
Genian ZTNA

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DEPLOYMENT GUIDE

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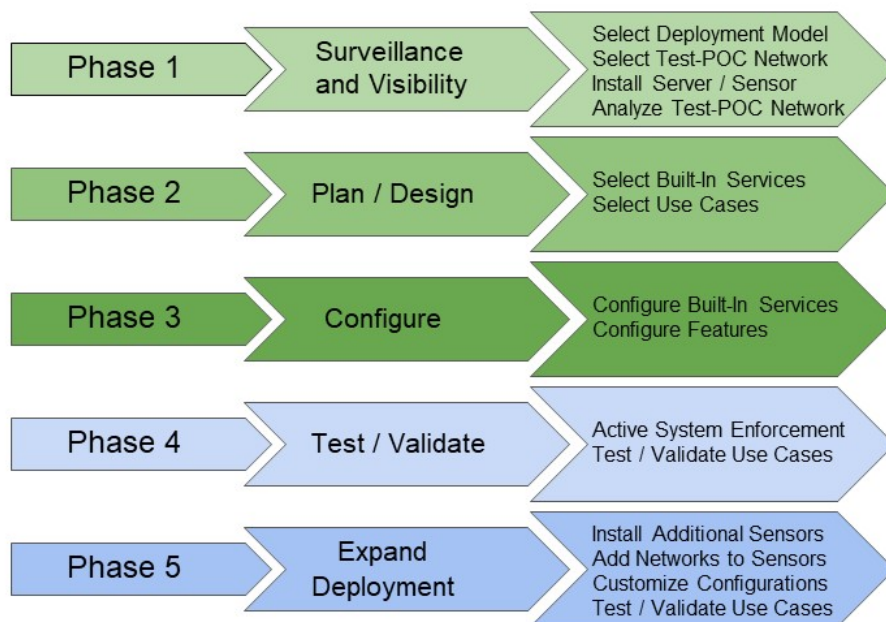
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DEPLOYMENT OVERVIEW

There are 5 recommended phases for Zero Trust Network Access (ZTNA) deployment.

- **Phase 1** - Network Surveillance / Visibility
- **Phase 2** - Plan / Design
- **Phase 3** - Configure
- **Phase 4** - Test / Validate
- **Phase 5** - Expand Deployment



Following the steps documented in the various phases will allow Administrators with any level of experience with ZTNA to successfully deploy the Genian ZTNA Solution. While not every specific use case or edge condition is addressed, the steps outlined in each phase cover the most common deployment scenarios and use cases for ZTNA.

PHASE 1 - NETWORK SURVEILLANCE / VISIBILITY

Gaining visibility into the network will allow Administrators to understand what nodes are active on the network by various information including IP, MAC, Platform Type, Location, Ownership and Status. This information will be used during Phase 2 when designing Grouping and Enforcement Policies.

2.1 Step 1 - Select Deployment Model

The first step when deploying the system is to choose a deployment model. Initially, the following decisions need to be made:

- Will the Policy Server be On-Prem or Cloud?
- Will the Policy Server and Sensor be Physical or Virtual?

The information below provides details that will assist Administrators in choosing the Deployment Model that is best for their environment:

- *Understanding Components*
- *Deployment Considerations*
- *Installing Genian ZTNA*

2.2 Step 2 - Select Test/POC Network

It is a recommended Best Practice to select a test/POC network when initially deploying the system. Typically, the test network is easily accessible to IT staff and includes one or more IT staff member. Information that will be needed when identifying the test network include, VLAN ID, subnet/mask, and gateway. This information will be required when configuring the system to monitor the test/POC network.

Example: VLAN 10, 192.168.10.0/24 , 192.168.1.1(gateway)

2.3 Step 3 - Install Policy Server / Sensor

Instructions for installing the Policy Server / Sensor are listed below which include steps on downloading the ISO image and installing the image in a virtual environment or on hardware.

- *Installing Genian ZTNA*

2.4 Step 4 - Deploy Sensor on Test/POC Network in Monitoring Mode

Once the Policy Server / Sensor have been installed, follow the steps below to add the test/POC network to the Sensor for Visibility. The Sensor will start to collect information for all nodes in the designated network in the form of Device Platform Intelligence.

- *Administration Console*
- *Adding And Deleting Network Sensors*
- *Genian Device Platform Intelligence (GDPI)*

The information gathered in this Phase will be used in Phase 2 when planning and designing how the system will be implemented.

PHASE 2 - PLAN / DESIGN

After Visibility has been enabled and Device Platform Intelligence has been analyzed for the test/POC network, the next step is to decide what features of the system will be enabled and what use cases are relevant for the deployment. There are no configuration tasks in this Phase, just decisions that will determine which steps will be executed in the following Phase when configuring the system.

3.1 Step 1 - Select from Optional Built-In Services

Note: None of these services are required for Visibility or Enforcement and are all optional.

Genian ZTNA has several built-in services which are available by default. These services include a DHCP Server, RADIUS Server, Switch Management via SNMP and Syslog Server. Part of the Planning and Design Phase is to determine if any of these services will be utilized.

- DHCP Server? - Y/N
- RADIUS Server? - Y/N
- Switch Management? - Y/N
- Syslog Server? - Y/N

3.2 Step 2 - Select Applicable Use Cases

- Block all unknown devices? - Y/N
- Captive Portal for browser capable devices? - Y/N
- Guest registration? - Y/N
 - Internet only access for Guests? - Y/N
 - Role Based Access (RBAC) for Guests? - Y/N
- Categorize networking devices? - Y/N
- Add tag (Trusted for example) to networking devices? - Y/N
- Authenticate Managed Devices? - Y/N
- AD/Domain SSO? - Y/N
- RADIUS SSO? - Y/N

- Role Based Access (RBAC) for Managed Devices? - Y/N
- Authenticate BYOD Devices?
- Internet only access for BYOD? - Y/N
- Role Based Access (RBAC) for BYOD? - Y/N
- Agent Enforcement for Managed Devices? - Y/N
- Agent Enforcement for BYOD? - Y/N
- Agent Enforcement for Guests? - Y/N
- IoT Use Cases? - Y/N
- Add tags to IoT devices? - Y/N
- Specific/restricted access for IoT devices? - Y/N
- Other tag use cases? - Y/N
- Other/Specific Use Cases? - Y/N
- Regulatory Compliance
- Business Specific, Other, etc.
- Network Security Automation? - Y/N
- Publish to External System? - Y/N
- Receive Alerts from External System? - Y/N

PHASE 3 - CONFIGURE

4.1 Step 1 - Configuration Optional Built-In Services

If selected in Phase 2, configure the desired built-in service. As a reminder, these are optional and not required for Visibility or Enforcement.

- *Configuring DHCP Server*
- *Configuring RADIUS Enforcement*
- *Monitoring Switch*
- *Receiving Events*

4.2 Step 2 - Configure Features for Grouping, Enforcement and Reporting

If selected in Phase 2, configure the desired features to meet the specific use cases of the deployment. Any feature not selected in Phase 2 may be skipped.

Once all of the desired configurations are completed, they will be used in Phase 4 to Test and Validate use cases.

4.2.1 Create Node Groups to categorize Devices/Users

- *Managing Node Groups*

4.2.2 Create Tags

- *Tagging Nodes*

4.2.3 Create Network Objects/Services/Permissions

- *Creating Permissions*

4.2.4 Create Enforcement Policies

- *Creating and Viewing Enforcement Policy for Nodes*

4.2.5 Configure AD Integration

- *Integrating User Directories*

4.2.6 Configure Single-Sign-On (SSO)

- *Single Sign-On*

4.2.7 Configure Captive Portal

- *Authentication using Captive Web Portal*

4.2.8 Configure Network Security Automation

- *Sending Events*
- *Integrating Palo Alto Networks Firewall*
- *Integrating FireEye*

4.2.9 Configure Alerting / Reporting

- *Managing Reports*

PHASE 4 - TEST / VALIDATE

5.1 Step 1 - Switch Sensor on Test/POC Network to Enforcement Mode

Sensors are deployed in Monitoring mode by default. This means all nodes are allowed on the network and even enabled Enforcement Policies will not be executed. In order to test any use cases which involvement Enforcement, the Sensor will need to be set to Enforcement Mode. The instructions below outline the steps required to activate a Sensor.

An additional consideration is whether or not to Allow or Block new nodes joining the network after the Sensor has been activated. This will essentially enable a Zero Trust model where any node not explicitly permitted by any of the previously configured policies will be blocked until an Administrator specifically grants the node access. When following the steps below, to enable this option, set the New Node Policy under IPAM to “Deny MAC”. If this option is not enabled, the default mode is “Allow” and nodes not machining any particular policy will be granted network access.

Configuring ARP Enforcement

5.2 Step 2 - Test / Validate Use Cases

With the Sensor now activated, all applicable use cases can be tested and validated. Any use cases not selected in Phase 2 can be skipped.

- Verify Unknown devices are blocked
- Verify Captive Portal
- Verify Guest Registration
- Verify tags for network devices
- Verify Managed Device Authentication
- AD/Domain SSO
- RADIUS SSO
- Captive Portal (non-domain environments)
- Verify Role Based Access (RBAC)
- For Managed Devices
- For BYOD
- For Guests
- Verify Agent Enforcement Actions

- For Managed Devices
- For BYOD
- For Guests
- Verify IoT Use Cases
- Verify tags/access as applicable
- Verify other tag Use Cases
- Verify tags/access as applicable
- Verify other specific Use Cases
- Verify Network Security Automation
- Verify Publish to External System
- Verify Receiving from External System
- Verify Alerting and Reporting

PHASE 5 - EXPAND DEPLOYMENT

6.1 Step 1 - Install Additional Sensors / Networks

Follow the steps outlined in Phase 1, Steps 3 and 4 to install additional Sensors or add more networks to an existing Sensor.

6.2 Step 2 - Modify / Customize Configurations

If applicable, modify or customize configurations from the newly added networks, or Sensors. Skip this step if not applicable.

6.3 Step 3 - Test / Validate Use Cases

Follow the steps outlined in Phase 4 as a Best Practice when deploying new Sensors or managing new networks to ensure that everything is operating properly based on the configurations. Repeat as necessary.

UNDERSTANDING NETWORK ACCESS CONTROL

7.1 What is ZTNA?

Zero Trust Network Access (ZTNA) starts by checking whether a device is permitted to connect to a network. Based on this, a device may be allowed or denied access. Such access control is typically provided through a technology known as 802.1X, which provides three important functions called Authentication, Authorization, and Accounting (AAA).

Authentication

Authentication is the process of verifying the identity of a user or device connecting to the network. This is usually done through the end user entering a username/password. In some cases the MAC address and digital certificates may be used for authentication.

Authorization

Authorization is the process of determining what network resources an authenticated device can access. Depending on the type of authenticated device or group of identified users, network, service and time zone may be restricted.

Accounting

Accounting is a process that allows a device to keep records of network access and use it for future billing or security purposes. This allows you to see who technology of network access control. Recently, due to security vulnerabilities of network endpoints, it has become desirable to determine eligibility for used what device, when, where, and how. AAA has long been used as a basic network access by security compliance status of the endpoints. ZTNA solutions function to allow administrators to set security compliance criteria other than usernames and passwords, and to control access based on these varied criteria.

These different aspects of ZTNA can be divided conceptually into functions that occur before the point of network connection, and after network connection.

Pre-Connect

Pre-Connect refers to operations performed before the endpoint is connected to the network and normal communication is established. When an endpoint attempts to connect to a network, the endpoint is identified and authenticated using identity information such as a username / password / certificate / MAC address provided by that endpoint. If this process does not confirm that the device is authorized, the network connection will be denied. This process can be provided via 802.1X through a device such as a switch or a wireless LAN access point, or through ARP control.

Post-Connect

If the endpoint meets the requirements of the Pre-Connect phase, it will be given access to the network with a certain level of authorization. At the time of connection, the ZTNA begins continuously monitoring the endpoint for compliance to policies set by the administrator. If and when the policy is violated, the network privileges of the endpoint may be reduced or revoked to isolate the endpoint. An agent can be used to monitor the state of the endpoint. The agent monitors the status of the endpoints hardware and software for compliance. Upon change, the ZTNA policy server is notified and network access can be controlled if a violation has occurred.

7.2 The Evolution of ZTNA:

First Generation

The earliest generation of ZTNA is user and device authentication based on 802.1X protocols. If a device tried to connect to switch ports or wireless access points, it was required to provide a username/password or certificate, to be approved by a RADIUS server. This approach allowed or denied access at the level of the switch port or the wireless access point. This method, while effective can be difficult to implement and is not compatible with all devices.

Second Generation

The second generation of ZTNA expanded to information gathering capability through SNMP with network devices or using independent network sensor devices. This generation also introduced access control methods in addition to 802.1X, such as VLAN quarantining, ARP based control, and port mirroring. This era also coincided with an increasing shift to wireless networking. To manage the emerging vulnerabilities of WLANs like rogue access points, solutions like network sensors, wireless controllers and endpoint agents were increasingly utilized for visibility and control.

Third Generation

The third generation of ZTNA expanded into automation. Agents became able to automatically configure endpoint devices to comply with security policy, and enabled the creation of a cooperative security model through integration with various systems. For example, a security system operating in the perimeter of the network such as an IDS or firewall may be able to identify threats, but at best, it can only block traffic that flows through it. Integrating with a ZTNA provides the ability to quarantine malicious devices from the rest of the LAN. A ZTNA can also share detailed endpoint and user information to other security systems to enhance their functioning. These integration commonly use standardized protocols such as REST, Webhook, and Syslog.

Fourth Generation

The current generation of ZTNA aims to address the issues of reduced endpoint visibility that have come along with the increasing prevalence of IoT and BYOD. A main feature of this generation is an increasing move towards advanced device fingerprinting for managing business concerns such as end-of-life or end-of-support for assets, as well as automated management responses to known and emerging vulnerabilities. Lastly there an increasing reliance on and integrations with cloud technologies, mirroring the increasing use of cloud computing in fast changing networking environments.

7.3 Problems Addressed By ZTNA

Entry By Unauthorized Devices

Networks that do not implement ZTNA may be accessed by any device that is plugged into a switch port, or connects to a wireless access point. Even if password protection is enabled, a user may still log into the network with an unapproved devices. This carries a substantial risk of introducing malware into the network. ZTNA can safeguard against these threats by denying access by unapproved devices.

Lack of Detailed IP Tracking

Most security systems leave an IP address in the audit trail but may not associate that IP with a user, or a device. This means that in environments with changing IP addresses, it is difficult to determine which device or user may be responsible for a security violation tied to an IP. ZTNA can keep track of all the connected endpoints through continuous network monitoring, and can provide various information about the endpoint that used the IP at a certain point of time in the past.

Disorganized Asset Management

properly manage assets and ensure compliance to regulatory standards. However, it is difficult for administrators to accurately identify IT assets Today's IT environment is much more complex than in the past due to BYOD, IoT, and so on. These conditions require thorough assessment in order to and check their status at all times. To reduce administrative

burden, ZTNA can provide endpoint details such as the manufacturer, product name, name, location (switch port or physical location), user name, network connection / disconnection time, etc.

Poor WLAN Security

As mobile devices such as smart phones spread into business environments, they expand the usage of wireless LAN. In many networks, a shared password is used. Shared passwords can be easily exposed and it is difficult to trace because they can not be linked to a specific user. The company's shared password should, in principle, be changed if an employee who knows the password leaves the company. However, this is not an easy change to manage. To solve this problem, an 802.1X system is required to allow authentication using a personal password when accessing a wireless LAN. By default, ZTNA supports 802.1X, allowing for better wireless security.

Unauthorized Access Points

As the network technology develops, the user endpoints can access various types of external networks in addition to the network provided by the company to which the user belongs. Problems such as leakage of internal data may be caused by if a user connected to the internal network creates an access point to the network on their device that is available to outside entities. Data leaks may also occur if a device with sensitive data connects to a public network. ZTNA monitors WiFi that can be accessed from inside the company, and manages and controls which users are connected. Therefore both rogue access points and the use of non corporate networks can be identified and blocked.

Non-Compliant Endpoints

To solve security problems, administrators require employees to set up essential software or operating system settings, or may prohibit use of certain programs. However, security incidents are constantly occurring because not all users' endpoints meet their requirements. ZTNA continuously monitors the essential settings, such as antivirus software and screen savers, to ensure that they are properly complied with, allowing non compliant devices to be blocked/quarantined, and fixed in case of violation.

Insecure Operating Systems

The most important thing for security of endpoint is application of latest security patch. ZTNA continuously monitors the endpoint and isolates unpatched endpoints from the network. This is different from typical endpoint management software, in that the control operates at the network level that the endpoint has reached. Through network control, administrators can make strong regulations that users can not bypass.

7.4 The Difference Between ZTNA and Firewall

Users who are not familiar with ZTNA technology often confuse their roles with firewalls. Because of the generality of the term Network Access Control, it is easy to think of a firewall as a product of the same function. However, the two products have the following major differences.

Endpoint vs. Network focused

A firewall is generally located between two or more networks in its configuration location to provide access control for communication between the networks, while ZTNA controls communication between endpoints within a network. For example, ZTNA can control a file share between two PCs on the same subnet, while the firewall generally does not.

Dynamic vs. Static policies

Firewall policies are usually made through objects such as addresses and ports of the source / destination called 5 Tuples. Recently, next-generation firewalls have begun to provide control through additional objects, such as users. In ZTNA, devices are organized into groups by multiple criteria. As the devices behavior and attributes change, the group the device is placed into changes. Each of the groups can be linked to a security policy with a certain level of network privilege. For example, an endpoint that is not running an antivirus can be identified in real time and quarantined on the network.

Internal vs. External networking

A firewall generally controls traffic by blocking non compliant traffic coming into and out of a network, and generally works off simple rule sets. ZTNA acts on the endpoints themselves to control traffic between devices within the network in a more flexible fashion.

ZTNA and firewall solutions play complementary roles by addressing different aspects of network control.

7.5 Steps to Implement ZTNA

Gain Visibility

The ultimate goal of ZTNA is to control and manage the use of non-compliant end-user devices that connect to the network. For this purpose, however, it is very difficult to immediately apply control functions to the network. For example, when setting up 802.1X, it is often unclear if all networking devices and endpoint are compatible. Additionally, it is not obvious how to collect information for non compliant devices to bypass 802.1X. A proper setup for 802.1X requires visibility. However, 802.1X does not provide visibility until it is full implemented and controlling connections.

Additional strategies must be used to gain endpoint visibility such as IP, MAC, platform type / name / manufacturer, host name, connection switch / port, connection SSID, service port, and operation status. Agents and other means can help establish this visibility.

Classify Endpoints

Once the visibility is secured, a security policy should be established. The first step is to classify the endpoints based on the collected data to determine which groups require control. The classification of endpoints ideally groups endpoints in a way relevant to the IT manager's daily tasks or that indicates compliance status with organizational security rules.

Control Access

The methods of control should be applicable in a variety of ways, depending on the network environment or the status of the device. Technologies such as: 802.1X, ARP, SNMP switch control, SPAN, and agents may be used, as well as integrations with other security systems. The first consideration in the access control phase is the user's authentication. With identification being an important task, it is generally recommended that the user database be aligned with the existing authentication system in use at the deployment site. LDAP interlocks, such as Microsoft Active Directory, or enterprise services such as Google G-Suite, Office 365, email, and even RDBMS, are common options. The next step is to provide role-based access control on the nature of the device or the user authenticated. The next step is to attributes may be used to allocate VLANs or block connections so that organization provide role-based access control on the nature of the device or the user authenticated. User departments have different access rights for authenticating from devices, or using network resources.

If a user tries to access resources that have been restricted, they can be redirected to a captive web portal. This portal may be customized so that the user can know which policy they are in violation of, and in turn how to become compliant.

IT Security Automation

Automation is the automatic application of security standards set by the administrator, such as operating system/software updates and settings, installation and operation of essential software, etc. This allows for devices that may violate a policy to be brought to a compliant status before network privileges are revoked. For example, a non-compliant device may be identified by the agent, and automatically corrected, without the intervention, of an administrator.

For more detailed deployment practices and considerations, see *Deployment Considerations*.

7.6 Features of Genian ZTNA

- **1th Generation ZTNA**

Genian ZTNA is the flagship product of 1th Generation ZTNA, providing advanced visibility through network sensors, without the need for infrastructure changes. The information discovered can be used to dynamically group endpoints by over 500 criteria in real time. Flexible configuration options make it quick and easy to deploy.

- **Advanced Sensor Based Visibility**

Genian ZTNA uses network sensors that connect directly to the broadcast domains of each network, minimizing interworking with existing IT infrastructures, even working well in legacy networks. This approach allows for visibility of Broadcast (ARP, DHCP, uPNP, mDNS) and Multicast traffic on each subnet.

- **Advanced Endpoint Platform Information**

[Device Platform Intelligence](#) makes it easy for IT managers to perform daily management tasks by providing detailed endpoint information such as: End-of-Sale , End-of-Support, Network connection method, Manufacturers bankruptcy, Manufacturers merger, Manufacture country, List of published vulnerabilities, etc.

- **Multiple Access Control Methods**

Genian ZTNA provides the broadest set of access control methods compared to other ZTNA products. These include: ARP control, DHCP server, switch control, SPAN based control, agent based control, and 802.1x. This makes it easy to establish comprehensive security. (See: [Policy Enforcement Methods](#))

- **Diverse Security Automation Functions**

The Genian ZTNA agent make it easy to manage endpoint operating systems, software, and hardware, in addition to collecting detailed information and other services.

- **Enhanced WLAN Security**

Genian ZTNA collects wireless information through network sensors and agents to deliver security functions such as rogue AP detection, unauthorized wireless LAN connection monitoring/ control, and blocking of soft APs.

- **Excellent Interoperability**

[REST API](#), Webhook, and Syslog, are supported for interworking with existing IT systems.

- **Flexible Configurations**

On-Premises or Cloud-managed versions provide the right solution for everyone, whether using an in-house IT department, or an out-sourced management service. In addition, it is a software based product, so users can select the hardware or virtual environment they desire to use.

- **Function Based Editions**

Genian ZTNA is available in 3 Editions based on the implementation steps above. See: [Compare Editions](#). The Basic Edition is primarily intended to quickly provide visibility into the early stages of ZTNA deployment without changing the existing network configuration. The Professional Edition provides network access control functions such as 802.1X, ARP control, and SPAN control, and may be upgraded to after the Basic edition is used to assess the network. Finally, the Enterprise Edition can be considered if there is a need to apply automated endpoint control, interwork with other security systems, provide role based administration or high availability deployment.

DEPLOYING GENIAN ZTNA

This chapter introduces you to basic information you should know before installing Genian ZTNA.

8.1 Understanding Components

To operate Genian ZTNA, various components are required. This chapter describes the role and installation location of each component.

8.1.1 Policy Server

The policy server is a central management system that stores all the data and settings of Genian ZTNA. The other components receive the configuration for their operation from the policy server, and then transmit the collected information. Typically, the policy server resides in the organization's data center and is installed on a physical server or virtual machine. The policy server may also be cloud hosted.

Another role of the policy server is to provide the administrator's management console through which all components are managed. You can view the collected information and establish your organization's security policies here.

8.1.2 Network Sensor

The network sensor is located in each network segment, monitors the network, detects nodes, collects information about them, and transmits it to the policy server.

The network sensor is connected to a regular network access port and does not require special settings such as port mirroring. However, when collecting information from several VLANs with one physical sensor, it should be configured as a trunk port through 802.1Q. In this case, a separate sensor node will be shown in the web console for each VLAN.

The network sensor monitors broadcast packets such as ARP or DHCP to detect that a new device is connected to the network. And it detects platform or acquires device information through various broadcast packets such as UPNP and NetBIOS.

Therefore, **network sensors must be connected to every broadcast domain**. If there are remote sites connected to the WAN, a separate network sensor is needed for each location. Other sensor deployments (Port Mirror (SPAN) , in-line) are supported, but do not provide all features. For more information see: *Deployment Considerations*

The network sensor functions mainly over a physical or emulated wired ethernet interface. The network sensor may be operated on the same system as the policy server or may be constituted by an independent system. Only one policy server is needed for all network sensors.

Wireless Sensor

The Wireless Sensor is a sub component of the network sensor. It monitors the radio signal through the wireless LAN network interface to detect the SSID and wireless clients around the sensor. This data is collected in real time around the clock, and logged on our policy server where it is cross referenced with node and user data. This allows for you to identify threats like rogue access points, connection issues like channel conflicts, and to keep detailed accounting of when and by whom your networks are being accessed.

The Wireless Sensor can be configured on the same system as the Network Sensor if a WLAN interface is present. The Wireless Sensor may also be configured on a separate device to better detect signals in different areas of the deployment site.

Wireless sensors may not be used depending on whether wireless related functions are used or not.

Note: Network Sensors installed onto a virtual machine typically will not have direct access to the wireless interface on the host hardware. As a result, a wireless sensor will not operate, even if the host machine uses a wireless network interface. Genian ZTNA will detect the hosts wireless interface as a wired sensor interface. In this case, an endpoint agent installed to a device with a wireless NIC can perform the functions of a wireless sensor. See: [Controlling WLAN](#)

Network Enforcer

The Network Enforcer is a sub-component of the network sensor that provides independent network access control for devices that violate an organization's policies. This makes it possible to isolate devices themselves without the help of existing network infrastructure. Like the network sensor itself, the Network Enforcer functions over a physical or emulated wired ethernet interface.

By enabling the Enforcer on the network sensor installed in each network segment, ARP-based Layer 2 Enforcement can be provided, which is the easiest way to provide network access control with network sensors without additional hardware.

Another Enforcer can be connected to the core switch with a SPAN Port (Mirroring) to terminate the session upon detection of unauthorized network access. This requires separate independent hardware capable of processing according to the amount of network traffic.

An Enforcer may be deployed as a ZTNA Gateway. With this option, the Enforcer is in-line with network traffic and only authorized traffic will be permitted. Both Cloud ZTNA Gateway and On-Prem ZTNA Gateway options are available.

See: [Installing ZTNA Gateway](#)

8.1.3 Agent

Agent is software installed in the user's desktop system. It periodically collects operating system, hardware, software and network related information and sends it to the policy server when a change is detected. It also provides desktop configuration management capabilities, making it easy to manage the required settings for your organization's security policies.

This is an optional component.

The agent provides its own security functions such as termination prevention and deletion prevention according to the administrator's setting.

Table 1: Supported operating systems

Windows	macOS
Windows XP (SP2)	Apple OS X Mavericks
Windows Vista	Apple OS X Yosemite
Windows 7	Apple OS X El Capitan
Windows 8	Apple macOS Sierra
Windows 8.1	Apple macOS High Sierra
Windows 10	Apple macOS Mojave

8.1.4 Updating Components

Genian Data

The **Policy Server** routinely updates **CVE Information**, **Node Information**, **OS Update Information** and **Platform Information** from the Genians Cloud.

Genian Software

Software Updates for the **Policy Server**, **Network Sensor**, and **Agent** can be downloaded and applied from the Genians Cloud in the System software section of the Web UI.

For Genians Cloud-managed subscribers, the Policy Server Software Updates are automatically installed.

For more configuration and update information, See: *Deployment Considerations* and *Managing System Software*

8.2 Deployment Considerations

8.2.1 Successful ZTNA deployment with Genian ZTNA

Establishing network access control can lead to changes in the network environment. To avoid disruption to end-users, Genian ZTNA uses a phased approach to deployment. Based on the experience gained by deploying ZTNA to many customers over 10 years, Genians highly recommends the following deployment steps:

Step 1: Gain visibility into your network assets

Understanding your network and user environment is the most important factor in establishing security policies and successfully applying network access control.

Having visibility into the network and the user device means that the following information can be monitored in real time:

- Exact type and quantity of devices in the network, including switches / routers and their configuration
- Operating system / hardware / software information of the user's device
- Wireless LAN environment

There are many ways to achieve this visibility. We hear from many customers that they have failed to achieve visibility through the 802.1x access control method, which has a high degree of implementation complexity. It is very difficult to establish gradual network access control through 802.1x, because 802.1x is a technology designed for control rather than visibility. This means that network control must be established before visibility is obtained.

Another method is switch device integration via SNMP / CLI. This makes it easier to obtain visibility without control. However, considering compatibility with switch manufacturers and models, as well as un-managed switch devices, there are still considerable limitations.

To address these complexity and compatibility issues, Genians offers a method of securing visibility through an independent **Network Sensor**. The network sensor is connected to each subnet (broadcast domain) and can be deployed without changing the existing network environment. Usually, installation and full visibility can be achieved in under three days.

MTAS ID	LINK	Accuracy	Connectivity	MAC	IP	Tag	Enforcement Policy	Platform	Hostname (Name)	Network Access Device	Access Port	SSID	Time Detected	Location	
281801205075				02:15:05:00:75	192.168.0.41		Antivirus Not Compliant	Microsoft Windows 10 Professional x64	LAPTOP20CLST	North-Andrew-Office	Branch-Wireless-0209	gfi	2019-02-20 09:35	C-172-1T-8.5	
281801205075				08:15:04:38:C2:58	192.168.0.87		Default Policy	Cisco Meraki Z1 AP	North-Andrew-Office	Branch-Wireless-0209	gfi	2019-02-20 09:35	London		
281801205075				08:02:03:34:07:58	192.168.0.27		Default Policy	ASUS RT-AC68P Wireless Router	WT-AC68P-8708	GMTEST1-C210b2	Fa1/9/6	2017-12-26 14:54	London		
281801205075				08:01:02:83:C4:57	192.168.0.63		Antivirus Not Compliant	Linux	192.168.0.210	gfi		2019-01-21 21:00	London		
281801205075				F4:4D:33:68:07:04	192.168.0.11		Default Policy	ESXi	USA-virt02server	Branch-E3709	GfH/6		2017-12-26 14:54	C-172-1T-8.5	
281801205075				0A:6D:1F:8F:07:F2	192.168.0.15		Default Policy	TP-LINK TECHNOLOGIES CO.,LTD. AP	CloudT36	Branch-E3709	Fa1/9/1		2019-03-05 16:30	London	
281801205075				3A:29:80:20:8C:C4	192.168.0.28		Default Policy	Apple macOS High Sierra	BMAC2080C4	Branch-E3709	GfH/6		2019-02-11 09:53	London	
281801205075				08:00:00:1A:00:84	192.168.0.24		Antivirus Not Compliant	Ubuntu Linux	lssystem	Branch-E3709	GfH/6/1		2017-12-26 14:54	London	
281801205075				18:41:1F:29:62:6A	192.168.0.38		Default Policy	Apple Device	Doveak	GMTEST1-C210b2	Fa1/9/5		2019-03-13 16:40	London	
281801205075				90:80:8D:00:88:F8	192.168.0.31		Default Policy	Apple iPhone	iPhone	Branch-E3709	GfH/6/3		Genians SG	2019-04-01 11:02	London
281801205075				19:00:88:00:00:C3	192.168.0.32		Default Policy	Samsung Android Device	android-6410214ab-000ab	Branch-Cloud384	London		2019-03-09 09:05	London	
281801205075				80:02:AF:4A:38:E7	192.168.0.33		Default Policy	Android OS	Android	Branch-E3709	GfH/6/3		2019-03-12 09:30	London	
281801205075				F9:63:1F:28:F9:C2	192.168.0.34		Default Policy	Microsoft Windows 10 Pro	SW10-DUKM	Branch-E3709	GfH/6/3		2019-03-01 16:29	London	
281801205075				0C:2B:85:8F:3C:F1	192.168.0.36		Default Policy	Microsoft Windows 10 Home	YOUNG&BECO	Branch-E3709	GfH/6/3		Genians SG	2019-03-02 13:50	London
281801205075				08:00:02:46:03:26	192.168.0.38		Default Policy	Linux OS-624 wireless broadband router	SWP-D4EP Cloud	Branch-E3709	GfH/6/3		Genians SG	2019-03-02 10:22	London
281801205075				08:28:F8:68:47:70	192.168.0.38		Default Policy	Microsoft Windows	www	Branch-E3709	GfH/6/3		Genians SG	2019-03-05 09:51	London
281801205075				94:0A:81:78:0A:68	192.168.0.42		Default Policy	Genians Genian NAC	www	GMTEST1-C210b2	Fa1/9/3		2019-02-19 14:54	London	
281801205075				08:50:08:0C:28:96	192.168.0.48		Default Policy	Linux		Branch-E3709	GfH/6		2019-03-12 16:30	London	
281801205075				84:52:80:00:78:78	192.168.0.100		Default Policy	Microsoft Windows	DESKTOP-BLH7716	Branch-E3709	GfH/6/3		2019-03-16 21:50	London	
281801205075				98:F5:DA:4A:3C:83	192.168.0.181		Default Policy	Antivirus Not Compliant	amazon-Round-143s	Branch-E3709	GfH/6/3		Genians Guest	2019-03-05 15:40	London
281801205075				00:A1:FC:8A:08:7E	192.168.0.189		Antivirus Not Compliant	Microsoft Windows 10 Professional x64	SW10-DUKM	CloudT36	Fa1/9/3		2019-03-12 09:31	London	
281801205075				AC:5E:FA:3C:78:38	192.168.0.118		Default Policy	Apple iPhone	Scout-Phone	Branch-E3709	GfH/6/3		Genians SG	2019-03-16 09:27	London
281801205075				38:F9:03:77:58:83	192.168.0.118		Default Policy	Apple MacBook Pro	MACBOOKPRO-5893	Branch-E3709	GfH/6/3		Genians SG	2019-04-18 06:43	London
281801205075				88:00:10:00:08:14	192.168.0.118		Default Policy	Cisco Networking Device	AP5816-1-802-0874	Branch-Wireless-0209	gfi1		2019-01-10 15:33	London	
281801205075				08:08:27:F8:21:3C	192.168.0.120		Default Policy	Canon Linux	centos	Branch-E3709	GfH/6/1		2019-02-22 11:00	London	
281801205075				9C:32:CE:30:F4:58	192.168.0.120		Default Policy	Canon Printer	CanonPrinter	Branch-E3709	GfH/6/3		Genians	2019-02-14 14:51	London
281801205075				08:6C:DA:37:00:86	192.168.0.183		Default Policy	Google Home Smart Speaker	GoogleHome	Branch-E3709	GfH/6/3		Genians SG	2019-03-01 18:30	London
281801205075				F0:00:0A:37:00:86	192.168.0.183		Default Policy	Linux		GMTEST1-C210b2	Fa1/9/4		2019-01-21 18:30	London	
281801205075				86:17:02:07:87:85	192.168.0.181		Default Policy	Apple Mobile Device	GDWANS-TV	Branch-E3709	GfH/6/3		2019-01-24 16:02	London	
281801205075				94:57:A8:80:0F:14	192.168.0.189		Default Policy	HP HP Officejet Pro K1075a MFP	HPCEKASA	Branch-E3709	GfH/6/3		2017-12-26 14:54	London	
281801205075				06:17:A8:22:35:1F	192.168.0.180		Default Policy	Linux	Philips-Ave	Branch-Wireless-0209	gfi		2019-01-21 03:12	London	
281801205075				78:14:66:47:DE:D8	192.168.0.181		Default Policy	Apple iPhone	iPhone	Branch-E3709	GfH/6/3		Genians	2019-04-01 09:02	London
281801205075				90:46:1F:74:8A:24	192.168.0.184		Default Policy	ASUS COMPUTER INC. AP	GMTEST2	Branch-E3709	GfH/6/3		2019-01-02 11:00	London	
281801205075				C4:80:01:07:80:F7	192.168.0.175		Antivirus Not Compliant	Apple macOS High Sierra	jesse-macbook-pro-local	GMTEST1-C210b2	Fa1/9/9		Genians SG	2019-02-28 09:10	London
281801205075				4C:81:9F:C8:87:8F	192.168.0.176		Default Policy	Samsung Smart TV	Smart-TV-0708	Branch-E3709	GfH/6/3		Genians	2019-03-28 16:30	London
281801205075				38:00:0A:37:00:86	192.168.0.177		Default Policy	Ubuntu Linux	ubuntu	Branch-E3709	GfH/6/3		2019-10-10 16:00	London	
281801205075				80:80:8F:78:8A:70	192.168.0.178		Default Policy	ASUS COMPUTER INC. AP	GMTEST1	Branch-E3709	GfH/6/3		2019-10-17 08:00	London	

Genian ZTNA also provides **Agent** software for greater visibility into Windows and MacOS operating systems. It can be installed on the user's system to collect information (operating system / hardware / software / update, etc.) desired by the administrator.

Step 2: Classify assets and check compliance

Once the visibility of the IT assets is established, the next step is to classify known assets. Genian ZTNA offers more than 500 different conditions for grouping assets. Node group membership updates in real time as the status of the node changes.

Ideally, groups are defined by multiple perspectives, such as who the intended user is, what kind of device the node is, or what subnet the nodes are part of. To this end, various additional information such as manufacturer / product name / model information, connection method, and more are provided by Genian ZTNA's Device Platform Intelligence.



Cisco SG300-20 Switch

Platform Information	http://www.cisco.com/c/en/us/support/switches/sg300-20-20-port-gigabit-managed-switch/model.html
Search Engine	Search on Google
End of Sales	Yes (2018-08-04) more info
End of Support	Planned (2023-08-31) more info
Wired Connection	Yes
Wireless Connection	-
Fingerprinting Source	MAC OUI NIC VENDOR SNMP Dssc SNMP OID DHCP
Added at	Nov 11, 2015
Manufacturer Name	Cisco Systems Inc.
Homepage	http://www.cisco.com/
Headquarters	United States of America
Business Status	Ongoing

[Suggest Update](#)

Platform's Common Vulnerabilities and Exposures (CVE)

CVE-ID	Severity v3.0	Severity v2.0	Description
CVE-2017-12308 01/18/2018	MEDIUM	MEDIUM	A vulnerability in the web framework of Cisco Small Business Managed Switches software could allow an unauthenticated, remote attacker to conduct an HTTP response splitting attack against a user of the web interface of an affected system. The vulnerability is due to insufficient input validation of some parameters that are passed to the web server of the affected system. An attacker could exploit this vulnerability by convincing a user to follow a malicious link or by intercepting a user request and injecting malicious code into the request. A successful exploit could allow the attacker to execute arbitrary script code in the context of the affected web interface or allow the attacker to access sensitive

In addition to administrative classification, classification of devices that violate security regulations is also very important.

In general, groups may be configured for:

- Devices that are not assets of the company are connected to the network (personal devices)
- PC's without antivirus software
- Non-Authenticated devices

Step 3: Establish IT security policy and remediation

Once an IT security policy is established, control of the device that violates it is required. Because it is not easy to control all identified violation devices at once Genian ZTNA provides a step-by-step, automated approach.

The Agent is equipped with a variety of control action plug-ins to automatically process various security settings and configurations without user intervention. The Captive Web Portal (CWP) can also guide you through the tasks you need to perform, such as guest user on-boarding.

For more information on control actions, see *Controlling Endpoints with Agent*

Step 4: Enforce network access control and Quarantine non-compliance devices

After removing the known unauthorized device through the above steps and completing the necessary security measures for the user's device, the remaining task is to continuously monitor whether the security regulations are complied with, and to control network access by the devices that violate the regulations. At this stage, various control methods can be selected according to the network environment and required security level. Genian ZTNA provides a variety of controls for this.

- 802.1x
- Layer 2 (ARP, DHCP)
- SNMP/CLI (Port Shutdown)
- Port Mirror (SPAN)
- Inline
- Integration with 3rd party device (Firewall, VPN, etc)
- Agent

For details about each control method, see *Policy Enforcement Methods*

8.2.2 Technical Considerations

Topic	Layer 2 Sensor/Enforcer	SNMP/CLI	Port Mirror (SPAN)	Inline	802.1x	Agent
Access Control at Layer 2	Yes	Yes	No	No	Yes	No
Access Control at Layer 3	RBAC	Switch Port ACL	RBAC	No	Switch Port ACL	OS Firewall
Post-admission Control	ARP, DHCP	VLAN/ACL/Shutdown	TCP RST, ICMP unreachable.	Filtering	CoA*	OS Firewall
Additional Hardware	Network Sensor	Managed Switches	Full traffic capable Device, Tap Device, SSL Decryption Device	Full traffic capable Device	802.1x Switch/AP	No
Endpoint Dependency	No	No	No	No	802.1x Supplicant	Agent required
WLAN Security	Monitoring (WNIC on Sensor)	Monitoring (SNMP with Controller)	No	No	Monitoring / Control (WPA2-Enterprise)	Monitoring / Control (SSID Whitelist)
Layer 2 Security	Detect MAC Spoofing, Detect Rogue DHCP, Managing IP Conflict	No	No	No	No	No

CoA*: Change of Authorization, RFC 5176 - Dynamic Authorization Extensions to RADIUS

8.2.3 Management Considerations

Topic	Layer 2 Sensor/Enforcer	SNMP/CLI	Port Mirror (SPAN)	Inline	802.1x	Agent
Network Config Change	Trunk port (optional)	Switch Config, VLAN/ACL	Tap Device, SPAN Port	Gateway Change	Switch Config, VLAN/ACL, Endpoint Config	No
Compatibility Issue	No	Vendor-dependent SNMP MIB/CLI	No	No	RADIUS Vendor Attribute, non-802.1x capable Device <i>(Poor wired device support)</i>	OS Type/Version
Easy of Deployment	Easy	Difficult	Intermediate	Easy	Very Difficult	Intermediate
Phased Deployment (Discover First, Control Later)	Yes	Yes	Yes	No	Must be controlled from the start of deployment	Yes
Single point of Failure	No	Yes	Yes	Yes	Yes	No
Vendor Lock-in	No	Intermediate	No	No	High	Intermediate
Recommended for	Essential Discovery and Control	Extended information and port control			Wireless network	Extended information and enforce compliance

8.2.4 Deployment Models

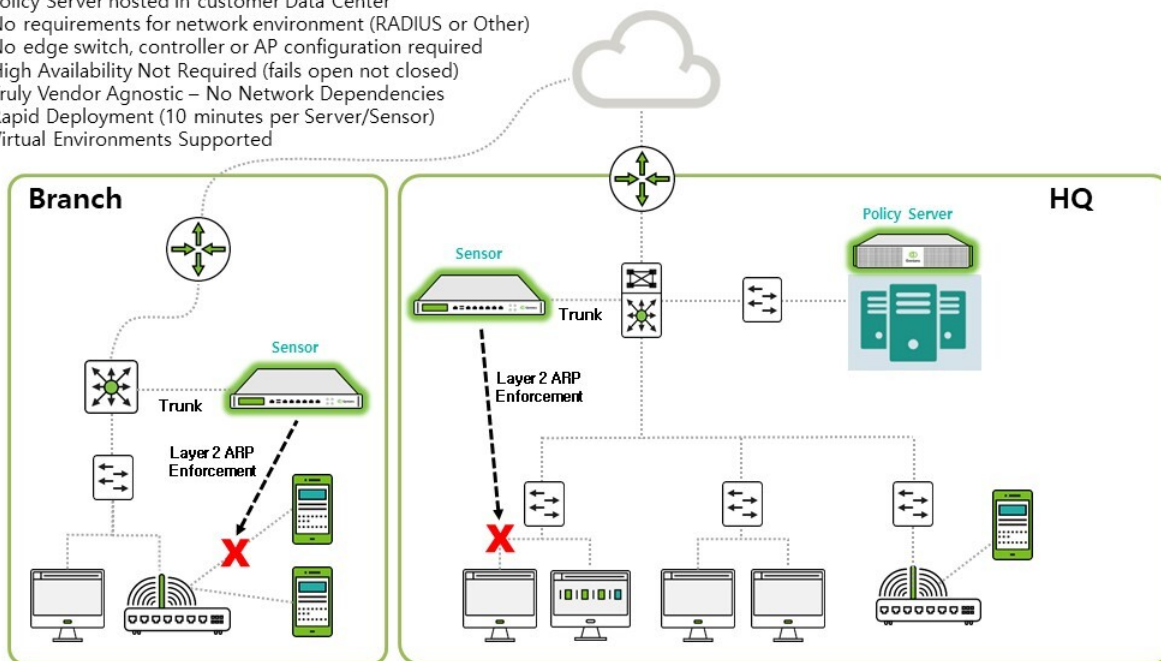
On-Premises

Policy Server and Network Sensor can be deployed flexibly.

- Policy Server/Network Sensor combined may be hosted on a single appliance or separately
- Sensor(s) may be deployed centrally (802.1Q trunk or mirror port) or distributed between networks.
 - Trunked Sensors support up to 128 Vlans(recommended 64 Vlans)
 - For more info on sensor modes , see: *Controlling Network Access*

Genian NAC Deployment – On-Prem Policy Server

- Policy Server hosted in customer Data Center
- No requirements for network environment (RADIUS or Other)
- No edge switch, controller or AP configuration required
- High Availability Not Required (fails open not closed)
- Truly Vendor Agnostic – No Network Dependencies
- Rapid Deployment (10 minutes per Server/Sensor)
- Virtual Environments Supported

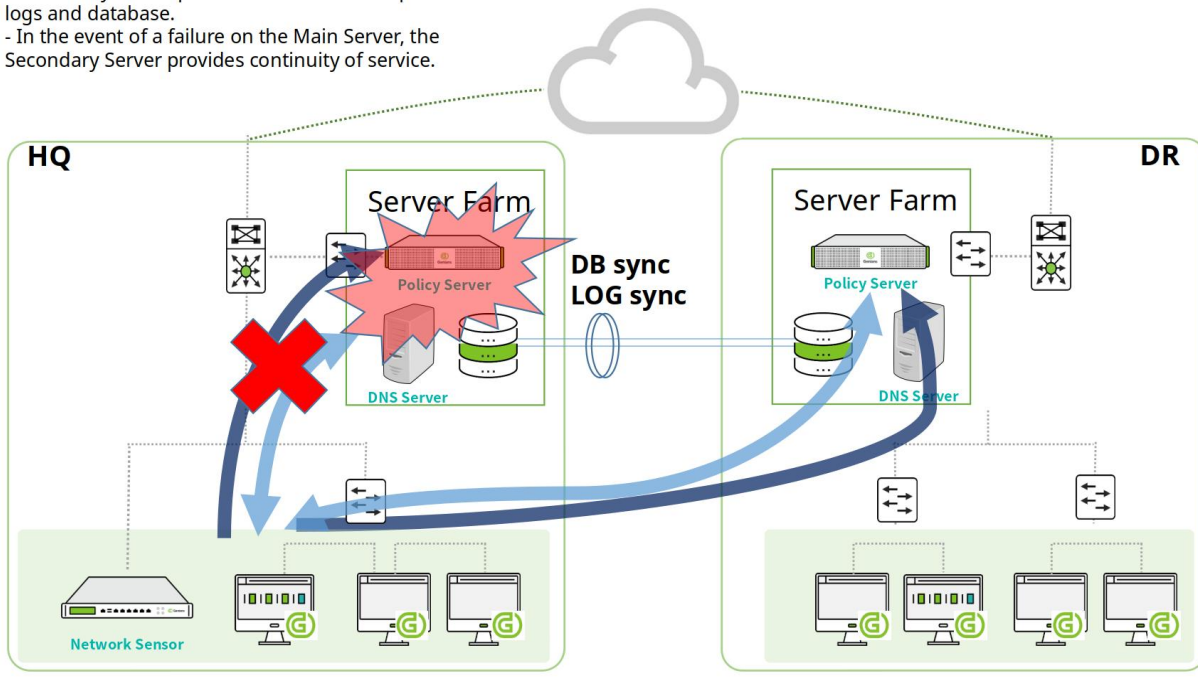


 Genians

Configuring High Availability

Genian NAC Deployment – DR Policy Server

- Secondary Server provides real time backup of logs and database.
- In the event of a failure on the Main Server, the Secondary Server provides continuity of service.



3

Genians

Your Cloud

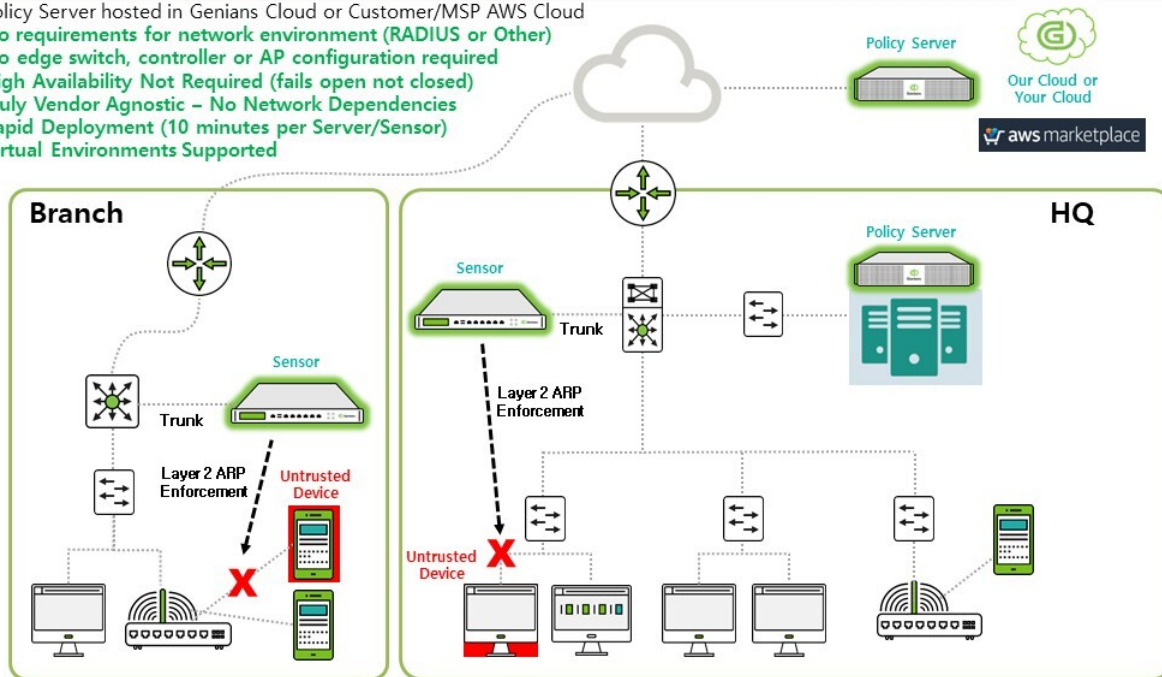
The Policy Server may be hosted in an existing Private Cloud by utilizing the publicly available AWS AMI. Deployment instructions are posted in the [AWS Market Place](#) product listing for Genian ZTNA Policy Server.

Genians Cloud

The Policy Server may be hosted in a Private site in the Genians Cloud which can be launched from [Genians.com](https://www.genians.com).

Genian NAC Deployment – Cloud Policy Server

- Policy Server hosted in Genians Cloud or Customer/MSP AWS Cloud
- No requirements for network environment (RADIUS or Other)
- No edge switch, controller or AP configuration required
- High Availability Not Required (fails open not closed)
- Truly Vendor Agnostic – No Network Dependencies
- Rapid Deployment (10 minutes per Server/Sensor)
- Virtual Environments Supported



Genians

ZTNA AS A SERVICE (MSP READY)

Essential Features For CyberSecurity-As-A-Service

Enhance the way of monitoring your customer network:

- Security infused IT Asset Management empowered by *Device Platform Intelligence*
- Ongoing Compliance-As-A-Service for Networks and Endpoints
- *Network anomaly detection*
- Customizable *dashboards* and *reports*

Secure network connections made by any type of IP enabled devices at the edge:

- *Control unauthorized/rogue/misconfigured devices*
- Support a productive *onboarding process*
- *Quarantine/Remediation*
- *Desktop configuration management*

Plus, the built-in services:

- *RADIUS Server* for AAA (802.1x)
- *DHCP Server* for IP management
- *Syslog Server* for Log and Event Management

Cloud Ready

Supports various Cloud environments:

- Public Cloud (AWS, Azure, Google)
- Private Cloud (VMWare, OpenStack)
- Nutanix Hyperconverged Infrastructure (HCI)

Genian ZTNA Components:

- Policy Server: Supports multi-tenancy (Docker container)
- Network Sensor: Support Universal customer premises equipment (uCPE)
- Agent: Multi functional features and customization

Management:

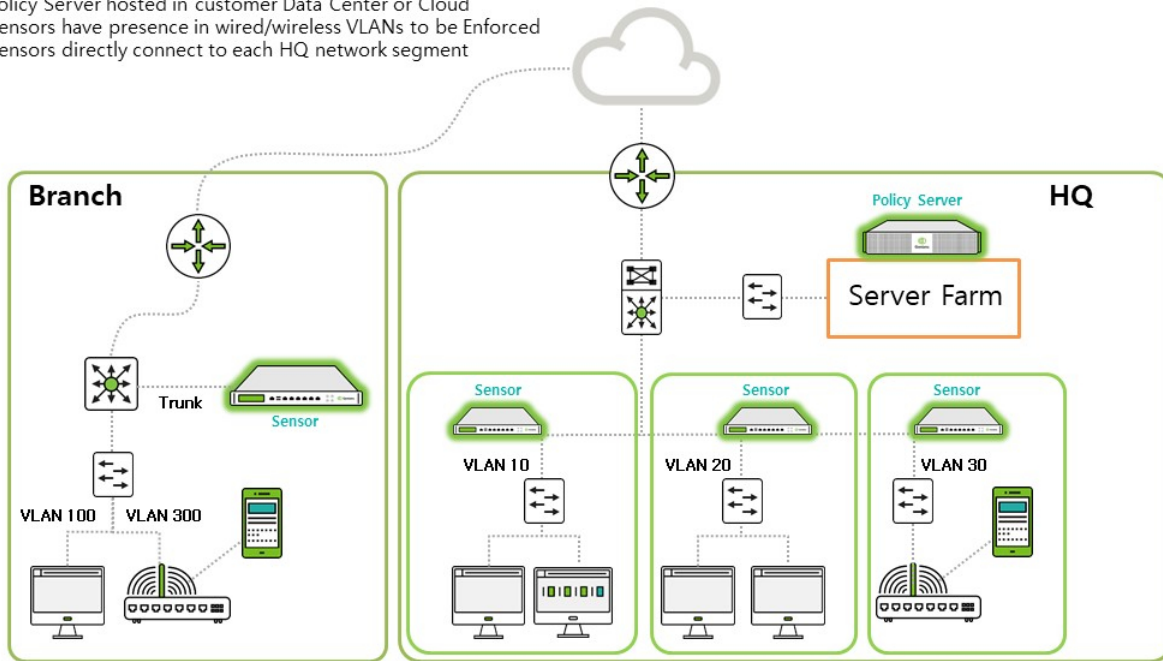
- One-stop service (sites, users, licenses, subscriptions, billing)
- Virtual domain support
- Centralized dashboard/reports
- Zero Config Provisioning
- White label service

Additional Deployment Models

On-Premise

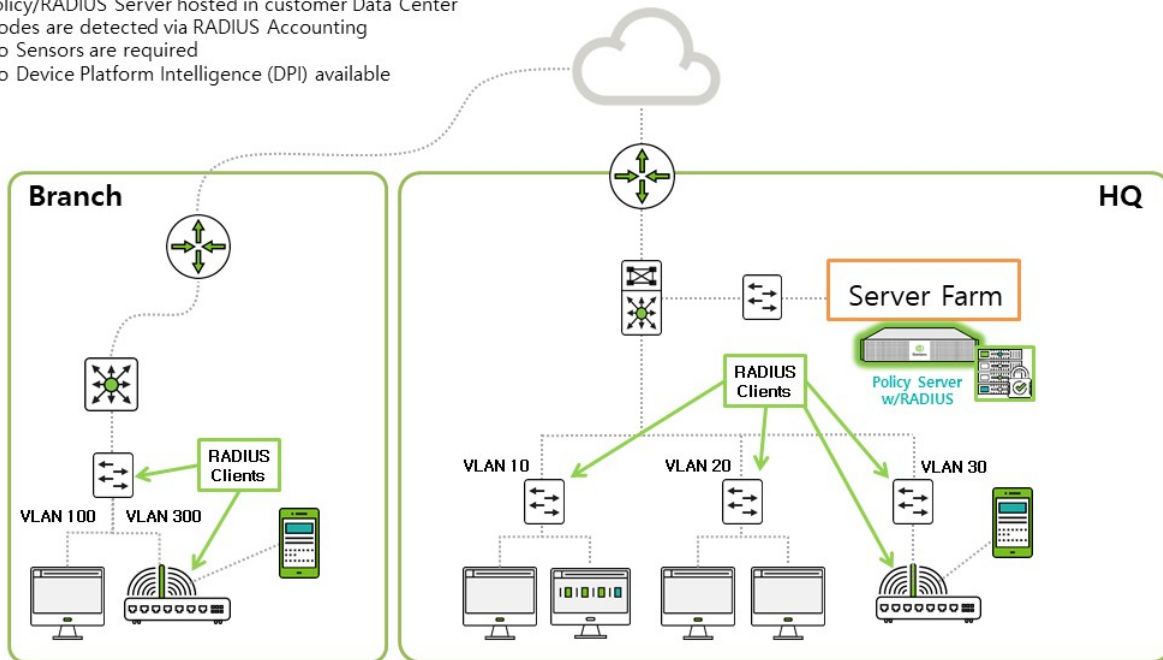
Distributed HQ Sensor Deployment

- Policy Server hosted in customer Data Center or Cloud
- Sensors have presence in wired/wireless VLANs to be Enforced
- Sensors directly connect to each HQ network segment



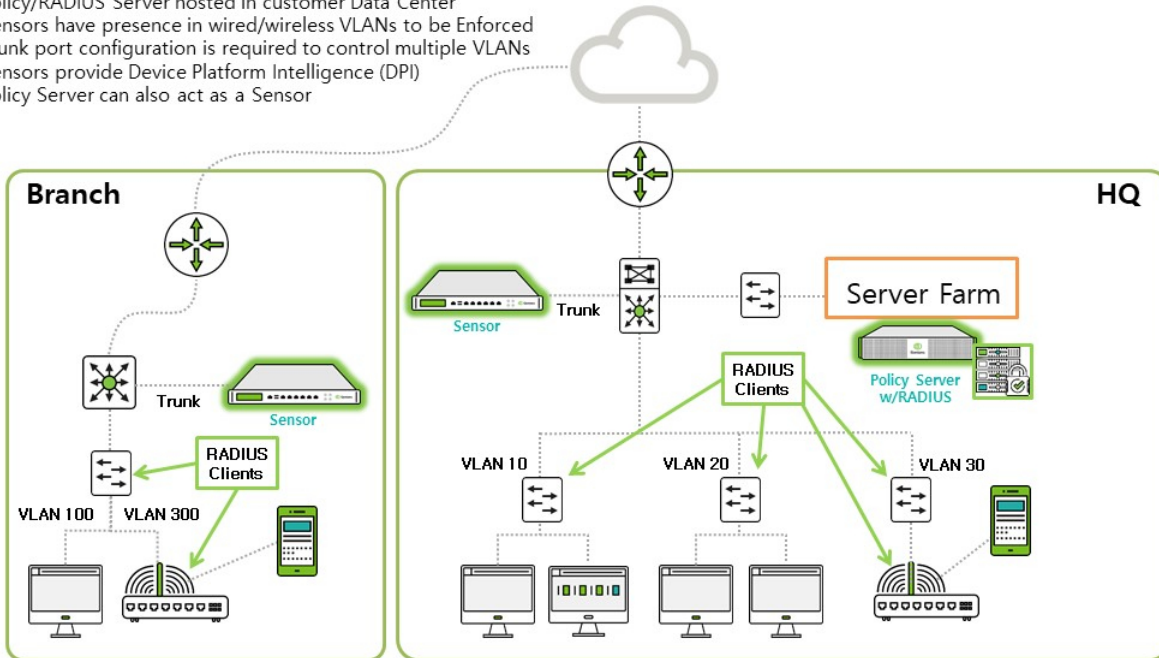
Typical On-Prem RADIUS Deployment

- Policy/RADIUS Server hosted in customer Data Center
- Nodes are detected via RADIUS Accounting
- No Sensors are required
- No Device Platform Intelligence (DPI) available



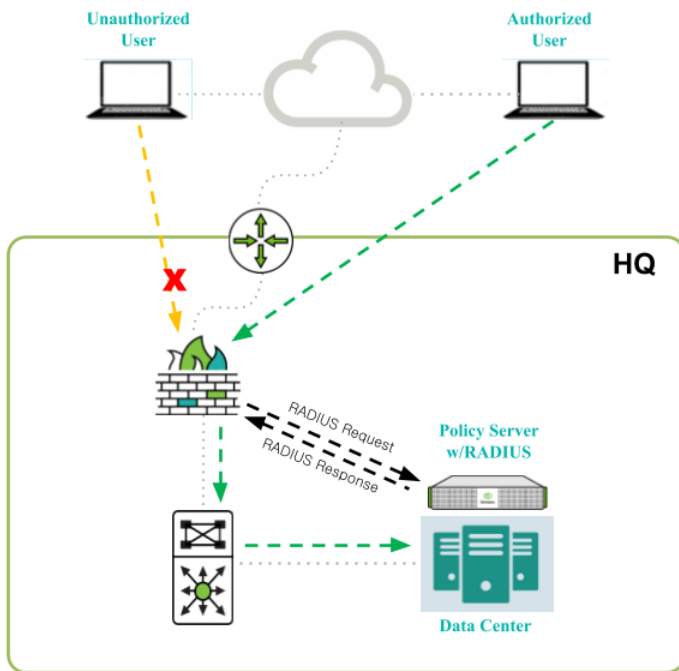
Typical On-Prem RADIUS Deployment with DPI

- Policy/RADIUS Server hosted in customer Data Center
- Sensors have presence in wired/wireless VLANs to be Enforced
- Trunk port configuration is required to control multiple VLANs
- Sensors provide Device Platform Intelligence (DPI)
- Policy Server can also act as a Sensor



Genians

Genians VPN Enforcement – Unauthorized User



Highlights:
No Agent Required
AD/Local User Accounts
No RADIUS CoA Required

RADIUS Enforcement

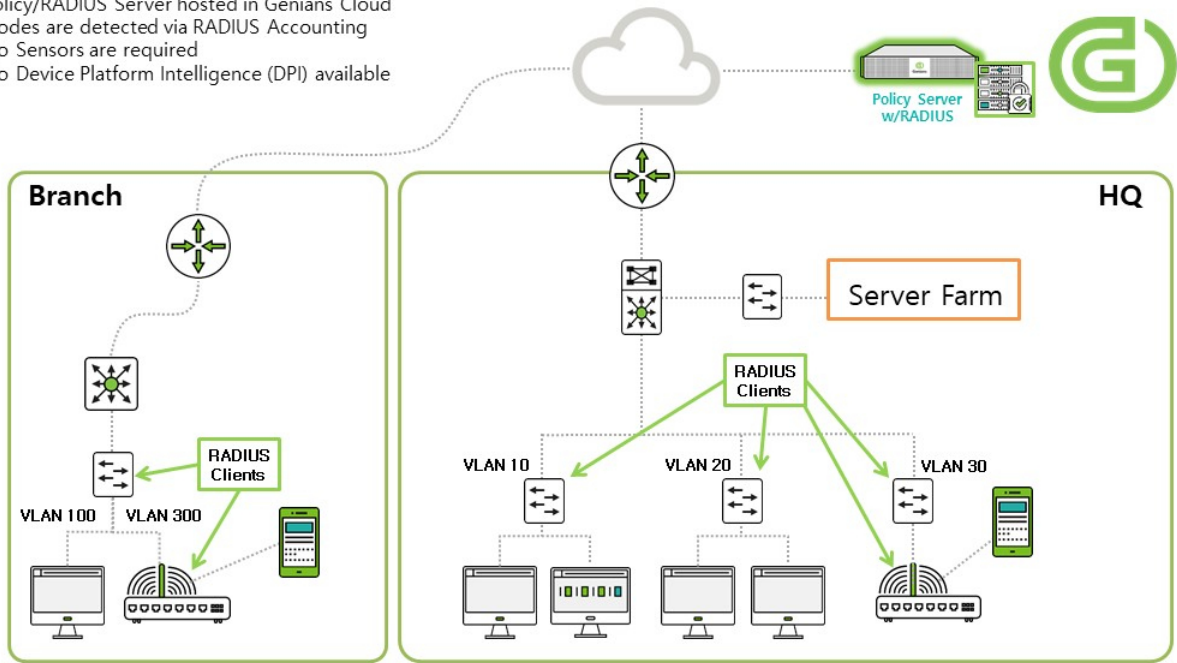
- VPN Firewall/Server Sends Request to Genians
- Genians Responds with Access-Reject Message
- User Unable to Establish VPN Connection



Cloud

Typical Cloud RADIUS Deployment

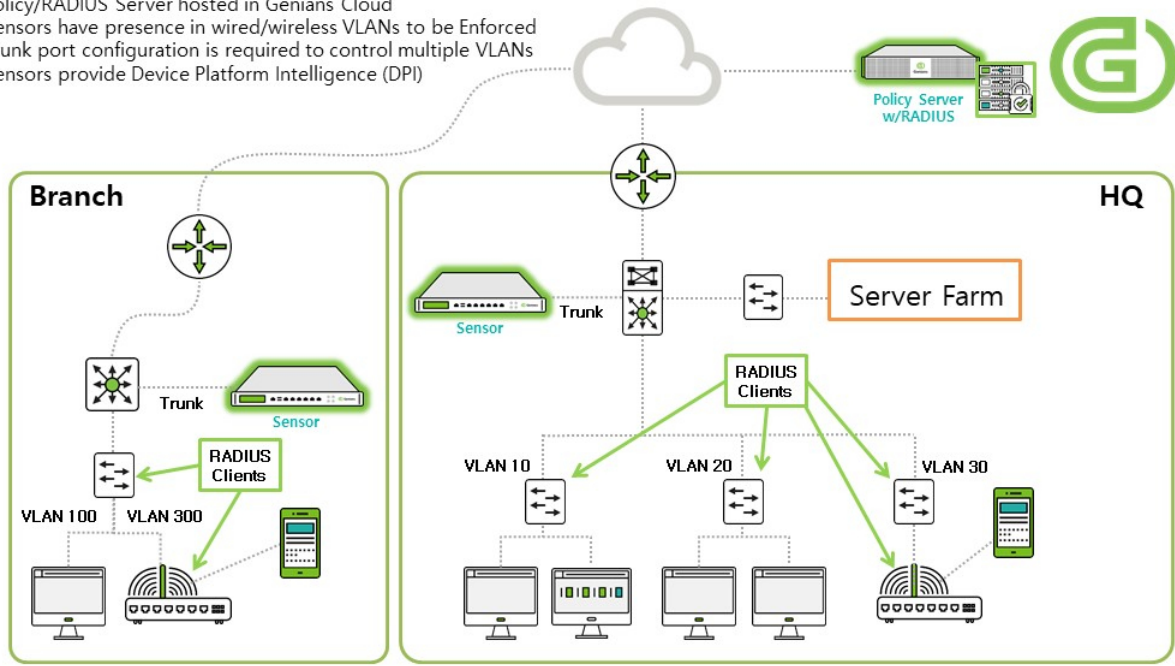
- Policy/RADIUS Server hosted in Genians Cloud
- Nodes are detected via RADIUS Accounting
- No Sensors are required
- No Device Platform Intelligence (DPI) available



Genians

Typical Cloud RADIUS Deployment with DPI

- Policy/RADIUS Server hosted in Genians Cloud
- Sensors have presence in wired/wireless VLANs to be Enforced
- Trunk port configuration is required to control multiple VLANs
- Sensors provide Device Platform Intelligence (DPI)



8.3 Compare Editions

Genian ZTNA is available in three editions: Basic, Professional, and Enterprise.

Each edition has the following purpose.

Basic

Provides visibility into network and IT assets.

Professional

Provides network access control according to IT security policy.

Enterprise

Provides advanced and automated IT security.

Your deployment can be built and upgraded step by step using each edition, making it easier to build gradually with less cost.

Please refer to the function comparison table for each edition below to select the product that suits you.

Category	Feature	Basic	Professional	Enterprise
Visibility	Detect/Monitor IP-enabled Device	Yes	Yes	Yes
	Device Platform Intelligence (Name, Type, Picture, EOL, Connection, CVE)	Yes	Yes	Yes

continues on next page

Table 2 – continued from previous page

Category	Feature	Basic	Professional	Enterprise
	Switch Port Information	Yes	Yes	Yes
	WLAN Monitoring / Security (Rogue/Misconfigured AP)	Yes	Yes	Yes
	Basic Endpoint Information (OS, HW, Software) by Windows/macOS Agent	Yes	Yes	Yes
	Condition based Dynamic Node Group	Yes	Yes	Yes
	Customizable Dashboards (Over 100 Widgets)	Yes	Yes	Yes
	Track Changes / Audit Logs	Yes	Yes	Yes
	Network Anomaly Detection (MAC Spoofing, Rogue Gateway, Ad-hoc)	Yes	Yes	Yes
	Basic Reports (Node, WLAN, Log)	Yes	Yes	Yes
	Notification (Email/Text Message)	Yes	Yes	Yes
	Custom Reports		Yes	Yes
User Authentication	Captive Portal Login (Web login)		Yes	Yes
	Active Directory SSO		Agent Based	Agent-less
	External User Directory Integration (LDAP/RADIUS/SMTP/POP3/IMAP/SAML2)			Yes
	Multifactor Authentication (Text Message/Email/Google OTP)		Admin Only	Yes
Network Access Control	802.1X based Control (RADIUS Server, EAP, MAB, VLAN Assign, CoA)		Yes	Yes
	ARP based Layer 2 Enforcement		Yes	Yes
	Port Mirroring (SPAN) based Enforcement		Yes	Yes
	In-line Enforcement (Dual-homed Gateway)		Yes	Yes
	Switch integration (SNMP) based Enforcement		Yes	Yes
	DHCP based Enforcement (DHCP Server)		Yes	Yes
	Role based Access Control		Yes	Yes
	IP Address Management(IPAM)		Yes	Yes
	Tag-Based Control of Users, Wlans and Devices/Nodes (E.g., Guest devices, temporary privileges, policy exemptions)		Yes	Yes
Cloud Security*	Cloud Workload Visibility			Yes
	Automated Cloud Control using CLI Interface			Yes
	Cloud Security Group Management			Yes
Remote Work*	ZTNA Client (SSL-VPN)			Yes
	FIDO (Biometric) authentication for MFA			Yes
	Always on ZTNA			Yes
Zero Trust Network Access (ZTNA)*	Role-base Access Control Permission Policy			Yes
	Dynamic destination (Node Group) support in Permission object			Yes
	ZTNA Cloud Gateway for Security Service Edge (SSE) - AWS, Azure, GCP			Yes
	Secure Branch Tunneling (IPSec/GRE)			Yes
	Traffic Visibility (netflow)			Yes
	URL and Application Filtering			Yes
	IP Mobility (VxLAN, Always on ZTNA)			Yes

continues on next page

Table 2 – continued from previous page

Category	Feature	Basic	Professional	Enterprise
Desktop Management	Compliance Check (Antivirus, OS Update, Required SW, OS Settings)		Yes	Yes
	OS Configuration (Screenlock, Internet Options, DNS)			Yes
	Windows Update Management (Offline Update, Update Cache, Approval)			Yes
	External Device Control (USB and etc.)			Yes
	802.1X Connection Profile Provisioning (Wireless/Wired)			Yes
	EAP-GTC Plugin for Windows (Support Legacy Password Authentication)			Yes
	WLAN Control (SSID Whitelist, SoftAP block)			Yes
Integration	User Directory Sync (RDBMS, Active Directory, LDAP, Google)			Yes
	Webhook / Syslog / SNMP trap (Outbound)			Yes
	REST API (Inbound)			Yes
	Syslog Server (Inbound)			Yes
Business Process	User Consent Pages			Yes
	Request/Approval via CWP (IP, Device, User, Guest User, External Device)			Yes
	Role based Administrator			Yes
	Custom Fields (Node, Device, User)			Yes
	Custom Captive Portal Pages			Yes
Scalability and Availability	Multilingual Support			Yes
	High Availability (Policy Server / Network Sensor)			Yes
	Interface Channel Bonding			Yes
	Disaster Recovery (DB Replication, Redundant Policy Server)			Yes

- Added in Genian ZTNA 6.0

8.4 Sizing Software and Hardware

8.4.1 Five steps to specifying the right software and hardware

This chapter provides a guideline for choosing the right Genian ZTNA software and hardware. Specifying the right software and hardware is dependent on a number of factors and involves developing a usage profile for the users and the network environment.

8.4.2 Step 1. Identify the Total Active Devices Number for Software License

The license of Genian ZTNA Software is based on the number of devices connected to the network and running. The number of devices is measured by the number of unique MAC addresses connected to the network. In order to purchase Genian ZTNA in the right size, it is necessary to know the number of devices in operation. This value can usually be found in the following ways:

- The number recognized by the IT / Network Administrator
- The existing IT management system (Asset Mgmt, Network Monitoring)
- Verifying actual numbers through [Genian ZTNA Trial Version](#) (Download and Identify Devices)

All devices that use TCP/IP communication, such as IP phones, surveillance cameras, as well as PCs should be considered as devices.

As your network grows, and the number of devices exceed your License limit, some information of new devices will be hide. But all policies work normally. (Product feature limitations due to license overrun may change without notice.)

MAC	Platform	Hostname	Hostname (Name)	Switch	Port	Traffic	Outgoing Traffic	Incoming Traffic	SSD	Auth User
70 18 0A 09 C2 58	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
78 62 66 3A 07 00	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
78 05 CA 37 5B 9D	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
78 05 CA 37 67 A0	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
78 C9 86 20 9E C4	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
CE BB 9B 38 25 84	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
88 AE ED 7D 3D 42	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
88 AE ED 7D 3D 42	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded	License limit exceeded
78 CB 8A A8 D9 AC	GeniNetworks Genian NAC			BostonMainSG300	g5					
88 AE ED 7D 83 E2	GeniNetworks Genian NAC			192.168.30.250	g1					

When devices are no longer seen on the network the License will then be carried over to the next active and running device. If you purchase an on-premise product, there are no licensing deadlines, only maintenance expirations. If maintenance contract expires, then you cannot upgrade to a newer version or update any of the various databases.

8.4.3 Step 2. Identify the Total Active Nodes Number for Hardware

You need to know the number of nodes to estimate the capacity of the policy server. A node is an endpoint on the network consisting of a combination of IP and MAC. If a system with a single MAC address is using multiple IPs at the same time, the number of devices is one, but the number of nodes can be several. Because Genian ZTNA manages all information on a per-node basis, it is closely related to the number of nodes in the capacity of the policy server.

Depending on the number of nodes in the network you wish to install, we recommend the following minimum specifications:

Policy Server:

	2,000 Nodes	10,000 Nodes	20,000 Nodes	Over 20,000 Nodes
CPU	Intel Dual Core	Intel Quad Core	Intel Hexa Core	Intel Octa Core
Memory	8 GB	16 GB	32 GB	64 GB
Storage	SSD 128 GB	SSD 256 GB	SSD 512 GB	SSD 1 TB

Network Sensor:

	2,000 Nodes	5,000 Nodes	10,000 Nodes	Over 10,000 Nodes
CPU	Intel Dual Core	Intel Quad Core	Intel Hexa Core	Intel Octa Core
Memory	2 GB	4 GB	8 GB	16 GB
Storage	SSD 128 GB	SSD 128 GB	SSD 128 GB	SSD 128 GB

8.4.4 Step 3. Identify the Total Managed Networks Number

Genian ZTNA requires the installation of a sensor for every single layer 2 broadcast domain. Therefore, the number of managed broadcast domains is an important factor in determining the sizing of the product. The number of network sensors required depends on two factors:

- Number of VLANs
- Number of remote networks with routing

A single network sensor can support up to 128 VLANs. When an 802.1Q VLAN Trunk connection is provided through the Core Switch, sensor services for up to 128 networks are provided over a single physical connection. If the managed network is physically separated and configured as a WAN connection, one Sensor will not be able to configure Layer 2 connections to different regions. If this is the case, you will need to configure a separate sensor for each remote network.

For example, if you have a corporate WAN with 4 branches, 1 sensor per branch is required. If any branch has multiple broadcast domains that you cannot access via a 802.1Q trunk port, you will need an additional sensor interface for each broadcast domain. A single sensor device may still be used.

8.4.5 Step 4. Identify the Total Agent Applied Devices Number

The number of systems requiring agent installation is closely related to the capacity of the policy server. Data and various events collected by the agent are sent directly to the policy server. Therefore, when the number of agents is large or the agent performs complicated tasks, the load on the policy server becomes high. We recommend that you follow these minimum requirements:

	1,000 Agents	5,000 Agents	10,000 Agents
CPU	Intel Dual Core	Intel Quad Core	Intel Quad Core
Memory	8 GB	16 GB	32 GB
Storage	SSD 128 GB	SSD 256 GB	SSD 512 GB

Genian ZTNA supports agents for windows and macOS operating systems. The quantity of agents may be less than or equal to the number of systems in which Windows and macOS operating systems are installed.

The Genian ZTNA Policy Server can be divided into two parts: a node server that receives and processes data from network sensors and agents, and a database that stores data. In a small to medium-sized operating environment, it is common for two functions to work together on a single server, but in a large-scale operating environment, the two functions can be operated as separate servers. If your network consists of more than 10,000 nodes, consider configuring the node server and database separately.

8.4.6 Step 5. Availability and Reliability Requirements

For availability and reliability, Genian ZTNA supports Active/Standby configuration. By configuring Backup system for policy server and network sensor, service can be provided without interruption in case of master system failure. For this, Genian ZTNA provides its own HA capabilities to automatically detect master system failures.

HA configuration requires an additional backup system for each system, so you need to prepare twice the number of devices required for service configuration.

8.4.7 Sizing Questionnaire

Please answer the following questions:

Number of Devices (Number of unique MACs on network)	
Number of Nodes (Number of MAC+IP combinations on network)	
Number of L2 Networks (Number of broadcast domains)	
Number of Network Sensors (One sensor supports up to 128 VLANs, each remote network needs a Sensor)	
Number of Agent Applied Devices	
Policy Server Functional Serparation (Node Server/Database Server)	YES / NO
High Availability for Policy Server	YES / NO
High Availability for Network Sensor	YES / NO

8.5 Preparing Network

When planning your Genian ZTNA Deployment onto your network there are several considerations.

- Where should the equipment be placed?
- How will it connect to my switches?
- How many pieces of equipment do I need?
- What ports do I need to open for Genians to communicate?

8.5.1 Wired Connectivity

The Policy Server should be directly connected to your Core Switch port as an access port. The Network Sensor should be connected to an Edge Switch port that can be an access port, or trunk port.

Switches

Network Sensors must be able to see broadcast packets, so they must be connected to all managed subnets.

VLANs

To monitor multiple VLANs (up to 128, recommended 64) through a single port, make sure the switch port is configured with 802.1Q trunking and that all VLANs you wish to monitor are allowed on that port.

Switches differ in how to configure this setup.

Below are examples of how to configure 802.1Q Trunk ports for VLANs on common switches. In these examples, we will show how to add VLANs 100 and 200 to port 48, configured with .1q trunk encapsulation.

Cisco Switch

```
Cisco(config)#interface gi1/0/48
Cisco(config-if)#switchport trunk encapsulation dot1q
Cisco(config-if)#switchport mode trunk
Cisco(config-if)#switchport trunk allowed vlan add 100,200
```

HP Switch

```
Procurve(config)#vlan 100
Procurve(config)#tagged 48
Procurve(config)#vlan 200
Procurve(config)#tagged 48
```

SNMP

Genians supports SNMP Versions 1, 2c and 3. The read-only community string is used to check whether the node supports SNMP in the process of collecting information about the Node by the network sensor. If the node responds to an SNMP request, the sensor verifies that the node is a switch by verifying that it supports the BRIDGE-MIB through an SNMP query. The read-write community string is used to make changes to the switches for port descriptions and shutting down switch ports. In addition, it can be used for various additional functions such as collecting information of wireless controller using SNMP, detecting platform information of device.

Note: Be sure to add the Network Sensor to the access-lists of all switches in the same network segment, and assign necessary permissions for users/groups to view all OIDs. For more info see: [Switch Ports](#)

WAN

If you have more than one location behind WAN Technologies then a Network Sensor would be required at each of these locations.

8.5.2 Wireless Connectivity

Network Sensors with Wireless NIC is used to detect wireless packets and identify SSIDs that are both Internal to your network and External (Neighboring) to your network. Placement of the Network Sensor with Wireless NIC is critical as you do not want to place this in a Data closet where you will only detect Wireless SSIDs near the data closet. You will want to place the Network Sensor with Wireless NIC centrally to where you can detect the majority of the SSIDs around it.

8.5.3 Firewall Requirements

The following connections must be allowed for Genian ZTNA to function properly.

On-Premise

SRC IP	DST IP	Service	Note
Policy Server IP	www.genians.com (54.81.159.137)	TCP/443	Sign-in to www.genians.com (<i>On-Prem Only</i>)
Policy Server IP	geniupdate.geninetworks.com (52.78.17.154) techlab.geninetworks.com (222.121.135.252)	TCP/80, TCP/443	GENIAN Data Update (<i>On-Prem Only</i>)
Policy Server IP	d1s536j2uzv1h7.cloudfront.net (IP may vary)	TCP/443	Download Updated Software Image (<i>On-Prem Only</i>)
Network Sensor IP	Policy Server IP/FQDN	Various services on unique ports	See UI under System > Services > Port
PC IP (Agent)	Policy Server IP/FQDN	UDP/3870, UDP/3871 TCP/80, TCP/443, TCP/8000, TCP/3910	Keep Alive, Update Information/Policy Windows Update
Management PC	Policy Server IP, Network Sensor IP	TCP/22	SSH Console

Note: GENIAN Data: It required to allow the On-Premise Policy Server to get weekly/monthly updates for the Platform Detection DB, CVE and NIC Vendors.

Cloud Managed

SRC IP	DST IP	Service	Note
Network Sensor IP	Policy Server IP/FQDN	UDP/ UNIQUE PORT , TCP/80, TCP/443	Keep Alive, Update Information/Policy
PC IP (Agent)	Policy Server IP/FQDN	UDP/ UNIQUE PORT , TCP/80, TCP/443, TCP/8000, TCP/3910	Keep Alive, Update Information/Policy Windows Update
Management PC	Network Sensor IP	TCP/22	SSH Console

Note: UNIQUE PORT: Specific Port Info for the Cloud Managed Policy Server can be found in the Web Console by selecting **System** on the top panel, and then selecting **Service > Port** from the left menu bar.

Note: Keep Alive traffic is sent from all Sensor interfaces, including Vlan interfaces (ethX, and ethx.x)

INSTALLING GENIAN ZTNA

This chapter guides you through installing Genian ZTNA on your system and accessing the administrator Web and CLI Console.

9.1 Installing Genian ZTNA

9.1.1 Choose Deployment Option

Genians Cloud-Managed

By utilizing the Genians Cloud, a Genian ZTNA Cloud deployment option is available that does not require customers to manually install and manage a Policy Server. With this option, the Policy Server is deployed through the my.genians.com web portal and hosted in the Genians Cloud. Once a ZTNA Policy Server has been deployed in the Genians Cloud, a ZTNA Sensor can be deployed through the Policy Server UI:

See: *Controlling Access to Cloud Resources*.

Customer Cloud or On-Premises

Policy Server(s) may also be installed in any customer Cloud environment or On-Prem in the customer's physical or virtual infrastructure.

To ensure your physical or virtual infrastructure meets the required specifications:

See: *Sizing Software and Hardware*.

9.1.2 Installing the ZTNA Policy Server in Customer Cloud or On-Prem

1. Install Ubuntu(20.04 or later) based system on a physical or virtual machine
2. The command below can be used to install the ZTNA Policy Server

```
#curl -s https://docs.genians.com/install/ztna-server.sh | sudo bash -s
```

Note: If installing on a virtual machine, be sure that the network adapter is set to bridged mode instead of NAT mode. The ZTNA Policy Server requires a dedicated IP address in order to function properly.

9.1.3 Installing the ZTNA Sensor in Customer Cloud or On-Prem

1. Install Ubuntu(20.04 or later) based system on physical or virtual machine
2. The command below can be used to install the ZTNA Sensor

```
#curl -s https://docs.genians.com/install/ztna-sensor.sh | sudo BRANCH=└─
↳bash -s - POLICYSERVER.DOMAIN.ORIP
```

Note: If installing on a virtual machine, be sure that the network adapter is set to bridged mode instead of NAT mode. The ZTNA Sensor requires a dedicated IP address in order to function properly.

9.1.4 Network Connection Requirements (Sensor in Gateway Mode):

For Gateway mode, the Genian ZTNA Sensor only requires a single interface. That interface will be used to receive and filter incoming packets based on Enforcement and Permissions policies. See the Untagged/Access switch port section below. To configure a Sensor as a ZTNA Gateway:

See: *Controlling Access to Customer Cloud or On-Prem Resources through a ZTNA Gateway.*

9.1.5 Network Connection Requirements (Sensor in ARP Enforcement Mode):

Note: ARP Enforcement mode is available for On-Prem networks only

For ARP Enforcement mode, Genian ZTNA needs to monitor network broadcast packets (ARP, DHCP, uPNP...), **so it must be connected to all the segments (broadcast domains)** that you want to manage.

If you have a switch configured with VLANs, you can set up a tagged/trunk/802.1Q port to monitor multiple networks with one physical interface.

If you are installing Genian ZTNA in a virtual environment, the VM (Sensor) must have direct communication to and from all segments you wish to monitor and control. This may be accomplished in a variety of ways depending on your available hardware, and the capabilities of your virtualization platform.

9.1.6 Preparing Network Connection (Switch Side)

Untagged/Access Port

No additional configuration is required to monitor a single network over a switch untagged/access port. As long as the interface has a routable IP address, the Sensor can be used to either monitor a single network for ARP Enforcement or can be configured as a ZTNA Gateway.

Tagged/Trunk/802.1Q Port

To monitor multiple VLANs on a single interface, your switch port must be set to trunk mode with 802.1Q encapsulation. Below are examples of how to configure 802.1Q trunk ports for VLANs on common switches. In these examples, we will show how to add VLANs 55 and 77 to port 48, configured with dot1q encapsulation.

Cisco Switch

```
Cisco(config)#interface gi1/0/48
Cisco(config-if)#switchport trunk encapsulation dot1q
Cisco(config-if)#switchport mode trunk
Cisco(config-if)#switchport trunk allowed vlan add 55,77
```

HP Switch

```
Procurve(config)#vlan 55
Procurve(config)#tagged 48
Procurve(config)#vlan 200
Procurve(config)#tagged 77
```

9.1.7 Preparing Network Connection (Server Side)

Ubuntu Netplan Overview

Ubuntu 20.04 or later utilizes Netplan for server interface configuration. The default Netplan configuration can be viewed by issuing the command below (modify command as required if default .yaml file has been renamed):

```
#sudo /etc/netplan
#sudo cat 00-installer-config.yaml

#This is the network config written by 'subiquity'
network:
  ethernets:
    enp1s0:
      dhcp4: no
      addresses:
        - 192.168.50.107/24
      gateway4: 192.168.50.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
  version: 2
```

Using the **ifconfig** command the interface can be verified:

```
#ifconfig

enp1s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
  inet 192.168.50.107 netmask 255.255.255.0 broadcast 192.168.50.255
  inet6 fe80::201:2eff:fe83:cad8 prefixlen 64 scopeid 0x20<link>
  ether 00:01:2e:83:ca:d8 txqueuelen 1000 (Ethernet)
  RX packets 1415401 bytes 130383626 (130.3 MB)
  RX errors 0 dropped 206776 overruns 0 frame 0
  TX packets 45040 bytes 2388558 (2.3 MB)
  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
```

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```

inet 127.0.0.1 netmask 255.0.0.0
inet6 ::1 prefixlen 128 scopeid 0x10<host>
loop txqueuelen 1000 (Local Loopback)
RX packets 264 bytes 23972 (23.9 KB)
RX errors 0 dropped 0 overruns 0 frame 0
TX packets 264 bytes 23972 (23.9 KB)
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

Single VLAN (Untagged/Access Port Configured on Switch)

In the example above, the system installed has a single static IP address defined for management purposes. With this configuration, only nodes present in the 192.168.50.0/24 subnet (VLAN 50) will be discovered. No additional configuration is required if monitoring and enforcement of only a single VLAN/subnet is desired.

Multiple VLANs (Tagged/Trunk/802.1Q Port Configured on Switch)

If monitoring and enforcement of multiple VLANs/subnets is desired, the Netplan configuration must be modified to define sub-interfaces. This is accomplished by adding a second ethernet interface to the configuration under the **ethernets** section as well as adding a **vlan**s section. In the example below, VLANS 55 and 77, as well as the corresponding subnets have been added to the configuration file.

```

#sudo /etc/netplan
#sudo cat 00-installer-config.yaml

#This is the network config written by 'subiquity'
network:
  ethernets:
    enp0s31f6:
      dhcp4: no
    enp1s0:
      dhcp4: no
      addresses:
        - 192.168.50.107/24
      gateway4: 192.168.50.1
      nameservers:
        addresses: [8.8.8.8, 1.1.1.1]
  vlans:
    enp0s31f6.55:
      id: 55
      link: enp0s31f6
      addresses:
        - 192.168.55.200/24
    enp0s31f6.77:
      id: 77
      link: enp0s31f6
      addresses:
        - 192.168.77.200/24
  version: 2

```

To validate and apply the configuration, utilize the Netplan command option below and press **ENTER** when prompted:

```

#sudo /etc/netplan
#sudo netplan try

```

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```

Do you want to keep these settings?

Press ENTER before the timeout to accept the new configuration

Changes will revert in 118 seconds
Configuration accepted.

```

Using the **ifconfig** command the new interfaces can be verified:

```

#ifconfig

enp0s31f6: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
  inet6 fe80::201:2eff:fe83:cad7 prefixlen 64 scopeid 0x20<link>
  ether 00:01:2e:83:ca:d7 txqueuelen 1000 (Ethernet)
  RX packets 1364841 bytes 110772537 (110.7 MB)
  RX errors 0 dropped 207338 overruns 0 frame 0
  TX packets 5765 bytes 1895530 (1.8 MB)
  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
  device interrupt 16 memory 0xdf300000-df320000

enp0s31f6dot55: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
  inet 192.168.55.200 netmask 255.255.255.255 broadcast 0.0.0.0
  inet6 fe80::201:2eff:fe83:cad7 prefixlen 64 scopeid 0x20<link>
  ether 00:01:2e:83:ca:d7 txqueuelen 1000 (Ethernet)
  RX packets 10 bytes 946 (946.0 B)
  RX errors 0 dropped 0 overruns 0 frame 0
  TX packets 32 bytes 2524 (2.5 KB)
  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp0s31f6dot77: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
  inet 192.168.77.200 netmask 255.255.255.255 broadcast 0.0.0.0
  inet6 fe80::201:2eff:fe83:cad7 prefixlen 64 scopeid 0x20<link>
  ether 00:01:2e:83:ca:d7 txqueuelen 1000 (Ethernet)
  RX packets 11 bytes 992 (992.0 B)
  RX errors 0 dropped 0 overruns 0 frame 0
  TX packets 30 bytes 2364 (2.3 KB)
  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

enp1s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
  inet 192.168.50.107 netmask 255.255.255.0 broadcast 192.168.50.255
  inet6 fe80::201:2eff:fe83:cad8 prefixlen 64 scopeid 0x20<link>
  ether 00:01:2e:83:ca:d8 txqueuelen 1000 (Ethernet)
  RX packets 1438120 bytes 132237018 (132.2 MB)
  RX errors 0 dropped 208877 overruns 0 frame 0
  TX packets 49505 bytes 3046038 (3.0 MB)
  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
  inet 127.0.0.1 netmask 255.0.0.0
  inet6 ::1 prefixlen 128 scopeid 0x10<host>
  loop txqueuelen 1000 (Local Loopback)
  RX packets 342 bytes 31583 (31.5 KB)
  RX errors 0 dropped 0 overruns 0 frame 0
  TX packets 342 bytes 31583 (31.5 KB)
  TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

Use the **ping** command to verify access to the gateway IP configured on each subnet (in this case .2 and .254 are the

gateways):

```
#ping 192.168.77.2
PING 192.168.77.2 (192.168.77.2) 56(84) bytes of data.
64 bytes from 192.168.77.2: icmp_seq=1 ttl=255 time=6.22 ms
64 bytes from 192.168.77.2: icmp_seq=2 ttl=255 time=1.75 ms

#ping 192.168.55.254
PING 192.168.55.254 (192.168.55.254) 56(84) bytes of data.
64 bytes from 192.168.55.254: icmp_seq=1 ttl=255 time=12.8 ms
64 bytes from 192.168.55.254: icmp_seq=2 ttl=255 time=2.07 ms
```

Use the **arp -a** command to verify the gateway IPs for each subnet are associated with the sub-interfaces:

```
#arp -a
(192.168.55.254) at 04:fe:7f:22:91:41 [ether] on enp0s31f6.55
gateway (192.168.50.1) at 00:18:0a:09:c2:58 [ether] on enp1s0
(192.168.77.2) at 04:fe:7f:22:91:43 [ether] on enp0s31f6.77
```

9.2 Administration Console

Genian ZTNA provides two types of management consoles. A command-line console that provides system settings such as basic service configuration and network configuration, and a Web console that provides all other management and policy features.

9.2.1 Web Console

The access method of the web console is different according to the deployment type of the policy server.

On-Premises

1. Open up **Web Browser** and navigate to the following link
2. Copy and paste link below into browser
3. Replace **Policy Server Management IP Address:8443** with actual IP address

```
https://"Policy Server Management IP Address:8443"/ (e.g. https://192.168.50.10:8443/)
```

Cloud

1. Open up **Web Browser** and navigate to the following link
2. Copy and paste link below into browser
3. Replace **Cloud Policy Server Name** with actual registered name of Cloud Policy Server

```
https://"Cloud Site Name"/ (e.g. https://nac.genians.net/)
```


9.2.2 CLI Console

1. CLI console access through SSH access program


The CLI (Command Line Interface) console can be accessed through SSH (default port: 22).

```
ssh "policy server management IP" -p 22 (e.g. : ssh 192.168.50.10 -p 22)
```

Note:

Cloud-managed policy server does not provide SSH command-line console.

2. CLI console access through SSH connection from the web console

1. Go to **System** on the top panel.
2. Select **System** from the **System** item on the left.
3. SSH connection destination IP address right  Click the icon.
4. SSH connection is performed using Username and Password in the pop-up window.

Genian ZTNA by default does not allow for SSH access to the appliance until the Administrator allows for this access by adding IP Address or Network Address/CIDR.

See: "Allow Remote Access via SSH" under *Initializing the System*

9.3 Installing License

When Genian ZTNA is installed, it works by default as Free Version. Free Version has the following restrictions.

- Only Basic Edition functions are provided. (Monitoring only)
- Up to 300 nodes can be managed.
- Remote sensor can not be connected. (All-in-One only)

If you require Visibility and Control, then you will need to obtain a license for the Professional or Enterprise Edition. You can get a trial license to experience the Professional/Enterprise Edition for 30 days by going to the [Trial License Page](#)

Note: License only required on On-Premises Policy Server. Cloud Managed service does not require license

9.3.1 Find Server ID

1. Go to **System** in the top panel
2. Go to **System > License** in the left **System Management** panel
3. Find **Server ID**

9.3.2 Get Trial License

1. Go to [Trial License Page](#)
2. Find **Server ID** section and add in your Server ID found on your Policy Server.
3. Enter **Full Name, Company Name, and Email**
4. Click **Get Trial License**
5. Copy **License** text from `—BEGIN CERTIFICATE—` to `—END CERTIFICATE—` (*Include both Begin and End Certificate Lines*)

9.3.3 To Install License

1. Go to **System** in the top panel
2. Go to **System > License** in the left **System Management** panel
3. Find **License** section and paste in the **License**
4. Click **Apply**

9.3.4 Transfer License to a Different Server ID

1. Login to my.genians.com and locate the existing license
2. In the search text box, enter the existing server ID and click **Search**
3. Under the **License Reissuance** field, enter the new server ID you would like to transfer the license to then click the **Reissue** button
4. You should see a **Success** pop-up message if the operation was successful
5. Search for the old server ID to confirm there is no longer an entry for it
6. Search for the new server ID and confirm the license has been transferred
7. Click the **Download** button and install the license on the new server following the instructions above

9.4 Installing Agent

Agent not only assists in determining the posture of the endpoint device, but can also collect system information, access control, and authenticate users. The Agent can be installed onto **Windows** and **MacOS** either manually or by **Agent Not Installed Enforcement** Policy. Once installed, the Agent then communicates with the Policy Server keeping device compliant with policies.

9.4.1 Installing Windows Agent

You can install **Agent** on Windows devices through GPO, Captive Web Portal (CWP), or manually using removable storage media

Install Windows agent

- *Download and install via agent download page*
- *Installing the agent via CWP*
- *MSI packages for installation via Active Directory GPOs*
- *Installing the agent from the Microsoft App Store*
- *Verify Windows Agent installed*
- *Where To Find Agent Logs On Windows Device*

Download and install via agent download page

1. Download Agent
 - `https://(IP or FQDN)/agent`
2. Choose Agent: DO NOT change the filename to avoid name conflicts
 - Windows installer version: GnUpdate_(IP or FQDN).exe
3. If prompted, provide the IP or FQDN of your Policy Server.

Note: If the user does not have the file installation permission, the installer can not be executed.

Installing the agent via CWP

Genian ZTNA enforcement policy can be enabled to redirect the user to the CWP for network access when the agent is not installed. In the CWP message, click the Install Agent button to download and install the Agent

To enable agent install by captive web portal:

1. Go to **Policy** in the top panel
2. Go to **Enforcement Policy**
3. Click the **Agent Not Installed** policy in the view pane.
4. Under the **General** section, change the Status to **Enabled**
5. Click **Update** at the bottom of the screen.

6. Click **Apply** in the top right corner of the screen.

Nodes under this enforcement policy are by default directed to a captive web portal with instructions on how to download the agent.

MSI packages for installation via Active Directory GPOs

Downloading MSI File

From the Web Console:

1. Navigate to the **System** Tab on the top of the Screen, then select **Genian Software** from the left menu panel.
2. In the main view pane, find **Genian ZTNA Agent for Windows**. On the far right of the row, click the **MSI** link to download.

Deploying Agent MSI via Active Directory GPOs

Note: The Agent Execution Account may need elevated privilege for successful agent deployment and operation.

1. Go to **Policy** in the top panel
2. Go to **Node Policy**
3. Click "Node policy ID" where do you want to apply the policy.
4. Find the **Agent Policy** section
5. Select **Execution Account** and "Computer Logon account": in the checkbox
6. How to set up to deploy the MSI Package via AD

To configure GPO in Active Directory

Describes how to set up a GPO that can deploy the Genian Agent MSI in AD.

Step 1. Create a shared folder for the deploying MSI files

- Copy the Agent MSI file from Genians to a shared folder or set the folder that contains the file as a shared folder

Step 2. Open the Group Policy Management and to make the GPO

- **Run > gpmmc.msc** or **Start > Administrative Tools > Group Policy Management** in Window server
- Expand the **[domain name]** on the left panel > Click the **Group Policy Object** on the mouse right button > Click the **New > Put the Name(ex. genian) > OK**
- Click the **genian** GPO on right mouse button > **Edit** You can see the **Group Policy Management Editor**

Step 3. To configure the Group Policy Management Editor

- Expand the **Policies** and **Software Settings** folder in left panel > click the **Software installation** > Click the right mouse button in right panel and click the **New and Package**
- To move on shared folder path like (ex. \[domain]Share folder). Set the folder permissions as **Authenticated = Read, Domain Computers = Read, System = Full Control**
- Select the Agent MSI file > select **Advanced** in **Deploy Software** popup
- click the **advanced** > check the **Ignore language when deploying this package** > **OK**

Step 4. To apply the GPO policy in Group Policy Management

Note: GPOs can contain both **computer** and **user** sets of policies.

The **Computer section** of a GPO is applied during boot.
The **User section** of a GPO is applied at user login.

- Click the **Computers** or **user** folder on the mouse right button in left panel > click the **Link an Existing GPO** > Select the **genian GPO**

Step 5. Verification

- **run > cmd** > put the command **gpupdate /force**
- Check the **GnAgent.exe, GnPlugin.exe, GnStart.exe** process in the **task manage**
- Check for Agent files existent like **GnAgent.exe, GnPlugin.exe, GnStart.exe** in C:Program FilesGeniGenian

Installing the agent from the Microsoft App Store

The Genian ZTNA agent can be installed from the Microsoft App Store following the steps below:

1. From the search menu in Windows type in **windows** and click on **Microsoft Store App** when it appears
2. In the search box, type in **genian** and select the **Genian ZTNA Agent** App, then click **Open**
3. Enter the FQDN or IP of your policy server in the **Policy Server IP/Domain" text box, then click **Okay**
4. The ZTNA agent should install and connect with your Policy Server

Verify Windows Agent installed

1. Select **Management > Node**
2. Click **NT AG SS** column in Nodes window (*If a node has an installed Agent, the Agent icon will show*)

Genian Agent Options On Windows Device

1. Go to **Systray** of Windows device
2. Find and right-click on **Genians Agent Icon**
3. Listed options allow you to do the following:
 - **Read Notice:** Shows current notices from the Administrator
 - **Read Message:** Shows current messages from the Administrator
 - **View My Status:** Shows the devices current **Captive Web Portal (CWP)** page
 - **Login (L):** Allows user to log in and upon successful login displays CWP page
 - **Logout (O):** Allows user to log out
 - **View User Information:** Allows user to view account information upon successful login
 - **View Network Connections:** Allows user to view the devices active network connections
 - **View USB Information:** Allows user to view the devices USB information
 - **Delete Agent:** *(User is unable to delete the installed Agent. This must be done by the Administrator)*
 - **About Genian Agent:** Allows user to see current information about installed Agent

Where To Find Agent Logs On Windows Device

1. Open **File Explorer** on Windows device
2. Go to **C:Program FilesGeniGenianLogs**
3. Sort by **Date modified**

Installation Specifications

Disk	Memory
30~40MB	20~30MB

Windows Support List

See: *Supported Operating Systems and Plugins*

9.4.2 Installing macOS Agent

You can install **Agent** on macOS devices through GPO, Captive Web Portal (CWP), or manually using removable storage media

Install macOS Agent

1. Download Agent
 - [https://\(IP or FQDN\)/agent](https://(IP or FQDN)/agent)
2. Choose Agent: DO NOT change the filename to avoid name conflicts
 - macOS version: GnAgent_(IP or FQDN).pkg
3. If prompted, provide the IP or FQDN of your Policy Server.

Verify macOS Agent Installed

1. Select **Management > Node**
2. Click **NT AG SS** column in Nodes window (*If a node has an installed agent, the Agent icon will show*)

Installation Specifications

Disk	Memory
20~30MB	30~60MB

macOS Support List

See: *Supported Operating Systems and Plugins*

9.4.3 Installing Linux agent

Installing the Linux Agent over CWP

There are several ways to install agents in Genian ZTNA.

This is the guide for how to install the agent by accessing the CWP page.

1. Access the CWP page. https://policy_server_IP-or-cloudsite_name/agent
2. Select the Linux icon from the OS-specific agent icon and download the file.
3. Open **Terminal** in your Linux distribution and navigate to the **Download** folder. (Based on Ubuntu)
4. **Run the installation script in the download directory as follows:**
 - `cd ~/Download`
 - `chmod 755 lnagent_*.Serveraddress*.sh`
 - `sudo ./lnagent_*.Serveraddress*.sh`
5. If prompted, provide the IP or FQDN of your Policy Server.

Note:

- Depending on the Linux distribution, the download path for the Linux Agent installation script may vary.
- The installer cannot run if the user does not have permission to install the file, so it must be run as an administrator. The process will automatically run when the script ends.

- This Script may also be obtained and distributed via other means.
-

Verify Linux Agent Installation

1. Connect to Web Console.
2. Go to the **Management > Node** menu.
3. Access the IP of the node you wish to check.
4. If the agent icon is displayed on the Node List screen, the installation and information registration are completed normally.

Find agent logs on Linux

- **Open Terminal in your Linux distribution to view the log files below.**
 - Installation path: /usr/local/Geni
 - Log path: /var/log/genians
 - Setup file path: /usr/share/genias/GenianDB
 - PID file path: /var/run/genians

Installation Specifications

Disk	Memory
20~30MB	20~30MB

Linux Agent Supported OS List

See: *Supported Operating Systems and Plugins*

9.4.4 Deleting Agent

You can uninstall the Agent on the endpoints either by using a Node Policy which allows you to group many devices together or by using an Authentication Code which allows you to delete an individual agent.

Delete Agent Using Policy

This method is ideal for deleting the agent from a large number of devices, without end user involvement.

1. Create a **Node Group** to select which nodes to delete agent.
2. Create a **Node Policy** to delete agent from the selected nodes.
 - Under: **Policy Preferences** find the **Agent Policy** section and set the **Agent** drop down menu to **Delete**.
3. After creating the node policy, click the **apply** option in the top right corner.

This will automate the deletion of the agent from the designated devices when the node policy updates on the agent.

Note: To uninstall a Windows Agent that was deployed via GPO, select the GPO for software deployment, select Computer Configuration, and select edit. Find the Genians Agent under the Computer Configuration menu, and right click to select All Tasks > Remove.

Delete Agent From Tray Icon

This option is available to end users if it has been enabled on the Policy Server by the administrator.

To Configure see: **Agent Deletion Method** in: *Configuring Agent Defaults*

Deleting as **Endpoint user**:

1. Go to the task bar on Windows or OSX machine and find the Genians logo.
2. Right click the logo and select the ***Delete Agent(D)** option.
3. If prompted for a code, see the next section in this document.

Delete Agent Using Authentication Code

This option is ideal for a user to request agent removal. An administrator can approve this request.

Deleting as **Endpoint user**:

1. Go to the task bar on Windows or OSX machine and find the Genians logo.
2. Right click the logo and select the ***Delete Agent(D)** option.
3. find the **Agent Code** in the pop up window, and provide it to your Genians ZTNA Administrator who will use it to generate an **Authentication Code**.
4. Enter the **Authentication Code** provided into the designated form, and click the **Delete** button.

Claiming ***Authentication Code** as an **Administrator**

1. Log in to Policy server Management console.
2. Mouse over the **Management** tab on the menu bar and select the **Request** option underneath.
3. In the tree panel on the left of the page, find **Agent Authentication Code**, and select **Generator**
4. Enter the **Agent Code** supplied by the endpoint user and click **Generate** button.
5. An **Authentication Code** will be displayed. Provide this code to the end user.

Note: Authentication Code based deletion method is still possible when endpoint is offline, as long as policy server is active.

Delete Agent When Policy Server Is No Longer Available

The Policy Server used to install the agent is needed to delete the agent. If this Policy Server is no longer available, a new policy server is needed.

1. Install new Policy Server.
2. Reinstall Agent from Policy Server using standard agent installation. This will overwrite the existing agent.
3. Delete the agent using Node Policy or Authentication Code.

9.5 Installing ZTNA Gateway

9.5.1 ZTNA Gateway Deployment Options

The ZTNA Gateway can be deployed into Cloud environments or can be installed On-Premises. Enforcement of the policies in the ZTNA Gateway requires that user traffic pass through the gateway. Different deployment models support different goals.

For example, if controlling access to Cloud resources is important, deploying a ZTNA Gateway in the Cloud would be ideal. Remote user traffic could also connect through the Cloud ZTNA Gateway controlling access to any destination (including On-Prem).

If deployed On-Prem, local or remote user traffic could route through the Cloud ZTNA Gateway. This would allow for the control of On-Prem users regardless of destination and also support remote users connecting back to the On-Prem environment.

9.5.2 Installing the ZTNA Gateway in the AWS Cloud

See: *Controlling Access to Cloud Resources*.

9.5.3 Installing the ZTNA Gateway On-Premises or in Non-AWS Cloud Environments

1. Install Ubuntu(20.04) based system on physical or virtual machine
2. The command below can be used to install the ZTNA Gateway on Ubuntu Linux 20.04 or later

```
#curl -s https://docs.genians.com/install/ztna-sensor.sh | sudo BRANCH=└─  
↪bash -s - POLICYSERVER.DOMAIN.ORIP
```

Note: If installing on a virtual machine, be sure that the network adapter is set to bridged mode instead of NAT mode. The ZTNA gateway requires a dedicated IP address in order to function properly.

1. For further instructions to configure and test the ZTNA Gateway after it is installed, follow the link below

See: *Controlling Access to Cloud Resources*.

MONITORING NETWORK ASSETS

You can monitor network assets by the Nodes themselves or by monitoring IP Addresses, Switches, and Wireless LAN

10.1 Understanding Network Monitoring

10.1.1 Getting Visibility of Network and Endpoint

Network access control is generally established through the following steps.

- Obtain visibility of assets through network discovery and information gathering
- Classify the collected assets according to security policy and status
- Establish network access control policies for classified objects

Genian ZTNA collects information of various network assets through network sensors and agents and provides real time visibility to network and endpoints including:

- Network Node
- Endpoint
- IP Address
- Switch / Port
- Wireless LAN

The network sensor and the agent monitor the management target network or the endpoint in real time and transmit the new information or the changed information to the policy server. The administrator can inquire the information of the entire management target network and the endpoint through the management console provided by the policy server.

10.1.2 Management Menu

The management menu on the administrator web console is for searching information collected through network sensors and agents. Each management screen is divided into three areas. The Tree Panel and Status & Filter Panel on the left serve to select the target objects to be displayed on the right View Pane.

The screenshot displays the Genian NAC dashboard interface. At the top, there is a navigation bar with 'Dashboard', 'Management', 'Menu Bar', 'Preferences', and 'System'. A search bar is located in the top right corner. The main interface is divided into three primary sections:

- Tree Panel:** Located on the left, it shows a hierarchical view of nodes and groups. A search bar is present at the top of this panel.
- Status & Filter Panel:** Located below the Tree Panel, it provides detailed filtering options for the selected objects, including Node Policy, Enforcement Policy, Node Group, Threat Definition, Threat Detection, Network Group, Services, and Change.
- View Pane:** The central area displays a table of nodes with columns for IP, MAC, Hostname (Name), Platform, Threat Detected, Threat Definition, and Sensor. A search bar is also located at the top of this pane.

The View Pane table contains the following data:

IP	MAC	Hostname (Name)	Platform	Threat Detected	Threat Definition	Sensor
172.29.20.1	60 12 88 D8 0C 88	CANONDC9CB	Canon R-ADY C5535-5543 UFR II			S-172.29.20.13
172.29.20.4	44 8A 58 5A A2 95		Genian Genian NAC	2018-08-24 05:58:49	ARP Bomb	S-172.29.20.13
172.29.20.5	80 FA EB 3D 9C 90		Cisco Networking Device			S-172.29.20.13
172.29.20.6	84 78 AC B2 91 80	CT2504	Cisco AIR CT2504 WLAN Controller			S-172.29.20.13
172.29.20.11	A0 CE C8 6A 68 8A	SEJN-PC	Microsoft Windows 10 Pro			S-172.29.20.13
172.29.20.13	08 00 27 82 FC 78	who	CT64			C-172.29.20.13
172.29.20.13	08 00 27 82 FC 78	who	CT64			C-172.29.20.13
172.29.20.15	08 00 27 AF 7F 23		Genian Genian NAC	2018-08-31 13:33:16	ARP Bomb	S-172.29.20.13
172.29.20.30	00 90 FB 06 98 C8					S-172.29.20.13
172.29.20.30	00 90 FB 06 98 C8					S-172.29.20.13
172.29.20.30	8C 16 85 5A 8F 8F		Cisco Networking Device			S-172.29.20.13
172.29.20.34	4C ED FB 98 C1 8C	DESKTOP-	Microsoft Windows			S-172.29.20.13
172.29.20.40	00 25 90 25 E9 2D		Genian Genian NAC	2018-08-31 05:58:31	ARP Bomb	S-172.29.20.13
172.29.20.45	2C 59 E3 E7 FC 18	HPETFC18	HP Official Pro 8100			S-172.29.20.13
172.29.20.49	00 90 FB 2D 77 A9		Genian Genian NAC	2018-08-24 05:58:45	ARP Bomb	S-172.29.20.13
172.29.20.66	E9 D5 5E 86 9A 9C	DESKTOP-GQTHMAQJ	Microsoft Windows			S-172.29.20.13
172.29.20.89	E9 D5 5E A8 D2 CA	DESKTOP-RMG5TH	Microsoft Windows			S-172.29.20.13
172.29.20.99	00 E9 4C 38 03 10	GENIANS-KLAUS				S-172.29.20.13
172.29.20.100	30 E1 71 D3 AB D5	HPD3ABD5	HP HP Official Pro 8210			S-172.29.20.13
172.29.20.104	9C 3D CF CB 50 F9					S-172.29.20.13
172.29.20.115	94 C8 91 13 F1 95		Genian Genian Insights	2018-08-24 10:51:06	ARP Bomb	S-172.29.20.13
172.29.20.120	E9 D5 5E 80 05 21	DESKTOP-GQHJHUS	Microsoft Windows			S-172.29.20.13
172.29.20.122	00 E9 4C 55 09 43	KIMHYE06	Microsoft Windows	2018-08-23 15:58:53	ARP Bomb	S-172.29.20.13
172.29.20.124	D0 50 99 91 D3 79	DESKTOP-OR1HETU	Microsoft Windows			S-172.29.20.13
172.29.20.125	FC 15 8A A3 83 D3	HPFC158AA383D3	HP HP Official Pro 8540			S-172.29.20.13
172.29.20.127	14 C9 13 10 D4 73	DESKTOP-SUMLC19	Microsoft Windows 10 Home			S-172.29.20.13
172.29.20.130	00 F0 87 10 08 21	UNUSUAL	Microsoft Windows			S-172.29.20.13

Tree Panel

The Tree Panel allows you to select the target objects to be displayed on the View Pane as a sensor or as a group that meets the conditions specified by the administrator.

Status & Filter Panel

The Status & Filter Panel provides more detailed filtering of selected objects in the Tree Panel. Based on various information gathered by Genian ZTNA, it is easy to select and display objects matching the information in the right view pane. Also, statistical information is provided through a graph or a table when the top of various categories provided is selected.

View Pane

You can perform searches on the objects output through the search function provided at the top, or perform various tasks through the **Tasks** menu by selecting each item. Click on the link in the key column for each management menu to see more detailed information about the object. The key column for each management menu is as follows.

- Node: **IP**
- IP Address: **Sensor**
- Switch: **Switch, Port**
- WLAN: **MAC**

10.1.3 Troubleshooting

- *Genian ZTNA log collection method*
- *Genian ZTNA diagnosis Method*
- *Node is not displayed in Web Console*
- *Wrong Link State Displayed for Node*

10.2 Monitoring Network Nodes

You can monitor **Nodes** by grouping, filtering, and listing by various perspectives

10.2.1 Understanding Network Nodes

Network Nodes and Devices

A network node is a connection point that can be connected to an IP network and communicate with another system. A system uses IP address for remote network and MAC address for local network to communicate with other system. Genian ZTNA recognizes this IP and MAC address pair as one node.

A node is a logical concept different from a physical device. For example, a single device may have multiple IPs or MACs and thus be recognized as multiple nodes. E.g

- One device connected to the network via multiple LAN cards (wired LAN, wireless LAN)
- Multiple operating systems use different IP addresses through multiple boot on one device.
- Multiple IP / MAC pairs are used through a virtual machine on one device

Genian ZTNA automatically recognizes different nodes as connected to one device if:

- Nodes use the same MAC address
- Through the agent that multiple network adapters are installed on one device

This allows administrators to selectively provide node-based management view or device-based management view.

Detecting Network Nodes & Devices

Genian ZTNA detects nodes in the network through network sensors or agents. The network sensor recognizes the existence of the node through the ARP packet generated in the network. Because of its nature, ARP is broadcast over the network, so a network sensor can detect that a new network node is connected just by being connected to the network. It can also analyze Ethernet frames received over a broadcast packet such as DHCP to see if a new node is connected to the network.

Another way to recognize the node is to install the agent on the Endpoint system. The agent collects various information including the IP / MAC of the system and sends it to the policy server to be registered as a node.

Lastly, devices (MAC only) can be detected and registered through RADIUS authentication. RADIUS access-request supplies the MAC Address while accounting-request supplies the IP.

Gathering Node Information

A network sensor uses a passive method of obtaining information through a packet such as a broadcast generated in a node and a method of actively collecting information through an open port of the node.

The passive method can collect information without affecting the node through the information contained in the packets periodically generated by the node, such as DHCP, NetBIOS, UPNP, and mDNS. The policy server can also gather node information like IP address, and connected SSID through RADIUS accounting.

In the active method, the network sensor first checks the service provided by the node through the port scan, and collects the information through the request according to each service. For example, if a node provides an HTTP service over the TCP 80 port, the sensor can request the top-level page to obtain information.

The information that is actively collected can set the target item and the collection period. For more information, see [Configure Collecting Networks and Node information](#)

The network sensor can also send WMI Queries to windows nodes to gather information about hardware, software and networking properties. See:

WMI Node Info Scan

Gathering Capabilities

Hardware

- **Motherboard**
 - Chassis Type
 - Manufacturer
 - CPU Name
 - CPU Manufacturer
 - Revision
 - Battery
- **Memory Info**
 - Total
 - Used
 - % Used
- **Storage Devices**
 - Device Name
 - Device Type
 - Unique #
 - File System
 - Capacity
 - Used Capacity
 - % Used
- **USB Devices**

- Class Name
- Device Name
- Manufacturer
- State

Operating System

- **Operating System**

- Operating System Name
- Version
- Build Version
- Service Pack
- Most Recent Update Time
- Language
- User
- Organization
- Computer Name
- Domain
- Install Time
- Uptime

- **User**

- User Name
- Account Type
- Password Settings
- Login Status

- **Screensaver**

- Enabled/Disabled
- Password Settings
- Wait Time
- Name

Network

- **Interface**
 - Name
 - Connection Method
 - MAC
 - Device Name
 - Link
 - Speed
 - Promiscuity
- **IPv4 Settings**
 - Name
 - IPv4
 - IP/Netmask
 - Gateway
 - Primary/Secondary DNS
- **IPv6 Settings**
 - Name
 - IPv6
 - IPv6 Address
 - IPv6 Link Local

Folder Sharing

- **Share Information**
 - Share Name
 - Type
 - Path
 - Details
 - Detection Time

Printer

- **Printer**
 - Name
 - Device Name
 - Port Information

Software

- **Software Information**
 - Program Name
 - Version
 - Path
 - Installation Date
 - Detection Time
- **Antivirus Information**
 - For Compatible AV Software, see: *Collecting Antivirus Software Information*
 - AV Name
 - Real Time Monitoring Status (Enabled/Disabled)

Configuring WMI Node Info Collection

Configure Pre-Requisite settings

1. Ensure that the target machines are domain joined.
2. Allow for endpoint/ domain accounts to respond to WMI Query.
3. Enter Bind DN and Password for privileged Domain account under **Preferences > Authentication Integrtation > LDAP Server**.

Enable WMI Scan

1. Navigate to the **System** tab and select the desired sensor.
2. Select the **Sensor** tab, and then select the **Interface** you wish to configure.
3. Under **Node Information Scan**, enable **Port / Service Scan** and then enable **WMI Information Scan**

Note: The WMI scan only operates on nodes without an installed agent. If you wish to collect info with an agent, See: *Collecting Windows System Information using WMI*

10.2.2 Genian Device Platform Intelligence (GDPI)

What is GDPI

BYOD, which uses a personal device in a business network, or IoT, in which all IT devices are connected to a network, makes today's networks more sophisticated and versatile than before. This puts a heavy burden on administrators responsible for IT security.

IT managers need to protect the network from vulnerable devices by allowing only authorized devices to connect to the network. However, it is not easy to identify and manage the various devices that are connected between many access points in an organization.

Genian ZTNA provides Device Platform Intelligence to make this task easier for administrators.

First, Device Platform Intelligence identifies the manufacturer, product name, and model name of devices connected to the network through various intelligent methods. Through the identified Device Platform, the administrator can inquire various information possessed by the device such as:

- Photos of the device
- Type of device connection (wired, wireless)
- End of Sale (EOS) status of the device.
- End of Life (EOL) status of the device
- Manufacturer
- Country of manufacturer
- Manufacturer Business Continuity Status
- Acquisition of manufacturer

This additional information makes it easier for administrators to manage IT by providing greater visibility into devices on their network.

Device Platform and CVE

Common Vulnerabilities and Exposures (CVE) is a database of vulnerabilities in IT equipment and software provided by [MITER](#). More than 1,000 new vulnerabilities are released each month. IT managers must identify vulnerabilities associated with IT devices they manage. Genian ZTNA can identify the IT devices in the network and show their CVEs to make network management easier.

How to Detect Device Platform

Genian ZTNA will detect connected device platforms using various information collected by the **Network Sensor**. When a device connects to the network, packets are sent out and the device responds with one or more protocols. Genian ZTNA uses the following protocols to detect devices platform information

Active Method:

- HTTP / HTTPS header and body
- Web Browser User-Agent
- TELNET / SSH / SMTP banners
- Open Port
- SNMP OID / Description

- SIP
- and more

Passive Method:

- Web Browser User-Agent (using SPAN port)
- MAC Address
- Hostname
- DHCP Request
- UPNP
- HPSLP
- and more

Genian ZTNA is using our own, highly advanced platform database (GPDB) for detecting device platforms. GPDB has various patterns for matching against device information to ensure that platforms are accurately detected. To provide paramount accuracy, the GPDB is updated weekly so that the newest devices on the market can be quickly identified within the network. (*Weekly GPDB updates are for the Paid Edition Only. The Free Edition's GPDB is updated monthly*)

Node Types

Each Device Platform has a Node Type, such as:

- Policy Server
- Network Sensor
- Virtual Sensor
- Agent Sensor
- Switch Port
- Sensor Alias
- Virtual IP
- Wireless Sensor
- Undefined
- PC
- Mobile Device
- Server
- Network Appliance
- Wireless Device
- Router
- Switch
- Security Device
- Printer
- VOIP
- Other

You can browse or make policy based on this node type information.

Genian Platform Database (GPDB)

GPDB is a database that stores device platform detection pattern and device platform information related to GDPI. This GPDB is constantly updated via Genians' device platform engineers. This makes it possible to detect new devices quickly without any additional work.

To check the time of the last updated GPDB

1. Go to **System > Genian Data**
2. See time of **Platform Information**

See Device Platform Intelligence

You can see additional device platform information through [Device Platform Intelligence](#) page.

To see individual nodes information,

1. Go to **Management > Node** in the top panel
2. Find and click a desired **Platform** name of **Node**

Define a Node Platform Manually

1. Go to **Management > Node** in the top panel
2. Select the desired node's **IP Address**

Under **General** tab

1. For **Platform**, click **Checkbox** to **Manually define**
2. Manually enter **Platform Name**
3. Click **Update**

Note: In Node View you will now see a Icon next to name in the Platform Column. This Icon will indicate this has been manually defined.

Create a User-defined Node Type

1. Go to **Preferences** in the top panel
2. Go to **Properties > Node Type** in the left Preferences panel
3. Click **Tasks > Create**
4. Enter a **Name** and select an **Icon** (Click ****Add*** to upload your own icon*)
5. Click **Save**

Note: A User-defined Node Type must be defined manually and added to the node.

1. Go to **Management > Node** in the top panel

2. Click on desired node **IP Address**

Under **General** tab

1. For **Node Type**, click **Checkbox** to **Manually define**
2. Select **Node Type**
3. Click Update

Report Unknown/Wrong Platform Detection

If for some reason Genian ZTNA cannot detect the Platform of a device, one of the following could be the underlying reason:

- **Not enough information:** A device is not sending packets or is not responding to any request. This is possible if the OS has a Firewall active
- **No matching pattern in GPDB:** Node information has some evidence of a specific Platform, but the GPDB does not have that matching pattern yet.

In case there is no matching pattern in our GPDB, you can send that Nodes information to the Genian Cloud using the Report Wrong Platform dialog. Once Genians has received the report, our engineers will investigate the Platform pattern and update it to the GPDB.

Disable Reporting Unknown Platform

By default, Genian ZTNA sends a Report Wrong Platform for unknown Platform Nodes every day. All sent information is readable from outside of the device. To deactivate sending a Report Wrong Platform to the Genian Cloud, follow these steps:

1. Go to **Preferences** in the top panel
2. Go to **General > Node** in the left Preferences panel

Under **Detection**

1. For **Reporting Unknown Platform**, select **Off**
2. Click **Update**

10.2.3 Browse/Search/Filter Nodes

Sensor & Group Panel

The **Sensor & Group** panel allows the viewing of Nodes in a quick and organized manner. Click **Management > Node** in the top panel

- **Sensor tab:** All Nodes, Detected Networks, and the Sensors pertaining to each network are visible
(Clicking on a Sensor will show all the Nodes associated with that particular Sensor)
- **Group tab:** All Nodes and Nodes categorized by their Node Group

Status & Filter Panel

Nodes can be filtered by using our pre-defined filters in the **Status & Filters** panel

1. Click **Management > Node** in the top panel
2. Find **Status & Filters** in the left panel. Click **Main Category** then **Sub-Category**

(Click on Main category just to see a summarized view of Nodes within categories)

For Example: To view predefined filters with "Microsoft Windows" on a node managed by a specific Sensor:

1. Click **Management > Node** in the top panel
2. Go to **Sensor** tab in left panel. Click specific Sensor
3. Go to **Status & Filter** in the left down panel. Click **Node Group > Identification > Microsoft Windows**

You will see only "Microsoft Windows" nodes managed by a specific sensor on the main node view screen.

Customize Status & Filter

You can hide unnecessary categories that are not in use

1. Click **Management > Node** in the top panel
2. Find **Status & Filters** in the left panel. Click **Edit** icon in top right corner of **Status & Filters** left panel
3. **Drag and Drop** unwanted categories from **Selected** to **Available**
4. Click **Update**

Note: Customized status & filters only affect the view of the current administrator.

Find Nodes by Network Sensor

1. Go to **Management > Node** in the top panel
2. Go to **Sensor** tab in left panel
3. Click the search icon to use search
4. Input Name or IP of Network Sensor
5. Select specific Sensor
 - If no results are available, enter the blank and press Enter to confirm the entire sensor

Note: You will see the Nodes in the main Node view based off of the Network Sensors location.

Edit and Create Subfolders for Multiple Sensors

1. Go to **Management > Node** in the top panel
2. Go to **Sensor** tab in left panel
3. Click **Edit Tree** icon at the top right corner
4. Select Sensor and Drag&Drop to reorganize of Network Sensor
 - In case you have many Network Sensors, you can create a subfolder by selecting Create option

Find Nodes by Node Group

1. Go to **Management > Node** in the top panel
2. Go to **Group** tab in left panel
3. Under the site name, there are four **Node Categories** that contain **Node Groups** for you to select
 - **Identification**
 - **Categorization**
 - **Compliance**
 - **Uncategorized**

Note: These are provided by default, but you can create others by going to *Managing Node Groups*.

Edit and Create Node Categories for Sensors and Node Groups

1. Go to **Management > Node** in the top panel
2. Go to **Group** tab in left panel
3. Click **Edit Tree** icon in the top right corner
4. **Right Click** on your site name to Create or Assign a **Sensor** or **Node Group**
 - In case you have many **Network Sensors**, you can create a subfolder by selecting **Create** option
 - Select Assign and toggle to see options for either **Sensor** or **Node Group**
5. Search and click **Checkbox**
6. Click **OK**

List Nodes By Various Views

You can browse **Nodes** through various perspectives

1. Go to **Management > Node** in the top panel
2. Click the **menu** icon to the right of the **Tasks** button
3. Select **View Criteria > By Node** or **By Device**
4. View from the following perspectives:
 - **Overview**

- **Node View**
- **IPAM View**
- **Anomaly View**
- **OS Updates View**
- **Asset Management View**
- **Agent Action View**
- **Authenticated User View**
- **External Device View**
- **Device Life-Cycle View**

Find Contextual Information

1. Go to **Management > Node** in the top panel
2. Find and click on desired **IP address** of **Node**
3. Find General information and other information to include:
 - If the agent is not installed
 - **General** - *IP, MAC, IPv6, IPv6 Link-local, Hostname, Platform, Platform Intelligence, Connection Type, User Authenticated, RADIUS Acct-Session, Platform CVE, Manufacturer CVE, and more*
 - **Device** - *Name, Device ID, Device Life-Cycle, Nodes for Device*
 - **Network** - *Traffic, WLAN, TCP Connections, Service, Open Port*
 - **Logs** - *Logs, Status Logs*
 - **IPAM** - *IP and MAC Policy*
 - **Policy** - *Authentication Policy, Hostname Policy, Node Management Options*
 - **Policy Status** - *Node policy, Enforcement Policy, Node Group, Anomaly Definition, Agent Action Compliance Statistics*
 - If the agent is installed, There are additional tabs. *(The information shown may vary depending on the plugin assigned)*
 - **General**
 - **Device**
 - **System** - *Motherboard, Memory, Disk, OS, Network Connections, Interface, Sharing, User Account, USB Device, Monitor, Printer*
 - **Network**
 - **Software** - *Antivirus Software, installed Program*
 - **OS Update** - *Windows OS Update*
 - **Logs**
 - **IPAM**
 - **Policy**
 - **Policy Status**

Search Nodes by Contextual Information

To search from all nodes, or from the sensor/group selected in the tree panel, select the search bar from the top of the view pane and choose an attribute to search from the drop down list, specify the MYSQL operators, and define your search term.

- Supported Node Attributes Include:
- **IP**
- **MAC**
- **Status**
- **Node Type**
- **Node Policy**
- **Enforcement Policy**
- **Domain**
- **Authenticated User Username**
- **Authenticated User Full name**
- **Department**
- **Hostname**
- **Node name**
- **Node Description**
- **Platform**
- **Device Name**
- **Device Description**
- **Switch**
- **Switch Port**
- **Connected SSID**
- **Hardware Info**
- **Software Info**
- **Detected Anomaly**
- **Open Port**

And many more.

10.2.4 Tagging Nodes

Understanding Tags

A **Tag** is a custom description that is applied to a Node (MAC + IP) or Device (MAC) to help manage them. One or more identifying **Tags** can be applied to a node or device. **Tags** may also be applied automatically through the log function, or used as a grouping condition.

Node Tags apply to a MAC+IP address pair. They are suitable for tracking or applying policy to a specific MAC address and a single IP address that it uses. Because a **node tag** applies to a MAC+IP address pair, a tag will not follow a device when it changes IP addresses, due to a change in static IP, DHCP assigned IP, or a network segment change. The changed IP address and the MAC address are considered to be a separate node.

In contrast, **MAC Tags** will apply to all nodes with the specific MAC address. This makes MAC tags ideal for tracking and controlling devices which may regularly change IP addresses, such as DHCP devices, or mobile devices that regularly change networks.

Create Tag

1. Go to **Preferences** in the top panel
2. Go to **Properties > Tag**
3. Click **Tasks > Create**
4. For **Name**, type unique name
5. For **Description**, describe what this Tag is for
6. For **Color**, click choose desired color and click **OK**
7. For **Schedule**, this is optional for Lifetime and Expiration
8. If you assign this tag to a separate administrator, check the administrator role entry and select Administrator.
9. Click **Save**

Tag for Individual Node

1. Go to **Management > Node** in the top panel
2. Find and click on desired **IP address** of **Node**
3. Move to bottom tag of panel
4. Enter the category, name, assignment, description, and so on and click the **ADD** button.
5. Click **Update** Top button

Tag for Multiple Nodes

1. Go to **Management > Node** in the top panel
2. Find and click **Checkbox** of desired Nodes
3. Click **Tasks > Node and Device > Edit Node Tags**
4. Select **Assign Selected Tags** from the drop-down in the upper left corner of the **Edit Tag Settings** panel
5. Find and click **Checkbox** of desired **Tag** (*You can choose more than one*)
6. Click **Save**

Note: In this panel you can select options from the drop-down to edit current Tag Settings.

Tag for MAC

1. Go to **Management > Node** in the top panel
2. Click **IP address** of the desired MAC Address
3. Move to bottom tag of panel
4. Enter the category, name, assignment, description, and so on and click the **ADD** button.
5. Click **Update** Top button

Note: When assigning a tag to a specific MAC address, all nodes with that MAC address will automatically be tagged as well.

Untag for individual Node

1. Go to **Management > Node** in the top panel
2. Find and click on desired **IP address** of **Node**
3. Click **Delete** for the tag you want to delete in the bottom right corner of the panel.
4. Click **Update**

Untag for Multiple Nodes

1. Go to **Management > Node** in the top panel
2. Find and click **Checkbox** of desired Nodes
3. Click **Tasks > Node and Device > Edit Node Tag Settings**
4. Select **Remove Selected Tags** from the drop-down in the upper left corner of the **Edit Tag Settings** panel
5. Find and click **Checkbox** of desired **Tag** (*You can choose more than one*)
6. Click **Save**

Note: Select **Remove All Tags** to remove all tags from the node.

Untag for MAC

1. Go to **Management > Node** in the top panel
2. Click **IP address** of the desired MAC Address
3. Find and click on desired **IP address** of **Node**
4. Click **Delete** for the tag you want to delete in the bottom right corner of the panel.
5. Click **Update**

Tagging with Log Filter

You can automatically tag or untag a node when a specific log occurs.

- For more information on creating log filters. See : *Creating Log Filter*
- For more information on Tagging with log filter. See: *Tagging Assets Using Event*

10.2.5 Managing Nodes

Adding Nodes

Genian ZTNA automatically detects active nodes and registers them in the node list. Also, You can pre-register and use a node when you allow or deny a node before the node has access to the network.

1. Go to **Management > Node** in the top panel
2. Click **Tasks > Node and Device > Add Node**
3. Fill out the **Add Node** up to the panel.

You can register the node by entering IP only, MAC only, or both. *(Other values are optional)*

1. **IP** as IP address
2. **Additional IP** Select this when you want to register multiple consecutive IP nodes.
3. **IP Policy** Select when you want to use a specific IP policy.
 - **Allow IP**
 - **Allow IP for Specific MACs**
4. **Start** Select the start date and time in the calendar. Set the availability start period for the node.
5. **End** Select the end date and time in the calendar. Set the availability end period for the node.
6. **IPAM Policy for New Node**
 - **Allow MAC**
 - **Enable Conflict Prevention**
 - **Enable Change Prevention**
 - **Enable Conflict Prevention / Change Prevention**
7. **MAC** as MAC address
8. **MAC Policy** Select when you want to use a specific MAC policy.
9. **Start** Select the start date and time in the calendar. Set the availability start period for the node.

10. **End** Select the end date and time in the calendar. Set Set the availability end period for the node.
11. **Sensor** The node selects the location of the sensor to be registered.
12. **Node Type** Select the type of node to be registered.
13. **Node Delete-Prevention** Select whether the node can be deleted. `on` or `off`
14. Configure additional fields (if applicable)
15. Click **Save**

Add Multiple Nodes

You can register multiple nodes at once using CSV file.

1. Go to **Management > Node** in the top panel
2. Click **Tasks > Node and Device > Import Nodes**
3. Click **Select file CSV** menu in **Import Nodes** up to the panel.
4. Select the CSV file that you created for the format on your file explorer.
5. Select the appropriate **Sensor** from the drop-down menu where the node will be registered.
6. Click **Import**

Note: If the format in the CSV file is not correct, the node is not registered.

Remove Node

You can delete inactive Node data to better organize the networks Node view. You can delete inactive Nodes through policies, or manually delete Nodes as they are no longer found on the network.

Manually Remove Inactive Nodes

1. Go to **Management > Node** in the top panel
2. Find desired inactive Nodes. Click **Checkbox**
3. Click **Tasks > Node and Device > Remove Node**

Warning: If a connected and running node is accidentally deleted, that node will instantly re-register.

Remove Inactive Nodes Through Policy

1. Go to **Policy** in the top panel
2. Go to **Policy > Node Policy** in the left Policy panel
3. Find and click [**Policy Name**] in the Node Policy panel
4. Find **Management Policy > Deleting Down Node** in the Node Policy panel
5. Set a time for deleting Nodes after a period of inactivity : 30 (*If a Node is offline for a certain period of time, it will be deleted automatically. Default is 30 days*)
6. Click **Update**
7. Click **Apply** in top right corner

Remove Outdated Node

The Policy Server keeps Node information by default up to 3 days after an IP has been changed.

1. Go to **Preferences > General > Node**
2. Find **Lifetime > Keeping Outdated Node** in the Node
3. Set a time for deleting Nodes after a period of outdated Node information by IP address change : 3 (*Default is 3 days*)
4. Click **Update**
5. Click **Apply** in top right corner

Monitoring Node Host Names

New Nodes can be screened for compliance with a host name policy.

You can define the allowed host name for nodes per their Node Policy. Criteria for allowed node policy can be constructed based off authenticated User Attributes , IP address or regex.

1. Go to **Policy** in the top panel #. Go to **Policy > Node Policy** in the left Policy panel
2. Find and click [**Policy Name**] in the Node Policy panel
3. Find **Management Policy > Hostname Policy for New Node** and select **On**.
4. Enter your standard hostname, or click **Use Template** to define a compliant host name scheme.

Windows host names may also be changed using the Change Computer Name plugin.

See: *Changing Computer Name*

Using Node Bucket

The Node bucket is a grouping tool that can be used for various administrative purposes such as testing or monitoring. It cannot be used for Policy.

Add to Node Bucket

1. Go to **Management > Node** in the top panel
2. Find the desired node(s) and Click the **Checkbox** on the left of the entry.
3. Click **Tasks > Node and Device > Add To Node Bucket**
4. Click **Ok** (*Nodes added to your Node Bucket will appear in the Management > Node view*)

Remove from Node Bucket

1. Go to **Management > Node** in the top panel
2. Go to **Sensor Tab > Node Bucket** in the left panel
3. Find **Node** from **Node Bucket** window. Click **Checkbox**
4. Click **Empty** button in top right (*To clean the entire Node Bucket. Click Empty All*)

10.2.6 Managing Node Groups

Creating a Node Group

A **Node Group** is a group of **Nodes** that are similar to each other based off of certain conditions. **Node Groups** allow you take action on many **Nodes** at once versus the same action on many individual **Nodes**.

Genian ZTNA provides two types of **Node Groups**:

- **Policy Group**: is group based on Node-related information such as Node type, IP/MAC information, User information, Authentication, and more.
- **Node Group**: is group based on the Node status, measured by Node Policies and the outcome of associated conditions.

Only **Policy Groups** may be linked to **Node Policies**, while all group types may be linked to **Enforcement Policies**

1. Click **Policy** in the top panel
2. Go to **Group > Node** in the left Policy panel
3. Click **Tasks > Create for Node Policy** or **Create**

Under **General**

1. For **Category**, Choose default or Create New (*This allows you to categorize your Node Groups*)
2. For **ID**, type unique name
3. For **Description** (*Brief description of what this Node Group is for*)
4. For **Status**, **Enabled**
5. Enter the following in Condition section:
 - Boolean: “**AND**” or “**OR**” (“**AND**” *all conditions have to apply.* “**OR**” *any of the conditions have to apply*)

- Settings: Click **Add** (*These are the various conditions to be applied for proper grouping*)

6. Click **Add**
7. Click **Save**
8. Click **Apply** in top right corner

Node Group Settings

Favorite a Node Group

To pin a node group to the top of the list, you can **Star** a node group by clicking the **Star** to the left of the node group name in the view pane.

Edit Node Group Category

You can change the **Name** or **Link Color** of a node group category to make them more easily recognized.

1. Click the Category name in the left panel.
2. Click **Tasks > Update Category**
3. Fill in the desired **Name**
4. Click the **Color** form to enter the desired Hex Color code, or use the included selector tool.
5. After selecting, click **Ok**
6. Click **Update**

Import / Export Node Group in JSON Format

Genian ZTNA Supports importing and exporting node group configurations in json format.

To import or export a node group in json format:

1. Click **Policy** in the top panel
2. Go to **Group > Node** in the left Policy panel
3. Click **Tasks > Export Node Group** (select node group) or **Import Node Group**

10.2.7 Node Details

Genian ZTNA displays node detail information and policy status in the Web Console. Node-Details included Network Sensor collected information, Agent collected information and Node Policy status.

In Node-Details, Administrator can check the node policy status, run node tasks and run agent tasks.

How to check Node-Details

1. Go to **Management > Node** in the top panel
2. Choose Node and Click Node's **IP**
3. Check **Node Details**

List(tab name)	Collecting from	Collected information
Node	Network Sensor	IP, MAC, Status, Platform Intelligence information
Device	Network Sensor	Nodes for Device, Device Life-Cycle
Network	Network Sensor	Service, Open port
	Agent Plugin (Collect network information, Inspect TCP Connections, Control WLAN)	Traffic, WLAN, TCP Connections
System	Agent Plugin (Collect Hardware Information, Collect Monitor Information, Control Network Folder Sharing, Collect System Information Using WMI, Control Personalization)	Hardware information, OS, Network Connections, WMI Status, etc.
Software	Agent Plugin (Collect Software Information)	Programs, Antivirus Software
OS Update	Agent Plugin (Update Windows, Update macOS)	OS update information
Policy	Policy Server	IP Policy, MAC Policy, Node(IP+MAC) Policy
Policy Status	Policy Server	Node Policy, Enforcement Policy, Node group, Agent Action Compliance Statistics, etc.
Malware	Agent Plugin (Collect Malware Information)	Malware information
Logs	Policy Server(Log Server)	Audit logs based on node information(IP+MAC)

10.3 Monitoring IP Address

The **Network Sensor** monitors IP Addresses and presents the usage status of the IP Address in real-time through the intuitive Matrix view.

10.3.1 Browsing Sensor IP Status

You can browse through **Network Sensors** and see current status from the **IPAM** panel.

To Find the Overall Status of IP usage by Network Sensor Per Network

1. Go to **Management > IP Address** in the top panel
2. Click on **name of Network Sensor** in the left IPAM panel

10.3.2 Browsing IP Status Using Matrix View

You can browse **IP usage** and see **current status** from the Matrix view.

Find how IP Addresses are being used for each Network Segment

1. Go to **Management > IP Address** in the top panel
2. Click on **name of Network Sensor** in the left IPAM panel

Find Details

1. Go to **Management > IP Address** in the top panel
2. Click on **name of Network Sensor** in the left IPAM panel
3. Mouse over an **IP Address block** to see more information

10.4 Monitoring Switch

You can see how many devices are connected to specific Switch ports, connection status (*up/down*), port-level security status, 802.1x information, traffic, utilization, and more.

10.4.1 Browsing Switches

To identify a **Switch**, Genian ZTNA sends out an **SNMP request**. If the response to the request comes back with an OID (`dot1dBaseBridgeAddress(1.3.6.1.2.1.17.1.1)`), then Genian ZTNA labels that **MAC Address** as a **Switch**. If switches are not identified with the public community string you will need to check the community string configuration or run a **SNMPWALK** to verify switch is responding properly.

Set Node Scan Interval On Network Sensor

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the left System Management window
3. Click **Network Sensor IP**

Under **Settings** tab:

1. Click **Sensor Settings**

Under **Node Information Scan**:

1. For **Update Interval**, edit time interval (1 minute - 1 year)
2. Click **Update**

Set SNMP Settings For SNMP Scan

1. Go to **Preferences** in the top panel
2. Go to **General > Node** in the left Preferences window

Under **SNMP**:

1. Click **Add** for SNMP settings
1. For **SNMP Version** select `Version 2c` or `Version 3`
2. In Version 2, enter read/write community string(*e.g. public,private*) For **Community**
3. In Version 3, enter **Username** and Select the appropriate **Security Level**
4. There are `NoAuth/NoPriv`, `Auth/NoPriv`, and `Auth/Priv` in the **Security Level**
1. For **Collecting Network Information**, needs to remain **On** (*If set to Off SNMP information will not be collected*)
2. For **Update Interval**, edit time interval (*5 minutes – 1 year*)
3. For **Time Object**, specify time object
4. Click **Scan Now** button for SNMP to scan instantly

Use SNMPWALK on Windows machine To Verify Switch Response

Note: If a Switch fails to populate in Switch List, first check Switch Community strings on switch, then run a SNMP-WALK.

1. Login to your **Switch** and verify it's SNMP Community strings
2. Verify **Genian ZTNA** has correct **SNMP Community strings** set
3. Using Windows machine and Net-SNMP do the following:
 - Download **Net-SNMP** for Windows (*Set the default folder location to C:Net-SNMP to easily locate it*)
 - Open **Command Prompt** and change directories. Type `cd /Net-SNMP/bin`
 - Run the snmpwalk using this command: `snmpwalk -Os -c public -v 2c "Switch-IP" .1.3.6.1.2.1.17.1.1` (*e.g. snmpwalk-Os -c public -v 2c 192.168.50.5 .1.3.6.1.2.1.17.1.1*)
 - Should display `mib-2.17.1.1.0 = Hex-STRING: XX XX XX XX XX XX` (*This determines that the switch is responding properly to SNMP Requests*)

Configure Switch Specific Information

Note: To enable switchport blocking enforcement, a write community or an SNMPv3 user with write permissions must be used. For more info see [Configuring Switch Port Control](#)

1. Go to **Management > Switch** in the top panel and click **Switches** folder in the left Switch Management window.
2. Find and click desired **Switch** name in the main Switches window
3. By **SNMP Data Collection**, select **On** or **Off**.
4. Select **SNMP Version 2c** or **Version 3**.

5. Enter the Community strings in the **Read/Write Community** fields or enter the **SNMP V3 Security information**.
6. Click **Update**

10.4.2 Switch Ports

Browsing Switch Ports

The **Switch Port** List provides detailed information about every **Switch Port** detected on the network. The **Switch Port List** can be viewed by going to the **Switch Management Panel** in the top left, and clicking on Switch Ports.

Contextual Information

1. Go to **Management > Switch**
2. Find and click on desired **Switch Name**
3. Find information such as:
 - **Switch** - Hostname of Switch
 - **Port** - Port Number of Switch
 - **Description** - Description of port
 - **Authenticated User** - Authenticated user's Full Name through connected switch port
 - **Hostname** - Hostname of node through connected switch port
 - **IP / MAC** - IP / MAC through connected switch port
 - **Nodes** - The number of nodes through connected switch port
 - **MACs** - The number of macs through connected switch port
 - **Connection Type** - Connection type through connected switch port
 - **Link** - Link On Green icon, Link Off Gray icon
 - **Admin Down** - Indicates port shutdown.
 - **Duplex** - Link Duplex
 - **Speed** - Link Speed
 - **Traffic** - bps through connected switch port
 - **Utilization** - Port utilization %
 - **VLAN ID** - VLAN ID assigned to the port
 - **Trunk Port** - Show if trunk port is enabled `trunk` or `blank`
 - **Port Security Settings** - Status of Port Security settings `On` or `Off`
 - **802.1x Settings** - Status of 802.1x settings `Enable` or `blank`
 - **Auth MACs** - The number of Authenticated MAC address

Add to a Node Bucket

1. Go to **Management > Switch** in the top panel
2. Find **Switch Ports** to add. Click **Checkbox** (*Make sure that port has at least 1 node connected*)
3. Click **Tasks > Add To Node Bucket**
4. Click **Ok** (*Nodes added to your Node Bucket will appear in the Management > Node view*)

Remove from a Node Bucket

1. Go to **Management > Node** in the top panel
2. Go to **Sensor Tab > Node Bucket** in the left panel
3. Find **Node** from **Node Bucket** window. Click **Checkbox**
4. Click **Empty** button in top right (*To clean the entire Node Bucket. Click Empty All*)

Searching Switch Ports

You can search **Switches** and their information using the **Search Bar** located at the top of the main panel. Details that can be searched are Switch Name, Port, Description, Auth User, Hostname, or the Number of MACs/Nodes.

Changing Switch Port Description

1. Go to **Management > Switch** in the top panel
2. Find and click **Switch Port** in the **Port** column

Under **General** tab

1. For **Description field**, enter a description
2. Click **Update**

Changing Switch Port VLAN ID

1. Go to **Management > Switch** in the top panel
2. Find and click **Switch Port** in the **Port** column

Under **General** tab

1. For **VLAN ID**, enter a number
2. Click **Send SNMP Command**

Changing Switch Port Default VLAN

1. Go to **Management > Switch** in the top panel
2. Find and click **Switch Port** in the **Port** column

Under **General** tab

1. For **Default VLAN**, enter a number. When a node attached to a switchport falls under an Enforcement Policy where switch port VLAN assignment is not specified, the switch port will be set the the **Default VLAN**. Enter **0** as the **Default VLAN** to perform no change to the Switch Port.
2. Click **Set**

Note: In order to change a Description, or VLAN ID the read/write Community string or an SNMPv3 Username with write permissions for that Switch must be specified.

10.4.3 Troubleshooting

- *Cisco Switch-port Information Is Not Showing*

10.5 Monitoring Wireless LAN

Network Sensors with built-in Wireless Adapters scan the network and detect all Internal and Neighboring wireless SSIDs. The Policy Server communicates with the installed Agent on the endpoints to leverage their built-in Wireless Adapters to collect SSID information as well as Internal SSIDs. You can browse and search through the WLAN view and create groups for monitoring, managing and enforcing policies. (*Without a Wireless Adapter you will not detect any WLAN SSIDs*)

10.5.1 Browsing SSIDs

You can find any wifi-enabled devices and list them by **Network Sensor** or **WLAN AP** status (*SSID usage, security status, frequency, 802.11 protocol, signal strength, detected date, connected wireless devices, etc.*)

View All the Detected SSIDs on your Network

1. Go to **Management > WLAN** in the top panel

Customize Table Columns

1. Click **Tasks** in the top left of the WLAN Node list
2. Select **Edit Columns**
3. Move column topics from **Available** to **Selected** to add to the **WLAN List**
4. **Drag** and **Drop** columns to change the display order
5. Click **Update**

Searching SSIDs

You can search **SSIDs** and their information using the **Search Bar** located at the top of the **Management > WLAN** main panel. Details that can be searched are **SSID**, **MAC Address**, **Vendor**, and **Security Settings**.

WLAN Status and Filters

WLANs can be viewed by pre-defined filters in the Status & Filters section.

Viewing Stations

Stations also referred to as **STA**, are devices that have the capability to use the 802.11 protocol. These can be fixed, or mobile.

View Station Details

1. Go to **Management > WLAN** in the top panel
2. Find **Stations** column in the main **WLANs** window. Click **Stations** to sort column (*This will sort the column based off of a number of Stations for each MAC Address*)
3. **Click the Number in the Stations column of the desired device**
 - You can now view all Stations for MAC Address and change view between **External/Internal**
 - Use the **Search bar** to find specific **Stations** (*Searches can also be filtered between External/Internal or Internal*)

Finding SSID Physical Location

In a BYOD environment, unknown devices appear at any given time, and when they do, it is the Network Administrators job to track them down. To figure out what devices are in or outside of a network, various different steps are needed to locate that device's physical location.

Discover what SSID a Device belongs to

If a rogue device shows up on the network, the first step to tracking it down is to find which SSID it is connected to.

1. Go to **Management > Node** in the top panel
2. Click the **IP Address** of the desired node
3. In the **General** tab, under **SSID Connected**, click the **SSID** displayed

All information relevant to that SSID is now displayed in the main panel.

View the Signal Strength of a Device

A device's relative location can be determined by monitoring the signal strength to figure out which direction and how close it is. The stronger the signal, the closer the device.

The signal strength is depicted in two ways:

- **Color/Icon:** Red means weak, Orange means not an ideal signal, and Green means a strong signal connection
- **dBm:** This is the decibel strength of the signal. The lower the numbers, the closer the stronger the signal and closer the device

The device can now be tracked down to a relative location. The device can then be looked for or employees can be inquired about the device until it is found.

10.5.2 Detecting Internal SSID

SSIDs are differentiated in the list from **Internal** to **Neighboring APs**.

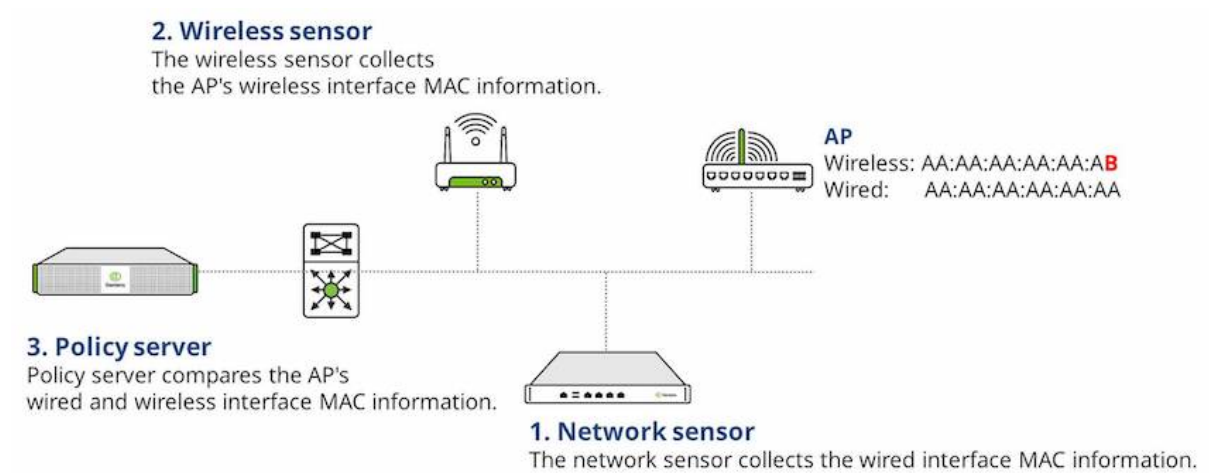
Show Internal SSIDs

1. Go to **Management > WLAN** in the top panel.
2. Find and click column labeled **Internal** in the main WLANs window. All internal APs will be identified with a checkmark in this column.

How to Find an Internal AP

The AP detected by the Genian ZTNA Agent and the wireless sensor can be distinguished as an internally connected AP by several criteria. The Internal AP detection method is as follows:

MAC Similarity Check

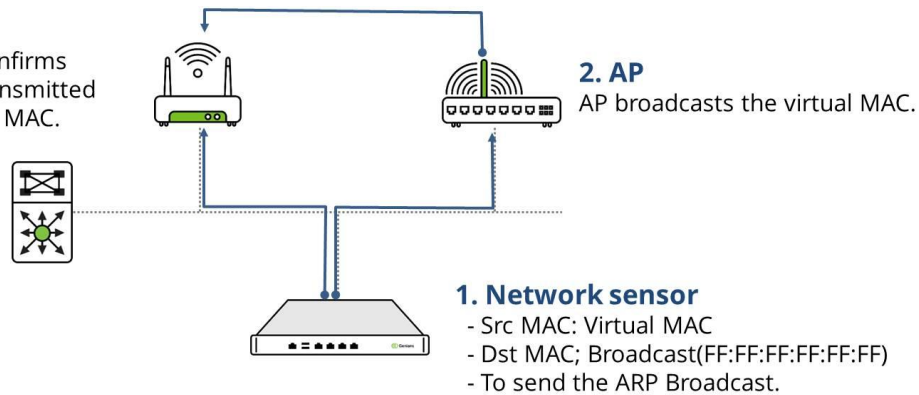


1. The network sensor collects the wired interface MAC information of the internally connected AP.
2. The wireless sensor collects the AP's wireless interface MAC information and sends it to the policy server.
3. Policy server compares the AP's wired and wireless interface MAC information and if they are similar, it determines that the access point is internal.

Packet broadcasting

3. Wireless sensor

The wireless sensor confirms whether the packet transmitted from the AP is a virtual MAC.



1. The network sensor broadcasts a virtual MAC to the network.
2. At this time, AP connected to the internal network broadcasts the virtual MAC received from the network sensor to the AP's wireless band.
3. The wireless sensor is monitoring the wireless network and when the wireless sensor receives the virtual MAC from the AP, it judges the AP as the internal AP.

Agent

1. The Agent collects all network interface information on user device.
2. This information is checked for matches against known network interface MAC addresses.

SNMP with wireless controller

1. Information is collected from wireless controller using SNMP.
2. This information is checked for matches against known MAC addresses from the wireless controller.

10.5.3 Creating Wireless Groups

A **Wireless Group** is any detected amount of **SSIDs** that are grouped together due to conditions or properties that have been set as identifiers. This is to help Network Administrators quickly navigate to specific **SSIDs** or **Categories** when dealing with a large quantity of SSIDs.

Create a WLAN Group

1. Go to **Policy** in the top panel
2. Go to **Group > WLAN** in the left Policy panel
3. Click **Tasks > Create**

Under **General**:

1. For **ID**, enter a unique name
2. For **Description**, type what this group consists of
3. For **Status**, select **Enabled** from the drop-down list.
4. For **Generating Logs** turn **On** to show logs when SSIDs are added to the group

Under **Condition**:

1. For **Boolean Operator**, choose **AND** to match all conditions, or **OR** to match any conditions
2. For **Conditions** click **Add** to add conditions

Under **Settings**:

These are conditional settings that allow you to be specific in identifying SSIDs:

1. For **Criteria**, you can select MAC, Protocol, SSID, Security Settings, Tag, and more
2. For **Operator**, allows you to choose equal to, not equal to, contains, does not contain, and more
3. For **Value**, type in some value to match what your searching for
4. For **Description**, type what this condition does
5. Click **Add**
6. Click **Save**

Assign a WLAN Tag

You can Tag SSIDs to help categorize them and to build Policies using these Tags:

1. Go to **Management > WLAN** in the top panel
2. Find and click **Checkbox** of desired **SSIDs**
3. Click **Tasks > Edit WLAN Tag Settings**

Under **Assign WLAN Tag**

1. In drop-down select **Assign Selected Tags**
2. Click **Checkbox** of tag to apply
3. Click **Save**
4. Click **Apply**

Assign a WLAN Group

You can group SSIDs that are similar to each other based off of Tags, SSID Name, Vendor, Security Settings, Protocol, and more.

1. Go to **Management > WLAN** in the top panel
2. Find and click **Checkbox** of desired **SSIDs**
3. Click **Tasks > Edit WLAN Group Settings**

Under **Assign WLAN Group**

1. For **Action**, select **Add** or **Remove**
2. For **WLAN ID**, select **SSID**, **MAC**, or **MAC+SSID**
3. For **WLAN Group**, group to associate to
4. Click **Save**
5. Click **Apply**

Group by Network Sensor

If you have many Network Sensors, it is difficult to manage all of these in one list. Here you have the ability to create groups and assign **Network Sensors** to them.

1. Go to **Management > WLAN** in the top panel
2. Click **Edit Tree icon** in the top right corner
3. Right click on either **WLAN AP** or **WLAN Client**, click **Create** (*New node group will appear for you to rename*)
4. Right click on newly created group and click **Assign**
5. Search for **Network Sensor** and select each **Checkbox** you want to add to this group
6. Click **OK**

Note: If you have a presence around the world you can create **Country Groups** and add **Network Sensors** that are located within those countries.

10.6 Managing Dashboards

Dashboards are a collection of Widgets. Dashboards give you an overview of the reports and metrics that are most important to you. You can personalize Dashboards by customizing Widgets. By default, Genian ZTNA provides over 100 Widgets which are categorized by the following groups. You can add, delete, customize and share your dashboards depending on your requirements.

10.6.1 Create Dashboards

1. Click **Add Tab** on the right side of the tabs on the main screen.
2. In the Add Dashboard Tab window, enter **Tab Name**.
3. Click **Confirm**.

10.6.2 Remove Dashboards

1. Hover your mouse over the name of the tab you want to delete.
2. Click the **Delete** next to the name.
3. **Confirm** in the confirmation window.

10.6.3 Add a Widget to Dashboard

1. Go to **Dashboard** in the top panel.
2. Click **Tools > Add Widget**.
3. Find **Category** section in the Add Widget window. Select **Category**.
4. Find **Widget** section in the Add Widget window.
5. Click **Add Widget**.

10.6.4 Arrange Widgets

Widgets can be grabbed by the title bar and dragged to the desired location.

10.6.5 Customize the Settings of a Widget

Hovering over a widget will make a gear icon appear in the upper right corner of the widget. Clicking the gear icon will display that widget's settings. Setting changes can be applied to the widget by clicking Save when finished.

10.6.6 Delete a Widget

1. Go to **Dashboard** in the top panel.
2. Find **Widget** and hover over the title bar.
3. Click **X**.
4. Click **Confirm**.

10.6.7 Creating a Sensor Map

To monitor and customize Sensor Placement globally using Google Maps.

- To use Sensor Map, you must obtain the Google Maps API Key.
 - For use, please follow the [API Key issue guidelines](#).
1. Click **Add Tab** on the right side of the tabs on the main screen.
 2. In the Add Dashboard Tab window, enter **Tab Name**.
 3. Activate **Sensor Map**.
 4. Click **Confirm**.
 5. Enter the issued **API Key**.
 6. Click **Confirm**.

10.6.8 Place a Sensor on Sensor Map

1. Go to **Sensor Map** tab.
2. Find **Menu** icon in the upper right corner of the main panel.
3. Find **Sensor bubble** and drag it to the desired location.

10.6.9 Export Dashboards

You can export Dashboards into several formats:

1. Click **Dashboard** in the top panel
2. Select **Dashboard** tab you choose to export
3. Click **Export** and select the format

Creating Mobile Platform Detection Widget

Administrators can create Mobile Platform Detection Widget for monitoring Mobile devices.

Step 1. Create Mobile platform Node Group

Please refer to *Managing Node Groups* for create new node group

Create Android Nodegroup

- Node Group Type : Status Group
- **Group Condition**
 - Criteria : OS
 - Value : Android

Create Iphone OS Nodegroup

- Node Group Type : Status Group
- **Group Condition**
 - Criteria : OS
 - Value : iPhone OS

Step 2. Assign Node Group to Widget

1. Go to **Dashboard** in the top panel.
2. Click **Tools > Create Dashboard**.
3. Find **Node** in Categories list.
4. Find **Node Group** or **Node Detection Statistics by Node Group**.
5. Click **Add Widget**.
6. Find Node Group on left side and move to **right**.
7. Configure View Name, Update Interval, Value Font Size, Lable Font Size.
8. Click **Save**.

10.7 Genian ZTNA Monitor(for Mobile)

Genian ZTNA can check the status on Mobile through **Genian ZTNA Monitor**. It also provides real-time information to the administrator through **Push Alarm**.

10.7.1 Receive alarms via Mobile App

Support Feature

1. Push alarm when detecting new node.
2. Push alarm when IP application occurs.

Setting method

1. Login after running Genian ZTNA monitor
2. Administrator push token registration confirmation
 - Accessing Web Console via WebBrowser > Management > User > Admin ID accessed by App Click > Administrator Tab > Notification > Confirm items added to administrator Push Token.*

Note: Install method App : Install "Genian ZTNA monitor" app on mobile device (Android and IOS support)

10.8 Managing Nodes in the Cloud

The Genian ZTNA Cloud Collector can be enabled to collect information about IP-enabled nodes in a Cloud environment. At the configured interval, the Cloud Collector will query the Cloud Service Provider to identify any nodes in the specified environment as well as other valuable Cloud related details of the discovered nodes.

10.8.1 Configuring Cloud Environment

Add Cloud Provider

1. From the top menu navigate to System > Cloud Provider
2. Click Tasks then Create
3. Enter Name for the Cloud Provider (ex. 'AWS Cloud')
4. Select "AWS" for Cloud
5. Enter AWS Access Key
6. Enter AWS Secret Key
7. Click Save

Create Cloud site

1. From the top menu, navigate to System > Site
2. Click Tasks then Create
3. Enter a Name for the site (ex. 'Corp Hub' or 'VCP-XXXXXXXX')
4. For Infrastructure select Cloud
5. For Cloud Provider, select the Cloud Provider created in the previous steps
6. For Region, select the desired AWS Region from the list
7. For VPC ID, select the desired VPC from the list

Note: If no VPCs are listed, check the previous step and logs to ensure there were no issues when adding the Cloud Provider.

1. For Type select Hub or Branch
2. For Network Address enter the corresponding subnet for the VPC entered in step 7 (ex. 172.31.16.0/20)
3. Set Collector status to Enabled (leave Proxy settings default and set desired collection interval)
4. Click Save

Verify Cloud Node Detection

1. From the top menu, navigate to Management > Node
2. In the left window pane, click on the Site name created in the previous steps
3. All AWS EC2 instances in the VPC and subnet previously specified should be listed as nodes
4. AWS details for discovered nodes is logged under node details. Node details can be viewed by navigating to Management > Node, clicking on the node IP and scrolling down to the AWS section.

Note: See: *Monitoring Network Nodes* for search, grouping and monitoring of nodes. Managing Nodes in the Cloud

Configuring and Using the AWS Connector

Install AWS Connector

1. In the top section, go to **System > Update Management > Software > Policy Server Plugin**.
2. Choose **Upload Plugins** from the **Tasks** menu.
3. Click Select file to upload the AWS Connector.
4. In the list in the **System > Update > Software > Policy Server Plugin** menu, make sure that the status of the AWS Connector is changed to Installed.

AWS Connector Settings

1. In the top section, go to **Preferences > AWS Connector**.
2. Change the use of the AWS Connector to **Periodic Performance** or **Specified Time Performance**.
3. Click the **Add** button in AWS Account Options.
4. Enter your AWS account information (**Access Key, Access Secret Key,Region**) and the **Account Name** to specify these settings.
5. Click the **Add** button.
6. Set the **Execution Cycle** to get AWS Instance information.
7. Click the **Modify** button at the bottom.

Checking AWS Instance Information

1. In the top section, go to **Management > Node**.
2. In the tree item on the left, choose the name you specified when setting up your AWS Connector account.
3. In the right view pane, check whether the instance information created by the AWS EC2 service is registered as a node.

Note: See: *Monitoring Network Nodes* for search, grouping and monitoring of nodes.

10.9 Network Traffic

10.9.1 Enabling Netflow Agent

Genian ZTNA can monitor network traffic by utilizing the Netflow Agent function of a sensor. This flow information of connected devices provides enhanced Network Observability which is a crucial component for enforcing ZTNA policies. Once enabled, the Netflow Agent will log flows of all traffic flowing through the sensor. Information logged in flows includes but is not limited to:

- **Source IP Address**
- **Destination IP Address**
- **Protocol (UDP/TCP)**
- **Source Port**
- **Destination Port**
- **Application**
- **Geolocation Data**
- **User (which user the flows are associated with)**
- **Number of Packets**
- **Number of Bytes**
- **Flow Start (date/time)**

- **Flow End (date/time)**

Note: In order to see flows utilizing the Netflow Agent, traffic from an endpoint must be flowing through a network sensor. To route traffic through a sensor, following the instructions below to deploy a cloud gateway and ZTNA client.

Managing Nodes in the Cloud

Controlling Access to Cloud Resources

To enable the Netflow Agent on the network sensor:

1. Go to **System > Sensor** in the top panel
2. Click on **Edit Sensor Settings** for the tap_1 sensor interface
3. Scroll down to **Traffic Monitoring** section and toggle **Netflow Agent** to **On**
4. Click **Update** at the bottom of the page

To test and validate that flow data is being collected and logged:

1. Go to **Log > Flow** in the top panel
2. Flows should be populated for any traffic routing through the network sensor

Note: Only flows for connected ZTNA clients will be logged.

To view connected ZTNA clients:

1. Go to **System > Site** in the top panel
2. Under the **ZTNA - Client** column, click on the (*) link to view connected clients
3. Flows from these clients should be visible in the flow logs

To view summary information for flow data:

1. Go to **Dashboard** in the top panel
2. Click on **Flow Data** tab in Dashboard
3. View various widgets including Top Traffic by Source IP, Destination IP, User, etc.

CONTROLLING NETWORK ACCESS

Note: This feature required Professional or Enterprise Edition

Based on the information collected through the network sensor and the agent, a policy can be established to restrict network use by the non-compliant device. Enforcement policies can be applied in a variety of ways.

11.1 Understanding Access Control Policy

Genian ZTNA uses 3 main policies to control network access, **IP/MAC Policy**, **Node Policy**, and **Enforcement Policy**.

11.1.1 IP/MAC Policy

IP and MAC features allow an administrator to manually or automatically control a devices IP address, and to allow / deny network access based off of IP or MAC address.

To use these features in Genian ZTNA, you must configure the network sensor(s) in enforcement mode and enable an IP/MAC policy. This section will explain how to enable IPAM policy, enforce Conflict/Change Prevention, and set up time allowances for IP/MAC addresses.

Preparing Access Control using IPAM

You can enable enforcement by enabling the **Unauthorized Device** default policy, and changing the default policies on each individual sensor.

To Enable "Unauthorized Device" Policy

By default, the “**Unauthorized Device**” enforcement policy is disabled. Before controlling nodes using the Policy, the enforcement policy for “**Unauthorized Device**” must be enabled.

1. Go to **Policy** in the top panel
2. Go to **Enforcement Policy** in the left Policy panel
3. Click **Unauthorized Device** name in the Enforcement Policy window
4. Find **General > Status** section to **Enabled**
5. Click **Update**
6. Click **Apply** in top right corner

To Change Sensors IPAM Default Policy

The Default Policy can be changed on each sensor's settings

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the left System Management panel
3. Click the desired sensor's **IP Address**
4. Click the **Settings** tab and click **Sensor Settings**
5. Find **IPAM Policy** section, change **IPAM Policy** for **New Node** accordingly
6. Click **Update**

Options for New node policy are as follows:

- **Deny MAC:** Deny a MAC Address
- **Deny IP:** Deny an IP Address
- **Deny IP/MAC:** Deny an IP and MAC Address
- **Allow:** Allow an IP and MAC (default)
- **Enable Change Prevention:** Enable IP Change Prevention for a node's IP/MAC
- **Enable Conflict Prevention:** Enable IP conflict Prevention for a node's IP/MAC

Changing IPAM Policy

You can also manually allow or deny from Node List and Matrix View.

the following IPAM options are available when selecting nodes from the node view or IP's from the matrix view

To Allow or Deny IPAM from Node List

1. Go to **Management > Node** in the top panel
2. Click **Checkbox** of the **desired node** in the Node window
3. Click **Tasks > IP/MAC Policy**
4. Select the desired **options:**
 - **Deny IP**
 - **Allow IP:** Allow an IP Address, but do not reserve the IP address.
 - **Allow IP for Specific MACs:** Allow an IP Address, and reserve it to a specific MAC address. (Additional MACs may be added by selecting the node, and editing under the IP Policy section.)
 - **Enable Hostname Policy for IP** (Require host name to meet the Hostname Policy defined in the node policy. See: [Managing Nodes](#))
 - **Remove Hostname Policy for IP**
 - **Time Restriction for IP:** Set allowed time period for IP.
 - **Edit IPAM New Node Policy for Reserved IP:** (Choose: Allow MAC, Enable Conflict Prevention, Enable Change Prevention, or Enable Conflict Prevention/Change Prevention)
 - **Edit IP Purpose** (Choose: Dynamic, Static, or Temporary IP Address)

- **Deny MAC**
- **Allow MAC:** Allow an IP Address, but do not mandate an IP address.
- **Allow MAC - Current IP for Current Sensor:** Allow a MAC Address, and mandate a specific IP address on a specific sensor managed network.
- **Allow MAC - Current IP for All Sensors:** Allow a MAC Address, and mandate a specific IP address.
- **Time Restriction for MAC:** Set allowed time period for MAC.
- **Deny IP/MAC:** Deny an IP and MAC Address
- **Allow IP and MAC:** Allow an IP and MAC
- **Enable Conflict/Change Prevention:** Enable IP Change and conflict Prevention for a node's IP/MAC

To Allow or Deny IPAM from Matrix View

1. Go to **Management > IP Address** in the top panel
2. Click on the desired **Sensor's Name**
3. Find **IP Address Square** and click to **highlight square**
4. Click **Tasks**
5. Select the desired **options:**
 - **Add Node**
 - **Remove Node**
 - **Deny IP**
 - **Allow IP:** Allow an IP Address, but do not reserve the IP address.
 - **Allow IP for Specific MACs:** Allow an IP Address, and reserve it to a specific MAC address.
 - **Enable Conflict/Change Prevention:** Enable IP Change and conflict Prevention for a node's IP/MAC
 - **Edit IPAM New Node Policy for New Node Settings** (Choose: Allow MAC, Enable Conflict Prevention, Enable Change Prevention, or Enable Conflict Prevention/Change Prevention)
 - **IP Time Allowance**
 - **Assign User IP Ownership**
 - **Assign Department IP Ownership**
 - **Define IP Purpose** (Choose: Dynamic, Static, or Temporary IP Address)

Note: Denied IP/MAC Addresses are highlighted in light red with the text of the IP Address having a strikethrough

Configuring IP Change Preventions

You can prevent users from changing their IP Address. Changing an IP can lead to conflicts or compromising issues where users can gain privileges they were not intended to have. For instance, an Administrator could have a designated IP Address set up to allow internet access, while all others are blocked. If an employee is able to change their IP to that designated address, then that employee will gain internet access when they are not allowed to.

How IP Change Prevention Works

The Sensor watches and analyzes packets that are being sent from each device. When a new node is detected, the Sensor sends a gratuitous ARP request. If a machine receives an ARP request containing a source IP that is different than the previously used IP for that MAC, then it knows a change has occurred, and the offending node will be enforced against.

To Enable IP Change Prevention

1. Go to **Management > Node** in the top panel
2. Click on the desired node **IP**
3. Click **Policy** tab
4. Find **MAC Policy** section, click **Allow MAC - Enable Change Prevention (Choose: Specific Network or All Networks)**
5. Enter **IP Address(es)** in the form below to allow them to be used the selected device.
6. Click **Update**

To Disable IP Change Prevention

1. Go to **Management > Node** in the top panel
2. Click on the desired node **IP**
3. Click **Policy** tab
4. Find **MAC Policy** section, click **Allow MAC – Disable Change Prevention**
5. Click **Update**

<p>Warning: This feature should only be used on nodes using a static IP to avoid accidental blocking.</p>
--

Configuring IP Conflict Prevention

You can prevent users from using an IP Address that is already assigned to another device. IP conflicts can result in routing issues, or users can gain privileges they were not intended to have. For instance, an Administrator could have a designated IP Address set up to allow internet access, while all others are blocked. If an employee is able to change their IP to that designated address, then that employee will gain internet access when they are not allowed to.

How IP Conflict Prevention Works

The Sensor watches and analyzes packets that are being sent from each device. When a new node is detected, the Sensor sends a gratuitous ARP request. If a machine receives an ARP request containing a source IP that is reserved for another MAC address, a conflict is identified, and the offending node will be enforced against.

To Enable IP Conflict Prevention

1. Go to **Management > Node** in the top panel
2. Click on the desired node **IP**
3. Click **Policy** tab
4. Find **IP Policy** section, select **Allow IP – Enable Conflict Prevention**
5. Enter **MAC Address(es)** in the form below to allow them to use the **IP**.
6. Click **Update**

To Disable IP Conflict Prevention

1. Go to **Management > Node** in the top panel
2. Click on the desired node **IP**
3. Click **Policy** tab
4. Find **IP Policy** section, select **Allow IP – Disable Conflict Prevention**
5. Click **Update**

Allowing IP/MAC Based On Time

You can allow an IP Address for a designated period of time (Date, Hours, and Minutes) to ensure temporary access is granted. When that time is up, the IP Address becomes denied and blocked from the network until another allowance or privilege is set.

Configure an IP Allowance Time

1. Click **Management > Node** in the top panel
2. Click the desired **IP Address**
3. Click **Policy** tab
4. Find **IP Policy** section, Locate **Start** and click the form to edit date and time settings
5. Locate **End** and click the form to edit date and time settings
6. Click **Update**

Configure an MAC Allowance Time

1. Click **Management > Node** in the top panel
2. Click the desired **IP Address**
3. Click **Policy** tab
4. Find **MAC Policy** section, Locate **Start** and click the form to edit date and time settings
5. Locate **End** and click the form to edit date and time settings
6. Click **Update**

11.1.2 Node Policy

Node Policies are mainly used for collecting information from Nodes, and managing their network presence while they are in a compliant state. **Node Policies** allow you to establish **Authentication Policies** based on User, Node, and Authentication method, as well as to define the standard operation of the endpoint agent and more.

To configure a Node Policy, create or use existing **Node Groups** (*Managing Node Groups*)

Next, navigate to **Policy > Node Policy** and select **Tasks > create**.

Follow the Policy creation prompts to apply the policy to groups and configure options.

See:

- *Configuring User Authentication Options*
- *Configuring Agent Settings by Node Policy*
- *Managing Nodes*

11.1.3 Enforcement Policy

While **Node Policies** are mainly used for collecting information from Nodes, **Enforcement Policies** are typically used to block the endpoint from accessing the network and potentially take additional action. This additional action may involve redirection to a **Captive Web Portal** for compliance instructions, or control of the endpoint through an agent.

Once **Node Groups** are created, (*Managing Node Groups*) controls can be defined by creating **Enforcement Policies**. These policies can then be applied to the **Node Group** to enforce those conditions upon the Nodes within the Group.

Creating Permissions

Understanding Permissions

Permissions allow you to define Node Access based off of a combination of Network, Service, and Time objects. Out of the box Genians has 2 Permissions that are used in our pre-defined Enforcement Policies. These are **PERM-ALL** and **PERM-DNS**.

- **PERM-ALL**: Allow all services on all networks
- **PERM-DNS**: Only allow DNS service on all networks

(You can create custom Permissions but you first need to understand about the Network, Service and Time objects and how to edit and create them)

- **Network** - A rule that identifies certain networks and allows you to define access based off of IP/Netmask, IP Range. Fully qualified domain names may also be used to block or allow specific websites. Node Groups may also be used as a network object.
- **Service** - A rule that identifies services to allow you to define access through several protocols and ports.
- **Time** - A rule used to create different access times to either allow during certain days and hours, or deny during certain days or hours.

(*Exclude checkbox is used to as a ****NOT Operator***. e.g. For a defined Network, checking the box for Exclude allows Nodes to access ALL networks other then this one**)

Important: Permission is applicable only to ARP Enforcement, Port Mirroring enforcement, and in-line enforcement.

Step 1. Create A Custom Network Object

Note: Node Groups may also be used as Network Objects. To enable, go to **Preferences > Beta Features**, then skip to **Step 4** to configure to a permission.

1. Go to **Policy** in top panel
2. Go to **Object > Network** in left Policy panel
3. Click **Tasks > Create**
4. Enter the following:
 - **ID:** Unique-Name (*e.g. Guest Network*)
 - **Group:** Select Group or Groups to apply to this Network Object
 - **Network IP/Netmask, Range, or FQDN + DNS TTL**
5. Click **Create**
6. Click **Apply**

Default Network Objects

- **@LOCAL** - Is an object representing the local network of each intended sensor interface. A local server can be accessed by anyone on the local network but outside access is denied.
- **@MANAGED** - Is combined networks from ALL Network Sensors. If New Network Sensors are added then those networks are automatically added and included into the @MANAGED group.

Example:

Network Sensor	IP Address
Sensor 1	192.168.10.10
Sensor 2	192.168.20.10
Sensor 3	192.168.30.10

A Node connects with IP: 192.168.10.100

If the Node is allowed and the Network object is LOCAL Group: A(192.168.10.100) Perm Destination Network: Local
The node can only connect to the Network range 192.168.10.0/24

The Node is allowed and the Network object is MANAGED Group:A(192.168.10.100) Perm Destination Network:
Manage The node can only connect to the Network ranges in 192.168.10.0/24, 192.168.20.0/24, 192.168.30.0/24

Step 2. Create A Custom Service Object

1. Go to **Policy** in top panel
2. Go to **Object > Service** in left Policy panel
3. Click **Tasks > Create**
4. Enter the following:
 - **ID:** Unique-Name (*e.g. Port 80*)
 - **Group:** Select Group or Groups to apply to this Network Object
 - **Service Port:** Select a Protocol and Operator to choose ports (*e.g. For Port 80: TCP/ = 80, and TCP/ = 8080*)
5. Click **Update**
6. Click **Apply**

Step 3. Create A Custom Time Object

1. Go to **Policy** in top panel
2. Go to **Object > Time** in left Policy panel
3. Click **Tasks > Create**
4. Enter the following:
 - **ID:** Unique-Name (*e.g. Business Hours for Guests*)
 - **Group:** Select Group or Groups to apply to this Network Object
 - **Time:** Specific Date or Range of Days and Hours (*e.g. Time: 0800-1800, Days: Monday-Friday*)
5. Click **Create**
6. Click **Apply**

Step 4. Create A Permission

1. Go to **Policy** in top panel
2. Go to **Object > Permission** in left Policy panel
3. Click **Tasks > Create**
4. Enter the following:
 - **ID:** Unique-Name
 - **Description:** Some description to help understand what the Permission does
 - **Settings:** Select and edit Network, Service, and Time objects.

- **Exclude:** Is used as a NOT Operator
5. Click **Create**
 6. Click **Apply**

Creating and Viewing Enforcement Policy for Nodes

Enforcement Policies work in a similar fashion to sorting in a mail room. All Nodes flow through a Priority List of **Enforcement Policies** to decide how much access they are allowed and which Groups they fit into. *(When creating custom Enforcement Policies, or re-arranging your Enforcement Policy list, two Enforcement Policies are required to stay where they are)*

- **Blocking Exceptions:** A custom Enforcement Policy cannot be placed above the Blocking Exceptions, or the Exceptions will not be properly applied
- **Default Policy:** A custom Enforcement Policy cannot be placed below the Default Policy, as these are the bottom baselines for Enforcement

To Create An Enforcement Policy

1. Go to **Policy** in the top panel
2. Go to **Policy > Enforcement Policy** in the left Policy panel
3. Click **Tasks > Create**
4. **Action** tab click **Next**
5. **General** tab create an **ID** and enter brief **Description** to identify what the Policy does *(Priority stays as default. Status should be Enabled)* Click **Next**
6. **Node Group** tab select the **Node Group** that was created, move to **Selected** section and click **Next**
7. **Permission** tab select **Available Permission** and move to **Selected** and click **Next**
8. **Redirection** tab is optional to set **CWP** and **Switch Block options**. Click **Next**
9. **Agent Action** tab is **optional** to add **Agent Actions**
10. Click **Finish**

Viewing Enforcement Policy Utilization

Widgets displaying enforcement stats can be viewed by clicking **Policy** from the top panel and then selecting **Policy > Enforcement Policy** from the left Policy panel.

The two widgets displayed are:

- **Sensor Operation Mode Status Statistics:** Shows how many Sensors are Up and how many are in Monitoring or Enforcement Sensor Operating Mode
- **Nodes Denied Status:** Shows percentage of nodes denied out of all detected nodes

To See Enforcement Status on Node Management Page

The *Enforcement Status* of a Node can be found by on the **Node Management** page, which can be viewed from the top panel by clicking **Management > Node**

- **Enforcement Policy Column:** Shows which Policies are being enforced on that Node. If a Node has a Policy listed in **Orange**, that means that node is currently **Blocked** because it is not compliant with that Policy.

To Group by Enforcement Policy

Go to the **Status & Filters** window in the bottom left corner of the **Node Management** page. Select from the options under **Enforcement Policy**.

Configuring Agent Action For Enforcement Policy

Enforcement Policy Agent Actions use the installed Agent to do various administrative tasks, allowing you to take various actions on endpoint devices. You can Control Network Interface, Control Power Options, Notify User, or more.

To Configure Agent Action for Enforcement Policy

1. Go to **Policy** in the top panel
2. Go to **Enforcement Policy > Agent Action** in the left Policy panel
3. Click **Tasks > Create**
4. Find **Agent Action** section and configure the following options:
 - **OS Type** (*Windows, Linux, macOS*)
 - **Plugin** (*Windows example*)
 - **Control Network Interface** has various control settings of all Network Interfaces
 - **Control Power Options** allows you to control various Power Options of the Windows machine
 - **Notify User** allows you to notify user and keep them informed of the current Enforcement Policy
 - **Execution Interval**
 - **Language**
 - **OS Edition**
5. Click **Create**
6. Click **Apply** in top right corner

To Apply or Remove an Agent Action from an Enforcement Policy

1. Go to **Policy** in the top panel
2. Go to **Enforcement Policy** in the left Policy panel
3. Find and click name of **desired Enforcement Policy**
4. Find **Agent Action** section and click Assign
5. Click and drag agent actions to or from the **Selected** column, double click them, or highlight them and use the arrow buttons.
6. Click **Add**
7. Click **Update**
8. Click **Apply** in top right corner

Delete Agent Action

1. Go to **Policy > Enforcement Policy > Agent Action**
2. Find and click **Checkbox** of **desired Agent Action** to delete
3. Click **Tasks > Delete**
4. Click **Apply** in top right corner

11.1.4 Troubleshooting

- *Genian ZTNA log collection method*
- *Genian ZTNA diagnosis Method*
- *Running Genian Agent is not Detected in WebUI*
- *Agent is Installed but not Running*
- *A problem in which the node is assigned the wrong policy due to platform false positives*
- *Compliant Node is Blocked*

11.2 Policy Enforcement Methods

You need a way to control devices that violate network policies defined by your organization. Genian ZTNA provides multiple layers of enforcement methods from Layer 2 network control to agent-based. Depending on your network environment or security requirements, you can leverage the following options:

11.2.1 ARP Enforcement

Controlling network access according to the status of devices in the internal network has always been a challenge. Setting ACLs on routers to control access between internal networks can provide only a simple access control.

ACLs can be difficult to enforce in a DHCP environment where devices move frequently or devices that use IP change frequently. Moreover, access control between multiple devices connected to the same sub-net is the most challenging task and there are not many solutions.

A possible choice is to apply the Port based Access Control function using 802.1x to the switch port to which the device is connected. However, 802.1x can be expensive, requiring large network configuration changes, such as replacing unsupported devices and converting to a single vendor for networking equipment.

In addition, because all network devices do not support 802.1x, manual configuration is frequently required for each switch port. In an enormous enterprise network, setting an exception list for 802.1x for each switch port is complicated and time consuming.

Another option is to use network access control with ARP Enforcement. ARP Enforcement uses the characteristics of the ARP protocol to perform access control. The device conducting the enforcement impersonates other network endpoints in order to intercept traffic.

Genian ZTNA performs ARP Enforcement using the following procedure.

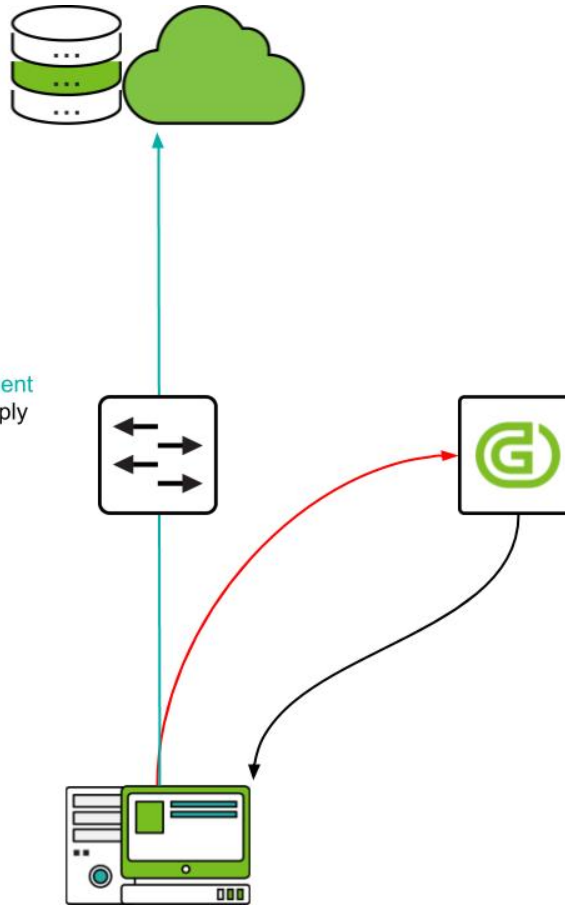
- The device to be blocked generates an ARP request.
- The network sensor responds to the request with its own MAC.
- The device to be blocked transmits the packet to the network sensor.
- The network sensor drops according to the access control policy or delivers it to the actual destination.

If the target device attempts to bypass this enforcement by setting static ARP, a bidirectional enforcement function is provided to control the reply packet generated from the communication target such as gateway, and static ARP setting can be blocked through Agent.

Genian ZTNA has a built-in RADIUS server for 802.1x and ARP Enforcement via network sensor, so users can select the option best for their network environment.

ARP Enforcement

1. Normal traffic flow prior to Enforcement
2. Genian NAC sends unicast ARP Reply packet to non-compliant node
3. Non-compliant node is quarantined



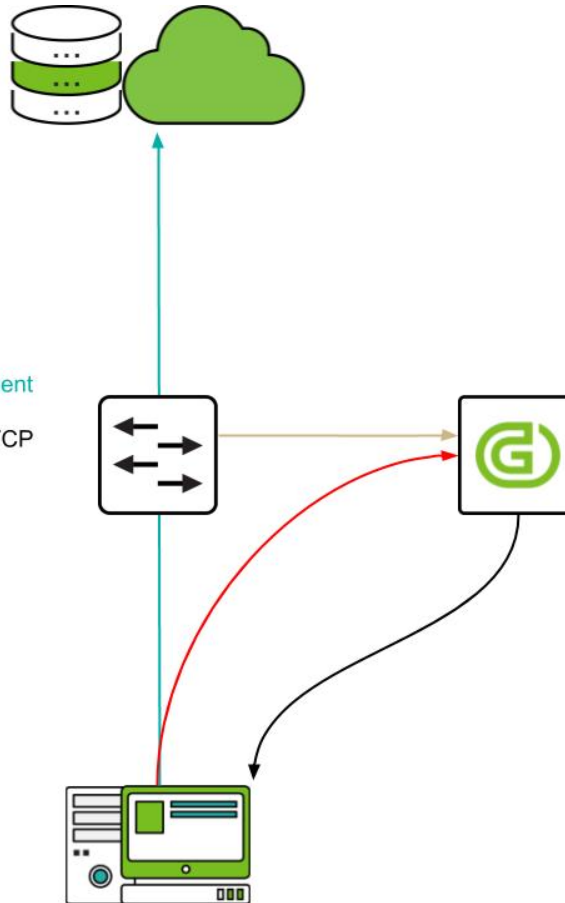
11.2.2 Port Mirroring (SPAN)

Genian ZTNA uses Port Mirroring (SPAN in Cisco) as a way to provide access control with minimal network configuration changes. It monitors newly connected sessions through Mirroring port and blocks connection by transmitting TCP RST or ICMP Destination Unreachable packet.

To do this, you need to transfer the traffic to Genian ZTNA using a Port Mirroring supported switch or a Network TAP device.

SPAN/Mirror Enforcement

1. Normal traffic flow prior to Enforcement
2. Mirror/SPAN port to Genian NAC
3. Genian NAC uses TCP Reset and TCP Intercept on non-compliant node
4. Non-compliant node is quarantined



Genian ZTNA offers two types of port mirroring modes.

Global Mirror Sensor

The Global Mirror Sensor can perform information collection and access control. In general, it is located in the boundary network connected to the Internet, and access control is performed while monitoring all the internal traffic.

In this setup, it is recommended to use a separate network sensor with high performance hardware because it controls all nodes while monitoring all traffic generated in the network.

Local Mirror Sensor

Unlike the Global mirror, the local mirror sensor can only control packets passing through a specific network segment at that location. To solve this problem, it is possible to add a mirroring port to the network sensor installed in each end network. This makes it possible to control connections occurring within the local network.

Since the local mirror sensor is only monitoring and controlling one network segment, it can be operated in the hardware of relatively low specification as compared with the global mirror sensor.

11.2.3 802.1x (RADIUS)

802.1x port based access control is the most ideal access control method that can be applied in enterprise wireless LAN environment. User-based authentication allows only authorized users to access the network. Also, depending on the compliance status of the device, it is possible to connect to a specific VLAN or forcibly release a connected connection.

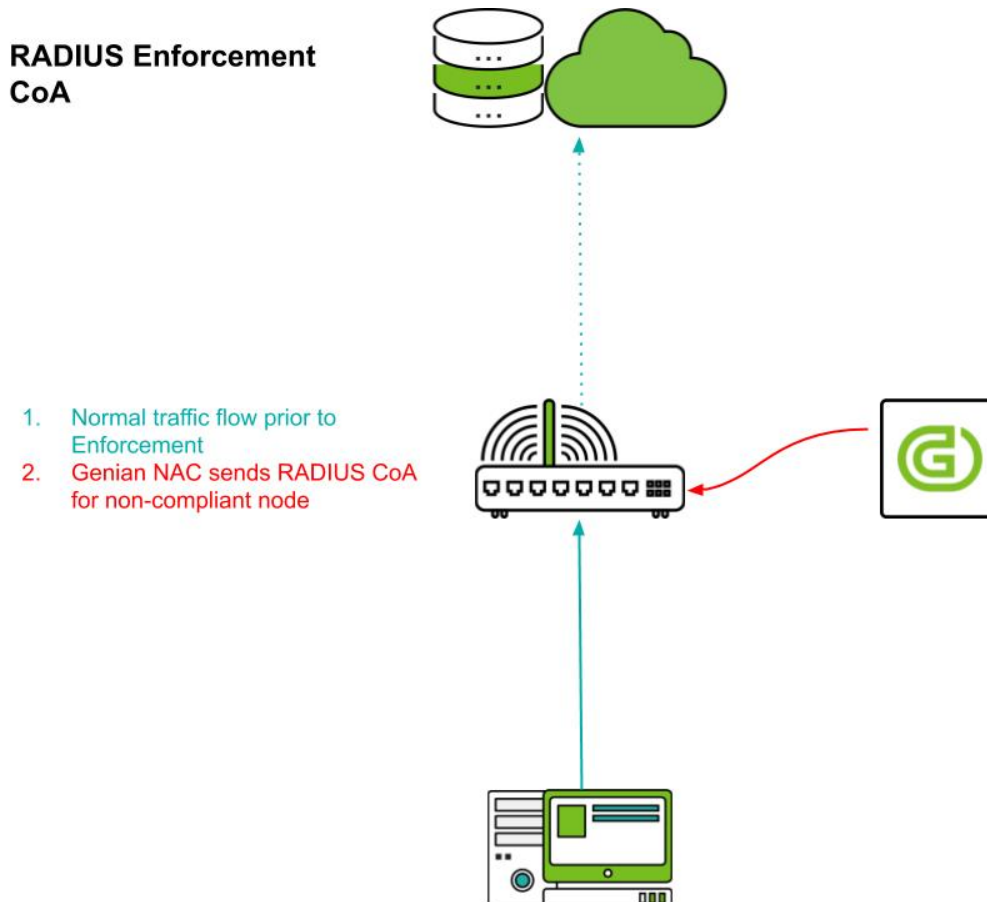
This requires a user device that supports 802.1x, a network access device such as an 802.1x-capable access point or switch, and a RADIUS server. Genian ZTNA provides a built-in RADIUS server and provides the following access control functions.

User Authentication

802.1x allows access to the network through user-based authentication instead of a weak authentication method such as a shared secret. For more information about User Authentication, see [Configuring RADIUS Enforcement](#)

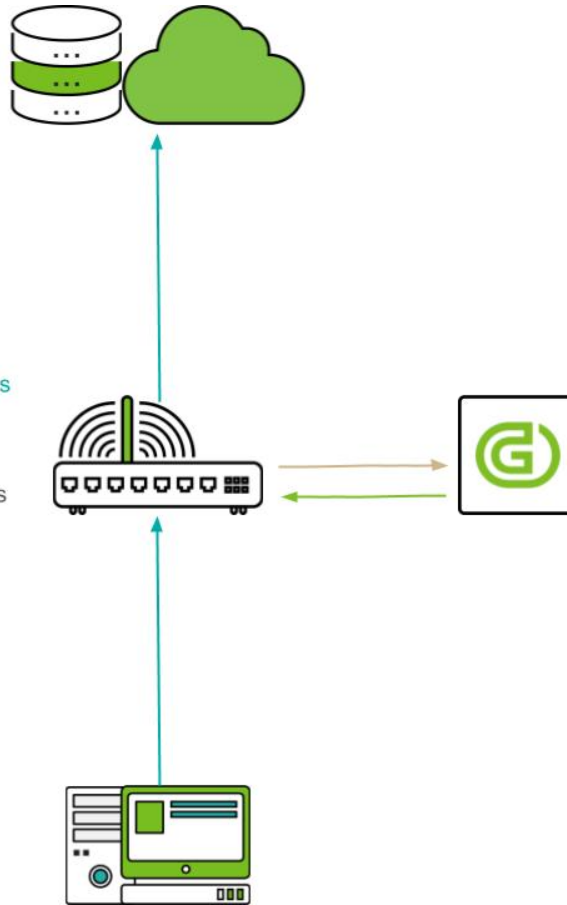
VLAN Assignment & Reassignment

Devices can be assigned to a VLAN upon connection based on Radius attributes (Standard or Vendor-specific.) If network access needs to be restricted due to device state changes, the device can be terminated using a RADIUS CoA (Change of Authorization). The disconnected device will try a new connection and connect to the isolated VLAN at this time to securely isolate the device from the network. To do this, the access point or switch must support the *RFC 5176 - Dynamic Authorization Extensions to RADIUS* standard.



RADIUS Enforcement VLAN Assignment

1. Node connects to wired or wireless 802.1X / WPA2E network
2. Authentication Request is sent to Genian Radius Server
3. Authentication and Authorization is performed
4. Genian NAC Radius returns appropriate VLAN



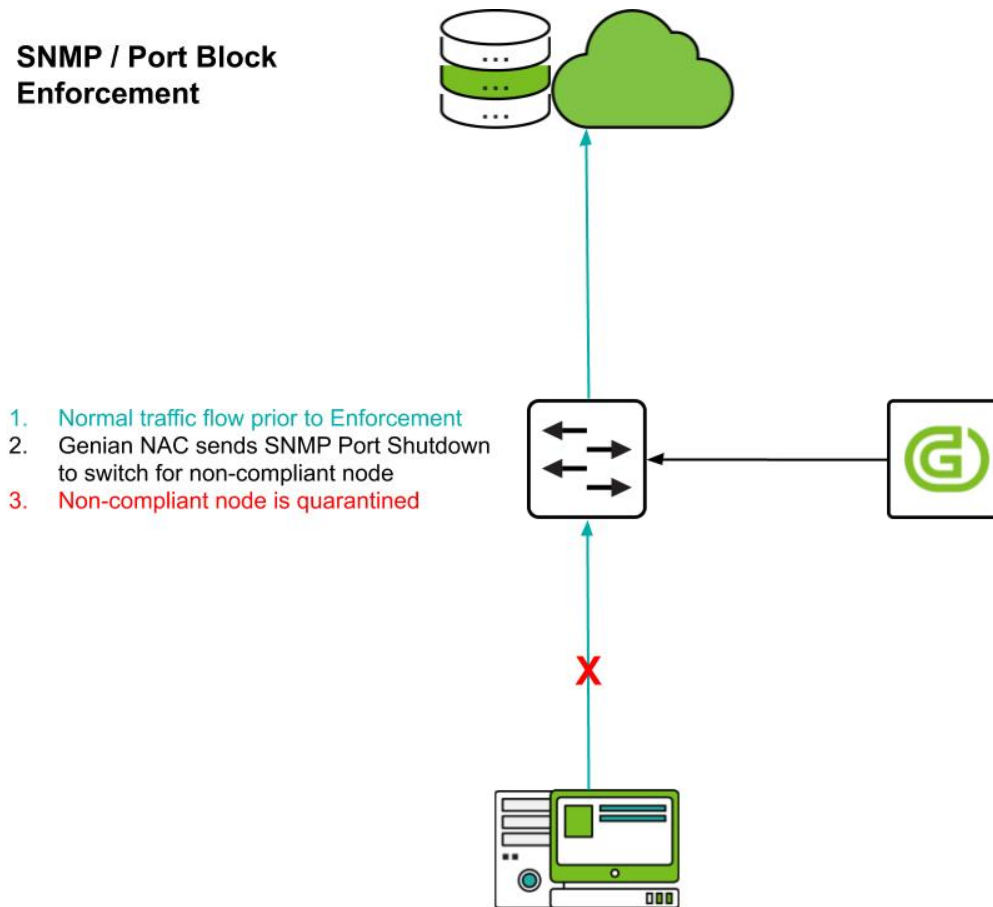
11.2.4 DHCP

Genian ZTNA can allocate or not allocate IP according to IP / MAC policy through built-in DHCP server. This prevents unauthorized devices from accessing the network or assigns a fixed IP address to devices with a specific MAC address.

11.2.5 Switch Port Block

If you use a switch that supports SNMP, Genian ZTNA will collect SNMP and switch and port information connected to each node. This information can be used to shut down the switch port according to the security policy of the device. Switch port block is done via SNMP Write. The switch MUST provide a writable *SNMP MIB-2 ifAdminStatus* property.

SNMP / Port Block Enforcement



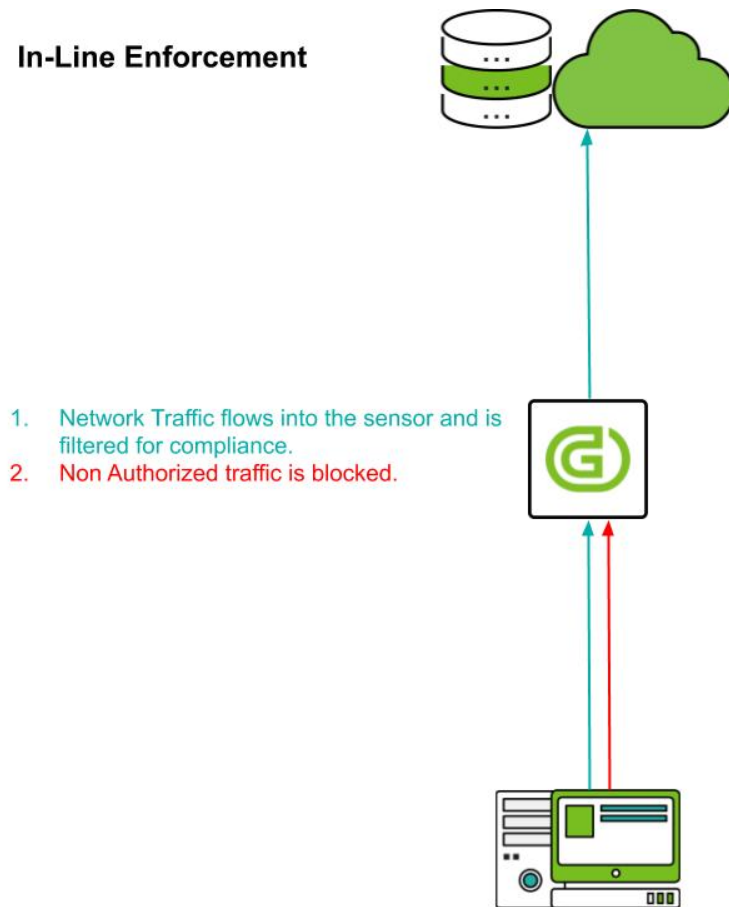
11.2.6 Inline packet filtering

To apply the access control policy determined by the enforcement policy, you can use a dual-homed packet filtering device between the two networks. This works the same way as a firewall. Two network interfaces operate as gateways in each network, and in the process of forwarding packets, it checks the policy and drops unauthorized packets.

Unlike the out-of-band method such as ARP or Port Mirroring method, it provides higher security because it checks the security policy against all packets passing through and transfers only allowed packets. However, this inline device is subject to security policy checks on every packet it passes through, which can cause packet transmission delays. In addition, access control policies can not be applied to packets that do not pass through this inline device. Therefore, you need to be careful about where you will install it before deployment.

For inline packet filtering, network sensor software must be installed on hardware that has two or more network interfaces. When the sensor operation mode is set to 'inline' through the setting, the security policy is applied to the received packet and then forwarded to another interface in the system according to the routing table.

In-Line Enforcement

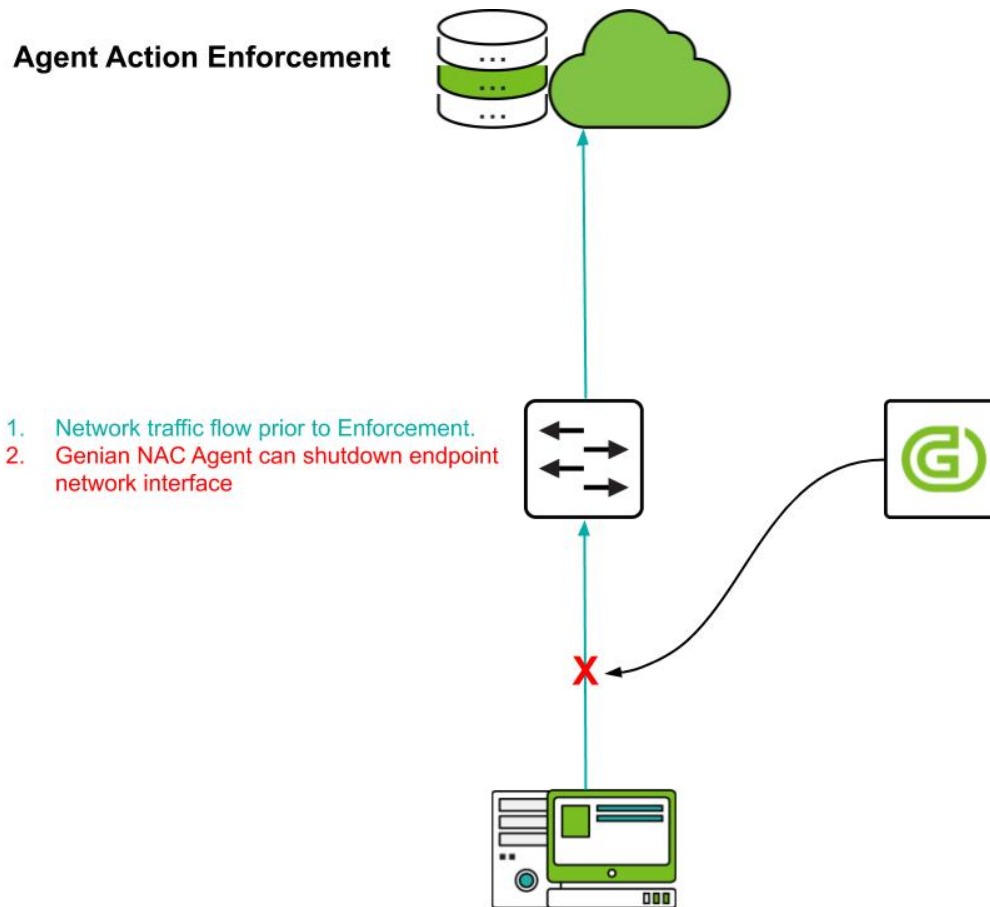


11.2.7 Agent Action

Depending the node policy, and enforcement policy, applied, the following agent actions can be used to control an endpoint:

- *Control Windows Firewall*
- *Controlling Network Interface*
- *Controlling WLAN*
- *Shut Down System*
- *Notify User*

Note: If you use wired/wireless network interface control to control your device, you might not be able to communicate with the policy server and receive a new policy assignment.



11.3 Configuring ARP Enforcement

Network Sensor by default is configured to passively collect information and forward it to the Policy Server. This information assists in identifying the endpoints information, allowing you to build groups and policies. Network Sensor Operating Mode needs to be changed from Monitoring to Enforcement which allows the Policy Server to enforce policies and control endpoints access onto the network using ARP Enforcement.

For more information. See *Policy Enforcement Methods*

Note: ARP Enforcement may trigger security alerts from IDS or EDR products, see: *ARP Enforcement does not block network access*

11.3.1 Enabling ARP Enforcement

You can enforce policies by activating the **Network Sensor**. The Network Sensor has two types of **Sensor Operating Modes**. By default, the **Network Sensor** is set to **Monitoring** mode.

To activate the Network Sensor enforcement:

1. Go to **System** in the top panel
2. Select the desired sensor's **IP Address** for activating enforcement
3. Click the **Sensor** tab
4. Click the **Interface** of the sensor you wish to activate.
5. For **Sensor Mode**, select **Host**
6. For **Sensor Operating Mode**, change to **Enforcement**
7. Configure optional **Enforcement Exceptions** Unmanaged IP ranges.
8. Configure **Managed IP Control Range**
9. Click **Update**

11.4 Configuring Mirror Mode

Mirror Mode monitors newly connected sessions through Mirroring port and blocks connection by transmitting TCP RST or ICMP Destination Unreachable packet.

Mirror mode requires at least two NICs. One NIC assigns an IP to manage the sensor and the other as an unnumbered NIC for Packet Monitoring.

For more information. See *Policy Enforcement Methods*

11.4.1 Global Mirror

The Global Mirror sensor monitors all Nodes.

1. Go to **System** in the top panel
2. Go to **System > Sensors** in the left System Management panel
3. Select the desired sensor's **IP Address** for Mirror
4. Click **Sensor** tab
5. Click the interface desired to use in mirror mode. **eth1** *There is no IP assigned to this interface*
6. Select **Mirror** in **Sensor Mode**
7. Select **Global** in **Mirror Operating Scope**
8. For **Sensor Operating Mode**, change to **Enforcement**
9. Click **Update**

Note: If you use Global Mirror only, the agent must be installed on the endpoint because it is not registered as a node.

11.4.2 Local Mirror

You can use it with **Host** mode sensor to gather more information. Available in the same equipment as **Host** mode sensor.

1. Go to **System** in the top panel
2. Go to **System > Sensors** in the left System Management panel
3. Select the desired sensor's **IP Address** for Mirror
4. Click **Sensor** tab
5. Click the interface desired to use in mirror mode. **eth1** *There is no IP assigned to this interface*
6. Select **Mirror** in **Sensor Mode**
7. Select **Local** in **Mirror Operating Scope**
8. For **Sensor Operating Mode**, change to **Enforcement**
9. Click **Update**

Note: Local Mirror can additionally use Traffic Monitoring.

1. Find **Traffic Monitoring** section
2. **Collection Interval** 0 is disable, minimum 10 **seconds**, maximum 1 **day**
3. **Time for Average** minimum 10 **seconds**, maximum 1 **day**, Initial value is 5 **minutes**
4. **Minimum Update Value** KB/s unit, the minimum value to update the traffic information, Initial value is 30 KB/s
5. **Update Fluctuation** % unit, the minimum fluctuation percentage rate, Initial value is 30 %
6. **Destination based Status Collection** Select **On** or **Off**, collect the traffic information based on the destination

11.5 Configuring RADIUS Enforcement

Genian ZTNA includes a built in RADIUS server for use with wireless and wired 802.1x authentication (credential or client certificate), or MAC/MAB Authentication (based on MAC Address only).

In order for the Genian ZTNA RADIUS server to accept authentication requests from RADIUS clients/authenticators (switches, controllers, access points, etc), they must first be added as a known RADIUS client. See the instructions below to add RADIUS clients to the RADIUS server.

The RADIUS server can also register devices into the policy server database. IP addresses and other information can be collected through RADIUS accounting.

11.5.1 Enable Built-In RADIUS Server

1. Go to **Preferences** in the top panel.
2. Go to **Service > RADIUS Server** in the left panel.

Under **RADIUS Secret**

1. For **Shared Secret Key**, enter the shared secret key for RADIUS the client/authenticator. This must match what is configured on the switch, controller or access point.

2. For **RADIUS Client IP**, enter the IP address or addresses. Each entry must be on a separate line. Individual IPs and CIDR notation for subnets are supported.

Under **Authentication Server**

1. For **Generating Accounting**, select **On** to allow for node information collection, if the RADIUS Clients do not support accounting.

For information on RADIUS Accounting from External RADIUS Servers, see: *Single Sign-On*

11.5.2 802.1X Authentication

802.1X is an IEEE Standard for port-based Network Access Control (PNAC). It is part of the IEEE 802.1 group of networking protocols. It provides an authentication mechanism to devices wishing to attach to a LAN or WLAN.

802.1X authentication involves three parties: a supplicant, an authenticator, and an authentication server.

The supplicant is a client device (such as a laptop) that wishes to attach to the LAN/WLAN. The term 'supplicant' is also used interchangeably to refer to the software running on the client that provides credentials to the authenticator.

The authenticator is a network device, such as an Ethernet switch, wireless controller or wireless access point. The authenticator acts like a security guard to a protected network. The supplicant is not allowed access through the authenticator to the protected side of the network until the supplicant's identity has been validated and authorized.

With 802.1X port-based authentication, the supplicant provides credentials, such as username/password or digital certificate, to the authenticator, and the authenticator forwards the credentials to the authentication server for verification. If the authentication server determines the credentials are valid, the supplicant (client device) is allowed to access resources located on the protected side of the network.

Configuring 802.1x

EAP Settings

Different configurations are required based upon which database user credentials are being checked against.

Active Directory or Genians Local Directory (Internal Database)

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left panel
3. Under **Authentication Server**
4. Under **EAP Authentication > Default EAP-PEAP**, Select **MSCHAPv2**
5. Click **Update**

Note: If EAP is disabled, NTLM Auth PAP will be used by default.

LDAP (or other legacy directory)

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left panel
3. Under **Authentication Server**
4. Under **EAP Authentication > Default EAP-PEAP**, Select **EAP-GTC**
5. Click **Update**

Note: The above LDAP authentication configuration requires the Genian ZTNA agent on the endpoint as native support for GTC is typically not available in supplicants by default.

EAP-TLS

When you use EAP with a strong EAP type, such as TLS with smart cards or TLS with certificates, both the client and the server use certificates to verify their identities to each other.

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left panel
3. Under **Authentication Server**
4. Under **EAP Authentication > EAP-TLS**, Select **On**
 1. Click **Upload** button to the right of the **CA Certificate** to upload the certificate of the CA.
 2. Click **+** button on CA certificate window, Select the certification file of the CA.
 3. **CACert Information** allows you to check the information of the saved CACert.
5. Click **CreateServerCertificate** button to the right of the **Server Certificate**
 1. Input the **Common Name** like `nac.genians.com`, The fully qualified domain name (FQDN) of your server or IP of the server. This must match exactly what you type in your web browser or you will receive a name mismatch error.
 2. Input the country code as **Country** like `US`, The two-letter ISO code for the country
 3. Input the name of organization as **Organization** like `Genians Inc.`
 4. Input the Email as **Email** like `admin@genians.com`, An email address used to contact your organization.
 5. Click **Generate CSR**
 6. Copy All text in the box to the right of the **Certificate Signing Request**
 7. Send a request to the CA server, issue a server certificate, open a BASE64 encoded file, and copy and paste the text in the box to the right of the **Certificate**
 8. Click **Register**
 9. **ServerCert Information** allows you to check the information of the saved ServerCert.
6. Input Certificate Revocation List point as **CRL distribution point**, If you do not verify the CRL, you do not need to enter it.
7. Input Online Certificate Status Protocol Responder URL as **OCSP Responder URL**, If you do not use OCSP, you do not need to enter it.

8. Click **Update**

Note: To use EAP-TLS, the user must also obtain a certificate from the same CA server or trusted CA server that issued the certificate to the server.

Attention: Issuance, revocation and management of server certificates and user certificates are managed through an external CA server.

Cisco Switch RADIUS Configuration Settings

1. Switch AAA and 802.1X Settings

Configure global AAA RADIUS and 802.1X settings, define RADIUS server and enable RADIUS Change of Authorization (CoA).

```
aaa new-model
aaa authentication dot1x default group radius
aaa authorization network default group radius
aaa accounting dot1x default start-stop group radius
aaa session-id common
aaa accounting update newinfo periodic 10

radius server {radius server name}
  address ipv4 {radius server ip} auth-port 1812 acct-port 1813
  key {radius secret key}

radius-server vsa send authentication
ip radius source-interface X (Layer 3 management interface)

aaa server radius dynamic-author
client

server-key {radius secret key}

port 3799
auth-type any

dot1x system-auth-control
ip device tracking
```

2. Interface 802.1X Settings

Configure 802.1X and mab on the interface along with associated timers and authentication modes.

```
dot1x port-control auto
authentication port-control auto
mab
dot1x pae authenticator
dot1x timeout quiet-period 10
dot1x max-reauth-req 1
dot1x radius-attributes vlan static
dot1x host-mode multi-auth
```

Note: Two port-control commands are provided since various Cisco IOS versions use different commands. Choose the appropriate command for your version.

Note: "mab" is configured to allow devices that do not support a supplicant to authenticate via MAC Authentication.

Note: Refer to Cisco documentation for more information on timers and authentication modes.

11.5.3 MAC Authentication Bypass (MAB)

Not all devices support 802.1X authentication. Examples include network printers, Ethernet-based electronics like environmental sensors, cameras, and wireless phones. For those devices to be used in a protected network environment, alternative mechanisms must be provided to authenticate them.

For wired networks, when Mac Authentication/ MAB is configured on a port, the port will first try to check if the connected device is configured for 802.1X (has an active supplicant), and if no response is received from the connected device, it will try to authenticate with the RADIUS server using the connected device's MAC address as the username and password. You may also configure switch ports to only perform MAC authentication (speeding up the process) or in many cases, the option to change the authentication order is also available (MAC authentication first followed by 802.1X authentication). This will vary by switch vendor.

For wireless networks, the authentication method is typically set on a per SSID basis and is either 802.1X/WPA2E or MAC authentication but not both.

Configuring MAC Authentication (MAB)

Genian ZTNA can select the MAC address to be allowed on the network through a specified Node Group. If the MAC address that is requested to be authenticated exists in the Node Group, the authentication is allowed; otherwise, the authentication is denied.

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left panel
3. Under **Authentication Server**
4. For **MAC Authentication**, select **On** for enable MAC Authentication bypass (MAB)
5. For **Node Group**, select Node Group for allow MAC authentication
6. Click **Update**

No endpoint supplicant configuration is required for MAC Authentication (MAB).

11.5.4 Authorization

AAA refers to Authentication, Authorization and Accounting. Once an endpoint device successfully authenticates to a network, authorization is optional.

Authorization is a method to authorize the device a specific level of access (such as a VLAN or ACL) or apply other attributes to the device that control certain aspects of connectivity (such as QoS attributes).

The Genian ZTNA RADIUS Server supports authorization in the form of initial VLAN assignment. Additional access controls are available with Genian ZTNA outside of the RADIUS server as well (ACLs via ARP Enforcement, etc).

Configuring Authorization

Authorization can be completed at the time of initial authentication based on AD/LDAP group membership or RADIUS attributes included in the authentication request. Authorization can also be facilitated by RADIUS CoA after authentication has been completed based on other criteria such as node group, noncompliance with a policy, change in status, etc.

Configure Initial Authorization

Genian ZTNA provides the ability to specify an attribute for a device when it connects to the network. This can be used for assigning a VLAN, ACL or other attribute based on an attribute of the node authenticating, such as User-Name. Additionally this feature can be used to selectively deny authentication requests.

1. Go to **Policy** in the top panel.
2. Go to **Policy > RADIUS Policy** in the left panel.
3. Click **Tasks > Create**
4. For **General**, input **Name**, **Priority**, and activation **Status**.
5. For **Conditions**, select **Attribute**.
6. Select **Operator** and **Value**.
7. Click **Add** button.
8. For **Policy**, choose to **ACCEPT** or **REJECT** Authentication Requests that match the attribute conditions.
 - If **ACCEPT**, Select **Additional Attributes** to apply to the Node / User.
9. Click **Add** button.
10. Click **Create** button.

Note: You can use RADIUS attributes such as *User-Name*, *Calling-Station-Id*, *Called-Station-Id*, *Framed-IP-Address*, *NAS-IP-Address*, *NAS-Port*, *Service-Type*, *Filter-Id*, *Login-IP-Host*, *Class*, *Vendor-Specific*, *NAS-Port-Type*, *Connect-Info*, *NAS-Port-ID*, *Aruba-User-Role*, *Aruba-Essid-Name*

Attention: RADIUS client devices must support the [RFC2868](#) IEEE 802.1X standard for client authentication.

Enable CoA (Change of Authorization)

If a device changes status after being authenticated to the network, such as violating a configured policy, the network access for the device can be restricted or denied using various RADIUS attributes. This is provided through a standard called CoA (Change of Authorization, RFC 5176 - Dynamic Authorization Extensions to RADIUS standard).

The CoA will disconnect the device from the network at which point the device will attempt to reconnect. The RADIUS server will then return the desired attribute.

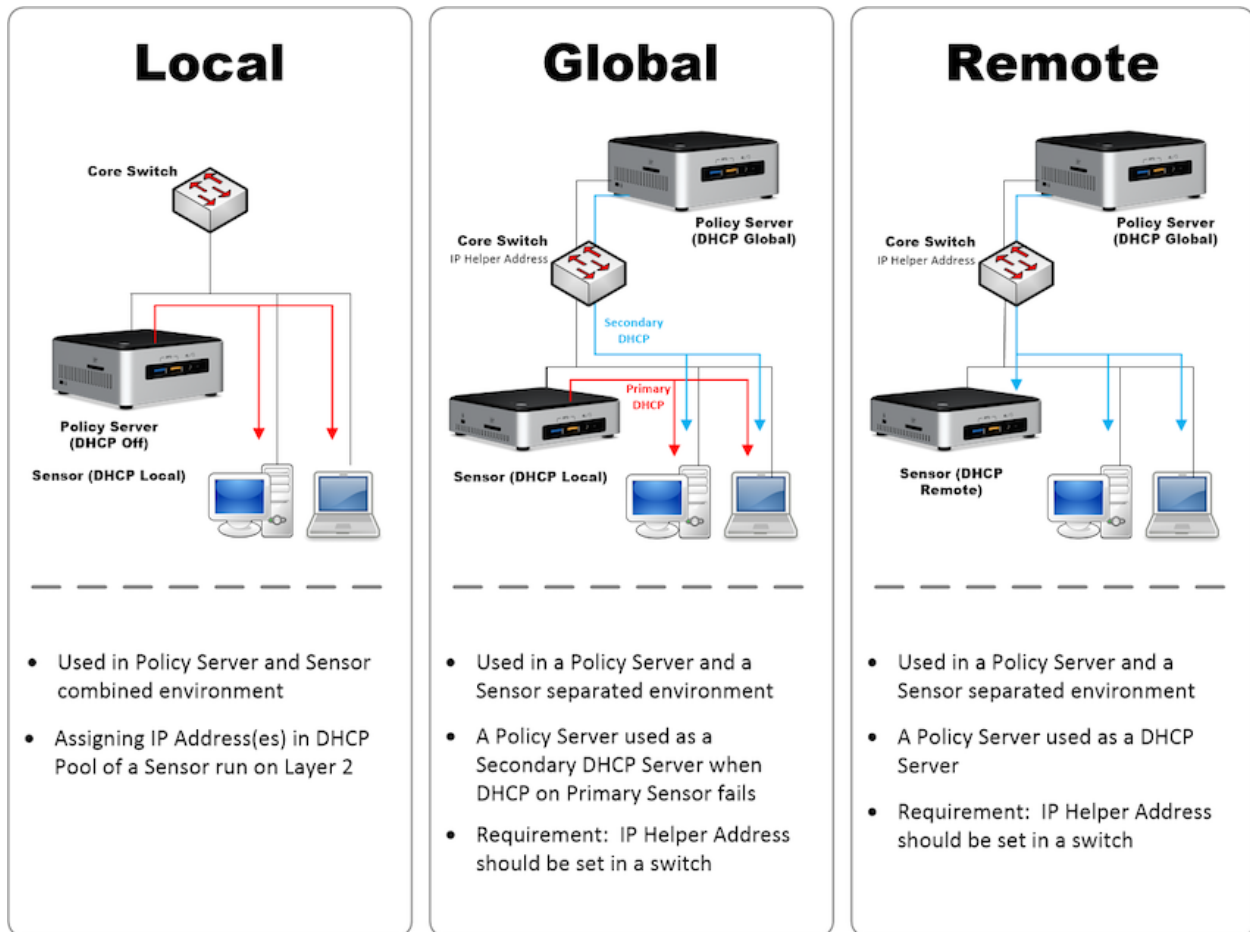
1. Go to **Policy** in the top panel.
2. Go to **Policy > Enforcement Policy** in the left panel.
3. Click name of enforcement policy to disconnect connection.
4. Under **Enforcement Options > RADIUS Control**.
5. For **RADIUS CoA**, select **On**.
6. For **CoA Commands**, select **Terminate Session** for a standard attribute or select another Vendor Specific Attribute (VSA).
7. For **Vendor-Specific-Attribute**, Enter the VSA value (for example, `Nas-filter-Rule = 'permit in tcp from any to any 23'`).
8. Click **Update** button.
9. Click **Apply** in the right top.

11.6 Configuring DHCP Server

The Dynamic Host Configuration Protocol (DHCP) is a standardized network protocol used on IP networks. The DHCP is controlled by the Policy Server/Sensor that dynamically distributes network configuration parameters, such as IP addresses. You will be able to configure and manage the Built-In DHCP Options and configure Policy Server/Sensor to utilize the three DHCP Services. (Local, Remote, and Local & Remote)

If you need to make custom configuration changes to a Network Sensor that is already in operation then you would use the **System > Sensor > Sensor Settings** option.

Depending on your requirements you have three options for DHCP. (**Local, Remote, and Local & Remote**)



11.6.1 Configuring DHCP Services

- *Configuring DHCP Server*

11.6.2 Assign fixed IPs to devices

Genian ZTNA supports fixed DHCP IP allocation to analyze many environments to support situations in which some devices in the DHCP environment need to have static IP allocation.

1. Go to **Management** in the top panel
2. Check the left side check box of the terminal to assign a static IP.
3. Click Select **Task** > IP/MAC Policie > Enable Conflict/Change Prevention
 - When you set conflict protection and change prevention, the IP is assigned only to the setup device.

11.6.3 Managing DHCP Leases

It is a function to inquire and delete the DHCP IP assigned to the device by the DHCP server. This feature is only available through the CLI(Command Line Interface).

Show DHCP Lease status

```
genian# show dhcp lease all
```

IP Address	MAC	Expire	Interface
172.29.30.152	00:24:21:3D:65:C4	2018-08-06 20:10:13	eth0
172.29.30.154	00:90:FB:26:7D:24	2018-08-06 19:10:24	eth0
172.29.30.155	AC:3C:0B:3C:01:70	2018-08-06 20:10:21	eth0

Clear DHCP Lease status

```
geinian# clear dhcp lease ip 172.29.30.152
genian# show dhcp lease all
```

IP Address	MAC	Expire	Interface
172.29.30.154	00:90:FB:26:7D:24	2018-08-06 19:10:24	eth0
172.29.30.155	AC:3C:0B:3C:01:70	2018-08-06 20:10:21	eth0

11.7 Configuring Switch Port Control

Configuring Switch Port Control by Enforcement Policies or manual action starts with the configuration of SNMP, which will provide the information and access necessary for port blocking. For basic switch setup, see: [Browsing Switches](#).

11.7.1 Enable Switch Port Control on Enforcement Policy

The target of the switch port control is determined by the Enforcement Policy. If you want to control switch ports for specific nodes, you need to create an enforcement policy that targets those nodes and then configure the switch port blocking setting.

1. Click **Policy** in the top panel
2. Go to **Policy > Enforcement Policy** in the left panel
3. Click desired **ID** for enabling switch port blocking

Under **Enforcement Options > Switchport Control**

1. For **Control Port with SNMP**, select **None**, **Shutdown**, or **VLAN**
2. For **SNMP Write Community**, enter default write community string, or an SNMPv3 user and password(s). If this setting is empty, will use switch's own setting.
3. Configure Specific options:
 - For **Port Shutdown**: configure the following:
 - Description**: enter text for appending to SwitchPorts existing description.
 - MAC Threshold for Disabling**: if a SwitchPort has more than this number of MACs associated, it will not be blocked.
 - Description for Exception**: If a SwitchPort Description partially matches a term entered here, it will not be shut down.

- For **Port VLAN**: Enter the **VLAN ID** to be assigned.
4. For **MAC Threshold for Disabling**, if a switch port has more than this number of MACs, it will not be blocked.
 5. For **Description**, enter text for appending to the switch port's existing description.
 6. Click **Update**

11.7.2 Switch Port Manual Control

You can manually control **Switch Ports** in the web UI under **Management > Switch**.

1. Go to **Management > Switch** in the top panel
2. Click on **Port** in the main **Switch Ports** window
3. Configure one or more of the following:
 - **Admin Down**: Check or uncheck the box to change the port link status.
 - **VLAN ID**: Enter a VLAN ID for the port.
4. Click **Send SNMP Command**

11.8 Configuring Wireless Access Control

Genian ZTNA has features aimed at addressing the most common concerns relating to wireless network administration.

11.8.1 Detecting Rogue Access Points

Rogue access points within your networks can be easily identified and blocked. Any devices and users associated with use of the rogue access point can also be identified.

11.8.2 Unauthorized Network Connections

The wireless sensor is capable of detecting when devices connect to an SSID that does not belong to your organization. This makes it easy to block devices that may have been compromised and easily identify users who are breaking device usage policies.

A node's connected SSID can be seen in the Node Management window, the WLAN Management window or in the Logs section.

Both **Rogue Access Points** and **Unauthorized Connections** can be identified in the following locations:

- *Browse/Search/Filter Nodes*
- *Monitoring Wireless LAN*
- *Managing Logs and Events*

11.8.3 SSID Whitelisting

Using information collected about SSIDs in your area, you can create an SSID whitelist. Through use of the endpoint agent (Windows), connections to any SSID not on the white list can be disabled.

See:

- *Controlling WLAN*

11.8.4 Wlan Client Provisioning

By configuring the connection settings for your preferred wireless networks on the Policy Server, the correct network configuration can be automatically distributed to end user devices through use of the endpoint agent (Windows).

See:

- *Configuring Wireless Connection Manager*

11.9 Configuring ZTNA Gateway Options

Note: This section assumes you have already installed a ZTNA Gateway. For ZTNA Gateway installation instructions refer to the link below.

See *Installing ZTNA Gateway*

11.9.1 Enable ZTNA Client Option

See *Enable ZTNA Client in Cloud Site*

ZTNA Client Split Tunneling Option

The network address entered into the Access Network text box (ex 192.168.100.0/24) will be routed through the ZTNA Gateway while all other traffic will be routed out the local default gateway.

Default setting: If nothing is entered, then all traffic (0.0.0.0/0) will be routed through the ZTNA Gateway.

ZTNA Client Isolation Option

When enabled, connected ZTNA clients with different IP addresses or different usernames will not be able to communicate. ZTNA clients with different IP addresses but the same username will be able to communicate.

Default setting: Off. All ZTNA connected clients can communicate with each other.

11.9.2 Enable ZTNA Netflow Agent Option

See *Network Traffic*

11.9.3 Enable Cloud Collector Option

Ensure steps 10 and 11 in the link below have been completed for the appropriate Hub site.

See *Create Cloud site*

11.9.4 Enable Multi-Factor (MFA, 2FA, 2-step) Authentication for ZTNA Connection Manager

To enable MFA for clients connecting through the ZTNA Gateway, refer to the link below.

See *Enabling Multi-Factor Authentication for ZTNA Connection Manager (MFA, 2FA, 2-Step)*

11.10 Integrating External Systems

Note: This feature requires Enterprise Edition

Genan ZTNA can integrate with a variety of security vendors to establish security intelligence.

11.10.1 Integrating Palo Alto Networks Firewall

This guide provides an overview of integration with Palo Alto firewall. It includes the following information:

- *1. About This Guide*
- *2. Deployment of Genian ZTNA using PAN Firewall*
- *3. Configuring PAN Firewall for integration via XML API*
- *4. Configuring PAN Firewall for Integration via SYSLOG*

1. About this Guide

This guide describes how Genian ZTNA engineers and enterprise operators can send information of user authentication to PAN firewall.

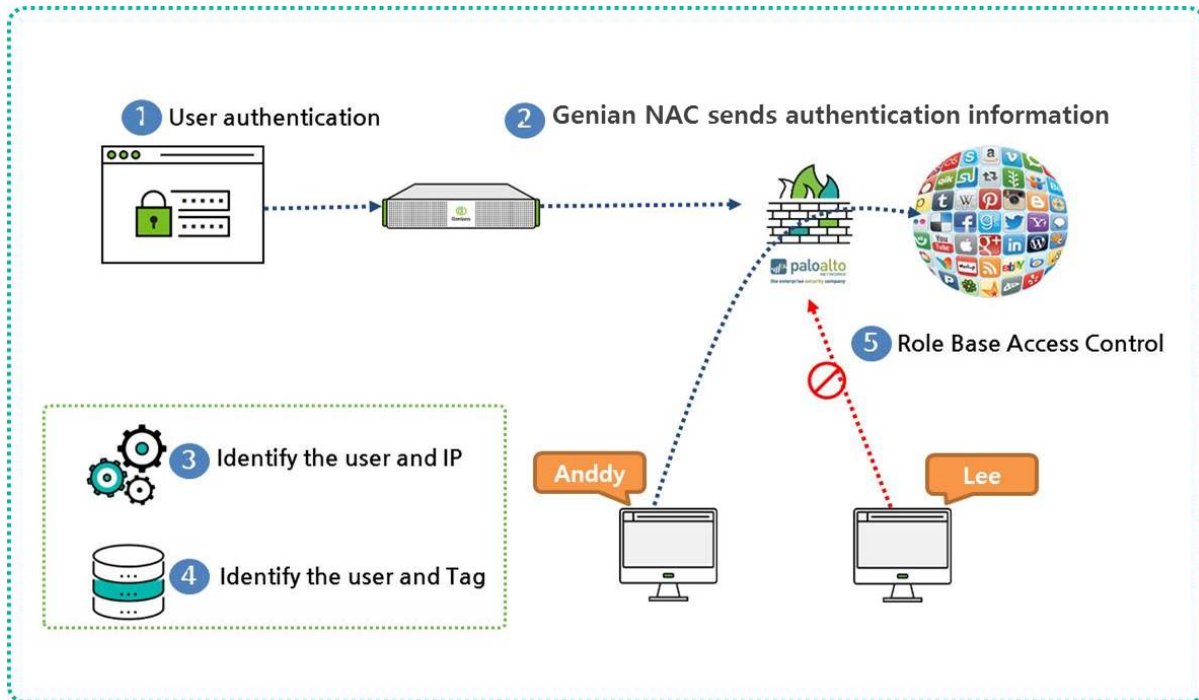
PAN Firewall generally requires that when a user changes a department or location, the IP information changes and the assigned permissions are modified accordingly. IP-based firewall policies do not know who is using an IP, but they can work with Genian ZTNA to get user information about an IP.

Based on this information, even if the user's department or location is moved and the IP information is changed, the user will be able to apply the authority assigned to each user without modifying the rule in the firewall. This efficiently improves administrator's internal infrastructure operation and security.

For more info about PAN firewalls , see <https://docs.paloaltonetworks.com/pan-os>

2. Deployment of Genian ZTNA using PAN Firewall

Genian ZTNA provides the integration of authentication. The PAN firewall refers to the IP and user authentication information provided by Genian ZTNA, and performs USER-ID mapping to enable access control by user role in the PAN Firewall.

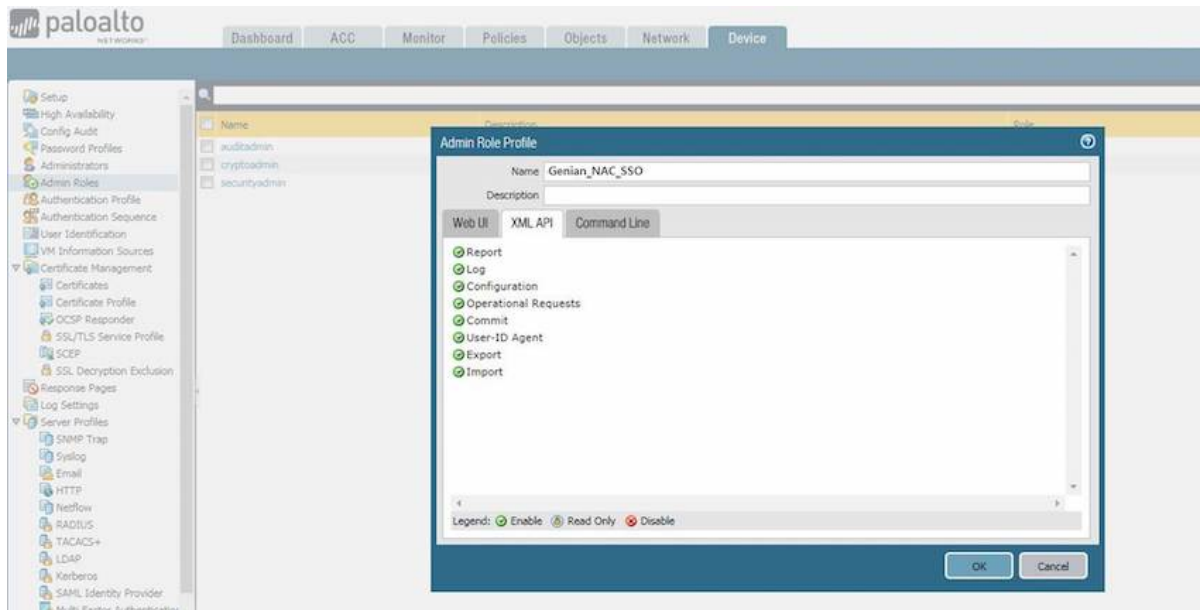


The authentication process is described below:

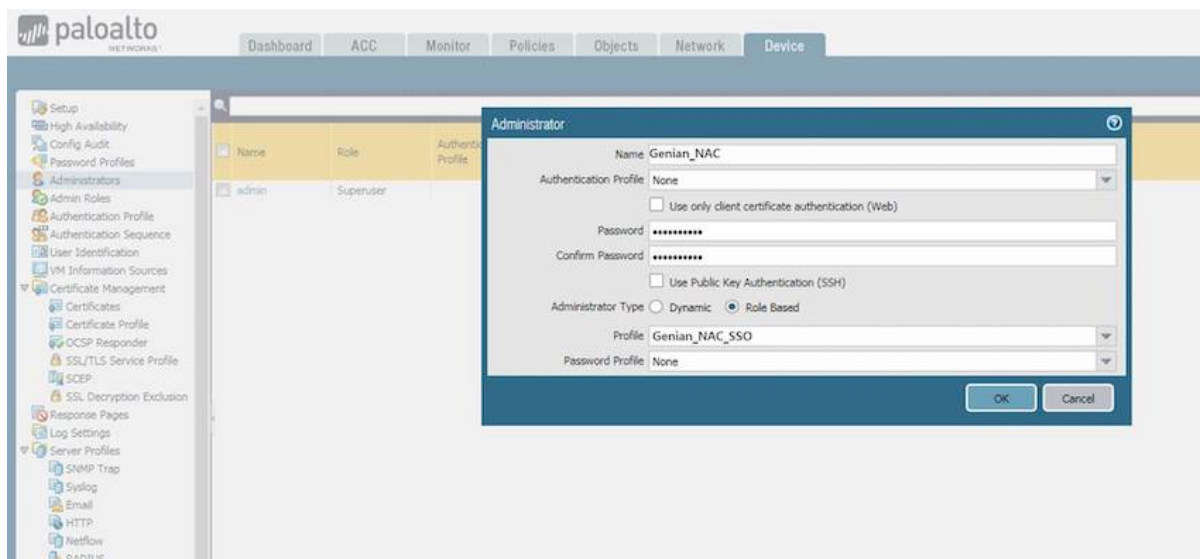
1. User Authentication in Genian ZTNA
2. Genian ZTNA sends authentication user and IP information to PAN firewall
3. The PAN firewall compares the authentication user and IP information it receives from Genian ZTNA with its own user ID table.
4. PAN confirms tag assigned to User-ID
5. Establish role-specific access control policy based on tag assigned to each user

3. Configuring PAN Firewall for integration via XML API

3.1 Create an Admin role on the PAN firewall. - Go to **Device > Admin Roles > Add** - Create the role **Name** Genian_ZTNA_SSO, under the **XML API** tab - Enable everything and validate it with **OK**



3.2 Create an account for Genian ZTNA. Assign the SSO role to the account. - Enter a **Name**: Genian_ZTNA - Select the **Administrator Type**: Role Based - Select the **Profile**: Genian_ZTNA_SSO



3.3 Generate the XML Key. Go on this URL: **https://[IP of PAN firewall]/api/?type=keygen&user=[username]&password=[password]** You can see the generated Key below:

```

**Script**
<response status = 'success'>
  <result>
    <key>LUFPRPT1KbW80SU1hRXJuNk5XNHBudUhCNGMydE0rSuk9RFIzdEJ5RGcwWkRCVlhYMX10Q1FPdz09
    </key>
  </result>

```

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```
</response>
```

3.4 Configure the Genian ZTNA for sending SYSLOG. Genian ZTNA uses filters in the audit log to integrate with XML.

- Go to **Log** in the top panel
- Go to **Log > Search > Advanced Search > Log ID > Check Authentication > Click Search** button in the left **Log** panel
- You will see the Log of Authentication user and then you click the “**save as**” button

Enter a **Name**: SSO_PaloAlto Set the **Webhook URL**:

```
Call the PAN firewall XML
https://[IP of PAN firewall]/api/?type=user-id&action=set&
↳key=LUFPRPT1KbW80SU1hRXJuNk5XNHBUdUHCNGMydE0rSuk9RFIzdEJ5RGcwWkRCV1hYMX10Q1FPdz09
```

Select a **character Set**: EUC-KR Select a **Method**: POST Enter the **POST Data**:

```
Script
<uid-message>
  <version>1.0</version>
  <type>update</type>
  <payload>
    <login>
      <entry name="{ID}" ip="{_IP}" timeout="20" />
    </login>
  </payload>
</uid-message>
```

Select a **Content-Type**: multipart/form-data

3.5 Configuring User Identification on Security Zones. PAN firewall policy rules use security zones to identify the Data

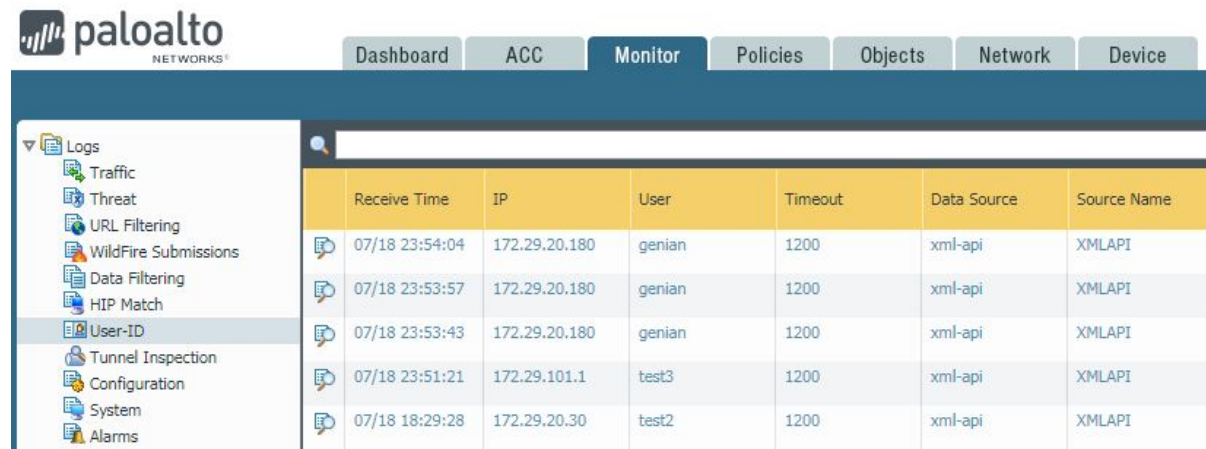
traffic which flows freely within the zone, not flowing freely between the different zones until you define the allowed security policy rules. To enable enforcement of user identity, you must enable user identification in both the inbound and outbound zones that are passed by end-user traffic.

To enable User Identification - Go to **Network > Zone** - Select **Enable User Identification** and click **OK**

3.6 Verify that the firewall is successfully receiving login events from SSH and Web Console.

```
CLI Command
admin@PA-VM> show user ip-user-mapping all
IP                Vsys      From      User      IdleTimeout (s)  MaxTimeout (s)
-----
172.29.101.1     vsys1     XMLAPI    genian    1111             1111
Total: 1 users
```

WebConsole - Go to **Monitor** - Go to **Logs > User-ID** in the left Monitor panel - You will see the list of authentication via Genian ZTNA



4. Configuring PAN Firewall for Integration via SYSLOG

4.1 Create a filter. The Palo Alto Firewall creates a log filter to distinguish authentication-related messages when receiving Syslog messages from Genian ZTNA.

- Go to **Device** on the top panel
- Go to **User Identification > User Mapping** > Click the Button look like **Gear** on PAN firewall **User-ID Agent Setup** Tab
- Go to **Syslog Filters > Add**

```
Enter values
Enter a Syslog Parse Profile: Genian_ZTNA
Enter a Event String: AUTHUSER
Enter a Username Prefix: ID=
Enter a Username Delimiter: ,
Enter a Address Prefix: IP=
Enter a Address Delimiter: ,
```

Syslog Parse Profile

Syslog Parse Profile: Genian_NAC

Description:

Type: Regex Identifier Field Identifier

Event String: AUTHUSER

Username Prefix: ID=

Username Delimiter: ,

Address Prefix: IP=

Address Delimiter: ,

OK Cancel

4.2 Specify the SYSLOG sender that the PAN firewall monitor.

- Go to **Device > User Identification > User Mapping** and **ADD** an entry to the Server Monitoring list

Enter values
 Enter a Name to identify the sender
 Make sure the sender Profile is Enabled (default is enabled)
 Set the Type to Syslog Sender.
 Enter the Network Address of the Genian ZTNA IP address
 Select SSL(default) or UDP as the Connection Type

Note: The UDP protocol is unencrypted data. It is recommended to use of the SSL protocol.

The listening ports(514 for UDP and 6514 for SSL)

4.3 Enable SYSLOG listener services. It is able to listen to the SYSLOG from Genian ZTNA.

- Go to **Network > Network Profiles > Interface Mgmt > ADD** a new profile

Enter values

Enter a Name to identify the Network Profile: Allow Genian ZTNA

Check the User-ID SYSLOG Listener-SSL or User-ID SYSLOG Listener-UDP

Click OK to save the interface management profile

4.4 Assign the interface Management profile to the interface.

- Go to **Network > Interfaces** and edit the interface
- Go to **Advanced > other info > select the Interface Management Profile > select the Allow Genian ZTNA > Click Ok**
- **Commit**

4.5 Configure the Genian ZTNA for sending SYSLOG. Genian ZTNA uses filters in the audit log to integrate with SYSLOG.

- Go to **Log** in the top panel
- Go to **Log > Search > Advanced Search > Log ID > Check Authentication > Click Search** button in the left Log panel
- You will see the Log of Authentication user and then you click the “**save as**” button

Enter values

Enter a Name

Enter a Server IP address[Palo Alto IP]

Select the Protocol either UDP or TCP (TLS)

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Set a Server port (UDP for 514, TCP (TLS) for 6514)
 Enter the SYSLOG Message: USERAUTH, ID={ID}, IP={_IP}
 Click the Save

The screenshot shows the 'Log Filter : Create' configuration page in the Genian NAC v5.0 web interface. The page is divided into several sections:

- Name:** SSO of PaloAlto via syslog
- Description:** (Empty)
- Tree & Log Monitor:** Display the Log Filter on Log Tree and Log Monitor
- Columns to Display:** A table with 'Available' and 'Selected' columns. The 'Selected' column contains: Time, Type, Log ID, Detected By, and IP.
- Notification:** When the logs defined by the Log Filter are generated, the notification will be sent based on the settings set below.
- SYSLOG:** When the logs defined by the Log Filter are generated, they will be sent to SYSLOG server.
 - Server IP: 52.79.237.202
 - Protocol: UDP
 - Server Port: 514 (Default Ports: 514 for UDP and 6514 for TCP (TLS))
 - SYSLOG Message: USERAUTH ID={ID}, IP={_IP}
 - Character Set: EUC-KR
- SNMP Trap:** When the logs defined by the Log Filter are generated, the SNMP Trap will be sent to SNMP server.
- Webhook:** When the logs defined by the Log Filter are generated, the page will be called based on the URL specified below.
- Tag:** Do Nothing

Buttons at the bottom right include 'Save' and 'Back to List'.

4.5 Verify that the user mappings when users log in and out.

```
CLI command
admin@PA-VM> show user ip-user-mapping all type SYSLOG
IP                Vsys      From      User      IdleTimeout (s)  MaxTimeout (s)
-----
172.29.101.1     vsys1     SYSLOGI   genian    2220             2220
Total: 1 users
```

11.10.2 Integrating FireEye

This guide provides an overview of integration with FireEye. It includes the following information:

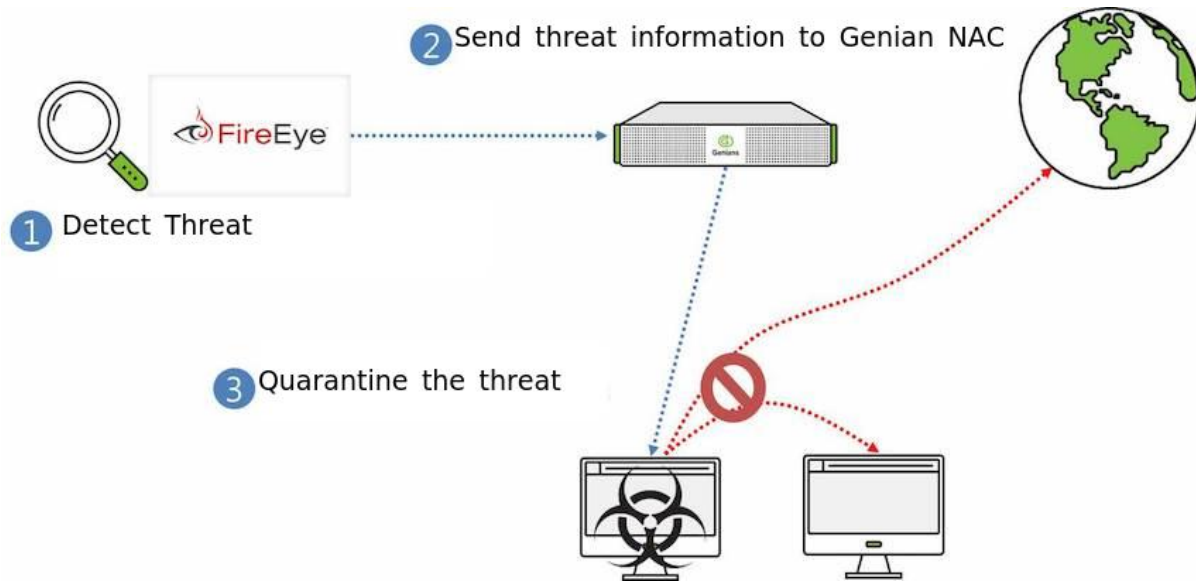
- 1. *About This Guide*
- 2. *Deployment of Genian ZTNA using FireEye*
- 3. *Configuring FireEye for integration via SYSLOG*
- 4. *Apply Genian ZTNA Policy based on FireEye Data*

1. About this Guide

The guide describes how to integrate Genian ZTNA and FireEye.

When a specific anomaly is detected by FireEye, FireEye sends anomaly information detected to Genian ZTNA through SYSLOG. Genian ZTNA will be able to prevent the spread of anomalies by quarantine the anomaly target.

2. Deployment of Genian ZTNA using FireEye



1. FireEye detects the threatening device.
2. FireEye sends the anomaly information to Genian ZTNA via SYSLOG.
3. Genian ZTNA quarantines the device to prevent compromising other assets on the network. Other automated responses may also be configured.

3. Configuring FireEye for integration via SYSLOG

3.1 Configuration of Genian ZTNA

For Genian ZTNA to receive and use the information from FireEye, the internal SYSLOG server must be configured to properly extract node information from the incoming log. The `Type` and `Type Value` variables determine which information sources will be accepted, and how they will be categorized. The `IP Prefix` and `MAC Prefix`

1. Login into Genian ZTNA with the administrator account
2. Go to the **Preferences** tap on the top panel.
3. Go to the **General > Log** on the left panel.
4. **Add** the Filter in **Server Rules** in the middle of the center
5. Enter the content

Name	FireEye
Filter host	
Filter Value [IP address of FireEye]	
IP Prefix	src=
MAC Prefix	smac=

6. Click the **Add** button below and **Update** button

3.2 Configuration of FireEye

The FireEye appliances are very flexible regarding Notification output and support the following formats.

- CEF
- LEEF
- CSV

For our guide, we will use CEF Complete the following steps to send data to Genian ZTNA using CEF:

1. Log into the FireEye appliance with an administrator account
2. Go to the **Settings** tap on the top panel.
3. Go to the **Notifications** on the left panel
4. Click the **rsyslog** on the middle of the center
5. Check the “Event type” in the check box
6. Make sure **Rsyslog settings** are

```
Default format: CEF
Default delivery: Per event
Default send as: Alert
```

7. **Add Rsyslog server** on the middle of under > Enter the **Name** Genian ZTNA > Click on **Add Rsyslog Server** button
8. Enter the IP address of the Genian ZTNA in the IP Address field
9. Click the **Update** button below

3.3 Verification

1. Go to **Log** on the top panel of Genian ZTNA.
2. Messages from FireEye will show. The Sensor column data will show the IP of the FireEye system, and the Description column data will show a FireEye signature.

4. Apply Genian ZTNA Policy based on FireEye Data

Once Genian ZTNA is receiving SYSLOG data from FireEye, the device information contained in the log files can be used to automatically apply Tags to individual nodes. These tags can be used to group nodes for organizational, or policy purposes.

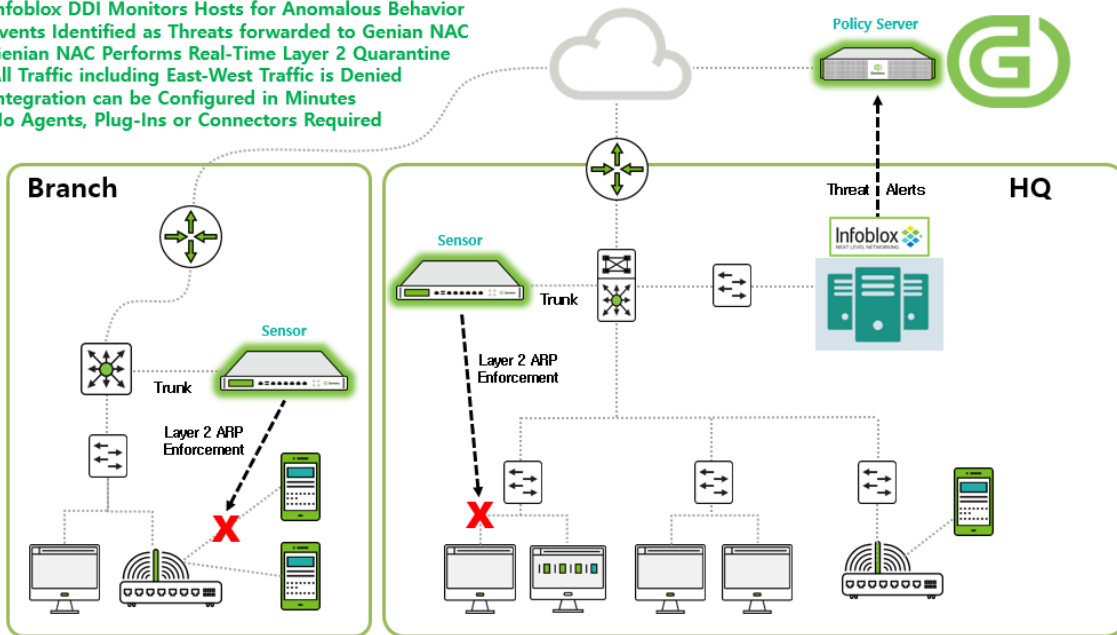
To apply policy through log tagging see: [:Tagging Assets Using Event](#)

11.10.3 Integrating Infoblox DDI

This document describes how to integrate Infoblox with Genian ZTNA using syslog. This integration provides the ability to extend the Infoblox DDI Response Policy Zone (RPZ) feature into the Enforcement capabilities of Genians ZTNA. A full video Webinar covering this integration along with a demo is available on the Genians YouTube Channel.

Genians and Infoblox DDI Security Automation

- Infoblox DDI Monitors Hosts for Anomalous Behavior
- Events Identified as Threats forwarded to Genian NAC
- Genian NAC Performs Real-Time Layer 2 Quarantine
- All Traffic including East-West Traffic is Denied
- Integration can be Configured in Minutes
- No Agents, Plug-Ins or Connectors Required



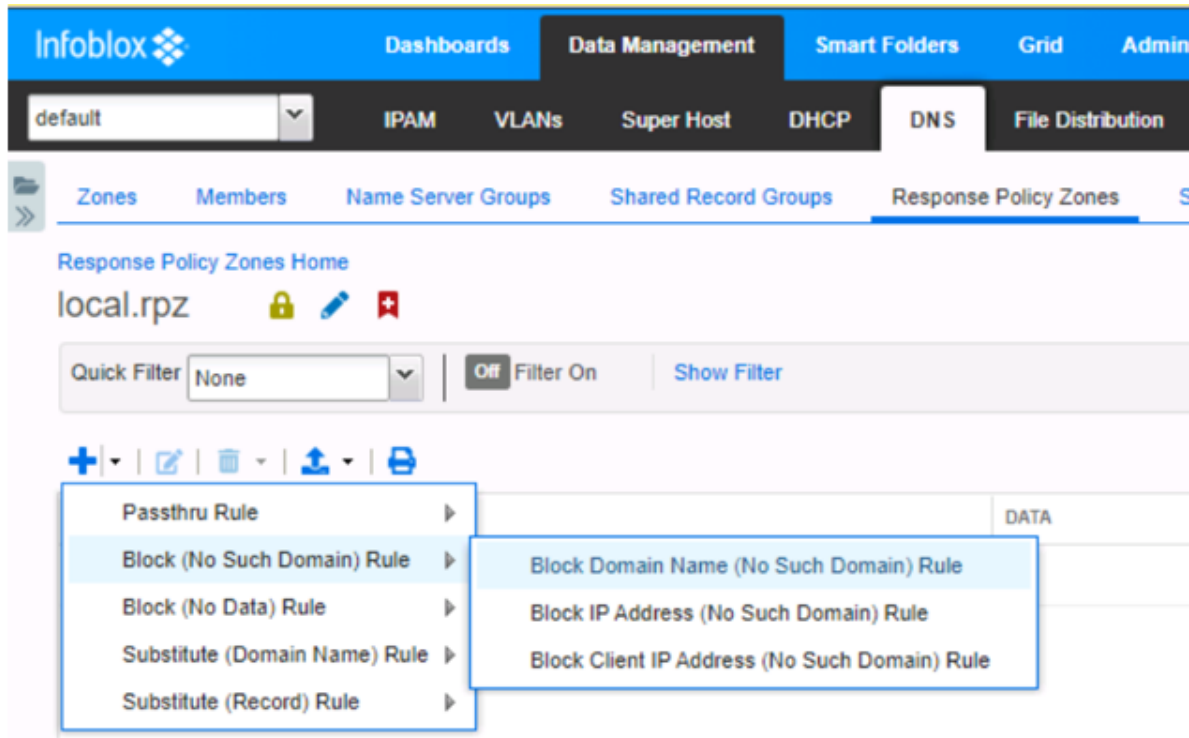
The main steps of this integration are as follows:

- Configure a domain to be blocked in Infoblox
- Export this blocking event to Genian ZTNA via syslog
- Configure Genian ZTNA to interpret this event, and apply enforcement to the impacted node.

Infoblox Domain Blocking Configuration

The steps below demonstrate how to configure and export critical RPZ events from Infoblox DDI to Genians via Syslog.

1. Navigate to **Data Management > DNS > Response Policy Zones > local.rpz**
2. Click **+** to add a new Block Rule for a Domain Name



3. Enter a test domain name. In this example www.yahoo.com was used to simulate to simulate a Domain Name that is associated with a Malware Threat. Enter the Domain Name and a comment and then click Save & Close. No need to complete steps 2 and 3 in Infoblox.

Note: If your Infoblox Grid is already receiving Threat Intelligence from an external Threat Feed, then any sites listed as malware sites in that feed will also be blocked. Consult Infoblox documentation for additional details.

Add a Block Domain Name (No Such Domain) Rule > Step 1 of 3

Name .local.rpz [Select Zone](#) [Clear](#)

DNS View default

Policy Block (No Such Domain)

Comment

Disable

[Cancel](#) [Previous](#) [Next](#) [Schedule for Later](#) [Save & Close](#)

[Response Policy Zones Home](#)

local.rpz

Quick Filter [Off](#) [Filter On](#) [Show Filter](#)

[+](#) [✎](#) [✖](#) [↑](#) [↓](#) [📄](#)

<input type="checkbox"/>	≡	NAME OR ADDRESS	POLICY	DATA	COMMENT
<input checked="" type="checkbox"/>	≡	www.yahoo.com	Block Domain Name (No Such Domain)		Block DNS queries for yahoo.com

- On a test machine subject to the previously configured Response Policy Zone, perform an nslookup on authorized domain (infoblox.com) and then perform an nslookup on unauthorized domain simulating malware site (www.yahoo.com).
- Note Infoblox.com resolves fine but www.yahoo.com is returned as Non-existent domain. If you do not receive a Non-existent domain notification for the test malware site, consult Infoblox DDI documentation or support until the issue is resolved.

```
C:\Windows\system32>nslookup
Default Server: 172-0-0-3.lightspeed.brhmal.sbcglobal.net
Address: 172.0.0.3

> www.infoblox.com
Server: 172-0-0-3.lightspeed.brhmal.sbcglobal.net
Address: 172.0.0.3

Non-authoritative answer:
Name: fe3.edge.pantheon.io
Addresses: 2620:12a:8001::3
           2620:12a:8000::3
           23.185.0.3
Aliases: www.infoblox.com
         live-infoblox-network.pantheonsite.io

> www.yahoo.com
Server: 172-0-0-3.lightspeed.brhmal.sbcglobal.net
Address: 172.0.0.3

*** 172-0-0-3.lightspeed.brhmal.sbcglobal.net can't find www.yahoo.com: Non-existent domain
```

6. On the test machine, generate continuous pings to both an internal and external host. Note that even though Infoblox DDI has denied the domain from being resolved, the device still has network access, both to external and internal hosts:

```
C:\Windows\system32>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=2ms TTL=52
Reply from 8.8.8.8: bytes=32 time=2ms TTL=52
Reply from 8.8.8.8: bytes=32 time=2ms TTL=52
Reply from 8.8.8.8: bytes=32 time=2ms TTL=52

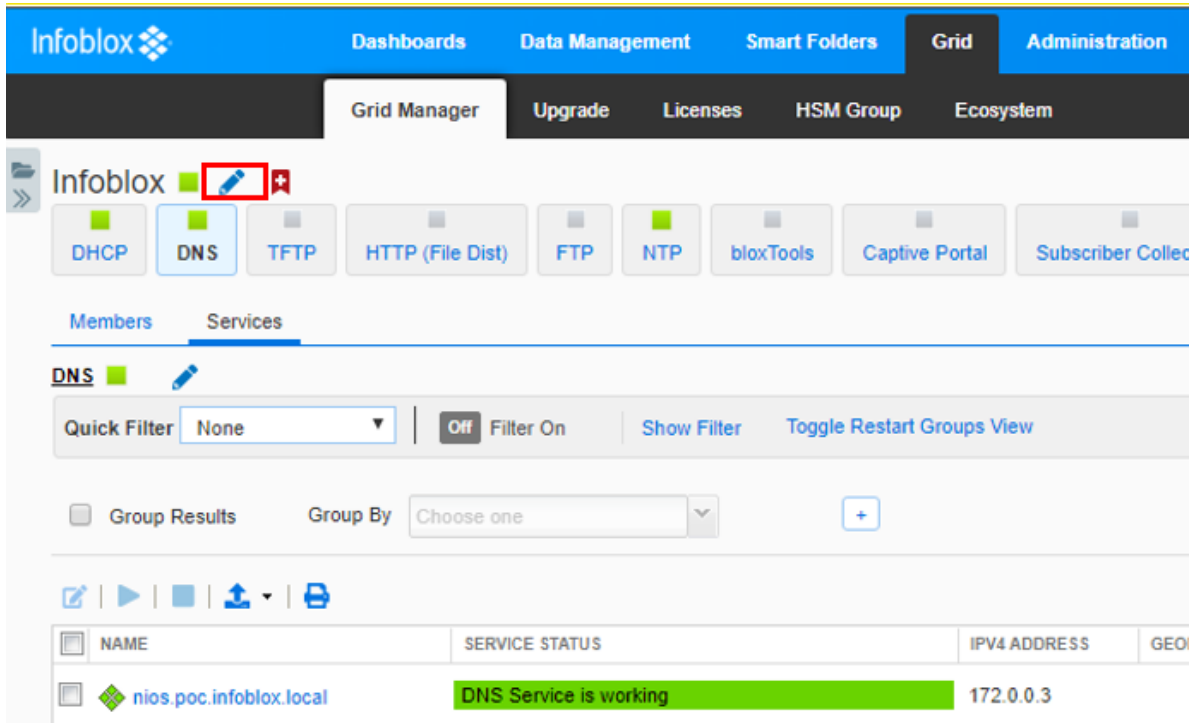
C:\Windows\system32>ping 172.0.0.21

Pinging 172.0.0.21 with 32 bytes of data:
Reply from 172.0.0.21: bytes=32 time<1ms TTL=128
Reply from 172.0.0.21: bytes=32 time<1ms TTL=128
Reply from 172.0.0.21: bytes=32 time<1ms TTL=128
Reply from 172.0.0.21: bytes=32 time<1ms TTL=128
```

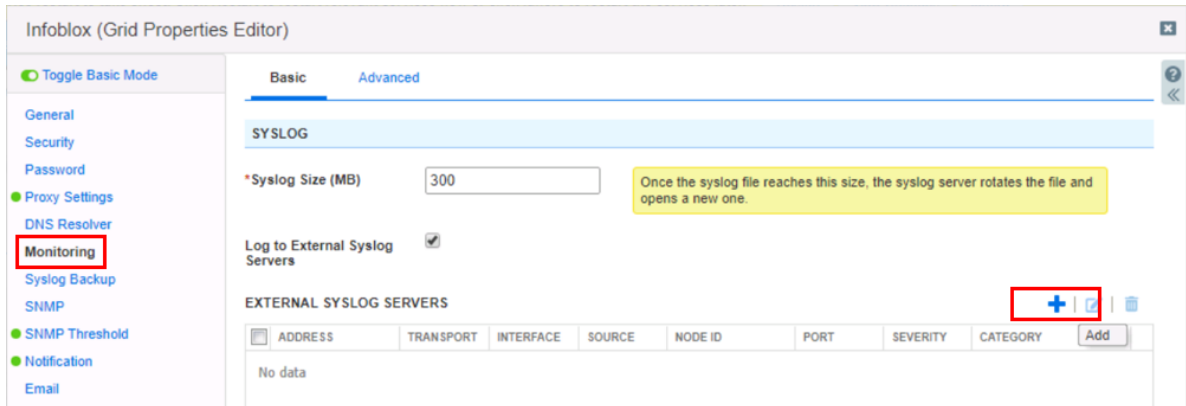
7. Once the test above has been validated, perform the steps below to export Non-existent domain events to the Genian ZTNA Policy Server.

Infoblox Event Export Configuration

1. Navigate to **Grid > Grid Manager** and click on the **edit** button next to Infoblox.



2. Click on **Monitoring** and then click the **+** button to add a new Syslog server.



3. Check the **Log to External Syslog Servers** box and click the **+** button to add a new server.
4. Enter the IP of the Genian ZTNA Policy Server, select **UDP**, **Any** for Interface, **Host Name** for Node ID, **Any** for Source, **Debug** for Severity and **514** for Port. Restart service in Infoblox DDI if prompted.

Infoblox (Grid Properties Editor)

Toggle Basic Mode

General
Security
Password
Proxy Settings
DNS Resolver
Monitoring
Syslog Backup
SNMP
SNMP Threshold
Notification
Email
LOM
Customer Improvement
NAT Groups
Object Change Tracking
ActiveTrust Cloud Integration
Microsoft Integration
Extensible Attribute Inheritance

Basic Advanced

SYSLOG

*Syslog Size (MB) Once the syslog file reaches this size, the system and opens a new one.

Log to External Syslog Servers

EXTERNAL SYSLOG SERVERS

Add External Syslog Server

*Address

Transport

Interface

Node ID

Source

Severity

*Port

Genian ZTNA Syslog Server Configuration

A Server Rule set must be added before receiving syslogs. We will configure a server rule based on the format of the Infoblox message to extract information about the device to be blocked. In this integration, we will use the IP address.

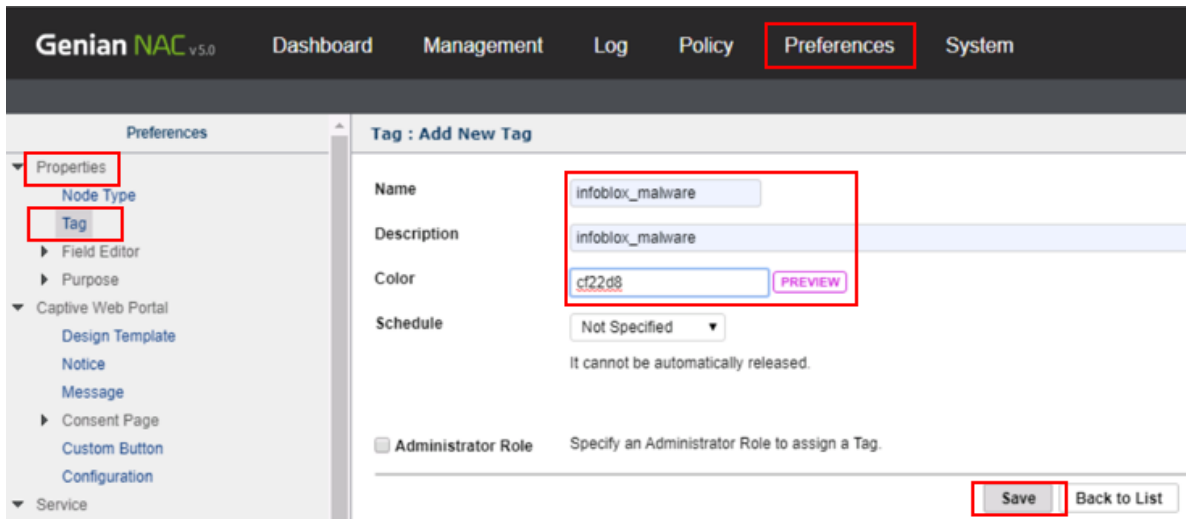
These options may be found under **General > Log** in the **Preferences** section.

1. Click the **Add** button to the right of the **Server Rules** label, and fill out the pop-up form.
2. Enter a name for the Rule.
3. For **Filter**, select a variable by which to evaluate incoming syslogs for allowance. Select from **Program**, **Host**, **Match**, or **Netmask**.
4. Define a **Filter Value**. If the **Filter** variable of the imported syslog matches the **Filter Value**, the syslog will be merged into the policy server logs. Enter the appropriate network or program information so that the message from your Infoblox system will be recognized.
5. Define **src=** as a prefix for **IP** values. This prefix will trigger the filter to import the value immediately following as an IP Address, allowing Genian ZTNA to identify the device using that IP.
6. Define the character set which the syslogs will be imported in.
7. Click **Add** at the bottom of the pop-up window.
8. Click **Update** at the bottom of the Log Preferences page.

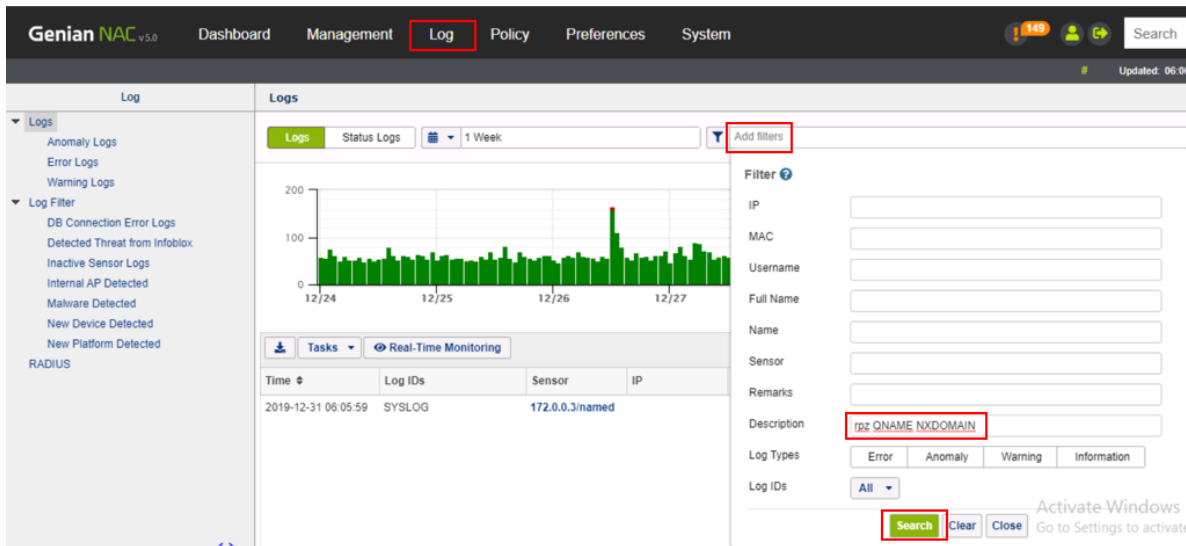
Now the message from the Infoblox system will be correlated with the nodes detected by Genian ZTNA.

Genian ZTNA Tag and Policy Configuration

1. Navigate to **Preferences > Properties > Tag** and create a tag called “infoblox_malware” then click **Save**. This tag will be linked to a log filter and eventually to an Enforcement Policy in future steps.



2. Click on **Log** and then **Add filters**. Critical RPZ syslog alerts from Infoblox DDI include the key words “rpz QNAME NXDOMAIN”. Type these words into the Description field of the log filter and click **Search**.



3. The search results should show a syslog alert from Infoblox DDI showing rpz QNAME NXDOMAIN for www.yahoo.com. This alert was generated from the previous test on [Win-Client1]. Click Save to save as a log filter.
4. Give the log filter a name, description and add the previously created “Infoblox_malware” tag then click **Save**. In this example, we will apply the tag to the node (MAC+IP), though log filters can also apply tags to MACs, Users, or WLANs.

Name

Description

Tag ▼

From ▼

To ▼

Tag

5. Navigate to **Policy > Group** then click **Tasks > Create** to create a new Node Group. Under General enter an ID and Description and set the Status to Enabled. Under Condition, click **Add** to add the previously created “Infoblox_malware” tag then click **Save**.
6. Navigate to **Policy > Enforcement Policy** then click **Tasks > Create** to create a new Enforcement Policy. Follow the wizard to create a new Enforcement Policy. Select the previously created “Infoblox_quarantine” Node Group, do not select any permissions (all access will be blocked by default), enable Captive Portal and enter a message to be displayed to the end user.
7. With all configurations now in place, the Genians Network Sensor must be switched from Passive to Active mode to facilitate the Layer 2 quarantine of non-compliant nodes on the network. Navigate to **System > Sensor > Edit Sensor Settings** and set the Sensor Operating Mode to Active then click Update at the bottom of the page.
8. To test the integration, from the test machine open a browser and navigate to www.yahoo.com. The page should not load. As a result of Infoblox enforcement DNS cannot be resolved, and no captive portal will be shown.
 - However, behind the scenes, a rpz QNAME NXDOMAIN syslog alert has been sent from Infoblox to Genians and the host has been Layer 2 quarantined on the network. The test machine should no longer be able to ping external or internal hosts.

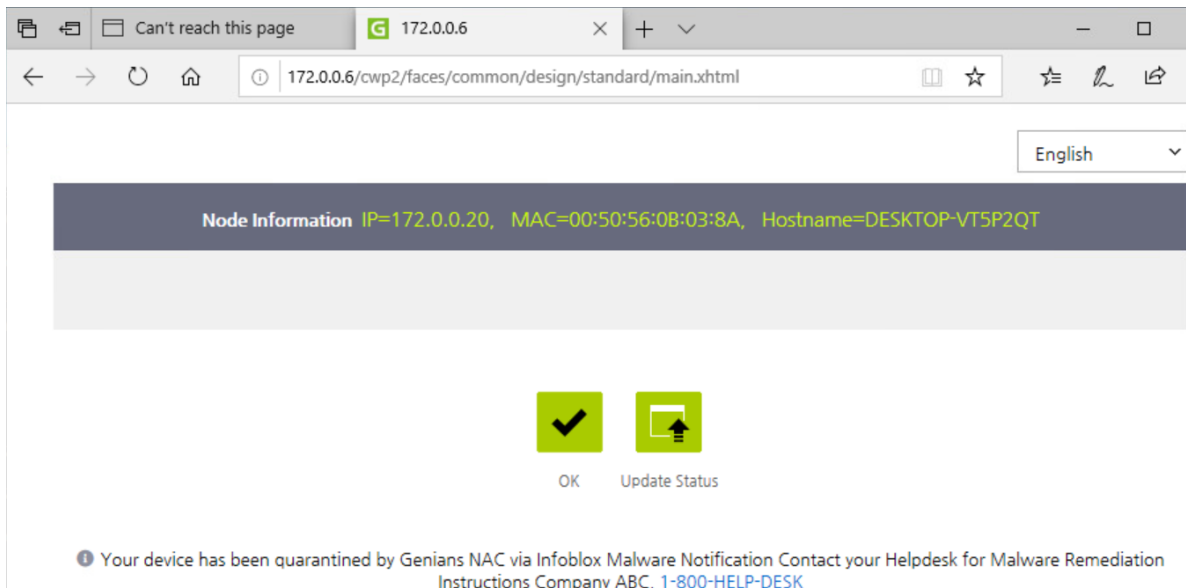
```
C:\Windows\system32>ping 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.

C:\Windows\system32>ping 172.0.0.21

Pinging 172.0.0.21 with 32 bytes of data:
Request timed out.
Request timed out.
Request timed out.
Request timed out.
```

9. In the browser of the test machine, navigate to Infoblox.com and the Genians Captive Portal will be displayed with your message. Both the page design and contents may be customized, this is just a generic template.

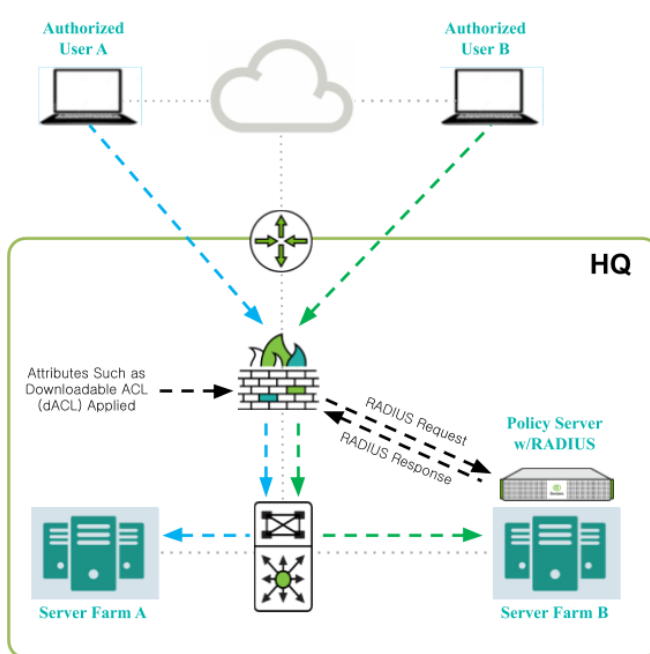


Note: Pages using HTTP Strict Transport Security (HSTS) will not allow a Captive Portal to be displayed. Navigate to another site if you see an HSTS error.

11.10.4 Integrating Cisco ASA - Applying Dynamic ACLs

If users are accessing your network using Cisco ASA (or a comparable solution) as a VPN gateway, you can use the Genians RADIUS Server to apply a dACL to perform role based access control to various network resources.

Genians VPN Enforcement – Authorization/Privileges



Highlights:

- No Agent Required
- AD/Local User Accounts
- No RADIUS CoA Required
- Attributes Assigned in Response

RADIUS Enforcement

- VPN Firewall/Server Sends Request to Genians
- Genians Verifies Account/Credentials
- Genians Verifies Authorization
- Attributes Appended to RADIUS Response
- VPN Firewall/Server Assigns Privileges
- Standard and Vendor Specific Attributes Supported
- Example: Downloadable ACL (dACL), Etc.

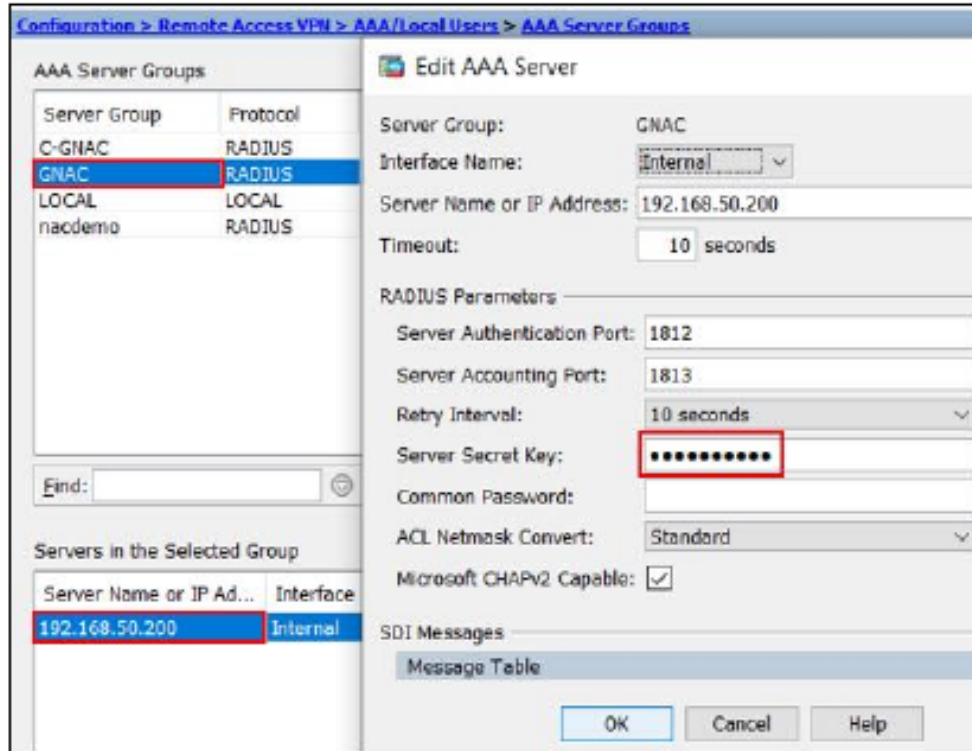


Integrating the Radius Server

First, ensure that the RADIUS Server is properly configured, and that your settings are compatible with your VPN environment.

See: *Configuring RADIUS Enforcement*

Next, configure Genian ZTNA as an Authentication Server in your VPN settings, by entering the **Shared Secret**, **Server Address**, **Authentication Port**, **Accounting Port**, and other info, as shown in the example below:



Configuring dACL

This can be accomplished by configuring an **RADIUS Policy**, and setting the **Access Policy** to **ACCEPT**, then setting **Cisco InBound ACL** for **Additional Attributes**.

In this example, we will use the **User-Name** attribute, and the Genians **User Group** feature to limit group members network access to a single server.

1. Go to **Policy** in the top panel.
2. Go to **Policy > RADIUS Policy** in the left panel.
3. Click **Tasks > Create**
4. For **General**, input **Name**, **Priority**, and activation **Status**.
5. For **Conditions**, select **Attribute**. For this example, select **User-Name**.
6. Set **Operator** and **Value** to **user is one of the User Group** and **[Your User Group]**
7. Click **Add** button.
8. For **Policy**, choose to **ACCEPT** Authentication Requests that match the attribute conditions, and select **Cisco InBound ACL** for **Additional Attributes**
9. For **Value**, enter a Cisco ACL, example:

```
Permit ip any host 192.168.55.200
deny ip any any
```

10. Click **Add** button.
11. Click **Create** button.

When an Authentication request is accepted from a member of the selected group, the access control list will be applied, thus limiting access to network resources.

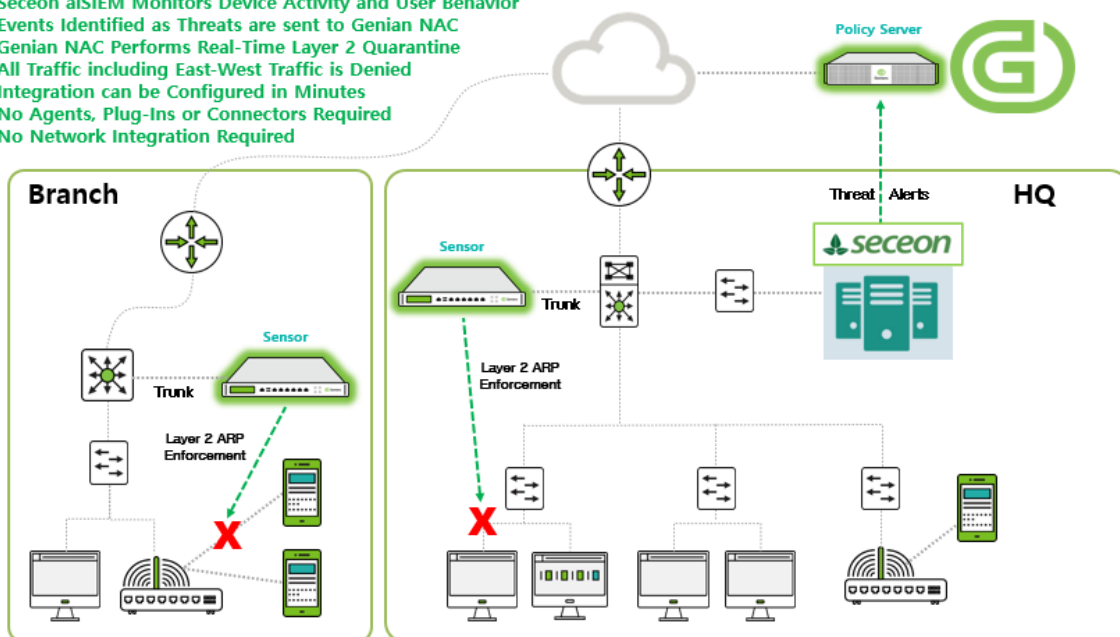
For more info on on authorization through RADIUS Attributes, see: [Configuring Authorization](#)

11.10.5 Integrating Seceon aiSIEM

This document describes how to integrate Seceon aiSIEM with Genian ZTNA using syslog. This integration provides the ability to extend Seceon aiSIEM threat detection capabilities into the Enforcement capabilities of Genians ZTNA. A full video Webinar covering this integration along with a demo is available on the Genians website under **Resources > Videos**.

Genians and Seceon aiSIEM Security Automation

- Seceon aiSIEM Monitors Device Activity and User Behavior
- Events Identified as Threats are sent to Genian NAC
- Genian NAC Performs Real-Time Layer 2 Quarantine
- All Traffic including East-West Traffic is Denied
- Integration can be Configured in Minutes
- No Agents, Plug-Ins or Connectors Required
- No Network Integration Required



The main steps of this integration are as follows:

1. Configure a Remediator in the Seceon APE
2. Configure Genian ZTNA to interpret this syslog event sent by the APE Remediator and apply enforcement to the impacted node.

APE Remediator Configuration

Login to the Seceon APE UI:

1. Under **Administration > Remediator > Add**, select Genians ZTNA as the Device, Firewall as the Device Type and enter the IP of your Genian ZTNA Policy Server.
2. The User Name, Password and Confirm Password fields are mandatory but not required for the integration to function so can be populated with any data.

Genian ZTNA Syslog Configuration

A Server Rule set must be added before receiving syslogs. We will configure a server rule based on the format of the Seceon aiSIEM message to extract information about the device to be blocked. In this integration, we will use the IP address to identify the device to be blocked.

1. Navigate to **General > Log** in the **Preferences** section.
2. Click the **Add** button to the right of the **Server Rules** label, and fill out the pop-up form.
3. Enter a name for the Rule.
4. For **Filter**, select a variable by which to evaluate incoming syslogs for allowance. Choose from **Program**, **Host**, **Match**, or **Netmask**. This option allows for syslogs from a given source location/ program, or a given message content to be allowed. In this case, select **Host**.
5. Define a **Filter Value**. If the **Filter** variable of the imported syslog matches the **Filter Value**, the syslog will be merged into the policy server logs. In this case, enter the **Seceon CCE IP**.
6. Define `src_ip`: as a prefix for IP values.
7. Define the character set which the syslogs will be imported in.
8. Click **Add** at the bottom of the pop-up window.
9. Click **Update** at the bottom of the Log Preferences page.

Now the message from the Infoblox system will be correlated with the nodes detected by Genian ZTNA.

Genian ZTNA Tag and Policy Configuration

Under **Preferences > Properties > Tag**:

1. Create a tag called “Seceon-Threat-Detected” then click Save. This tag will be linked to a log filter and eventually to an Enforcement Policy in future steps.
2. Click on **Log and then Add filters**. Syslog alerts from Seceon aiSIEM include the key words “THREAT so performing”. Type these words into the Description field of the log filter and click Search. You can further narrow the search by using the IP of your Seceon system.
3. Give the log filter a name, description and add the previously created “Seceon-Threat-Detected” tag then click Save. In this example, we will apply the tag to the node (MAC+IP), though log filters can also apply tags to MACs, Users, or WLANs. Be sure to select **Node** in the **From** and **To** sections.

Under **Policy > Group**:

1. Click **Tasks > Create** to create a new Node Group.
2. Under General enter an ID and Description and set the Status to Enabled.
3. Under Condition, click Add to add the previously created “Seceon-Threat-Detected” tag.
4. Click **Save**.

Under **Policy > Enforcement Policy**:

1. Click **Tasks > Create** to create a new Enforcement Policy.
2. Follow the wizard and select the previously created “Seceon-Threat-Detected” Node Group.
3. Select the desired Permissions, enable Captive Portal and enter a message to be displayed to the end user.
4. Click **Save**.

With all configurations now in place, the Genians Network Sensor must be switched from Monitoring to Enforcement mode to facilitate the Layer 2 quarantine of non-compliant nodes on the network. Navigate to **System > Sensor > Edit Sensor Settings** and set the Sensor Operating Mode to Enforcement then click Update at the bottom of the page.

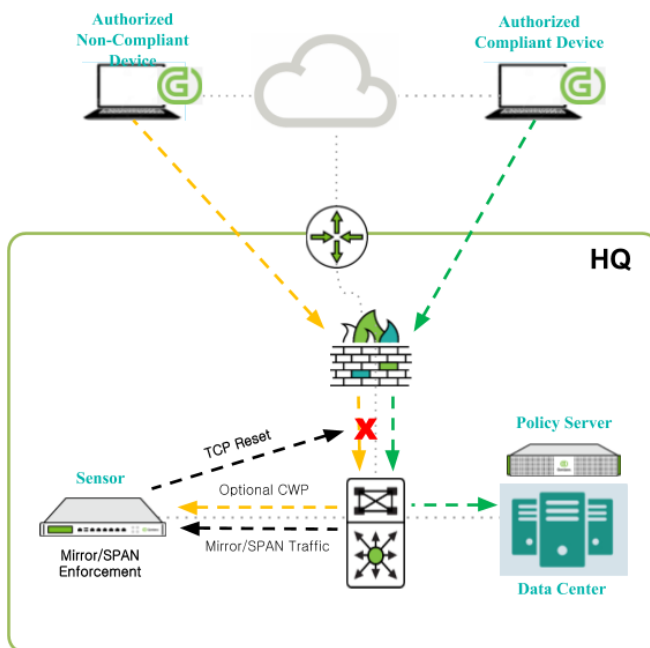
Testing and Validation

1. Select a test machine within a network that is managed by a sensor from your Seceon Integrated Genian ZTNA system.
2. Browse to a Seceon designated malware site with a test machine.
3. In roughly 1-3 minutes (time required for Seceon threat processing), Seceon will send a syslog alert to Genian ZTNA.
4. The test node should have Tag assigned once alert is received from Seceon.
5. The node will then be Layer 2 quarantined in real-time by Genian ZTNA. Pings will fail and if any new websites are accessed, a captive portal will be display indicating the device has been quarantined due to a Seceon detected threat.

11.11 Blocking Unauthorized or Non-Compliant VPN Devices

In some situations, correct user credentials may be supplied to log into a VPN, but the device itself is not approved for use on the network. This may be the result of stolen credentials, being used to access the network, or an authorized user signing into the network with an unapproved or non-compliant device. Genian ZTNA can block these unapproved devices at Layer 3 using a Network Sensor deployed in Mirror Mode.

Genians VPN Enforcement – Endpoint Security



Highlights:

- Agent Recommended
- No RADIUS Integration
- No MAC Whitelist to Manage
- Captive Portal Option

Mirror/SPAN Enforcement

- VPN User Establishes VPN Connection
- VPN User Attempts to Access Data Center
- Node Info Detected via Agent
- Endpoint Security Compliance Checked
- Node Blocked via TCP Reset (optional redirect)
- Message Displayed – Access Denied
- Message May Include Remediation Instructions
- User Remediates to Comply with Policy
- Node Permitted to Authorized Destinations

11.11.1 Cofigure Sensor

To configure a Sensor in Mirror Mode, see: *Configuring Mirror Mode*

11.11.2 Cofigure Groups and Enforcement Policies

Enforcing against VPN users with a mirror sensor uses the same configurations that are used for ARP Enforcement in a LAN environment.

Simply create Groups and Enforcement Policies to defined which nodes, devices, or users can access which network resources and at which times. It is also possible to redirect the non-compliant node to a captive portal, where they can be served with a message from the administer, or required to download an agent. You can create separate Groups and Policies for VPN users

The Mirror Sensor will use TCP Reset or ICMP unreachable replies to block any attempted access to prohibited resources. the VPN connection itself will remain unaltered.

To Create Groups and Enforcement Policies to allow or disallow access, see:

- *Managing Node Groups*
- *Creating and Viewing Enforcement Policy for Nodes*

Note: Traffic detected by a Mirror Sensor does not result in the creation of a node in the Web Console. Therefore traffic may be blocked without any logging occurring. Nodes with an Agent installed will be shown in the Web Console, and logging will occur when their policy status changes. Use of the Agent and is recommended for gathering endpoint information.

For more content relating to VPN users, see:

- *Authenticating VPN Users*
- *Integrating Cisco ASA - Applying Dynamic ACLs*

11.12 Controlling Access to Cloud Resources

The Genian ZTNA Gateway can be deployed in the Cloud to control access to Cloud Resources. Combined with the ZTNA Client feature embedded within the Genian ZTNA Agent, a secure connection is established between a remote endpoint and the ZTNA Cloud Gateway. After a user is successfully authenticated, only the access defined by the administrator will be available. Any other connection attempts will be discarded by the ZTNA Cloud Gateway.

11.12.1 Deploying the ZTNA Gateway in the AWS Cloud

Note: Presently the Genian ZTNA Gateway can only be deployed into AWS Cloud environments from the Genian ZTNA UI. To deploy a ZTNA Gateway in an environment other than AWS, See: *Installing ZTNA Gateway*

Note: Prior to following the steps below, be sure you have already added a Cloud Provider and Cloud Site. See: *Managing Nodes in the Cloud*

11.12.2 Enable ZTNA Client in Cloud Site

1. From the top menu, navigate to System > Site
2. Click on the desired Site Name
3. Under ZTNA Client, set Status to 'Enabled'
4. Leave the Network field blank for auto-assignment of an IP pool for remote endpoints connecting to the Cloud Gateway
5. Click Save

11.12.3 Add the ZTNA Connection Manager Agent Action to Node Policy

1. Select the applicable Node Policy (the Default Node Policy may be used unless you want to create a specific Node Policy)
2. From the top menu, navigate to Policy > Node Policy and click on the desired Node Policy
3. Under Authentication Policy, change Authentication Method from Password Authentication to Host Authentication
4. Scroll down to the Agent Action section and Click Assign
5. Select the 'ZTNA Connection Manager' by moving it from the Available window to the Selected window then click Update
6. Click on the name of the Node Policy
7. Scroll down and click on the ZTNA Connection Manager Agent Action
8. Under the Plugin section, click Assign to the right of the Site window
9. Select the desired site users will be connecting remotely to through the Cloud Sensor using the ZTNA Client
10. Click Update then click the blinking Apply in the upper right-hand corner

11.12.4 Deploy Cloud Sensor

1. From the top menu, navigate to System > Site
2. Check the box next to yoursite.genians.net
3. Click Tasks then select Add Cloud Sensor
4. Select the desired site where you will be deploying the Cloud Sensor
5. Select an Amazon Machine Image (AMI) (a recommended AMI will be displayed)
6. Select the desired EC2 Instance Type (t2.medium is recommended)
7. Select the desired Subnet ID for the subnet the Cloud Sensor will be deployed in
8. Select the desired keypair for remote CLI access to the Cloud Sensor EC2

Note: Typically, CLI access to the Cloud Sensor is not required, however, the key pair is mandatory for the AWS EC2 creation process. Any valid key pair created for the specified region may be used. Refer to AWS documentation for more information on how to create a keypair for remote EC2 access.

1. Click Check Init

2. A Terraform initialization test will be performed to confirm all the information selected will succeed in EC2 creation
3. If any errors are displayed during the Check Init process, address the issues in your AWS environment before proceeding

Note: At least one Elastic IP must be available in the region you deploy a Cloud Sensor to.

1. Click Create
2. When the Apply Complete message is displayed, this means the Cloud Sensor was successfully deployed
3. Click Close to close the window
4. The Cloud Sensor will now be displayed in the System list

Note: It may take up to 15 minutes for the Cloud Sensor to fully initialize and communicate with your Cloud Policy Server. To verify the status of the Cloud Sensor EC2, login to the AWS EC2 Console.

11.12.5 Set Cloud Sensor to Cloud Gateway Mode

1. From the top menu, navigate to System
2. Click on the Cloud Sensor IP
3. Click on the Sensor tab
4. For the eth0 interface, in the far-right Settings column, click on Sensor
5. Under Sensor Operation, change Sensor Mode from Host to Inline and change Mirror Operating Scope from Local to Global
6. Scroll down and click Update

11.12.6 Install Genian ZTNA Client and Verify Cloud Access

1. Create a test account for remote access under Management > User > Tasks > Add User
2. Browse to <https://yoursite.genians.net/agent>
3. Click the Download button and follow the prompts to install the Agent
4. Once installed, right click on the Agent icon, select Network Access and click Connect
5. Enter the username and password created in the step above
6. The ZTNA Client should pop up a message indicating you are now connected and provide your IP for the connection
7. All traffic from the endpoint will now be routed through the Cloud Gateway
8. The remote session information can be viewed under System > Site > ZTNA Client

11.13 Controlling Access to Customer Cloud or On-Prem Resources through a ZTNA Gateway

When a ZTNA Sensor is configured as ZTNA Gateway, it can be deployed in a Customer Cloud or On-Prem to control remote access to Cloud or On-Prem Resources. Combined with the ZTNA Client feature embedded within the Genian ZTNA Agent, a secure connection is established between a remote endpoint and the ZTNA Gateway. After a user is successfully authenticated, only the access defined by the administrator will be available. Any other connection attempts will be discarded by the ZTNA Gateway.

11.13.1 Deploying the ZTNA Sensor in a Customer Cloud or On-Premises

Skip this step if you have already installed a ZTNA Sensor in your Cloud or On-Prem. For instructions on how to install a ZTNA Sensor in a Customer Cloud or On-Prem:

See: *Installing Genian ZTNA*.

11.13.2 Create On-Prem Site

Note: On-Prem Infrastructure type is used for any non-AWS Cloud environment

1. From the top menu, navigate to System > Site
2. Click Tasks then Create
3. Enter a Name for the site (ex. 'Corp Hub')
4. For Infrastructure select On-Prem
5. For Type select Hub or Branch (typically Hub if this is the first Gateway you have deployed)
6. For Network Address enter the network address for the On-Prem or Cloud network (ex. 10.0.0.0/16 or 172.31.16.0/20)
7. Click Save

11.13.3 Enable ZTNA Client in On-Prem Site

1. From the top menu, navigate to System > Site
2. Click on the desired Site Name
3. Under ZTNA Client, set Status to 'Enabled'
4. Leave the Network field blank for auto-assignment of an IP pool for remote endpoints connecting to the ZTNA Gateway
5. Click Save

11.13.4 Add the ZTNA Connection Manager Agent Action to Node Policy

1. Select the applicable Node Policy (the Default Node Policy may be used unless you want to create a specific Node Policy)
2. From the top menu, navigate to Policy > Node Policy and click on the desired Node Policy
3. Under Authentication Policy, change Authentication Method from Password Authentication to Host Authentication
4. Scroll down to the Agent Action section and Click Assign
5. Select the 'ZTNA Connection Manager' by moving it from the Available window to the Selected window then click Update
6. Click on the name of the Node Policy
7. Scroll down and click on the ZTNA Connection Manager Agent Action
8. Under the Plugin section, click Assign to the right of the Site window
9. Select the desired site users will be connecting remotely to through the ZTNA Gateway using the ZTNA Client
10. Click Update then click the blinking Apply in the upper right-hand corner

11.13.5 Set ZTNA Sensor to Gateway (In-Line) Mode

1. From the top menu, navigate to System
2. Click on the Sensor IP
3. Click on the Sensor tab
4. For the eth0 interface, in the far-right Settings column, click on Sensor
5. Under Sensor Operation, change Sensor Mode from Host to Inline and change Mirror Operating Scope from Local to Global
6. Scroll down and click Update

11.13.6 Install Genian ZTNA Client and Verify Access

Note: The ZTNA Client will connect to the ZTNA Gateway over ports TCP 443,1194, and UDP 3870,3871 so these ports must be opened from the public IP of the end user's device to the public IP of the ZTNA Gateway. Be sure to update firewall rules and security groups accordingly.

1. Create a test account for remote access under Management > User > Tasks > Add User
2. Browse to <https://yoursite.genians.net/agent>
3. Click the Download button and follow the prompts to install the Agent
4. Once installed, right click on the Agent icon, select Network Access and click Connect
5. Enter the username and password created in the step above
6. The ZTNA Client should pop up a message indicating you are now connected and provide your IP for the connection
7. All traffic from the endpoint will now be routed through the ZTNA Gateway
8. The remote session information can be viewed under System > Site > ZTNA Client

MANAGING ON-BOARDING PROCESS

Note: This feature requires Professional or Enterprise Edition

You can customize the Captive Web Portal, and Guest Management in this On-boarding process section.

12.1 Configuring Captive Web Portal

A **Captive Web Portal (CWP)** is a 'landing' web page, often used for info or authentication. The portal intercepts observed packets until the user is authorized to launch browser sessions. The user is granted conditional Internet or Network access once Authentication, EULA Agreement, Payment, or other valid credentials have been completed.

12.1.1 Enable The Captive Web Portal

1. Go to **Policy** in the top panel
2. Go to **Enforcement Policy** in the left Policy panel
3. Select the desired **Enforcement Policy**
4. Under **General > Status** select **Enabled**
5. Under **Enforcement Options > Captive Web Portal** tab
6. Select **Default CWP Page** under **Redirecting to** section
7. Click **Update**
8. Click **Apply**

12.1.2 Configuring Proxy Server Exceptions

Captive portals may not be able to provide proper redirection if internal hosts on the network are configured to use a proxy server. By making the proper proxy exceptions on your proxy server, this will ensure captive portal redirection functions properly.

In the examples below, replace `x . x . x . x` with the IP of the Genian ZTNA Policy Server, and add to your existing proxy server configuration.

.pac example

```
function FindProxyForURL(url, host) { if (isInNet(host, "x.x.x.x",  
"255.255.255.255")) return "DIRECT"; else return  
"PROXY proxy.company.com:8080"; }
```

.dat example

```
function FindProxyForURL(url, host)  
{  
if (isPlainHostName(host) ||  
isInNet(host, "x.x.x.x", "255.255.255.255"))  
return "DIRECT";  
else  
return "PROXY proxy.company.com:8080";  
};
```

12.1.3 Customizing Messages

Default messages can feel bland or uninformative. While they get straight to the point, a default message might not provide enough information as to why a user is blocked from the network. Other times, there may be scheduled maintenance that will cause downtime on the network, an important update that needs to be downloaded, or a new policy in place that people need to be informed about. Thus, a Custom Web Portal Message is the perfect solution.

Add a Custom Web Portal Message

1. Go to **Policy** in the top panel
2. Go to **Policy > Enforcement Policy** in the left Policy panel
3. Click desired **Enforcement Policy** name
4. Find **Enforcement Options > Captive Web Portal** section
5. Select desired **Redirecting to** option
6. Enter **User Message** to be displayed on **CWP** (*This message is displayed when access is denied*)
7. Click **Update**

12.1.4 Managing Notice

Notices are bulletin style messages used for making employees or customers aware of important updates, events, or factors regarding the network. Notices are usually longer statements describing one or more topics, whereas messages are used for short, direct statements about why a user is blocked or what needs to be done to gain access to the network.

Create a Notice

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Notice** in the left Preferences panel
3. Click **Tasks > Create**
4. If a **Posting Period** is required, click on **Checkbox** and select a **date** and **time**
5. Enter **Subject**
6. Create **Content**
7. Select the **Type** (*HTML, Text, or Markdown*)
8. Click **Save**

Delete a Notice

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Notice** in the left Preferences panel
3. Click **Checkbox** of **Notice** to be deleted
4. Click **Tasks > Delete**
5. Click **Ok**

12.1.5 Managing Custom Buttons

You can create **Custom Buttons** that get inserted onto the **Captive Web Portal** page to redirect users to other web pages.

Button type	Description
Hyperlink	The current tab will be redirected to a specific URL.
Pop-up window	Open a specific URL in a new window
Agent Try Menu	Open a specific URL in a new window once you click the Agent tray menu.
Webpage	Go to the information collection page.
Download	Download the uploaded file.

Create a Button

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Custom Button** in the left Preferences panel
3. Click **Tasks > Create**
4. Add a **Name** and **Description** for the button
5. **Upload** a custom **Image** to use with the button (*Optional*)
6. Add a **Hyperlink** for the button
7. Click **Save**

Delete a Button

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Custom Button** in the left Preferences panel
3. Click **Checkbox** for **Button name** in Custom Button window
4. Click **Tasks > Delete**
5. Click **Ok**

Reorder Buttons

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Custom Button** in the left Preferences panel
3. Click **Tasks > Reorder**
4. Click to **highlight Buttons** to be reordered in Reorder window
5. Click **Save**

12.1.6 Creating Custom Pages

You can also create custom Captive Web Portal layouts for use in different situations.

Customizing Captive Web Portal Design

Customizing the **Captive Web Portal** page allows you to edit the current Default page, create something completely new, or add logos from current companies web page. This gives you the ability to display the same look and feel as your current internal web pages for your end users. Under **Preferences > Captive Web Portal > Design Template** Four tabs will be displayed to allow you to customize your CWP page

- **Component Options:** Allows you to edit the page using the component.
- **Edit:** Allows you to customize your own CWP page.
- **CSS Style:** Allows you to add CSS Style.
- **Layout:** Allows you to edit page layout.
- **Image:** Allows you to upload custom images to make the CWP look and feel like your own.

Component Options

1. Click the add or delete button for the required component
2. Page preview on Main page in the right side of the Web-console
3. Click **Update**

Edit

1. CWP page display in html code form
2. Provide pages in html code format
 - Modify the page by adding or removing the tag of the component to the code
 - Can be modified using html code
3. Click **Update**
4. A Page preview will display on the Main page in the right side of the Web console.

CSS Style

You can define CSS Style class and use it in EDIT Tab or Layout Tab.

1. Input the CSS style code in "CSS Style" tab.

```
.test {color:red;}
```

2. To use defined CSS style in "Edit" tab

```
<div class="test">
TEST
</div>
```

3. Click **Update**
4. A Page preview will display on the Main page in the right side of the Web console.

Layout

You can modify the layout of the page using Html code.

```
<?xml version='1.0' encoding='UTF-8' ?>
<!DOCTYPE html PUBLIC "-//W3C//DTD XHTML 1.0 Transitional//EN" "http://www.w3.org/TR/
↪xhtml1/DTD/xhtml1-transitional.dtd">
<html xmlns="http://www.w3.org/1999/xhtml"
  xmlns:ui="http://xmlns.jcp.org/jsf/facelets"
  xmlns:h="http://xmlns.jcp.org/jsf/html"
  xmlns:p="http://primefaces.org/ui"
  xmlns:gncomponent="http://xmlns.jcp.org/jsf/composite/gncomponent">
$HEAD
<body id="body1">
  $PAGEHEADER
  <div id="wrap" class="wrap">
    $CUSTOMPAGEHEADER
    <div id="content" class="content">
      <!-- Don't delete code -->
      $CONTENT
      <!-- Don't delete code -->
    </div>
    $CUSTOMPAGEFOOTER
  </div>
```

(continues on next page)

(continued from previous page)

```
</body>
</html>
```

Image

Upload custom images to make CWP look and feel like your own.

Note: Only jpg/gif/png files with alphabetic character file names are supported.

Apply the defined CWP template

1. Go to **Policy** in the top panel/li>
2. Go to **Node Policy** in the left Policy panel
3. Find and click **name of Node Policy**
4. Find **CWP Design Template** in the main **Management Policy**
5. Select a Design Template for a CWP page
6. Click **Update** and **apply** on the right top panel.

12.2 Configuring Security Policy Consent Page on Captive Web Portal

Genian ZTNA can notify users of internal network security policy terms and display a consent request page on the Captive Web portal. Devices/nodes status is updated based on if they have consented to the terms outlined in the captive portal. This can be used to group nodes/devices and apply policies to control devices.(Ex: Block network access until user consents to terms of usage)

12.2.1 Create Security Policy page

Administrator can custom Security Policy Consent pages.

Genian ZTNA Security policy pages have content fields and information collection fields. Administrator can display terms and conditions in Contents field and collect consent information by Assigning User Input Fields.

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Consent Page > Security Policy** in the left Policy panel
3. Find **Tasks** and click **Create**
4. Fill **Contents** and Assign **User Input Field**
5. Click **save**

12.2.2 Enable Security Policy Page on Captive Web Portal

Genian ZTNA displays the Security Policy Page to users by using the Captive Web Portal. To enable the security policy page, administrators need to create an *Enforcement Policy*.

Typically, first time users should be asked to consent to a security policy.

This is most easily accomplished with an Enforcement Policy configured to redirect the user to the Security Policy page. When configuring a Node Group to use for this Enforcement Policy, the `Consent` criteria can be used as a condition so that devices that have not completed the consent process fall under the Enforcement Policy, and be redirected to the Security Policy page.

1. Go to **policy** in the top panel
2. Go to **Enforcement Policy** in the left Policy panel
3. Click **ID**
4. Go to **Enforcement Options > Captive Web Portal > Redirecting to** and Choose **Security Policy Page**
5. Configure **URL, Security Policy Result Message, User Message** and click **update**
6. Click **Apply** in top right corner

12.3 Configuring Guest Management

Genian ZTNA can create temporary Guest Accounts for authorized visitors and manage them. Administrators can Specify whether to disable or delete an expired Guest Account. Guest Accounts may be created by the Administrator or requested by the user.

This guide will help you to add or delete a Guest Account as an Administrator.

12.3.1 Add Guest Account as an Administrator

An Administrator can create new Guest Accounts and set the ID and Password for guest.

1. Go to **Management > User** in the top panel
2. Click **Tasks > Add User**
3. Go to **General > Purpose** and choose **Guest Account**
4. Click **Save**

12.3.2 How to Configure Expired Guest Account Options

An Administrator can Specify whether to disable or delete an expired User Account.

1. Go to **Preferences** in the top panel
2. Go to **Properties > Purpose > User** in the left Policy panel
3. Click a **GUEST** in the list
4. Go to **Options > Approval Options > Expired Account Options**

5. Choose **Disable Account** or **Delete Account**
6. Click **Update**

12.3.3 Remove Guest Account

1. Go to **Management > User** in the top panel
2. Find **User** and click **Checkbox**
3. Click **Tasks > Remove User**
4. Click **Ok**

12.3.4 Enable Approval for Guest request

Enable Approval for Guest request

Genian ZTNA can identify and manage visitors by creating Guest Accounts. Guest Accounts may be created by the Administrator or requested by the user.

This guide will help you to understand the process of Guest Account requests and approvals.

Note: User cannot login with the new account until Administrator or Sponsor approve the request.

How to submit Guest Account requests

Guest Users can submit a Guest Account request on the CWP (Captive Web Portal) page using the **Request User Account** feature.

Enable Request User Account Button On CWP

In order for Guest user to submit Guest Account requests on CWPpage, an Administrator must activate Request User Account Button.

Note: Make sure the Network Sensor is in enforcement mode and an Enforcement Policy is enabled to redirect unauthenticated users to the CWP.

1. Go to **Policy** in the top panel
2. Go to **Policy > Node Policy** in the left Policy panel
3. Find and click **Node Policy**
4. Find **Advanced > Authentication Policy > User Account Request** and choose **On** to configure features
5. Click **Update**

CWP Address

```
http://(IP of Policy Server)/cwp
```

How to approve Guest Account requests

Guest users can login with the new account after their request is approved. There are three ways for approving Guest Account request: Administrator Approval, Email Approval and Instant Approval.

Case 1 : Administrator Approval

Administrator can approve Guest Accounts on through Web Console.

Administrator can still approve new requests on Request Management page, even if Administrator configured Email Approval.

How to configure Administrator Approval

1. Go to **Preferences** in the top panel
2. Go to **Properties > Purpose > User** in the left Policy panel
3. Click a **GUEST** in the list
4. Go to **Options > Approval Options > Email Approval for Guest** and choose **Off** to configure features
5. Go to **Instant Approval** and Choose **Off**
6. Click Update

How to Accept / Reject Guest Requests as an Administrator

1. Go to **Management > Request** in the top panel
2. Go to **User Account Request > Request** in the left Request Management panel
3. Find **Requests** in the list. Click **Checkbox** of desired request(s)
4. Click **Tasks > Accept All** or **Reject All**

Case 2 : Email Approval

Administrators and Sponsors can approve Guest Accounts via email. If the Guest Account request is submitted, an Administrator or Sponsor will receive a clickable approval mail. You can configure email approvers as Administrator, Sponsors or Both.

How to configure Administrator Approval

1. Go to **Preferences** in the top panel
2. Go to **Properties > Purpose > User** in the left Policy panel
3. Click a **GUEST** in the list
4. Go to **Options > Approval Options > Email Approval for Guest** and choose **On** to configure features

5. For **Email Approver** and Choose **Administrator, Existing User(Sponsor)** or **Both**
6. Click **Update**

How to Sponsor approve Guest Account request by email

1. Open '**User Account Request**' E-mail in Sponsor's Inbox
2. Click **Approve** button on E-mail

<p>Warning: If 'Failed to send Email' error occurs, please double check the Outbound Email Server configuration or Approver's Email address.</p>

Note: In an environment where there is no network access to the Policy Server, Even if admins click the approve button in the mail, the approval is not processed.

Case 3 : Instant Approval

When a Guest User submits the Request, the Request will be instantly approved.

How to configure Administrator Approval

1. Go to **Preferences** in the top panel
2. Go to **Properties > Purpose > User** in the left preferences panel
3. Click a **GUEST** in the list
4. Go to **Options > Approval Options > Email Approval for Guest** and choose **Off** to configure features
5. Go to **Instant Approval** and Choose **On**
6. Click **Update**

How to view approval results

Guest Users can receive approval notification by CWP page View Results option and Email.

Case 1 : View Approval results on CWP

Enable Request View Results button On CWP

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Design Template** in the left preferences panel
3. Choose a Template name
4. Activate [**View Results**] **Button**
5. Click **Update**

Case 2 : Receiving Approval notification by Email

How guest receive approval notification

1. Go to **Preferences** in the top panel
2. Go to **Properties > Purpose > User** in the left Policy panel
3. Click a **GUEST** in the list
4. Go to **Request Field Options** and move **Email** to right
5. Click **Update**

Note: If the Guest Account request is approved by Administrator or Sponsor, the Email address in the request form will be notified.

Case 3: How to Check Approval results as an Administrator

Administrator can check Approval results in the Web Console.

1. Go to **Management>Request** in the top panel
2. Go to **User Account Request > Results** in the left Request Management panel
3. Check a results of approval

12.4 Redirecting to Custom URL

This is how to configure redirection to a specific page when the device's network access is blocked. Admins can specify a custom URL instead CWP, or configure users to be redirected to a custom URL when they click the OK button on the CWP.

12.4.1 Redirect to specific URL instead of CWP

when the device's network access is blocked, admins can configure redirection to specific url instead of the cwp. However, the new URL should provide instructions on how to remediate the reason for being blocked.

1. Go to **Policy** in the top panel.
2. Go to **Enforcement Policy** in the left panel.
3. Find and click the policy to change in the list.
4. Go to **Enforcement Options > Captive Web Portal > Redirecting to**
5. Change **Redirecting to** option to **Custom URL**
6. Type **URL** and **User Message**
7. Click **Update** button.

12.4.2 Redirect to a specific URL when a user clicks the OK button on the CWP

When the user clicks the OK button on the CWP. It will be redirected to specific url such as Google, Wikipedia or in-house website.

1. Go to **Policy** in the top panel.
2. Go to **Design Template** in the left panel.
3. Find and click the template to change in the list.
4. Find and click **OK** button in **Components**
5. Upload image file and type URL
6. Click **Update** button.
7. Click **Update** button one more time

12.5 Configuring AP Profile for Wlan Policy

AP Profile is for use with the Genians W10 Access point. For availability information, contact Genians or your regional Genians distribution partner. Configuring AP Profile can management entire/individual wireless network sensor's profile.

12.5.1 1. Creating AP Profile

AP Profile can select security Type from **Open, WEP, WPA2-Personal, WPA2-Enterprise.**

1. Go to **Policy** in the top panel
2. Go to **Policy > Wlan Policy > AP Profile** in the left Policy pannel
3. Select **Tasks > Create**
4. Enter the information of a trusted network
5. Click **Create**

12.5.2 2. Creating Wlan Policy for wireless network sensor

Wlan Policies are made up of AP Policy and Client Policy They can be used along with the endpoint agent to set preferences and restrictions for accessing wireless networks. Administrator can assign AP Profiles to AP Policy. It can Perform the action by without configuring Client Policy.

1. Go to **Policy** in the top panel
2. Go to **Policy > Wlan Policy** in the left Policy pannel
3. Select **Tasks > Create**
4. Select AP profiles to apply to the policy
5. Enter the information of a trusted network
6. Click **Save**

12.6 Configuring Client Profile for Wlan Policy

Administrator can use Wireless Connection Manager (WCM) to automatically register the Client Profile on window os user device. Administrator can automatically register and manage hidden wireless network and security setting without requiring the user to manual configure the settings. In order to distribute the client profile to the device, the administrator needs to create a Client Profile and configure the WLAN Policy. And after distributing client profile, WCM configuration is required to access the wireless LAN through the profile.

12.6.1 1. Creating Client Profile

Client Profile can select security Type from **Open, WEP, WPA2-Personal, WPA2-Enterprise, 802.1x**

1. Go to **Policy** in the top panel
2. Go to **Policy > Wlan Policy > Client Profile** in the left Policy pannel
3. Select **Tasks > Create**
4. Enter the information of a trusted network.
5. Click **Create**

12.6.2 2. Creating Wlan Policy for user device

Configure WLAN Policy to distribute Client Profile on user devices. Wlan Policies are made up of AP Policy and Client Policy. In order to distribute Client Profiles, the administrator only need to configure the Client Policy.

1. Go to **Policy** in the top panel
2. Go to **Policy > Wlan Policy** in the left Policy pannel
3. Select **Tasks > Create**
4. Select **Client profile** to apply to the policy.
5. Enter the information of a trusted network.
6. Click Save.

12.6.3 3. Configuring Wireless Connection Manager

For Configuring Wireless Connection Manager, please refer to *Configuring Wireless Connection Manager*

12.7 Managing Captive Web Portal Redirection Ports

Administrator changes HTTP/HTTPS(web service) to other port besides default port, Genian ZTNA CWPpage redirection feature became disable status. Administrator should add a new port for enable the CWP page Redirection feature.

12.7.1 How to configure HTTP/HTTPS port?

On Genian ZTNA, HTTP port is configured as 80,8080 by default and HTTPS port is configured by 443. Genian ZTNA use ", " mark for add a new port numbers.

1. Go to **Preferences** in the top panel
2. Go to **General > Node** in the left Preferences panel
3. Find **Redirection** and fill a **HTTP Port** , **HTTPS Port**
4. Click update

12.8 Troubleshooting

- *Blocked Nodes are not redirected to CWP page*

MANAGING USER AUTHENTICATION

Note: This feature requires Professional or Enterprise Edition

User Authentication means verifying the identity of someone (User) behind a device that wants to access the network. User Authentication also enables accountability, by using user ID and password which makes it possible to link access and actions to specific identities. Genians provides the ability to Authenticate Users in several ways.

You can create Users locally in Policy Server, or configure Policy Server to pull User Information from Active Directory, RADIUS, POP3, IMAP, SMTP, CSV, or other third-party user management systems.

Locally Users Authenticate against the local database created within the Genians Policy Server. Once credentials match, the user is then allowed to proceed onto the network.

Externally (*Active Directory, RADIUS, IMAP, POP3, SMTP, CSV*) Genians can integrate with External Authentication sources to permit user access upon successful login using proper credentials.

13.1 Enabling User Authentication

You can configure User Authentication using Captive Web Portal, Agent, 802.1x, AD, and RADIUS or ZTNA Connection Manager and Gateway

13.1.1 Authentication using Captive Web Portal

Genian ZTNA uses a **Captive Web Portal (CWP)** for Guest Access, Authentication, Information, and Instructions to become compliant with enforced policies. You can configure the Policy Server to redirect both users and guests to a **CWP login** page for **Authentication**. Users are then forced to enter Username and Password to authenticate against a database before being allowed access to the network. This allows you to identify users behind endpoint devices, and present them with information or login instructions.

Example configuration for authentication via CWP:

Edit “User Not Authenticated” Node Group

1. Go to **Policy** in top panel
2. Go to **Group > Node** in the left Policy panel
3. Find and click on **User Not Authenticated** in the Node Group window
4. Find **General > Status** section and select **Enabled**
5. Click **Update**
6. Click **Apply** in top right corner

Apply “User Not Authenticated” Node Group to “User Not Authenticated” Enforcement Policy

1. Go to **Policy** in the top panel
2. Go to **Enforcement Policy** in the left Policy panel
3. Find and click on **User Not Authenticated** Enforcement Policy
4. Find **General> Status** section and select **Enabled**
5. Find **Node Group** section and verify **User Not Authenticated** is added (*If not then click Assign and add it in*)
6. Click **Update**
7. Click **Apply** in top right corner

(Navigate to /cwp and you should now see the Authentication Login icon on the page)

13.1.2 Authentication using Agent

Agent not only assists in determining the posture of the endpoint device, but can also collect system information, access control, and authenticate users. You can configure the **Policy Server** to force users to authenticate using the **Agent** with the **Authenticate User Using Genian Agent** plugin. Once Users credentials have been Authenticated the **Agent** then communicates with the Policy Server every 2 minutes continually validating the User behind the endpoint device.

Step 1. Create Node Group for Authentication by Agent

1. Go to **Policy** in top panel
2. Go to **Group > Node** in the left Policy panel
3. Click **Tasks > Create New Group for Policy**
4. Enter **ID** as **Agent Authentication**
5. Find **Condition** section in the Node Group window. Click **Add**
6. Enter the Following:
 - Criteria: **Agent**
 - Operator: **is**
 - Value: **Installed**
7. Click **Save**
8. Click **Apply** in the top right. Click Close

Step 2. Create Node Policy for Agent Authentication

1. Go to **Policy** in top panel
2. Go to **Policy > Node Policy** in the left Policy panel
3. Click **Tasks > Create**. Complete steps in **Node Policy Wizard**
4. On **General** tab. Enter **ID** as **Agent Authentication**
5. On **Node Group** tab. Select **Agent Authentication** Node Group and move it to **Selected** column #. On **Preferences** tab. Enter in **desired Options #**. On **Agent Action** tab. Select **Authenticate User Using Genian Agent** and move to **Selected** column
6. On **Anomaly Definition** tab. (*Nothing required on this tab*)
7. Click **Finish**
8. Click **Apply** in the top right. Click Close

Step 3. Configure User Authentication by Agent Plugin

1. Go to **Policy** in top panel
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel
3. Find and click **Authenticate User Using Genian Agent**
4. Add **desired Conditions** and **Agent Actions**
5. Click **Update**
6. Click **Apply** in the top right. Click **Close**

Note: Steps below are optional to use an existing Node Policy if you prefer not to create a new one

Assign Agent Action to Node Policy

1. Go to **Policy** in top panel
2. Go to **Policy > Node Policy** in the left Policy panel
3. Find and click **Node Policy** name
4. Find **Agent Action** section. Click **Assign**
5. Locate **Authenticate User Using Genian Agent** and move to **Selected** column
6. Click **Add**
7. Click **Apply** in the top right. Click Close

13.1.3 Authentication using RADIUS (802.1x)

Note: This feature required Enterprise Edition

Genian ZTNA includes a built-in RADIUS server to support 802.1x port-based access control. In general, 802.1x is widely used to provide improved user authentication for devices that access wireless networks. In a wired network, a user authentication function can be provided for a device connected to the network through a switch supporting 802.1x.

First, you need to enable the RADIUS server. See, *Configuring RADIUS Enforcement*

For RADIUS authentication against external databases, authentication integrations must be configured. See: *Integrating User Directories*

The RADIUS accounting must be activated on the client or in Genian ZTNA in order for the node information to be updated. See *Single Sign-On*

Enable AD Account for RADIUS

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left Preferences panel
3. Find **RADIUS Server: AD Account** section and select **On** in drop-down
4. Enter the following:
 - **Domain Name** (e.g. *genians.com*)
 - **Username** (Default is *Administrator*. Account needs to have *Admin Privileges*)
 - **Password** and retype
5. Click **Update**

Enable URL Account for RADIUS

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left Preferences panel
3. Find **RADIUS Server: URL Account** section and select **On** in drop-down
4. Enter the following:
 - **URL** (e.g. *http://.com*)
 - **Methods** (*GET, POST*)
 - **Regex for Authentication** (*This regular expression will check for successful login*)
5. Click **Update**

Enable Email Authentication for RADIUS

1. Go to **Preferences** in the top panel
2. Go to **Service > RADIUS Server** in the left Preferences panel
3. Find **RADIUS Server: Email Authentication** section and select **On** in
4. Click **Update**

MAC Authentication Bypass

For endpoints not supporting 802.1x such as printers or IP phones, it may be necessary to authenticate using MAC address.

The MAC authentication feature is a mechanism by which incoming traffic originating from a specific MAC address is forwarded only if the source MAC address is successfully authenticated by a RADIUS server. The MAC address itself is used as the username and password for RADIUS authentication. The user does not need to provide a specific username and password to gain access to the network.

- If RADIUS authentication for the MAC address is successful, traffic from the MAC address is forwarded in hardware. - If the RADIUS server cannot validate the user's MAC address, then it is considered an authentication failure, and a specified authentication-failure action can be taken.

Enabling MAC Authentication

See: *Configuring MAC Authentication (MAB)*

13.1.4 Single Sign-On

If user authentication through RADIUS is applied to the network, user authentication can be automatically performed through accounting packet provided by RADIUS client such as Access Point. Genian ZTNA receives external RADIUS accounting packets, saves them as audit records, and uses them as user authentication information.

When network access is granted to the user by the NAS, an Accounting Start (a RADIUS Accounting Request packet containing an Acct-Status-Type attribute with the value "start") is sent by the NAS to the RADIUS server to signal the start of the user's network access. "Start" records typically contain the user's identification, network address, point of attachment and a unique session identifier. Periodically, Interim Update records (a RADIUS Accounting Request packet containing an Acct-Status-Type attribute with the value "interim-update") may be sent by the NAS to the RADIUS server, to update it on the status of an active session. "Interim" records typically convey the current session duration and information on current data usage. Finally, when the user's network access is closed, the NAS issues a final Accounting Stop record (a RADIUS Accounting Request packet containing an Acct-Status-Type attribute with the value "stop") to the RADIUS server, providing information on the final usage in terms of time, packets transferred, data transferred, reason for disconnect and other information related to the user's network access. Typically, the client sends Accounting-Request packets until it receives an Accounting-Response acknowledgement, using some retry interval.

Via RADIUS Accounting

The RADIUS accounting server is responsible for receiving the accounting request and returning a response to the client indicating that it has successfully received the request. The RADIUS accounting server can act as a proxy client to other kinds of accounting servers.

To enable single sign on from external RADIUS Servers:

1. Go to **Preferences** in top panel
2. Go to **Service > RADIUS Server** in the left Preferences panel

Under **Accounting Server**

1. For **Single Sign-On**, select **On**.
2. For **Acct-Status-Type**, select events to update authentication status from the following: **Start, Stop, Interim-Update**.
3. For **Shared Secret Key**, enter the pre-shared secret key for RADIUS client authentication.
4. For **Attribute to Match**, select **MAC and IP** when RADIUS accounting packet contains **Calling-Station-Id** and **Framed-IP-Address**. If accounting packet doesn't have **Framed-IP-Address** attribute or generated by **Generating Accounting** option on Authentication Server setting, select **MAC**.
5. For **Node Status**, choose **All Nodes** or **Up Nodes** for authentication eligibility.
6. Click **Update**

Via AD Domain Login

Genian ZTNA can read Active Directory domain logon user information and register the user as authenticated on that node. This may be accomplished with, or without an endpoint agent.

To use any method of AD Single Sign-On, you must enable it under the Node Policy you wish to apply it to:

Apply SSO to Node Policies:

1. Navigate to **Policy** in the top panel.
2. Go to **Node Policy** and select a policy to allow AD SSO.

Under **Authentication Policy:**

1. For **Single Sign-On Method**, select **Active Directory**.
2. For **Domain Name**, enter your domain name as FQDN.
3. Click **Update**.

Enable Agent Based AD SSO

1. Install the agent as shown in *Installing Agent*.
 - The agent execution/installation account must be set as Domain account. If the agent is installed to a local account, SSO cannot function.

Enable Agentless AD SSO

This feature performs agentless SSO through WMI query to the Domain Controller (Supports all nodes that have authenticated to the domain). ZTNA Network sensor perform SSO authentication by comparing AD server domain logon event logs with the network sensor detected device host/domain name through netbios. Therefore, the network sensor must communicate with device netbios, remote wmi.

1. Navigate to **Preferences** in the top panel, then select **Authentication Integration > AD Single Sign-On** on the left panel.

Under **AD Single Sign-On**:

- For **Connect to AD Server from**, Specify the sensor to connect to the AD server. If you do not select any, connect from Policy Server.
- For **Server Address**, Specify a server address / domain for AD(Active Directory) Single Sign-On. Automatically authenticate users if the node is joined to a domain.
- For **User ID**, Specify the User ID for monitoring the server's event log.
- For **Password**, Specify the Password for monitoring the server's event log.
- For **Secondary AD**, Specify whether to use a secondary AD.
- Click **Update** button.

2. Choose **AD connection Settings**:

- By default this query is performed by the Policy Server.
- To perform the query from a Network Sensor, navigate to **Preferences > Beta Features** and select a Sensor from the **Connect to AD SSO Server from** drop down list.

Domain Controller Configuration:

1. Be sure the Bind DN account user is part of the following groups:

Administrative account status is not required for these privileges.

- Distributed COM Users
- Event Log Readers
- Server Operators

2. Run 'wmimgmt.msc' on the command prompt
3. From the Security tab on WMI Control Properties:
4. Select the CIMV2 folder
5. Click Security, Click Add and then select the Bind DN Account.
6. Check both Allow for **Enable Account** and **Remote Enable**
7. Apply changes

How to check whether device is joined to AD domain :

1. **How to check on the AD server:**

- Go to **Control Panel > Active Directory Users and Computers**
- Click **Domain > Computers** and check a joined computer list.

2. **How to check on the Client computer:**

- Open the **Command Prompt**

- Type `ping [AD domain]` and check the connection.

Setting preferences for collecting remote WMI information

Windows Management Instrumentation (WMI) is a Microsoft tool for web-based enterprise management. The WMI can be used to check your device and collect information from your device.

Basic Requirements

To use WMI on a Windows endpoint, verify the following settings: Remote WMI is only available when joined to an AD domain

- Port 135/TCP must be available for WMI communication.
- **The following services should be running:**
 - Server
 - Windows Management Instrumentation (WMI)
- WMI communication must be enabled in network firewalls.

Additional Configuration/Troubleshooting Options

Verify/implement the following configuration settings to work with WMI.

1. **Configure the following Active Directory settings. You can configure some of these settings on endpoints using a Group Policy.**
 - Member of Domain Administrators or Local Administrators group
 - **Member of the following domain groups:**
 - Performance Log Users
 - Distributed COM Users
 - **Member of a group with the following permissions:**
 - Act as part of Operating System
 - Log on as a batch job
 - Log on as a service
 - Replace a process
2. **Run the `dcomcnfg` utility and configure the following endpoint permissions:**
 - Access Permissions: Enable all
 - Launch and Activation Permissions: Enable all
3. **Run the `wmimgmt.msc` utility and configure WMI namespace security settings. Assign permissions to the following namespaces:**
 - `rootCIMv2`
 - `rootDefault`
 - `rootSecurityCenter`
 - `rootSecurityCenter2`

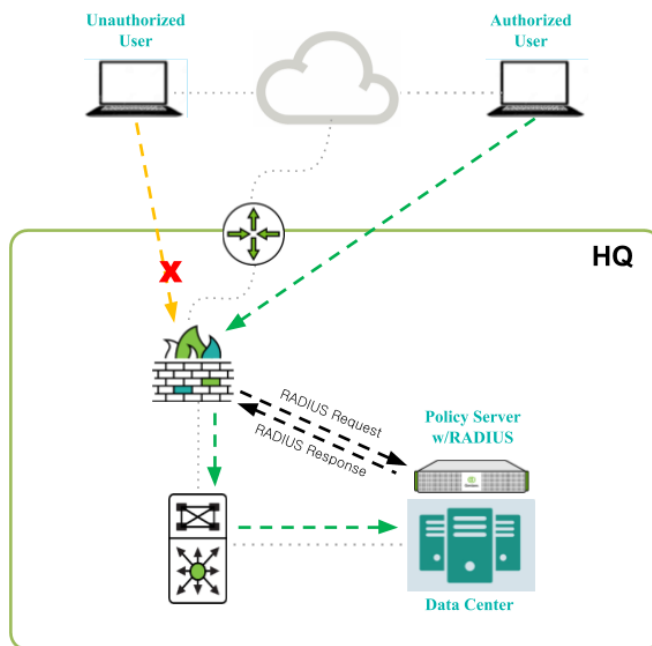
Assign the following permissions to each of the namespaces:

- Execute Methods
 - Enable Account
 - Remote Enable
 - Read Security
- Please check Agentless Q&A on *Frequently Asked Questions* page.

13.1.5 Authenticating VPN Users

Genians RADIUS Server can be used as the Authentication Server for your VPN environment. You can also limit which users can authenticate with the RADIUS Server.

Genians VPN Enforcement – Unauthorized User



Highlights:
 No Agent Required
 AD/Local User Accounts
 No RADIUS CoA Required

RADIUS Enforcement

- VPN Firewall/Server Sends Request to Genians
- Genians Responds with Access-Reject Message
- User Unable to Establish VPN Connection

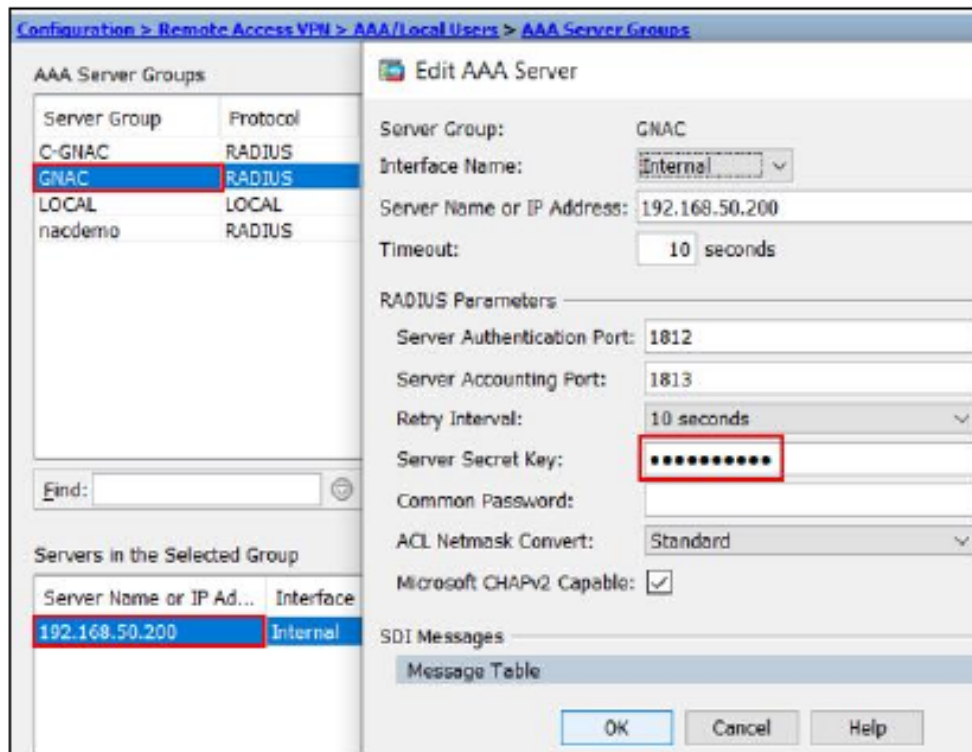


Integrating the Radius Server

First, ensure that the RADIUS Server is properly configured, and that your settings are compatible with your VPN environment.

See: *Configuring RADIUS Enforcement*

Next, configure Genian ZTNA as an Authentication Server in your VPN settings, by entering the **Shared Secret**, **Server Address**, **Authentication Port**, **Accounting Port**, and other info, as shown in the example below:



Configuring Authentication Restrictions

In some situations, you may wish to place restrictions on who can authenticate using the RADIUS Server. This can be accomplished by configuring an **RADIUS Policy**, and setting the **Access Policy** to **REJECT**.

1. Go to **Policy** in the top panel.
2. Go to **Policy > RADIUS Policy** in the left panel.
3. Click **Tasks > Create**
4. For **General**, input **Name**, **Priority**, and activation **Status**.
5. For **Conditions**, select **Attribute**.
6. Select **Operator** and **Value**.
7. Click **Add** button.
8. For **Policy**, choose to **REJECT** Authentication Requests that match the attribute conditions.
9. Click **Add** button.
10. Click **Create** button.

When an Authentication request meets the conditions defined, it will be rejected, unless it also meets the conditions of a policy with a higher priority.

13.1.6 Enabling Multi-Factor Authentication for ZTNA Connection Manager (MFA, 2FA, 2-Step)

With the ZTNA Connection Manager installed on an endpoint, and a ZTNA Gateway is Deployed, admins can configure MFA to use SMS, Google OTP or Passkeys. The Passkeys setting includes options such as Windows Hello PIN, Fingerprint and Face.

Regardless of which MFA method is chosen, they are all configured through a RADIUS Policy. The RADIUS Policy defines conditions, access policies, attributes and MFA options.

Click on the appropriate link below depending on which MFA option you would like to enable.

Configuring MFA with SMS

SMS can be used to verify identity by prompting to enter a code only known to the person possessing the registered mobile phone number.

In order to enable MFA using SMS, you will need to create a new Radius Policy.

Step 1 - Create a new Radius Policy

1. Navigate to Policy in the top panel
2. In the left window, click on Radius Policy
3. Click on Tasks and select Create
4. Enter Name for Radius Policy
5. Under the Conditions section, select the criteria to match on
6. Click Add
7. Scroll down to the Policy Section
8. Set Access Policy to 'Continue' (this allows for the MFA challenge)
9. Set 2-Step Authentication to 'Text Message'
10. Click Create

Note: Status can be left in 'Disabled' mode until you are ready to test.

Note: In order for MFA using SMS to function, ensure the user account has a mobile number entered under Management > User > userid > User Information > Mobile Phone.

Step 2 - Test / Validate

1. Connect using the Genian ZTNA Connection manager
2. Right-click on the tray icon
3. Select Network Access and then site name to connect
4. Sign in with user ID/password
5. An 'Authentication Code' window should display
6. This code will be sent via SMS to the number list in the user profile
7. Enter code into the 'Authentication Code' window
8. If code is correct, ZTNA Connection Manager should update that you are now connected

Configuring MFA with Google OTP

Google One Time Passcode can be used to verify identity by prompting to enter a code only known to the person possessing the registered Authenticator App.

In order to enable MFA using Google OTP, you will need to create a new Radius Policy.

Step 1 - Create a new Radius Policy

1. Navigate to Policy in the top panel
2. In the left window, click on Radius Policy
3. Click on Tasks and select Create
4. Enter Name for Radius Policy
5. Under the Conditions section, select the criteria to match on
6. Click Add
7. Scroll down to the Policy Section
8. Set Access Policy to 'Continue' (this allows for the MFA challenge)
9. Set 2-Step Authentication to 'Google OTP'
10. Click Create

Note: Status can be left in 'Disabled' mode until you are ready to test.

Note: In order for MFA using Google OTP to function, ensure the Google Authenticator App is installed on your mobile device.

Step 2 - Test / Validate

1. Connect using the Genian ZTNA Connection manager
2. Right-click on the tray icon
3. Select Network Access and then site name to connect
4. Sign in with user ID/password
5. A 'Google OTP' window should display
6. Click 'Confirm' to begin the process to issue a new security key
7. On the next page, select the 'QR-Code' option and click 'Generate Security Key'
8. On your mobile device, open the Authenticator App and click the + sign
9. Scan the QR Code that was generated in the previous step
10. On the next page, enter the 6-digit code displayed in the Authenticator App
11. If code is correct, ZTNA Connection Manager should update that you are now connected

Configuring MFA with Passkeys

Passkeys can be used to verify identity by prompting to enter biometric information such as a fingerprint, face scan or a PIN only known to the person possessing the registered endpoint.

In order to enable MFA with Passkeys, you will need to create a new Radius Policy.

Step 1 - Create a new Radius Policy

1. Navigate to Policy in the top panel
2. In the left window, click on Radius Policy
3. Click on Tasks and select Create
4. Enter Name for Radius Policy
5. Under the Conditions section, select the criteria to match on
6. Click Add
7. Scroll down to the Policy Section
8. Set Access Policy to 'Continue' (this allows for the MFA challenge)
9. Set 2-Step Authentication to 'Passkeys'
10. Click Create

Note: Status can be left in 'Disabled' mode until you are ready to test.

Note: In order for MFA using Passkeys to function, ensure the Windows Hello options are configured on your PC (PIN, Fingerprint, Face, etc).

Step 2 - Test / Validate

1. Connect using the Genian ZTNA Connection manager
2. Right-click on the tray icon
3. Select Network Access and then site name to connect
4. Sign in with user ID/password
5. A Windows Hello window should display
6. Enter the appropriate method to verify your identity (PIN, Fingerprint, Face)

Note: If you are not presented with an option to choose from, this may be due to limitations of the endpoint you are connecting with. Check Windows Hello and/or Sign On options as applicable to confirm the capabilities of your specific endpoint/OS.

1. You will be prompted to register once and then prompted a second time to verify
2. Once verified, ZTNA Connection Manager should update that you are now connected

13.2 Managing Users and Groups

You can manage users by adding information such as departments and job titles to create, assign, and group users.

13.2.1 Managing Users

Provides instructions for creating, grouping, and tagging users.

Add a User

1. Go to **Management > User** in the top panel
2. Click **Tasks > Add User**
3. Click **Save**

Remove User

1. Go to **Management > User** in the top panel
2. Find **User** and click **Checkbox**
3. Click **Tasks > Remove User**
4. Click **Ok**

Assign Tag User

1. Go to **Management > User** in the top panel
2. Find **User** and click **Checkbox**
3. Click **Tasks > Assign User Tag**
4. Click **Save**

Assigning user departments

1. Go to **Management > User** in the top panel
2. Click **User ID**
3. In the **User Information** topic, click the **Search** button to assign a department.
4. Click **Update**

Note: Department assignment is not possible for users added through information synchronization.

Configuring User Account Options

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > User Account** in the left Preferences panel

Configure User Account Inactivity Options

1. Enter the following options:
 - **Disabling Inactive User** - Select an Inactivity period after which to disable an account, and select if the rule should be applied to Admin accounts.
 - **Deleting Inactive User** - Select an Inactivity period after which to delete an account, and select if the rule should be applied to Admin accounts.
2. Click **Update**

13.2.2 Managing User Groups

You can manage groups of users that uniquely identify them by Department, Job title, or by the machine type they use. This gives you more control over your users on the network.

Create a User Group

1. Go to **Policy** in the top panel
2. Go to **Group > User** in the left Policy panel
3. Click **Tasks > Create**
4. Click **Save**

Assign a User Group

1. Go to **Management > User** in the top panel
2. Find **User** and click **Checkbox**
3. Click **Tasks > Assign User Group**
4. Click **Save`**

Delete a User Group

1. Go to **Policy** in the top panel
2. Go to **Group > User** in the left Policy panel
3. Find **User Group** and click **Checkbox**
4. Click **Tasks > Delete**
5. Click **Ok**

13.2.3 User Account Password Policy

To configure a password policy that applies to end users

For password policies, this is a common policy that sets administrator accounts in addition to end-user accounts equally.

Configure Password Policy

To configure Password Policy for end users:

1. Enter the following options:
 - **Minimum Length** - Must be at least 9 Characters.
 - **Maximum Length** - Is 30 characters.
 - **Start with Alphabet** - To force password to start with a letter.
 - **Uppercase/Lowercase** - To force a mixture of Uppercase and Lowercase letters.
 - **Repeated Characters** - To specify whether or not they are allowed to have repeated characters in a row. i.e. "000, aaa"
 - **Numerical or Alphabetical Order** - To allow or not allow a numerical or alphabetical order.
 - **Regular Expression** - To use to validate a password. Enter in Expression and Error message.
 - **Username Password Restriction** - Passwords will not be able to use usernames.

- **Password Blacklist** - Block weak or easily guessed passwords. This will require you to upload a Blacklist file in .txt format.

2. Click `Update`

13.2.4 User Department Management

You can manage departments by adding or deleting department information that is available for your account

Adding departments

1. Go to **Management > User** in the top panel
2. Go to **Departments** in the left panel
3. Click **Tasks > Create**
4. Enter the following:
 - **Department Code**, This is the code for the department
 - **Department**, The name of the department
 - **Parent Department**, Select a higher department. (You must select this item to display it as a tree structure.)
 - **Node Group (option)**, Select whether to include as a node group condition
5. Click the `Save` button

Import Department CSV File

Create departments based on predefined files in the form of external CSV files

1. Go to **Management > User** in the top panel
2. Go to **Departments** in the left panel
3. Click **Tasks > Import**
4. Click `Select File` to select the CSV file to import
5. Click `Run`

Note: The CSV file is download through the download icon on the left side of the TASK button, and is used by following the form.

Deleting Departments

1. Go to **Management > User** in the top panel
2. Go to **Departments** in the left panel
3. Check the check box on the left side of the department you want to delete.
4. Click **Tasks > Delete**

Note: To delete a department, you must either release the department from the account assigned to it or there must be no sub-department entries associated with it

To specify a department node group

To use an IP request system on a department-based basis, you must specify a node group containing departmental assignable IP bands

1. Go to **Management > User** in the top panel
2. Go to **Departments** in the left panel
3. Select the check box for the department you want to assign a node group to
4. Click **Tasks > Add to Node Group**
5. Click **Save**

Undepartmentalize node groups

1. Go to **Management > User** in the top panel
2. Go to **Departments** in the left panel
3. Select the check box for the department you want to assign a node group to
4. Click **Tasks > Remove from Node Group**
5. Click **Save**

13.2.5 Manage job titles

You can manage titles by adding or deleting available titles to your account.

You can define user groups using user titles, and create node groups based on the user groups defined.

Based on the node group created, you can specify a policy as the target for enforcement in the Genian ZTNA.

Adding Job Titles

1. Go to **Management > User** in the top panel
2. Go to **Job Titles** in the left panel
3. Click **Tasks > Create**
4. Enter the following:
 - Job Title Code
 - Job Title
5. Click **Save**

Deleting Job Titles

1. Go to **Management > User** in the top panel
2. Go to **Job Titles** in the left panel
3. Check the check box on the left side of the Job Title you want to delete.
4. Click **Tasks > Delete**

Import Job Titles CSV File

When creating a user job title, create job titles based on a predefined file in the form of an external CSV file.

1. Go to **Management > User** in the top panel
2. Go to **Job Titles** in the left panel
3. Click **Tasks > Import**
4. Click **Select File** to select the CSV file to import
5. Click **Run**

Note: The CSV file is downloaded through the download icon on the left side of the TASK button, and is used by following the form.

13.2.6 Using the User Registration Page

You can use the User Registration feature to receive a request from the user to create an account for the Genian ZTNA itself.

1. Go to **Policy** in the top panel
2. Click the node **policy name** to which you want to receive the account creation request.
3. Enable the User Account Request option for the Authentication Policy entry.
4. Click the **Update** button at the bottom.
5. Click the upper right **apply** button.

13.3 Integrating User Directories

You can configure the Policy Server to authenticate to external authentication systems using LDAP, RADIUS, IMAP, POP3, SMTP, or other third-party systems.

13.3.1 RADIUS

Remote Authentication and Dial-in User Service (RADIUS) is a broadly supported client-server protocol that provides centralized authentication, authorization, and accounting functions.

You can configure Policy Server to integrate with existing external RADIUS Server for User Authentication. When a user is authenticated through a captive web portal or an agent, the user password is authenticated through a RADIUS server.

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **RADIUS Server** section in the main window
4. For **Server Address**, enter the RADIUS server's IP Address or FQDN.
5. For **Server Port**, enter the RADIUS server's port (Default is 1812)
6. For **Shared Secret Key**, enter the pre-shared secret key for RADIUS authentication.
7. Click **Update**

13.3.2 LDAP (Active Directory)

Lightweight Directory Access Protocol (LDAP) is an Internet protocol used to maintain data that may include departments, people, groups of people, passwords, email addresses, and much more. Genian ZTNA can be integrated with LDAP to collect User Information and validate User Credentials.

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **LDAP Server** section in the main window
4. Enter the following:
 - **Server Address:**
 - **Server Port:** (*LDAP=389, LDAPS=636*)
 - **Base DN:** (*e.g. CN=Users,DC=company,DC=com*)
 - **Bind DN:** (*Should be FQDN: e.g. Administrator@company.com*) (*Bind Account should have Administrator Privileges*)
 - **Bind Password:**
 - **User Naming Attribute:** (*e.g. sAMAccountName*)
 - **SSL Connection:** (*Turn on if using LDAPS*)
5. Click **Update**
6. Click **Test** to test configuration settings (*Test account can be any User Account found within the Base DN*)

Note: Known Issues

LDAP Server connection failed. URI=ldaps://[IP]:[PORT]/, ERRMSG='-1:Can't contact LDAP server, TLSv1.0=-1:Can't contact LDAP server'

Possible Fix: Update AD(LDAP) Server Operating System to latest patches. Known issues authenticating against Active directory over Secure LDAP on un-patched servers due to encryption incompatibility.

EMAIL is the service provided by most organizations, making it an easy choice to provide the user directory. You can check the user's username and password using **SMTP**, **POP3**, and **IMAP**.

13.3.3 IMAP

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **IMAP Server** section in main window
4. Enter in **Server Address**, **Server Port**, and **Domain Name**
5. Click **Update**
6. Click **Test** to test configuration settings

Examples

Service Name	Server Name	Port	Domain
Google G Suites	imap.gmail.com	993	Your Domain
Exchange Online (Office 365)	outlook.office365.com	993	Your Domain

13.3.4 POP3

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **POP3 Server** section in main window
4. Enter in **Server Address**, **Server Port**, and **Domain Name**
5. Click **Update**
6. Click **Test** to test configuration settings

Examples

Service Name	Server Name	Port	Domain
Google G Suites	pop.gmail.com	995	Your Domain
Exchange Online (Office 365)	outlook.office365.com	995	Your Domain

13.3.5 SMTP

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **SMTP Server** section in main window
4. Enter in **Server Address**, **Server Port**, **Connection Security** and **Domain Name**
5. Click **Update**
6. Click **Test** to test configuration settings

Examples

Service Name	Server Name	Port	Connection Security	Domain
Google G Suites	smtp.gmail.com	465	SMTPS	Your Domain
Office 365	smtp.office365.com	587	MSA/STARTTLS	Your Domain

Note: Known Issues

Gmail Error: "Authentication failed.Authentication failed.SMTP(535-5.7.8:Username and Password not accepted. Learn more at <https://support.google.com/mail/?p=BadCredentialsy32sm41405227qt>)"
Fix: Turn on Less secure app access in Google account settings / security or use SAML integration

13.3.6 SAML 2.0

Security Assertion Markup Language (**SAML**) is an open standard that allows exchanging authentication and authorization data between parties. SAML consists of an End User and a Service Provider (SP) that requires authentication, and an Identity Provider (IdP) that provides authentication services. If Genian ZTNA is integrated with Google through SAML, Genian ZTNA becomes SP and Google becomes IdP.

The following are the basic configuration steps for SAML integration.

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **SAML2** section in main window
4. Copy the **SP Entity ID** and **SP ACS URL** values
5. Input these values into the *IdP server* during Genian ZTNA SAML configuration.
6. For **IdP Entity ID** and **IdP SSO URL** , enter the values obtained from the IdP server.
7. For **x509 Certificate**, Paste the certificate issued by the IdP server.
8. Click **Update**
9. Click **Test** to test configuration settings

Okta (SAML2.0) - CWP

This guide details authentication between Genian ZTNA (Service Provider), and Okta (Identity Provider).

This enables user authentication through Okta without having to manage users in Genian ZTNA.

SSO is achieved by invoking Okta authentication using the SAML2.0 protocol on the Genian ZTNA CWP(Captive Web Portal) page and checking Okta for user authentication.

Recommended Version

Product	Version
Genian ZTNA PolicyServer	V6.0
Okta APP	SAML2.0

Supported features

The Okta SAML integration currently supports the following features:

- SP-initiated SSO
- IdP-initiated SSO

For more information on the listed features, visit the https://help.okta.com/okta_help.htm?type=oie&id=ext_glossary

Configuration steps

The following steps provide only a basic integration, which will be automatically applied after the first setup.

Step 1: Register an Okta account (If needed)

1. Go to <https://www.Okta.com/free-trial/> and apply for a trial account.
 - Select your information and country and enter the domain you want to use for authentication.
2. Check the authentication mail received at the email address you requested.
 - An account information confirmation mail will be sent to the requested email address under the title 'Activate your Okta account'.
3. Click the **Activate Okta Account** button for activating your account.
 - When you log in, you will see a screen that sets the initial password change, security image, and security questions.
4. Add OTP for Okta Admin console connections.
 - Okta console connection requires OTP 2factor authentication and requires iPhone, Android OTP app installation and OTP registration.
 - Once you have completed OTP registration and login, SAML APP setup for interworking will now begin.

Step 2: Add and set up SAML APP for authentication integration

1. In the menu, navigate to **Applications > Applications**.
2. From the **Browse App Catalog** menu, search for the Genians ZTNA application and select application.
3. Click the "Add Integration".
4. Select the Sign On tab.
5. Click the **Sign on methods > SAML 2.0 > More details** button in the middle of the screen to view IdP information.

6. Copy and paste the following details into the Genian ZTNA **Web Console > Preferences > User Authentication > Authentication Integration > SAML2**.
 - **IdP SSO URL** - the Identity Provider **Sign on URL** from Okta.
 - **IdP Entity ID** - the Identity Provider **Issuer** from Okta.
 - **x509 Certificate** - download the **Signing Certificate** from Okta and copy and paste the contents of the file.
7. In **Sign in button text**, enter the text that will appear on the SAML authentication button in the ZTNA Web Console Authentication page.
8. Click the **Update** button at the bottom of the Genian ZTNA Web Console Settings screen.

Note: Make sure that you entered the correct value in the Subdomain field under the General tab. Using the wrong value will prevent you from authenticating via SAML to ZTNA.

- The following SAML attributes are supported:

Name	Value
firstName	user.firstName
lastName	user.lastName
email	user.email

Step 3: Adding and assigning accounts for Okta Authentication Integration

If you are already registered, go to number 5

1. Go to the Okta Console screen menu **Directory > Groups**.
2. Click the **Add Group** button in the middle of the screen to create a group.
3. Go to the Okta Console Screen Menu **Directory > People**
4. Click the **Add Person** button in the middle of the screen to add users.

Note: The Password entry selects whether the administrator should specify a password to create or change it at the user's initial login.

5. Go to the Okta Console screen menu **Application > Application**.
6. Click the triangle icon on the right side of the APP that you registered above and click **Assign to Users**
7. On the pop-up screen, click the **Assign** button on the right side of the account to be used for authentication integration through the APP to assign it to the APP.

Authentication Integration Test

How to test on Okta My Apps (IdP-initiated SSO)

1. Connect to the Okta My Apps and click the ZTNA SAML App.

How to test on Genian ZTNA Web Console (SP-initiated SSO)

1. Connect to the Web Console and click the **Test** button in the topic **Preferences > User Authentication > Authentication Integration > Authentication Test**.
2. In the pop-up window, select **SAML2** for the repository.
3. A new pop-up window displays the Okta authentication page and authenticates by entering your user-name and password.
4. On the authentication screen, click the login button.

How to test on the Genian ZTNA CWP page (SP-initiated SSO)

1. Prepare the device (node) to which the Genian ZTNA Node Policy is assigned the Authentication Method password policy.
2. Access the Genian ZTNA CWP page.
3. Click the **Login** button on the CWP page.
4. On the authentication screen, click the login button.
5. A new pop-up window displays the Okta authentication page and authenticates by entering your user-name and password.
6. If the message 'Authentication succeeded' is displayed, the authentication link has been successful.

Note: After setting up the authentication link, you must add the OKTA IdP domain to the enforcement policy permissions to display the authentication link window even in the blocked state.

1. To add permissions
2. Go to Policy > Object > Network
3. Click Task > Create
4. Enter general information
5. Condition > FQDN > Enter IdP Domain (e.g. genians.okta.com)
6. Click Create
7. Go to Permission
8. Create permissions using network objects that you create
9. Assign permissions that you create **in** a enforcement policy

Okta (SAML2.0) - Web Console

This guide details authentication between Genian ZTNA (Service Provider), and Okta (Identity Provider).

SSO is achieved by invoking Okta authentication using the SAML2.0 protocol on the Genian ZTNA web console page and checking Okta for administrator authentication.

Recommended Version

Product	Version
Genian ZTNA PolicyServer	V6.0
Okta APP	SAML2.0

Prerequisites

The current version does not support JIT provisioning, so you cannot authenticate without a administrator created in Genian ZTNA (SP). Please create a administrator in ZTNA first.

Supported features

The Okta SAML integration currently supports the following features:

- SP-initiated SSO
- IdP-initiated SSO

For more information on the listed features, visit the https://help.okta.com/okta_help.htm?type=oie&id=ext_glossary

Configuration steps

The following steps provide only a basic integration, which will be automatically applied after the first setup.

Step 1: Register an Okta account (If needed)

1. Go to <https://www.Okta.com/free-trial/> and apply for a trial account.
Select your information and country you want to use for authentication.
2. Check the authentication mail received at the email address you requested.
An account information confirmation mail will be sent to the requested email address under the title 'Activate your Okta account'.
3. Click the **Activate Okta Account** button for activating your account.
When you log in, you will see a screen that sets the initial password change, security image, and security questions.
Okta console connection requires OTP 2factor authentication and requires iPhone, Android OTP app installation and OTP registration.
Once you have completed OTP registration and login, SAML APP setup for interworking will now begin.

Step 2: Add and set up SAML APP for authentication integration

1. In the menu, navigate to **Applications > Applications**.
2. From the **Browse App Catalog** menu, search for the Genians ZTNA application and select application.
3. Click the "Add Integration".
4. Select the Sign On tab
5. Click the **Sign on methods > SAML 2.0 > More details** button in the middle of the screen to view IdP information.
6. Copy and paste the following details into the Genian ZTNA **Web Console > Preferences > General > Console > SAML2 Authentication > Identity Provider (IdP)**.
 - **IdP SSO URL** - the Identity Provider **Sign on URL** from Okta.
 - **IdP Entity ID** - the Identity Provider **Issuer** from Okta.
 - **x509 Certificate** - download the **Signing Certificate** from Okta and copy and paste the contents of the file.
7. In **Sign in button text**, enter the text that will appear on the SAML authentication button in the ZTNA Web Console Authentication page.
8. Click the **Update** button at the bottom of the Genian ZTNA Web Console Settings screen.

Note: Make sure that you entered the correct value in the Subdomain field under the General tab. Using the wrong value will prevent you from authenticating via SAML to ZTNA.

Step 3: Adding and assigning accounts for Okta Authentication Integration

If you are already registered, go to number 5

1. Go to the Okta Console screen menu **Directory > Groups**.
2. Click the **Add Group** button in the middle of the screen to create a group.
3. Go to the Okta Console Screen Menu **Directory > People**
4. Click the **Add Person** button in the middle of the screen to add users.

Note: The Password entry selects whether the administrator should specify a password to create or change it at the user's initial login.

5. Go to the Okta Console screen menu **Application > Application**.
6. Click the triangle icon on the right side of the APP that you registered above and click **Assign to Users**
7. On the pop-up screen, click the **Assign** button on the right side of the account to be used for authentication integration through the APP to assign it to the APP.

Authentication Integration Test

How to test on Okta My Apps (IdP-initiated SSO)

1. Connect to the Okta My Apps and click the ZTNA SAML App.

How to test on the Genian ZTNA Admin Web Console page (SP-initiated SSO)

1. Connect to the Genian ZTNA Admin Web Console sign in page.
2. Click the **SAML Login** button on the sign in page.
3. A new pop-up window displays the Okta authentication page and authenticates by entering your username and password.

Note: After setting up the authentication link, you must add the OKTA IdP domain to the enforcement policy permissions to display the authentication link window even in the blocked state.

- ```
1. To add permissions
2. Go to Policy > Object > Network
3. Click Task > Create
4. Enter general information
5. Condition > FQDN > Enter IdP Domain (e.g. geniains.okta.com)
6. Click Create
7. Go to Permission
8. Create permissions using network objects that you create
9. Assign permissions that you create in a enforcement policy
```

## 13.3.7 Testing Integration

You can test the integration configurations of **RADIUS**, **LDAP**, **IMAP**, **POP3**, **SMTP**, or **SAML** to verify successful connections.

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Authentication Integration** in the left Preferences panel
3. Find **Authentication Test** section at the bottom of main window
4. Click **Update** if you made any configuration changes
5. Click **Test** to test configuration settings

## 13.3.8 Troubleshooting

- *LDAP Search Failed - Operations Error*



## 13.4 Synchronizing User Directories

Additional information such as department, job title, email, and group is required if policy is to be established using the usage information. If the user is not created locally but exists externally, this information should be retrieved via synchronization. Additional information can be used to create user groups or use them as node group conditions. Genian ZTNA can source this info from various sources.

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**Note:** This feature required Enterprise Edition

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### 13.4.1 RDBMS

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**Note:** This feature required Enterprise Edition

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You can synchronize user directories with a Relational Database Management System(RDBMS). A Relational Database Management System (RDBMS) is a database engine/system based on a relational model. Most modern commercial and open-source database applications are relational in nature

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Data Synchronization** in the left Preferences panel
3. Click **Tasks > Create**
4. Find **General** section in main window
5. Set **Synchronization Interval** and **Action**
6. Find **Advanced > External DB** section in main window. Select **RDBMS**
7. Find **Advanced > User, Department, Job Title, Node, and LifeCycle Information** sections in main window. Add in information as needed.
8. Click **Tasks > Synchronize Now**

### 13.4.2 Synchronizing User Directories

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**Note:** This feature required Enterprise Edition

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Genian ZTNA can use an LDAP directory as a source of user and organizational information. LDAP synchronization allows user accounts to be created locally and used for administration or policies. LDAP synchronization is commonly used with Microsoft Active Directory (AD) systems.

## Creating Synchronization with AD

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Data Synchronization** in the left Preferences panel
3. Click **Tasks > Create**

### Under **General**

1. For **ID**, type unique name.
2. For **Update Interval**, select the specified time or periodic interval for this Synchronization.
3. For **Applying Policy**, select `Enabled` for applying change after Synchronization. If there are several synchronization settings, you can set it to `Disabled` and enable only the last one.

### Under **Database**

1. For **Type**, section LDAP
2. For **Server Address**, type IP Address or FQDN of Active Directory server
3. For **Server Port**, type AD LDAP service port. by default LDAP port is 389. if you use LDAPS (LDAP over SSL) default port is 636.
4. For **SSL Connection**, select `On` if you use LDAPS.
5. For **DB Username**, type Bind DN of Active Directory. Normally, you can use email format like `administrator@company.com`
6. For **DB Password**, type Bind DN user's password

### Under **User Information**

1. For **Table Name**, type base distinguished name (DN) of users. For example: `CN=Users,DC=company,DC=com`
2. For **Where Clause for DB**, type `(&(objectClass=user)(objectCategory=person))` for filtering person object.
3. For **Column Name for Username**, type `sAMAccountName`
4. For **Column Name for Full Name**, type `displayName`
5. For **Column Name for Department**, type `$distinguishedName, IF(LOCATE('OU=', $)>0, SUBSTRING($, LOCATE(' ', $)+1), '')`
6. For **Column Name for Memberships**, type `memberOf`
7. For any other extra information, you can use LDAP attribute name for each column name.

### Under **Department Information**

1. For **Table Name**, type base distinguished name (DN) of organizationUnit (OU). For example: `DC=company,DC=com`
2. For **Where Clause for DB**, type `objectClass=organizationalUnit` for filtering OU object.
3. For **Sort Criteria**, type `@NAMEPATH` for ordering based on department name.
4. For **Column Name for Department ID**, type `distinguishedName`
5. For **Column Name for Department**, type `name`
6. For **Column Name for Parent Dept.**, type `$distinguishedName, SUBSTRING($, LOCATE(' ', $)+1)`

7. Click **Save** at the bottom

**Attention:** Active Directory does not provide a userPassword attribute, so user passwords cannot be synchronized. Therefore, separate linkage should be set. check the *LDAP (Active Directory)*

### 13.4.3 CSV file or URL

**Note:** This feature required Enterprise Edition

You can add users to the Policy Server by importing end user information from a comma-separated value (CSV) file.

1. Go to **Preferences** in the top panel.
2. Navigate to **User Authentication > Authentication Synchronization** in the left panel.
3. Click **Tasks > Create**.
4. Find the **General** menu.
5. Set **Update Interval**.
6. Find **Advanced > DB Type** and select **CSV**.
7. In the **Data Synchronization** list, click the **checkbox** in the desired synchronization list.
8. Click **Tasks > Synchronize now**.

### 13.4.4 Google G Suite

**Note:** This feature required Enterprise Edition.

Genian ZTNA can use the G Suite directory as a source of user and organizational information. G Suite Sync lets you create user accounts locally and use them for management or policies.

Here's how to sync user and organization information based on G Suite.

#### Create sync settings

1. Move to **Preferences** in top panel.
2. Move to **User Authentication > Data Synchronization** in left panel.
3. Click **Tasks > Create**.

In **General** section

1. For **ID**, Enter name here
2. For **Update Interval**, Select the specified time or periodic interval for synchronization.
3. For **Policy Apply**, After synchronization, select **Enabled** to reflect the changes. If you have multiple sync settings, you can set it to **Disabled** and enable only the last sync.

In **Data Source** section

1. **DB Type**: Google G Suite
2. **Authorization Code**: Enter Authorization code. Click the `Generate Google Authorization Code` button at the top, and copy and enter the code that is output after clicking the `Allow` button on the account login.
3. **DOMAIN**: When you enter a domain, only the information from that domain is synchronized. If not entered, information about all domains to which the account belongs is synchronized.
4. **VIEW TYPE**: Select the data synchronization range according to authority. Typically, `admin_view` for an account with admin privileges, otherwise `domain_public`.

In **User information** section

1. For **Table Name**, Enter `users`.
2. For **Column Name for Username**, Enter `primaryEmail`.
3. For **Column Name for Full Name**, Enter `name/fullName`.
4. For **Column Name for Department ID**, Enter `orgUnitPath`.

In **Department Information** section

1. For **Table Name**, Enter `orgunits`.
2. For **Displaying Sorted Hierarchies**, Enter `@NAMEPATH` to show based on department name.
3. For **Column Name for Department Code**, Enter `orgUnitId`.
4. For **Column Name for Department Name**, Enter `name`.
5. For **Column Name for Parent Department**, Enter `parentOrgUnitId`.
6. Click **Create** button.

**Attention:** G Suite does not provide a password attribute when using the API, so user passwords cannot be synchronized. Therefore, separate linkage should be set. See SAML 2.0 in: [doc: ../integrate-external](#).

## 13.4.5 REST API Server

Genian ZTNA can use REST API Server as a source of user and organization information.

REST API Server synchronization allows user accounts to be created locally and used for administration or policy.

REST API Server requests are called using the HTTP GET method, and the response data format must be in JSON Object format.

The following example describes how to synchronize user information with REST API, from the application Slack.

User information in slack can be fetched through the `users.list` API, from URL <https://slack.com/api/users.list> which supports GET and POST requests. Info on how to use can be found at <https://api.slack.com/methods/users.list>

In ZTNA, REST API information is provided through Swagger.

Select REST API Server as the DB type and enter <https://slack.com> as the server address. Enter `/api/users.list?token=<API Token>` for the user information source. For column name, enter the path to extract values from JSON Object. See the content below, or the previous `users.list` help link for more examples.

### Pre-Requisites (In Slack)

- Create a Slack app with a properly privileged Slack Workspace account. Use **\*\* Add features and functionality > Permissions \*\***
- Obtain an access token and give it a `user:read` OAuth Scope. In our example we will use a **Bot User OAuth Access Token**
- Once these steps are completed, install the app to your Workspace. The app must be reinstalled after every configuration.

### Test the connection

In order to perform a connection test, default values must be entered for:

| ITEM            | set value                | Description                                         |
|-----------------|--------------------------|-----------------------------------------------------|
| REST API Server | Server Address           | Enter the server IP to call the REST API.           |
|                 | page parameter name      | Page parameter name to process multiple outputs set |
|                 | Page start number        | Set the page start number.                          |
|                 | Page Size Parameter Name | Enter the parameter name that specifies the number  |
|                 |                          | of prints on one page set.                          |
|                 | page size                | Set the number of prints per page.                  |
|                 | datasource cutoff        | Set when using multiple synchronization servers.    |

---

**Note:** If the connection test does not work properly, first check whether the communication between **Policy Server** and **Synchronization Server** is normal.

---

### Create sync settings

1. Go to **Preferences** In the top menu Bar
2. Go to **User Authentication > Data Synchronization** in the left side panel.
3. Select **Tasks > Create** and fill out the following forms.

#### General

1. **ID** : Select a Name for the synchronization
2. **Update Interval** : Configure when to synchronize the information.
3. **Policy Apply** : Enable to reflect changes after synchronization.

## Data Source

- For DB type, select REST API Server and enter the server address being used.
  - Ex) `https://slack.com` for slack, `https://(policy server IP):8443` for ZTNA
1. **DB Type** : REST API Server
  2. **Server Address** : Enter the URL of the server.
  3. **Parameter Name for Page Number** : Set the page number parameter name to be sent to the server during paging processing.
  4. **Start Number for Page Number** : Set the page start number during paging processing.
  5. **Parameter Name for Records Size Per Page** : Set the page size parameter name to be sent to the server during paging processing.
  6. **Records Size Per Page** : Set number of records to fetch per page.
  7. **Data Source Name** : Set a DSN to protect against accidental data deletion during synchs.

---

**Note:** Steps 3-6 can be left at their default values when synching from Slack

---

## User Info

When entering user information sources, enter `/api/users.list?token=<API Token>` if using API Key for mutual authentication or `/api/users.list` if using API service account. \* Column name enters the path to extract values from JSON Object. path is separated by `.`

- Ex) ID in case of JSON Response [ { "id": "..", "name": ".." }, { "id": "..", "name": ".." } ] Enter `id` for the column ID and `name` for the column name.
  - Ex) JSON Response { "users": { "members": [ { "id": "..", "name": ".." }, { "id": "..", "name": "In case of ".." } ] } }, enter `users.members.id` for the ID column name and `users.members.name` for the name column name.
1. **Data Source** : Enter the path to query. In our case we will add our access token to the path where the user list is stored at slack.com. `/api/users.list?token=xoxb-xxxxxxxxxx-xxxxxxxxxxxxxxxx-xxxxxxxxxxxxxxxxxxxxxxxxxxxxxxxx`
  2. **Where Clause for User** : Leave blank.
  3. **Column Name for Username** : Enter the path of the desired user value in JSON Object. In this example we will use `members.name` to use the first name of the Slack user.
  4. **Column Name for Full Name** : Enter the path of the desired user value in JSON Object. In this example we will use `members.real_name` to use the display name of the Slack user.
  5. **Department ID column name** : Enter the path of the desired user value in JSON Object. In this example we will use `members.team_id` to use the team id of the Slack user.

---

### Note:

- You may synch any variable returned with any info field that Genian ZTNA supports. Example: Email addresses as Usernames (may require different permissions in data source).
- You can repeat the process show under the **User Info** section for Department, Job Title, Node, and Device information.

### 13.4.6 Testing Synchronization

1. Go to **Preferences** in the top panel
2. Go to **User Authentication > Data Synchronization** in the left Preferences panel
3. Select checkbox of desired configuration.
4. Click **Tasks > Synchronize Now**
5. You can check result through **Logs** to verify.

---

**Note:** Some database types can be configured with a "Data Source Name", which can prevent accidental deletion of content. If a data source name is not configured, the information from the database will be fully overwritten during the sync.

---

### 13.4.7 Troubleshooting

- *LDAP Search Failed - Operations Error*

## 13.5 Configuring User Authentication Options

### 13.5.1 General Options

General options for authentication criteria, device ownership, logon recovery, and restrictions can be found under **Preferences > User Authentication > User Authentication**

#### Available Options

- **Authentication Criteria**
  - Select **Node** or **Device** (Mac+IP or MAC).
- **Authorized IP**
  - Specify whether to automatically set Authorized IP as IP address first authenticated from. This applies when the Authorized IP in the User Management settings is blank.
- **Authorized MAC**
  - Specify whether to automatically set Authorized MAC as MAC address first authenticated from. This applies when the Authorized MAC in the User Management settings is blank.
- **Automatic Ownership**
  - Specify whether to automatically assign User and Department ownerships to IP and/or MAC when a user is authenticated.
- **Regex for Username**
  - Enter a regular expression to validate username.
- **Hiding Username**

- Hide username under asterisks during authentication/
- **Log Out Button**
- Specify whether to display Log Out button in CWP page.
- **Find Username / Reset Password**
- Enable or disable recovery for lost username/password.
- **Verification code valid time**
- Set the validity code valid time for sms 2 factor authentication ( 2fa / mfa )
- **Displaying Authentication Info**
- Specify whether to display User Authentication Information in Agent Tray Menu and CWP page.
- **User Info for Node Info**
- Specify whether to add User Information (Name and Description) into Node Information for User Account Request approval.

### 13.5.2 Configuring Authentication Options by Single node

1. Click a node **IP Address** and select **Policy tab**
2. Select one option under **User Authentication Policy**

#### Available Options

- **Comply with Authentication Policy under Node Policy**
- **Require User Authentication (Allow All Users)**
- **Require User Authentication (Allow Specified User(s))**

### 13.5.3 Configuring Authentication Options by Group

Node Authentication policies determine when and how nodes of a given group will be required to authenticate, as well as the conditions of the process.

To configure options for authentication methods, requirements, time restrictions and logon procedure, select a node policy under **Policy > Node Policy > [Policy Name]** and scroll down to **Advanced > Authentication** in the main panel.

#### Available Options

- **Authentication Method**
- Select **Host Authentication** (Allow by node identity) or **Password Authentication**.
- For **Password Authentication** specify allowed **Authentication Sources** and Enable/Disable **2 Factor Authentication**. ( 2fa / mfa )
- **Single Sign-On Method**
- Select **Active Directory**, **External API** or **Genian API** and enter required info.
- **Auth User Group**



- Select a user group to allow for authentication from the policy member nodes.
- **Auto-Logout**
- Enable to log out users after a set time period.
- **Auto-Logout For Down Node**
- Enable to log out users after a node link status is down for a set time period.
- **Reauthentication Interval**
- Specify how often to renew authentication.
- **Session Timeout Notification**
- Specify time prior to the login session expiration that you want to notify users.
- Agent required.
- **Custom User Login Page URL**
- Specify URL for a custom user login page which will be redirected when a user clicks a Login button in CWP page.
- **Authentication at Startup**
- Specify whether to require Authentication when the computer restarts or wakes.
- Agent required. Not compatible when Single Sign-On is enabled.
- **Display Name of Username**
- Specify a display Name of Username for use on Captive Portal and Agent Authentication prompt.
- **Display Name of Password**
- Specify a display Name of Password for use on Captive Portal and Agent Authentication prompt.

## 13.6 Instant Approval of User Account Request

Genian ZTNA provide Instant Approval, a method that is automatically approved without the administrator manually approving the user account.

You can increase ease of use for guest accounts by automatically granting approval for specific uses without administrator confirmation.

### 13.6.1 Create User Account Request Purpose

Create a purpose to automatically set the authorization method when creating an account to perform user authentication in Genian ZTNA.

1. Go to **Preferences** in the top panel.
2. Select **Purpose > User** from the **Properties** column on the left.
3. Select **Create** from the **Tasks** menu.
4. In the **Options** section, set the **Approval Options > Email Approval for Guest** setting to **OFF**.
5. Set the setting value to **ON** in the lower **Instant Approval** item.
6. Click the **Save** button.

## 13.6.2 Creating and Authenticating User Accounts for Purposes Set with Instant Approval

When applying for a user account, if you select the Instant Approval set user purpose and proceed with the application, the account will be activated when the request is completed.

1. Click the **Request User Account** button on the CWP page.
2. Select the **Purpose** item as **Instant Approval set user purpose**.
3. Enter **indicates a required field** in your user account request.
4. Click the **Submit** button.
5. After checking the **Results Page**, click the **Main Page** button.
6. Click the **Login** button to perform **authentication** using the account created.

## 13.7 Use the Collection consent page when requesting a user account

In Genian ZTNA, you can use CWP to display terms and conditions for collecting information about personal information that is entered upon user account request and obtain user consent.

## 13.8 Add User Consent Page

Set the contents of the consent page to display to the user. The Agree to Collect User Information page is divided into the terms and conditions to display to the user and the collection information items that set the information to collect to the user.

1. Go to **Preferences** in the top panel
2. Go to **Captive Web Portal > Consent Page > Privacy Policy** in the left panel
3. Click **Tasks > Create**
4. Enter the following items:
  - Title, Consent Page Name
  - Description, Description of the consent page
  - Node Group Exception, Node group targets that do not want to display the Agree page
  - Priority, Display order of consent pages
  - Contents, Agree Page Content
  - Type, Content creation type (Choose from HTML, Markdown, or TEXT)
  - **User Input Field, Add buttons or fields to be filled in by the user.**  
(For field generation, see the following document: *Using custom fields to enter additional information to account*)

### 13.8.1 Setting up user consent pages

In order to get user consent from the CWP page, you must first activate the user registration button and then activate the consent page.

1. Go to **Preferences** in the top panel
2. Click the node **policy name** to which the users are assigned to accept consent.
3. Enable the User Account Request option for the Authentication Policy entry.
4. Enable the Consent Page option as well.
5. Click the `Update` button at the bottom.
6. Click the upper right `apply` button.

## 13.9 Approve User Accounts via Email

In Genian ZTNA, the user account can be approved for use by a general account (where a user account exists), not an administrator, using email.

By using the method of approval via email, you can act as an administrator by granting permission for approval to general users, not administrators.

---

**Note:** Mail server configuration is required to use Email Approval. Email information is required for the general user account.

---

### 13.9.1 Create User Account Request Purpose

Approval method is emailed to user account request, and the purpose of giving Email Approver for request to Existing User is created

1. Go to **Preferences** in the top panel.
2. Select **Purpose > User** from the **Properties** column on the left.
3. Select **Create** from the **Tasks** menu.
4. In the **Options** section, set the **Approval Options > Email Approval for Guest** setting to **ON**.
5. In the **Email Approver** item, set the setting value to **Existing User(Sponsor)**.
6. Click the **Save** button.

### 13.9.2 Approve user account requests via email

When requesting a user account, you must specify the purpose for which email approval is possible.

1. Check the **approval request email** on the email server.
2. Click the **Approve** button in the email.

## 13.10 User Account Request period setting

When requesting a User Account from Genian ZTNA, you can enter the account usage period.

It can be used for the purpose of managing visitors and outsourced personnel by setting the period of use for the account.

### 13.10.1 Creating a User Account Purpose with a set period of use

Create a purpose to receive the period of use. If you use Email Approval or Instant Approval as the approval method, please refer to the following items.

*Instant Approval of User Account Request , Approve User Accounts via Email*

1. Go to **Preferences** in the top panel.
2. Select **Purpose > User** from the **Properties** column on the left.
3. Select **Create** from the **Tasks** menu.
4. Under **Request Field Options**, click **Assign**.
5. Add **Expiry** item in **Request Field** window.
6. Click the **OK** button.
7. Click the **Save** button.

### 13.10.2 Setting a limit on the period of use

You can limit the period of use by changing the period setting for the purpose. If the limit date is set to 3 days, the user can enter a period of use from a minimum of 1 day to a maximum of 3 days.

1. Go to **Preferences** in the top panel.
2. Select **Purpose > User** from the **Properties** column on the left.
3. Click **New Request** in the **Field Options** section to the right of the created use.
4. Click **Expiry** in the Field Name field.
5. In **Settings**, change the **Start Date Restrictions > Period Restrictions** item from **90 days** to **3 days**.
6. Change the setting value in **Required Field** to **ON**.
7. Click the **Update** button.

## CONTROLLING ENDPOINTS WITH AGENT

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**Note:** This feature required Professional or Enterprise Edition

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An Endpoint device is an Internet-capable computer hardware device on a TCP/IP network. This can be anything from desktop computers, laptops, smartphones, tablets, thin clients, printers or other specialized hardware.

You can control Windows and macOS, Linux endpoint devices with the Genian ZTNA Agent. When installed onto the endpoint, it then runs in the background and communicates with the Policy Server when changes to the endpoint are made. The Agent takes action with policies to manage the endpoint system information, such as the operating system, updates, applications, registry entries, and services, that aids you in detecting and dealing with anomalies on the endpoint.

### 14.1 Configuring Agent Defaults

Agent default policies determine the basic installation and operation of the agent on endpoints. Additional node specific agent settings may also be configured. See: *Configuring Agent Settings by Node Policy*

To configure agent default options, select **Preferences** on the menu bar and **Agent** in the left panel.

#### 14.1.1 Installation Path

- Defines the location the agent files will be installed to. Default: %ProgramFiles%GeniGenian (Windows Only)

#### 14.1.2 User Confirmation before Installing

- Determines if the installer gives a consent prompt to install agent when the installer is executed. (Windows Only)
- Select: **On**, or **Off**

### 14.1.3 Displaying Installation Progress

- Displays progress of installation. (Windows Only)
- Select: **On**, or **Off**
- If **On**, select **On**, or **Off** for installation result message.

### 14.1.4 Registering Install Information

- Select: **On**, or **Off** for displaying agent under the Programs section in Control Panel. (Windows Only)

### 14.1.5 Agent Deletion Method

- Select: **Use Authorization Code**, **Without Authorization Code**, or **Not Allowed** to designate if and how an end user can remove the agent from their endpoint.

### 14.1.6 Automatic Update Target

- Select a Network Object to receive automatic agent updates.

### 14.1.7 Service Target Group

- Specify a network object to enable the agent running.

### 14.1.8 Automatic pop-up message

- Enable to display detailed message contents in a pop-up badge, rather than only a preview.

### 14.1.9 View My Status on Tray Menu

- Select: **On**, or **Off** for Tray/ Menu Bar Agent Icon info. (Windows and OSX only)

### 14.1.10 Web Browser Type

- Select: **Internet Explorer**, **Default Browser** or **Enter Path** to set the default browser for agent popups. (Windows only)
- Enter **Path** if applicable

## For Internet Explorer

- Select: **Enable**, or **Disable** for **Hiding Address Bar / Toolbar**
- Select window size: **Normal**, or **Maximized**
- Select **On**, or **Off** for **Display Window in Front**

### 14.1.11 Agent Custom Icon

- Upload a custom image for the tray icon. (Windows only)

### 14.1.12 KeepAlive Interval

- Specify: **Second(s)**, or **Minute(s)** for communication interval to update Agent runtime log. 5 Missed communications will define the agent as not running.

### 14.1.13 Scheduling Agent Restart

- Specify: **Minutes Hours** past computer entering sleep mode for the agent to reboot. (Windows and OSX only)

### 14.1.14 SSL Certificate

- Select: **On**, or **Off** for installing SSL Certificate from the policy server. (Windows and OSX only)

## 14.2 Supported Operating Systems and Plugins

### 14.2.1 Supported Windows

- Windows 8.1
- Windows 8.1 x64
- Windows 10
- Windows 10 x64
- Windows 11
- Windows 11 x64
- Windows Server 2012
- Windows Server 2012 x64
- Windows Server 2016
- Windows Server 2016 x64
- Windows Server 2019
- Windows Server 2019 x64

## 14.2.2 Supported Windows Plugins

| Plugin Name         | Description                                                                                                         |
|---------------------|---------------------------------------------------------------------------------------------------------------------|
| TcpSessionControl   | Collects TCP Connection Information periodically and disables a network interface that exceeds the configured o     |
| ChangeHostName      | Changes the computer name.                                                                                          |
| IESecurityControl   | Changes the way the computer manages internet connections and browser settings for Internet Explorer.               |
| NetIfControl        | Disables a network interface when an anomaly is detected.                                                           |
| CheckValidPwd       | Checks password validation policies to let users to use stronger passwords.                                         |
| WLanControl         | Controls Wireless Connection Manager options and actions.                                                           |
| GetMonitorInfo      | Collects information about all monitors currently connected to the computer.                                        |
| GetPrinterInfo      | Collects information about all printers currently installed on the computer.                                        |
| WMIInfoCollect      | Uses WMI to collect the system information.                                                                         |
| ScreenSaverControl  | Changes lock screen and wallpaper settings to control.                                                              |
| SharedFolderControl | Collects information about the shared folders over a network and controls its settings.                             |
| WinSecureControl    | Controls Windows security settings for Firewall, Remote Desktop and Autorun.                                        |
| InfoSW              | Collects information about all installed software on the system.                                                    |
| InfoNet             | Collects information about all network interfaces and the ports detected to display in Node information.            |
| InfoWin             | Collects information about OS installed on the computer.                                                            |
| WinUpdate           | Checks for Windows updates and executes an action on a scheduled basis.                                             |
| InfoHW              | Collects hardware information such as motherboard, memory and disk space to display in Node Information.            |
| Vaccine             | Collects information about the Antivirus software installed on the computer and the virus mitigation logs in real t |
| GeniAuth            | Uses Genian Agent Authentication and customizes the display options.                                                |
| PowerCtrl           | Conserves energy and controls the power options of the user's computer.                                             |
| DeployCtrl          | Deploys and executes files or copies files into a specific location.                                                |
| FileCtrl            | Runs, deletes, copies, moves and renames the files on the computer.                                                 |
| ProcessCtrl         | Terminates a specific process defined in Condition Settings.                                                        |
| Blank               | Checks Condition Settings configured in Agent Action.                                                               |
| ScriptCtrl          | Runs VB script or batch script.                                                                                     |
| DeviceCtrl          | Controls external device settings to disables any external devices not allowed.                                     |
| WConMgr             | Controls Wireless Connection Manager options and actions.                                                           |
| ARPCtrl             | Manages ARP table to prevent from ARP spoofing.                                                                     |
| UserMsg             | Changes slide-out notification settings to notify users.                                                            |
| AppRemove           | Uninstalls a program registered in Control Panel.                                                                   |
| DNSCtrl             | Controls DNS settings.                                                                                              |
| LanProfile          | Controls the wired authentication options and actions to provide authenticated network access for the Ethernet ac   |
| TrafficCtrl         | Collects network traffic Information periodically and disables a network interface that exceeds the configured lim  |
| MalwareDetector     | Collects information to detect Malware by integrating with Insights ECO.                                            |
| CheckSoftware       | Collects information about all installed software on the system.                                                    |
| NetCtrl             | Controls Windows security settings for Firewall, Remote Desktop and Autorun.                                        |
| ZTNAClient          | Controls Zero trust network access Connection Manager options and actions.                                          |

## 14.2.3 Supported macOS

- OS X Mavericks
- OS X Yosemite
- OS X El Capitan
- macOS Sierra
- macOS High Sierra



- macOS Mojave
- macOS Catalina
- macOS Big Sur
- macOS Monterey
- macOS Ventura



## 14.2.4 Supported macOS Plugins

| Plugin Name   | Description                                                                                                                 | Agent Version |
|---------------|-----------------------------------------------------------------------------------------------------------------------------|---------------|
| InfoOS        | Collects information about OS installed on the computer.                                                                    | 6.0.0~        |
| InfoHW        | Collects information about hardware of motherboard, memory and disk space.                                                  | 6.0.0~        |
| InfoSW        | Collects information about all installed applications on the system to display Applications in Software of Node Management. | 6.0.0~        |
| InfoNet       | Collects information about all network interfaces and the open ports detected to display in Node information.               | 6.0.0~        |
| InfoVaccine   | Collects information about Antivirus software installed on the system.                                                      | 6.0.0~        |
| MacUpdate     | Checks for macOS updates and executes an action on a scheduled basis.                                                       | 6.0.0~        |
| ProcessCtrl   | Terminates a specific process defined in Condition Settings.                                                                | 6.0.0~        |
| Blank         | Checks Condition Settings configured in Agent Action.                                                                       | 6.0.0~        |
| GeniAuth      | Uses Genian Agent Authentication and customizes the display options.                                                        | 6.0.0~        |
| SaverCtrl     | Collects information about the lock screen configured and controls the configuration settings.                              | 6.0.0~        |
| InfoPrinter   | Collects information about all printers currently installed on the computer.                                                | 6.0.0~        |
| InfoMonitor   | Collects information about all monitors currently connected to the computer.                                                | 6.0.0~        |
| PowerCtrl     | Controls the power options of the system.                                                                                   | 6.0.0~        |
| CheckSoftware | Collects information about all installed applications on the system to display Applications in Software of Node Management. | 6.0.0~        |
| UserMsg       | Changes slide-out notification settings to notify users.                                                                    | 6.0.0~        |
| FileCtrl      | Runs, deletes, copies, moves and renames the files on the computer.                                                         | 6.0.0~        |
| WirelessCtrl  | Provides information about wireless APs detected on wireless network interfaces and restricts disallowed AP connections.    | 6.0.0~        |
| ARPCtrl       | Perform administrative tasks on ARP tables on your PC.                                                                      | 6.0.0~        |
| DeployCtrl    | Run the file or download it to a specific location.                                                                         | 6.0.0~        |
| HostNameCtrl  | Change the host name of the computer.                                                                                       | 6.0.0~        |
| DeviceCtrl    | Controls external device settings to                                                                                        | 6.0.0~        |

## 14.2.5 Supported Linux

- Ubuntu 18 ~ 22
- Gooroom 2 ~ 3
- HamoniKR 3.0 ~ 4.0
- Hancorn Gooroom 2 ~ 3
- Tmax Gooroom 2, 21

## 14.2.6 Supported Linux Plugins

| Plugin Name        | Description                                                                                                   | Agent Version |
|--------------------|---------------------------------------------------------------------------------------------------------------|---------------|
| Blank              | Checks Condition Settings configured in Agent Action.                                                         | 6.0.0~        |
| InfoHW             | Collects hardware information such as motherboard, memory and disk space to display in Node Information.      | 6.0.0~        |
| InfoSW             | Collects information about all installed software on the system.                                              | 6.0.0~        |
| InfoNet            | Collects information about all network interfaces and the open ports detected to display in Node information. | 6.0.0~        |
| InfoOS             | Collects information about OS installed on the computer.                                                      | 6.0.0~        |
| NetIfCtrl          | Disables a network interface when an anomaly is detected.                                                     | 6.0.0~        |
| ZTNACon-Manager    | Controls Zero trust network access Connection Manager options and actions.                                    | 6.0.0~        |
| UpdateOS           | Checks for linux updates and report.                                                                          | 6.0.0~        |
| InfoAV             | Collects information about Antivirus software installed on the system.                                        | 6.0.0~        |
| ProcessCtrl        | Terminates a specific process defined in the action.                                                          | 6.0.0~        |
| ARPCtrl            | Manages ARP table to prevent from ARP spoofing.                                                               | 6.0.0~        |
| DeployCtrl         | Executes files or downloads files into a specific location.                                                   | 6.0.0~        |
| UserMsg            | Changes slide-out notification settings to notify users.                                                      | 6.0.0~        |
| InfoMonitor        | Collects information about all monitors currently connected to the computer.                                  | 6.0.0~        |
| CheckValid-Pwd     | Checks password validation policies to let users to use stronger passwords.                                   | 6.0.0~        |
| DeviceCtrl         | Controls external device settings to disables any external devices not allowed.                               | 6.0.0~        |
| SharedFolderCtrl   | Collects information about the shared folders over a network and controls its settings.                       | 6.0.0~        |
| Uninstall Programs | Removes specific uninstalleable programs among Debian packages and programs installed with Snap.              | 6.0.0~        |

## 14.3 Configuring Agent Settings by Node Policy

Agent policies can be configured on the basis of individual node policies, which are then applied to node groups. To configure, select a node policy under **Policy > Node Policy > [Policy Name]** and scroll down to **Advanced > Agent Policy** in the main panel to access the following options:

### 14.3.1 Agent

- Specify:
- **On, Off, or Delete** to toggle agent run status or remove the agent from the node(s).
- Deleting Agent Not Running:
- Define a time frame of **Hours, Days, Weeks or Months** upon which to Delete the agent, if it has not connected to the policy server. Input **0** to disable this function.

### 14.3.2 Dissolvable Agent

- The Windows Dissolvable Agent is a temporary executable that is pushed to a Windows system during a scan and automatically exits after collecting info from the endpoint. Control plugins are not fully supported by the dissolvable agent. Their control functions are inactive when the agent is in dissolvable mode, but they still may be used to collect endpoint information.
- Select **On, or Off**

### 14.3.3 Agent Fail-safe

- Deactivates the agent after a defined a time frame of **Minutes, Hours, Days, Weeks or Months** since the agent has not been connected to the policy server.
- Select **On, or Off**

### 14.3.4 Tray Icon

- Toggles the appearance of the Agent Icon in the OSX Menu- Status Bar or the Windows System Tray.
- Select **On, or Off**

### 14.3.5 Execution Account

- Select **Computer Logon Account, Privileged Account, or Local System Account** to run the agent. Ensure the account selected has the proper permissions to perform agent actions configured under enforcement policy. See: *Controlling Windows, Controlling macOS*.
- **Computer Logon Account** - Runs the agent from whatever account is logged in. Use this option if you plan to deploy the Agent through Active Directory GPO, SCCM or other software distribution mechanism.
- **Privileged Account** - Select this option for multiple non administrators within a domain to self install the Agent, and configure with domain administrator credentials.
- **Local System Account** - Select this account option for root level credentials on the local machine. Best used for node policies applied to a single device. The agent must be installed by the local account you wish to use.

### 14.3.6 Policy Update Interval

- Specify a time frame of **Hours** for the agent to check the policy server for updates.
- Select between 1-4 **Hours**

### 14.3.7 Deleting Outdated Information

- Define a time frame of **Hours, Days, Weeks** or **Months** upon which to Delete the agent information, if it has not connected been updated. Input **0** to disable this function.

## 14.4 Controlling Windows

The following Agent plugins are supported on Windows endpoints.

### 14.4.1 Agent Sensor

The Agent Sensor plug-in performs basic node detection on network segments without network sensors.

The agent sensor receives information contained in packets such as DHCP, NetBIOS, UPNP, and mDNS that occur periodically on the network, but does not perform active scanning or enforcement. It is ideally used for monitoring only, and installation in networks where full sensor deployment may be inconvenient.

The agent sensor receives information contained in packets such as DHCP, NetBIOS, UPNP, and mDNS that occur periodically on the node, so that it can gather information without affecting the node. Information gathering using nmap, snmp, etc. is collected by physical sensor equipment with registered agent sensors.

- Monitor nodes in network segments where network sensors are difficult to install
- Network segment that only wants to perform node monitoring without network control

#### Technical Details:

- This plug-in does not require a separate setup.
- No enforcement actions are conducted by this plugin.
- The agent-based sensor plugin communicates directly to the Policy Server but is not registered as a full Network Sensor.
- The agent-based sensor can be operated regardless of Windows login (service)
- **Agent plugin Functions:**
  - **New Node Registration:** Registers nodes based off of recieved traffic.
  - **Subnet Scanner:** Detects new nodes based on the result of ARP Request transmission for the entire subnet (C class) every 6 hours
  - **Node Health Check:** Updates the node link status by sending a ping once every 10 seconds and checking the ARP table in Windows.
  - If a node is not identified in the ARP table for 3 minutes, it is shown as having a link status of Down.
  - If a node is not identified in the ARP table for 2 minutes, a ping is sent every 10 seconds.
  - The plugin will listen on port 3871 to see if a full Network Sensor is deployed in ther network.

- \* If a Full Network Sensor is detected, the agent based sensor will go into standby.
- \* When multiple window sensors are operating in the same band, transmission is performed to distinguish them.

### How to use the Agent Sensor

1. Set the agent sensor band on a physical network sensor so that the agent sensor can be added as a child of that network sensor.
  - Go to **System** in the top panel.
  - **Select a network sensor** from the list of equipment.
  - Go to the **Appliance tab** and enter the network for the agent sensor in Other Settings Item > Agent Sensor Network.
2. Assign a sensor node action to the node policy in the band where you want to use the agent sensor.
  - Go to **Policy** in the top panel.
  - Go to **Node Policy** in the left Policy panel.
  - Click the **Default Policy** or another Policy in Node Policy window.
  - Find **Agent Action**. Click **Assign**.
  - Find **Agent Sensor** in the **Available** section. Select and drag it into the **Selected** section.
  - Click **Add**.
  - Click **Update**.

---

**Note:** When the plug-in is installed and operational on the agent installed on the node, a virtual agent sensor is added to the policy server.

---

## 14.4.2 Changing Computer Name

You can control the name of the Windows device.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Change Computer Name** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions: **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Control Method**, specify a if you would like to change the Hostname to a **User Defined** value, or a value based on the **Hostname Rule of the Node Policy**
  - If **User Defined**: enter a hostname.

2. For **Restart Options**, specify whether to Prompt or Restart.
  - **Delaying Computer Restart**, specify time to postpone a restart. (*seconds - hours*)
3. For **Agent Execution Account**, specify an account that can change a computer name from drop-down.
4. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Change Computer Name** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

---

**Note:** The name cannot contain all special and blank characters except the minus sign (-), and must be less than 63 bytes.

---

### 14.4.3 Collecting Antivirus Software Information

Policy Server communicates with the Agent to collect antivirus software information that is installed on your Windows devices.

These antiviruses can also be detected via Agentless WMI query. See: [WMI Node Info Scan](#)

#### List of Supported Antivirus

Check all Antivirus supported with Genian ZTNA by version.

| Vendor      | Product                          | Genian Version |
|-------------|----------------------------------|----------------|
| Ahnlab      | AhnLab V3 Endpoint Security      | 3.5.0          |
| Ahnlab      | AhnLab V3 Internet Security      | 3.5.0          |
| Ahnlab      | AhnLab V3 Net for Windows Server | 3.5.0          |
| Avira       | Avira Antivirus Pro V15          | 5.0.3          |
| Avira       | Avira Endpoint Security V15      | 5.0.3          |
| Avira       | Avira Free Antivirus V15         | 5.0.3          |
| BitDefender | Bitdefender Antivirus Plus       | 5.0.14         |
| BitDefender | Bitdefender Internet Security    | 5.0.14         |
| BitDefender | Bitdefender Total Security       | 5.0.14         |
| CrowdStrike | CrowdStrike FALCON Sensor        | 5.0.29         |
| Cylance     | CylancePROTECT                   | 5.0.24         |
| ESET        | ESET Endpoint Security           | 5.0.3          |
| ESET        | ESET Internet Security           | 5.0.3          |
| ESET        | ESET Smart Security              | 5.0.3          |
| ESET        | ESET NOD32 Antivirus             | 5.0.3          |
| Estsecurity | Estsecurity AIYak V2 V3          | 3.5.0          |
| F-Secure    | F-Secure Anti-Virus              | 5.0.15         |
| Hauri       | Hauri ViRobot VRIS 2011          | 3.5.0          |

continues on next page



Table 2 – continued from previous page

| Vendor         | Product                        | Genian Version |
|----------------|--------------------------------|----------------|
| Hauri          | Hauri ViRobot 5.5, 7.0         | 3.5.0          |
| INCA internet  | Anti-Virus/Spyware 3.0         | 4.0.11/3.5.19  |
| Kaspersky      | Kaspersky Endpoint Security    | 3.5.0          |
| McAfee         | McAfee VirusScan Enterprise    | 4.0.23/3.5.19  |
| McAfee         | McAfee Total Protection        | 5.0.24         |
| McAfee         | McAfee Endpoint Security       | 5.0.24         |
| Microsoft      | MS Forefront                   | 4.0.7/3.5.1    |
| Microsoft      | MS Security Essentials         | 5.0.3          |
| Microsoft      | MS System Center               | 5.0.3          |
| Microsoft      | Windows Defender               | 4.0.14         |
| Panda Security | Panda Endpoint Protection Plus | 5.0.30         |
| Sophos         | Endpoint                       | 5.0.17         |
| Sophos         | Home                           | 5.0.17         |
| Symantec       | Symantec Endpoint Protection   | 4.0.2/3.5.0    |
| Trend Micro    | OfficeScan                     | 3.5.0          |
| Virus Chaser   | Virus Chaser                   | 4.0.2/3.5.0    |

### Collect Antivirus Software Information

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Antivirus Software Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Action** section:

1. For **Boolean Operator**, leave as default **OR**.
2. For **Settings**, leave the default and click **Add** button to include others if they are not listed.
3. Click **Update**.
4. Go to Node **Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action** section, click **Assign**.
7. Find **Collect Antivirus Software Information** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.4.4 Collecting Computer OS Information

The Policy Server uses the Agent collects Operating System information from Windows endpoints.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Computer OS Information** in the Agent Action window. *(Notice there are two. One for Windows, and another for MacOS)*

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Collect Computer OS Information** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.4.5 Collecting Hardware Information

Policy Server communicates with the Agent to collect hardware information about Windows devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Hardware Information** in the Agent Action window. *(Notice there are three. One for Windows, one for MacOS and another for Linux)*

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Plugin Settings**, adjust **CPU, Memory, and Disk Space Utilization Thresholds** based off of your network requirements.
4. For **Execution Interval**, adjust Periodic Interval. *(Seconds - months)*
5. Click **Update**.

6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Collect Hardware Information** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

### 14.4.6 Collecting Malware Info

When running, the Agent collects information about executable files on the endpoint, including but not limited to their source, file have, and signatures. The information collected may be provided to a vendor or third party for analysis. The information collected is not provided for any purpose other than malicious code detection and analysis.

- Detection results are provided in real time.
- Results may differ from similar solutions. User/ Administrator is responsible for actions taken in response to the results.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Malware Information** in the Agent Action window.
4. Enter in **CWP message, Conditions**, based off of your network requirements.

Under **Consent Agreement** section:

1. Select **I Agree** from the drop down to consent to sharing endpoint data for threat analysis.

Under **Collection Exceptions** section:

1. List directories to exempt from data collection. Commonly exempted sections include antivirus quarantine folders, or other directories where known malicious files may be stored.
2. Click **Update**.

To Apply this Agent Action to a Node Policy:

1. Go to **Node Policy** in the left Policy panel.
2. Click the [**Desired Node Policy**] in Node Policy window.
3. Find **Agent Action**. Click **Assign**.
4. Find **Collect Malware Information** in the **Available** section. Select and drag it into the **Selected** section.
5. Click **Add**.
6. Click **Update**.

### 14.4.7 Collecting Monitor Information

Policy Server communicates with the Agent to collect information about the monitor that is connected to your Windows.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Monitor Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Collect Monitor Information** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

### 14.4.8 Collecting Network Information

Policy Server communicates with the Agent to collect network information on the end users Windows devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Network Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Traffic Utilization Change Threshold**, change the percentage for bandwidth to trigger network traffic utilization.
2. For **Update Interval**, adjust Periodic Interval. (*Seconds - hours*)
3. For **Moving Average**, adjust the moving time to be greater than the Update Interval.

4. For **Collecting Open Port Information**, turn **On** to collect open port information.
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Collect Network Information** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

### 14.4.9 Collecting Printer Information

Policy Server communicates with the Agent to collect printer information on end users Windows devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Printer Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Virtual Printer Exceptions**, turn **On** to ignore printer drivers which are not connected to physical devices.
4. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
5. Click **Update**.
6. Go to **Policy > Node Policy** in the left Policy panel.
7. Click the **desired Policy ID** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Collect Printer Information** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

## 14.4.10 Collecting Software Information

Policy Server communicates with the Agent to collect software information that is running on end users Windows devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Software Information** in the Agent Action window. (*Notice there are two. One for Windows, and another for MacOS*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Collect Software Information** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

## 14.4.11 Collecting Windows System Information using WMI

Policy Server communicates with the Agent which uses Windows Management Instrumentation (WMI) to obtain Windows system information on end users Windows devices.

System information for domain joined machines can also be collected through agentless WMI query. See: [WMI Node Info Scan](#)

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Click **Tasks > Create** to create new Agent Action.
4. For **Name**, type unique name. (*e.g. WMI Identify Internal Battery*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

3. For **Plugin**, select **Collect System Information Using WMI** from drop-down.
4. For **Settings: Namespace**, select appropriate Namespace from drop-down or define Namespace in: **User Defined Namespace** (e.g. *rootCIMV2*)
5. For **Settings: WMI Query**, type in optional queries separated by semicolon. (e.g. *SELECT Caption FROM Win32\_Battery*)
6. For **Execution Interval**, adjust Periodic Interval. (*seconds - months*)
7. Click **Update**.
8. Go to **Node Policy** in the left Policy panel.
9. Click the **Default Policy** in Node Policy window.
10. Find **Agent Action** section, click **Assign**.
11. Find and double click newly created **Agent Action**. (e.g. *WMI Identify Internal Battery*)
12. Click **Add**.
13. Click **Update**.

### See WMI Results

You can wait for the Policy to run on the defined schedule or you can Run Actions Now to see results immediately.

1. Click **Policy** in the top panel.
2. Go to **Node Policy** in the left Policy panel.
3. Click **Checkbox** of Default Policy.
4. Click **Tasks > Run Actions Now**. (*Wait a few minutes for this Action to run*)
5. Go to **Management > Node**, find and click on **IP** of Windows Node with Agent Installed.
6. Find and click **System** tab.
7. Find **WMI Status** section to view WMI results.

### Creating Node Group for WMI Results

Create a Node Group based off of the WMI results from the **Agent Action** created from above. This Node Group then allows you to identify and enforce policies depending on your network requirements.

1. Click **Policy** in the top panel.
2. Go to **Group > Node** in the left Policy panel.
3. Click **Tasks > Create**

Under **General** section:

1. For **Category**, Choose default or Create New. (*This allows you to categorize your Node Groups*)
2. For **ID**, type unique name. (e.g. *WMI Internal Battery Group*)
3. For **Description**: (*Brief description of what this Node Group is for*)
4. For **Status**:, select **Enabled**.

Under **Condition** section:

1. For **Boolean**, select "AND" or "OR". ("AND" all conditions have to apply. "OR" any of the conditions have to apply)
2. For **Settings**, click **Add**. (These are the various conditions to be applied for proper grouping)
3. For **Options**, select **WMI**.
4. For **Operator**, select appropriate option from drop-down. (e.g. class/property value are equal to)
5. For **Value**, type appropriate class/property value. (e.g. Win32\_Battery/Caption, Internal Battery)
6. Click **Add**.
7. Click **Save**.

**WMI Query Examples:**

| WMI Name                  | Names-pace | WMI Query                                                                                 |
|---------------------------|------------|-------------------------------------------------------------------------------------------|
| Battery Info              | rootCIMV2  | SELECT Caption FROM Win32_Battery                                                         |
| HDD Vendor                | rootCIMV2  | SELECT Caption FROM Win32_DiskDrive                                                       |
| HDD Size                  | rootCIMV2  | SELECT Size FROM Win32_DiskDrive                                                          |
| HDD Model                 | rootCIMV2  | SELECT Model FROM Win32_DiskDrive                                                         |
| HDD Serial                | rootCIMV2  | SELECT SerialNumber FROM Win32_DiskDrive                                                  |
| Volume Serial             | rootCIMV2  | SELECT VolumeSerialNumber FROM Win32_LogicalDisk                                          |
| Graphics Card Info        | rootCIMV2  | SELECT Caption, DriverVersion FROM Win32_DisplayConfiguration                             |
| Graphics Card Res-olution | rootCIMV2  | SELECT CurrentHorizontalResolution, CurrentVerticalResolution FROM Win32_VideoController  |
| HP Driver Version         | rootCIMV2  | SELECT * FROM Win32_PnPSignedDriver WHERE Devicename LIKE 'HP%'                           |
| NDIS Driver Ver-sion      | rootCIMV2  | SELECT * FROM Win32_PnPSignedDriver WHERE Devicename LIKE 'NDIS%'                         |
| Printer Info              | rootCIMV2  | SELECT Drivername FROM Win32_Printer                                                      |
| DHCP service              | rootCIMV2  | SELECT Description, DHCPEnabled, IPEnabled FROM Win32_NetworkAdapterConfiguration         |
| NIC Traffic Info          | rootCIMV2  | SELECT BytesSentPersec, BytesReceivedPersec FROM Win32_PerfRawData_Tcpip_NetworkInterface |

**WMI Node Group Examples:** (Sample of the use of Operator: Equal to or Not Equal to, and Greater than or Less than)

| Node Group           | Options | Operator                            | Value                                   |
|----------------------|---------|-------------------------------------|-----------------------------------------|
| WMI Internal Battery | WMI     | class/property, value are equal to  | Win32_Battery/Caption, Internal Battery |
| WMI HDD Size         | WMI     | class/property, value are less then | Win32_DiskDrive/Size, 536870912000      |

**14.4.12 Checking Password Validation**

Policy Server communicates with the Agent to collect check the strength of a windows password



## Add the Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Checking Password Validation** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

## Checking Password Validation

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Checking Password Validation** in the Agent Action window.
4. Enter in **Conditions**, optional settings.

### Under **Plugin Settings**:

1. Select **On** or **Off** for:
  - **Display Account with Strong Password**: Specify whether to display an account with a strong password.
  - **Immovable Dialog Box** - Specify whether to lock Dialog Box in the center of the screen.
  - The settings below may be defined for both **Logged On Users** and **Logged Off Users**.
1. For **Password Check Options**, select **None**, **Protection** (check for password), or **Strength** (Checks password against password policy. See: *Managing Users and Groups*)
  - For **Action**, select **Force Password Change** (Which will mandate a password to be added, or mandate a password is made compliant, depending on the main password check option chosen), or **Check Password Strength** (Can be selected to check password strength without additional action, regardless of the main password check option. See: *Managing Users and Groups*).
2. For **Maximum Password Age**, Specify the period of time (*hours - months*) that a password can be used before the system requires the user to change it Enter 0 to Disable.
  - For **Expiry Notification**, Specify the period of time that users are notified before password expiration (*minutes - months*).
3. For **Username Exceptions**, Enter Username(s) to be excluded from password validation check.
4. For **Execution Interval**, adjust Periodic Interval. (*seconds - months*)
5. Click **Update**.

### 14.4.13 Inspecting TCP Connections

Policy Server communicates with the Agent to collect TCP Connection Information periodically and disables a network interface that exceeds the configured connection limits.

#### Add the Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Inspect TCP Connections** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

#### Inspect TCP Connections

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Inspect TCP Connections** in the Agent Action window.
4. Enter in **Conditions**, optional settings.

##### Under **Update Interval**:

1. For **Update Interval**, Specify the time interval to update the TCP connection information. Enter: 0 for No Update.
2. For **Connections Change Threshold**, Specify the percentage change in bandwidth to trigger TCP connection information update. (excluding LISTENING)
3. For **Connections Threshold**, Specify the number of connections to be considered as TCP connection information.

##### Under **Interface Control**:

1. For **Interface Control**, Specify whether to disable an interface if the connections exceed the specified limit.

##### Under **Interface Disabled Event Notification**:

1. For **Interface Disabled Event Notification**, Specify how to notify a user for the event of disabling an interface if the connections exceed the specified limit.
2. Click **Update**.

### 14.4.14 Controlling Instant Messaging Application

Policy Server communicates with the Agent to collect instant messaging application information on end users Windows devices. (e.g. Aim, GoogleTalk, Yahoo, MSN and more)

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Instant Messaging Application Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Action** section:

1. For **Boolean Operator**, leave as default **AND**.
2. For **Settings**, leave the default and click **Add** button to include others if they are not listed.
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Control Instant Messaging Application** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

### 14.4.15 Collecting Peer-to-peer Application Information

Policy Server communicates with the Agent to collect peer-to-peer application information on end users Windows devices. (e.g. *Torrent, Ares, BearShare, Shareaza, and more*)

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Peer-to-peer Application Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Action** section:

1. For **Boolean Operator**, leave as default **AND**.
2. For **Settings**, leave the default and click **Add** button to include others if they are not listed.
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**

5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Collect Peer-to-peer Application Information** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

### 14.4.16 Configuring Windows Security Settings

Policy Server communicates with the Agent to configure the Windows Security Settings on end users Windows devices. You can disable Guest Accounts, turn on Windows Firewall, block specific inbound ports (e.g. UDP/5355), turn off Remote Desktop, control Autorun settings, and setup sync with NTP.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Configure Windows Security Settings** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Firewall Control**, select **Turn On** to enable Windows Firewall, and enter inbound connection Protocols/Ports for blocking.
2. For **Remote Desktop**, select **Disable** to disable to use of Remote Desktop.
3. For **Recovery Console Auto Logon** select **Disable** or **Do Nothing**
4. For **Autorun**, select **Disable** to disable autorun on external devices. (*Media, External Device, Others*)
5. For **Internet Time Synchronization**, select **Turn On** to synchronize with NTP server. Enter **IP Address** and specify **Synch Interval**.
6. For **Scheduled Task for Windows XP**, select **Disable** to control scheduled tasks for Windows XP only.
7. For **Disabling Guest Account**, turn **On** to disable the use of Guest Accounts.
8. For **Require a password on wakeup**, select **Turn On** to enable a password to be required upon wakeup.
9. For **Screen**, select an inactivity period after which to turn off the screen.
10. For **Sleep**, select an inactivity period after which to put the machine to sleep.
11. For **Turn on fast startup**, choose to **Turn on**, **Turn off**, or to **Do Nothing** (For Windows 8 and later)
12. Click **Update**.
13. Go to **Node Policy** in the left Policy panel.

14. Click the **Default Policy** in Node Policy window.
15. Find **Agent Action**. Click **Assign**.
16. Find **Configure Windows Settings** in the **Available** section. Select and drag it into the **Selected** section.
17. Click **Add**.
18. Click **Update**.

### 14.4.17 Configuring Wireless Connection Manager

Wireless Connection Manager provides convenience for wireless connection configuration. - WCM makes it easier for users to use wireless LAN than the built-in wireless connection service offered by Windows - WCM provides 802.1x authentication

Policy Server communicates with the Agent to configure Wireless Connections with auto-connect, auto-reconnect, preferring specific networks, and much more. This Agent Action requires a configured Wlan Policy for use.

#### Wlan Policy

**Wlan Policies** are made up of **AP Profiles** and **Client Profiles**

They can be used along with the endpoint agent to set preferences and restrictions for accessing wireless networks.

To configure a Wlan Policy follow the steps below:

#### Creating AP Profile

For Creating AP Profile, please refer to *Configuring AP Profile for Wlan Policy*

#### Creating Client Profile

For Creating AP Profile, please refer to *Configuring Client Profile for Wlan Policy*

#### Creating Wlan Policy

1. Navigate to **Policy > Wlan Policy**.
2. Select **Tasks > Create**.
3. Enter the SSID(s) to be authorized for use.
4. Under **RADIUS Policy**, select a User group to allow for authentication.
5. Select **Client** and **AP profiles** to apply to the policy.
6. Click **Save**.

## Plugin Configuration

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Wireless Connection Manager** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **WLAN Policy**, click **Assign** to assign a WLAN Policy.
2. For **Wireless Connection Manager**, turn **On** to enable Wireless Connection Manager.
  - **Enforcing Wireless Connection Manager**, turn **On** to force the Wireless Connection Manager to run.
  - **Hiding Wireless Connection Manager for Wired**, specify whether to hide Wireless Connection Manager when a wired network is connected.
  - **Auto-Reconnect**, specify whether to automatically reconnect to a wireless network allowed with the strongest signal.
  - **Password Expiry Notification**, adjust time to allow a user to change password. (*hours - months*)
  - **Preferred Wireless Network**, specify whether the user connects to preferred wireless or wireless with strongest signal.
  - **Display Username**, use this field to display Username.
  - **Display Password**, use this field to display Password.
  - **Enabling Save Username**, turn **On** to allow user to save Username.
  - **Enabling Save Password**, turn **On** to allow user to save Password.
  - **Enabling Auto-Connect**, turn **On** to allow the latest wireless network to be connected automatically.
  - **Window Image**, click **Upload** to load a BMP file for the dialog box.
  - **Window Color**, specify a color for the dialog box.
  - **Font Color**, specify a color for the text in the dialog box.
  - **Contents for Window**, type to enter contents in the dialog box.
  - **HTML**, turn **On** to use HTML for contents to be displayed in the dialog box.
  - **Program at Log On**, click **Add** to add a Program to launch when user logs in. Specify Path or CLI parameter.
3. If **Wireless Connection Manager** Option set **Off**, Installed Wireless Connection Manager application will be removed.
  - if **Wireless Connection Manager** Action Policy is Disabled or removed on the applied Node Policy, Installed Wireless Connection Manager application will be removed also.
4. Click **Update**

5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action** and Click **Assign**
8. Find **Wireless Connection Manager** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**
10. Click **Update**

### 14.4.18 Configuring 802.1x Wired Authentication

802.1x is an IEEE Standard Switch-Port Authentication which provides assurance that a person behind an Endpoint Device is who they claim to be. In the wired environment, this is a physical port on a switch. In a wireless environment, it is an association with an Access Point(AP).In Port-Based Authentication, an Endpoint Device attempting to connect to a network (supplicant) will attempt to connect to an access point (authenticator)which will request authentication using EAP messages before communication with any other internal network devices can start. You can configure the Policy Server to authenticate users access through 802.1x.

#### Step 1. Create Node Group for Authentication by 802.1x

1. Go to **Policy** in top panel.
2. Go to **Group > Node** in the left Policy panel.
3. Click **Tasks > Create New Group for Policy**
4. Enter **ID** as **802.1x Authentication**.
5. Find **Condition** section in the Node Group window. Click **Add**.
6. Enter in the Following:
  - Criteria: **IP**
  - Operator: **is one of subnet**
  - Value: **(Network Subnet)**
7. Click **Save**.
8. Click **Apply** in the top right. Click **Close**.

#### Step 2. Create Node Policy for 802.1x Authentication

1. Go to **Policy** in top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click **Tasks > Create**. Complete steps in **Node Policy Wizard**.
4. On **General** tab. Enter **ID** as **802.1x Authentication**.
5. On **Node Group** tab. Select **802.1x Authentication** Node Group and move it to **Selected** column.
6. On **Policy Preferences** tab. Enter in **desired Options**.
7. On **Agent Action** tab. Select **Configuring 802.1X Wired Authentication** and move to **Selected** column.
8. On **Anomaly Definition** tab. *(Nothing required on this tab)*

9. Click **Finish**.
10. Click **Apply** in the top right. Click Close.

### Step 3. Configure 802.1X Wired Authentication Plugin

1. Go to **Policy** in top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Configuring 802.1X Wired Authentication**.
4. Add **Conditions** and **Agent Actions**.
5. Click **Update**.
6. Click **Apply** in the top right. Click Close.

*(Steps below are optional to use an existing Node Policy if you prefer not to create a new one)*

### Step 4. Assign Agent Action to Node Policy

1. Go to **Policy** in top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Find and click **Node Policy name**.
4. Find **Agent Action** section. Click **Assign**.
5. Locate **Configuring 802.1X Wired Authentication** and move to **Selected** column.
6. Click **Add**.
7. Click **Apply** in the top right. Click Close.

### Remove Agent Action from Node Policy

1. Go to **Policy** in top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Find and click **Node Policy name**.
4. Find **Agent Action** section. Locate **Configuring 802.1X Wired Authentication** and click **Delete** far right.
5. Click **Apply** in the top right. Click Close.

## 14.4.19 Authenticate User Using Genian Agent

Policy Server communicates with the Agent to authenticate users on windows devices.



### Add the Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Authenticate User Using Genian Agent** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

### Authenticate User Using Genian Agent

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Authenticate User Using Genian Agent** in the Agent Action window.
4. Enter in **Conditions**, optional settings.

#### Under **Authentication Policy**:

1. For **Authentication Methods**, Select a method to authenticate a user.
2. For **2-Step Authentication**, Select a 2-Step Authentication method.

#### Under **Agent Authentication Dialog Box Design**:

1. For **Window Image**, Specify an image for the Agent authentication dialog box.
2. For **Displaying Titlebar**, Specify whether to display a title bar on the Agent authentication dialog box.
3. For **Dialog Box Color**, Specify a dialog box color.
4. For **Font Color**, Specify a font color.
5. For **HTML Help Message**, Specify a HTML Help Message.
6. For **URL Button**, Specify a link to embed in the authentication window, and a button caption.

#### Under **Miscellaneous**:

1. For **Authentication Enforcement**, Specify whether to enforce an authentication by disabling the close action for the Agent Authentication dialog box.
2. For **Program Run after Authentication**, Add a program that is run after a user is successfully authenticated.
3. Click **Update**.

## 14.4.20 Controlling Antivirus Software Settings

Policy Server communicates with the Agent to collect information on the Antivirus Software installed on end users Windows devices so you can control scans, and force updates.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Antivirus Software Settings** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**.

Under **Plugin Settings** section:

1. For **Scheduled Antivirus Software Scan**, adjust frequency to collect information. (*Seconds - hours*)
2. For **Real-time Scan Off Events Exceptions**, specify the amount of times for Off Events to not be reported.
3. For **Antivirus Software Integration**, turn **On** to integrate with other Antivirus Software.
  - **Supported AV**
    - Ahnlab V3
    - Checkpoint Endpoint Security
    - ESTsoft Alyak
    - Hauri Virobot
    - INCA nProtect
    - Trend Micro APEX One
  - **Generating Mitigation Logs**, select **Generate Logs** or **Generate Error Logs** to generate mitigation logs.
  - **Period for Duplicate Logs Exception**, adjust time to exclude duplicate logs. (*Minutes - hours*)
  - **Real-time Scan Enforcement**, select **Off** to disable real-time scanning.
  - **Force Scan**, adjust how often to Force Scan. (*hours - months. Enter 0 to not enforce*)
  - **Scan Type**, select between **Full** or **Quick Scan**.
  - **Hiding Scanner**, turn **On** to hide the virus scan window from user.
  - **Force Update**, adjust how often to Force Update. (*hours - months*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Control Antivirus Software Settings** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.

10. Click **Update**.

### 14.4.21 Control Internet Explorer Security Settings

You can control the Security Settings of Internet Explorer on end users Windows devices. You can configure the options under General, Security, Content, and Connections tabs, as well as Add-Ons. Additionally, you can change browser settings using Add-on Controls.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Internet Explorer Security Settings** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**.

Under **Plugin Settings** section:

1. For **Internet Options General**:
  - **Home Page**, specify a home page or leave blank to not control.
  - **Empty Temporary Internet Files Folder**, select **Enforce** to delete all the temporary internet files stored during the session.
2. For **Internet Options Security**:
  - **Downloading Unsigned ActiveX Controls**, select **Disable** to not download unsigned ActiveX controls.
  - **Automatic Prompting for ActiveX Controls**, select **Disable** to disable the automatic prompting notifications.
  - **Automatic Prompting for File Downloads**, select **Disable** to disable the automatic prompting for download attempts.
  - **Blocking Pop-up**, select **Enforce** to prevent most pop-up windows from appearing.
  - **Trusted Sites**, turn **On** to add or remove Trusted Sites. Also can **Enable** and **Disable Server Verifications**.
3. For **Internet Options Connections**:
  - **Proxy Server**, specify whether to use or how to use a proxy server for User LAN. (*These settings will not apply to dial-up or VPN*)
    - **Do Not Use**, does not utilize the **Proxy Server**.
    - **Use Proxy Server**, add Address Port, enable optional Bypassing Proxy Server, enter in exceptions.
    - **Configure Advanced Settings**, enter HTTP, Secure, FTP, Socks Ports. Enable optional Bypassing Proxy Server, enter in exceptions.
4. For **Internet Options Content**:
  - **AutoComplete for Forms**, select **Disable** to prevent auto completion of forms.
5. For **Add-on Controls**:

- **Deleting Unused ActiveX Control**, turn **On** to delete unused ActiveX Controls installed.
  - **Removing Toolbar**, turn **On** to remove Toolbar.
  - **Removing Browser Helper Object**, turn **On** to remove Browser Helper Object.
  - **Exceptions**, type name of Add-ons to not be removed.
6. Click **Update**.
  7. Go to **Node Policy** in the left Policy panel.
  8. Click the **Default Policy** in Node Policy window.
  9. Find **Agent Action**. Click **Assign**.
  10. Find **Control Internet Explorer Security Settings** in the **Available** section. Select and drag it into the **Selected** section.
  11. Click **Add**.
  12. Click **Update**.

## 14.4.22 Controlling Network Interface

You can control wired and wireless network interfaces on end users Windows devices by disabling wired, wireless, bridged, and promiscuous mode. You can also send interface disabled event notifications with custom messages that appear as pop-ups.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Network Interface** in the Agent Action window.
4. Enter in **Conditions**, optional settings.

Under **Disabling Network**:

1. For **Network Type**, specify the Network type to be disabled. (*Wired, Wireless, or both*)
2. For **Exceptions**, turn on to enable the exclusion of specified Network Devices.
3. For **Disabling Network Bridge**, turn on to disable any Network Bridge Interface regardless of the exclusion above.
4. For **Disabling Promiscuous**, turn on to disable any Promiscuous Interfaces regardless of the exclusion above.
5. For **Interface Disabled Event Notification**, optional messages sent to user from Interface Disabled Events.

Under **Enforcing Network Device Properties**:

1. For **Internet Connection Sharing**, select to disable the shared Internet Connection.
2. For **IPv6**, select to disable the IPv6 Interface Connection.
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Control Network Interface** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

### 14.4.23 Controlling Network Traffic

Policy Server communicates with the Agent to collect TCP Connection Information periodically and disables a network interface that exceeds the configured connection limits.

#### Add the Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Controlling Network Traffic** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

#### Controlling Network Traffic

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Controlling Network Traffic** in the Agent Action window.
4. Enter in **Conditions**, optional settings.

#### Under **Network Traffic Control**:

1. For **Update Interval**, Specify the time interval to update the network traffic information.
2. For **Total Threshold**, Specify the total traffic for its limit.
3. For **Incoming Threshold**, Specify the Incoming traffic for its limit.
4. For **Outgoing Threshold**, Specify the Outgoing traffic for its limit.

#### Under **Notification**:

1. For **Interface Disabled Event Notification**, Specify how to notify a user for the event of disabling an interface if the connections exceed the specified limit.
2. Click **Update**.

### 14.4.24 Control Windows Firewall

When you use the **Enable automatic rule settings on plug-in assignment option**.

**Windows Firewall outbound rule** is set with the **permission object information of the enforcement policy** to which the node belongs.

Additional Windows Firewall restrictions can be configured in the Agent Plugin settings.

## Configure Network Control Options

1. **Notification** : Prompts the user for pop-up when setting up automatic rules.
2. **Message** : Enter the contents of the pop-up message when setting up the automatic rule.
3. **Custom Rule** : Set Windows Firewall rules yourself.
4. **Using FailSafe** : Stop the plug-in if it cannot connect to the Policy Server.

## Add Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Windows Firewall** in the Agent Action Window.
4. Add **Conditions** and **Agent Actions**.
5. Go to **Policy > Node Policy** in the left Policy panel.
6. Find and Click the **Node policy** to configure the network blocking policy.
7. Find **Agent Action** section. Click **Assign**.
8. Locate **Control Windows Firewall** and move to **Selected** column.
9. Click **Add**.
10. Click **Apply** in the top right. Click Close.

## Configure Network Blocking Policies in Enforcement Policy

### Step 1. Create Agent Action For Enforcement Policy

1. Go to **Policy** in the top panel.
2. Go to **Enforcement Policy > Agent Action** in the left panel.
3. Go to **Tasks > Create**.

### Under **General**

1. For **ID**, type unique name.
2. For **Description**. (*Brief description of what this Node Group is for*).
3. Find **Agent Action** section and configure the following options:
  - **OS Type** (*Windows*)
  - **Condition** (*Set the operating conditions*)
  - **Plugin** (*Network Control*)
  - **Settings** (*Set user notifications and custom rules*)
  - **Language**
  - **OS Edition**
4. Click **Create**

5. Click **Apply** in top right corner.

---

**Note:** Using the agent action in enforcement policy is an optional usage of the agent action, and not actually required.

---

### Step 2. Create Enforcement Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Enforcement Policy** in the left Policy panel.
3. Click **Tasks > Create**.
4. **Action** tab click **Next**
5. **General** tab create an **ID** and enter brief **Description** to identify what the Policy does(*Priority stays as default. Status should be Enabled*) Click **Next**.
6. **Node Group** tab select the **Node Group** that was created, move to **Selected** section and Click **Next**.
7. **Permission** tab select **Available Permission** and move to **Selected** and click **Next**
8. **Redirection Action** tab is optional to set **CWP** and **Switch Block options**. Click **Next**.
9. **Agent Action** tab is **optional** to add **Agent Action**. Click **Finish**.

## 14.4.25 Controlling WLAN

Policy Server communicates with the Agent to collect SSID information. You can control the WLAN by blocking unauthorized SSIDs, and message users with pop-up notifications.

### Wireless LAN management environment setting

You can set items to increase the accuracy of the collected data related to the wireless network.

1. Go to **Preferences > General** from the top panel.
2. Click **WLAN** in the left menu.

| Item                        | Explanation                                                                               | Reference |
|-----------------------------|-------------------------------------------------------------------------------------------|-----------|
| AP Down Detection           | Specify the period of time an AP is no longer detected to display as DOWN.                |           |
| AP Deletion                 | Specify the period of time an AP is no longer detected to delete the AP.                  |           |
| Connection History Deletion | Specify the period of time an AP is no longer connected to delete the connection history. |           |
| Internal AP detection       | Set the method to detect the AP location.                                                 |           |

## Plugin setting

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control WLAN** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **SSID Information Scope**, collects information about Detected SSIDs from a WLAN Interface and Connected SSIDs to a WLAN Interface.
2. For **Collecting Connections History**, turn **On** to collect information about the wireless connection history.
  - **Time Range for Daily Update**, specify the time range to update the wireless connection history. (*e.g. 0:00-23:59*)
  - **Attempts**, specify number of days to try and collect connections history. (*If the info cannot be sent, it will update on startup*)
  - **Duration**, specify the time duration in hours for the collected connections history.
3. For **Disabling Wireless Connection**, specify whether to disable connections to non-approved SSID(s).
  - **How to Define Allowed SSIDs**, select how to define SSIDs to be allowed. (*Selecting WLAN Group, Entering SSIDs, Using Regular Expression*)
  - **Allowed WLAN Group**, select a WLAN Group to be allowed from drop-down.
  - **Delay**, specify the time of how long to wait before disabling connection. (*seconds - minutes*)
  - **Disabled Connection Notification and Resolution**, specify whether to notify a user and how to resolve the disabled connection from drop-down.
  - **Auto-Connect to Allowed SSIDs**, specify whether to automatically connect to SSIDs allowed. (*Windows Vista or above required*)
4. For **Disabling AP Mode**, specify whether to disable AP mode such as SoftAP or Ad-hoc for wireless network interface.
  - **Interface Disabled Event Notification**, turn **On** to notify a user for the wireless AP mode disabled.
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Control WLAN** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.



## 14.4.26 Controlling DNS

You can control DNS to obtain DNS automatically or assign DNS manually to point to a specific DNS server. You can also add and remove entries within the devices Host File.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control DNS** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **DNS Configuration**, select to obtain DNS automatically or to enter DNS manually.
4. For **Editing Hosts File**, turn **On** to add or remove hosts in the Hosts file.
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Control DNS** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

## 14.4.27 Controlling External Device

- External devices are all devices that can be connected to the Windows system.
- You can find in Device Manager such as USB flash drives, USB disk drives, external USB hard drives, printers, keyboards, mice, and more.
- You can control an external device by disabling or removing the external device so that it can request approval for a set period of time.
- *(External device can be any device found in Device Manager that knows the class name and vendor name. For example, class name = "Universal Serial Bus Controller" / device name = "USB Mass Storage Device" )*

## Step 1. Create Device Group

- A device group is a function that defines a set of devices required for control. It can be used for blocking or exception on the policy.
1. Go to **Policy** in the top panel.
  2. Go to **External Device Group** in the left Policy panel.
  3. Click **Tasks > Create**.
  4. Find **General** section enter unique **ID name**. (e.g. "USB Storage Devices")
  5. Find **Settings** section enter the following:
    - **Class Name**: "Some-Name" found in Device Manager. (e.g. *Universal Serial Bus controllers*)
    - **Device Name**: "Some-Vendor-Name" found in Device Manager Details. (e.g. *USB Mass Storage Device*)
    - **Device Description**: "Description of device" found in Device Manager Details.
    - **Removable Device**: Select option for device removable properties.
    - **USB Vendor**: Specify USB Vendor name.
    - **USB Model**: Specify USB Model name.
    - **USB Serial No.**: Specify USB Serial Number.

---

**Note:** Conditions must be defined in accordance with the language settings of the endpoints operating system.

---

6. Click **Add**.
7. Click **Save**.

### Configuration Examples :

| Device Type      | Class Name                       | Name                                        |
|------------------|----------------------------------|---------------------------------------------|
| External Storage | Universal Serial Bus controllers | USB Mass Storage Device                     |
|                  | Storage controllers              | USB Attached SCSI (UAS) Mass Storage Device |
|                  | Portable Devices                 | *                                           |
| Optical Device   | DVD/CD-ROM drives                | *                                           |
| Printer          | Printers                         | *                                           |

## Step 2. Create External Device Policy

- Control External Device Policy defines the device groups to block or allow the target to perform device control.
  - When the plugin is uploaded, the device policy for the basic output device is provided as a template. (Device Control Policy ID: Data Leakage Prevention)
1. Go to **Policy** in the top panel.
  2. Go to **Policy > External Device Policy** in the left Policy panel.
  3. Click **Tasks > Create**
  4. Find **General** section enter unique **ID name**. (e.g. "USB Storage Policy")
  5. Find **Node Group** section click **Assign** and choose **Node Group**

6. Find **External Devices** section click **Assign** and choose **USB Storage Devices**. (You can select **Default Device Group** below.)
7. Click **Save**.
8. Click **Apply**.

**External Device Exceptions :**

|                                 |                                                                                                                                                                                                                                                                                                                   |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bluetooth</b>                | <ul style="list-style-type: none"> <li>• Devices in Bluetooth class</li> </ul>                                                                                                                                                                                                                                    |
| <b>CD/DVD/Floppy</b>            | <ul style="list-style-type: none"> <li>• Devices in CD-ROM, Floppy Disk Drive Class</li> </ul>                                                                                                                                                                                                                    |
| <b>Local Printer</b>            | <ul style="list-style-type: none"> <li>• Printer connected directly to the local PC (removes devices belonging to printer class)</li> <li>• Remove the device because the local printer can print out even if it is "disabled" in the device list.</li> </ul>                                                     |
| <b>USB Disk</b>                 | <ul style="list-style-type: none"> <li>• USB type storage device (a disk drive whose instance path starts with 'USBSTOR')</li> </ul>                                                                                                                                                                              |
| <b>USB Network Adapter</b>      | <ul style="list-style-type: none"> <li>• Network adapter connected via a USB port (network adapter whose instance path in the device properties starts with 'USB')</li> </ul>                                                                                                                                     |
| <b>USB Tethering</b>            | <ul style="list-style-type: none"> <li>• Network adapter connected via USB cable to the mobile device (network adapter with service property usbrndis or Netaapl)</li> <li>• If you are connected via Android, the network adapter uses the usbrndis service, and the iPhone uses the Netaapl service.</li> </ul> |
| <b>Wireless Network Adapter</b> | <ul style="list-style-type: none"> <li>• Wireless Network Card Device</li> </ul>                                                                                                                                                                                                                                  |

1. If there is exception devices, you can create an exception group and assign it to **External Device Exceptions** like Step.1.
2. Click the **Create** button.

### Step 3. Configure Control External Device Plugin

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control External Device**.
4. Find **Agent Action > Control Methods** section and choose to **Disable** or **Uninstall**.
5. Click **Update**.

### Step 4. Enable Agent Action on Node Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Control External Device** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

## 14.4.28 Update Windows

Genian ZTNA supports patching of Windows devices using the Agent Action “Update Windows”. Policy Server pulls down the latest Windows Updates and Patches periodically to help keep your endpoint devices current. With the Agent installed on the endpoints, you can control whether they are getting updates and how often.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Update Windows** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**.

Under **Plugin Settings** section:

1. For **Windows Update Settings**, select a Windows Update Setting from drop-down, Or click + to create an Update Setting.
2. For **Scheduled Check**, specify whether to check for updates on a scheduled basis.
  - **Periodic Interval**, adjust the time interval to check for updates. (*hours - months*)
3. For **Operation Mode**, specify whether to check for updates or install the updates.
4. For **Scheduled Installation**, specify whether to install the updates on a scheduled basis.

5. For **Restart Options**, specify whether to Do Nothing, Prompt or Restart.
6. For **Automatic Update**, specify timing, download and installation preferences for automatic updates.
7. Click **Update**.
8. Go to **Node Policy** in the left Policy panel.
9. Click the **Default Policy** in Node Policy window.
10. Find **Agent Action**. Click **Assign**.
11. Find **Update Windows** in the **Available** section. Select and drag it into the **Selected** section.
12. Specify a **Fail-Safe** setting for the Agent when it is disconnected from the Policy Server. Choose either the **Fail-Safe** settings from the endpoints **Node Policy** or create a unique setting for the Agent action.
13. Click **Add**.
14. Click **Update**.
15. Click **Apply** in top right corner.

### Create New Windows Updates For Specific OS or Patches

1. Go to **Policy** in top panel.
2. Go to **Node Policy > Agent Action > Windows Update** in the left Policy panel.
3. Click **Tasks > Create**.

Under **General** and **Automatic Approval Options**.

1. For **ID**, type in unique name.
2. For **Description**, type in brief description.
3. For **Products**, (*Select ones that apply, or All*)
4. For **Classifications**, (*Select ones that apply, or All*)
5. Click **Create**.
6. Click **Apply** in top right corner.

or

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Update Windows** in the Agent Action window.
4. Find **Agent Action: Windows Update Settings** section and click **Edit**.

Under **General** and **Automatic Approval Options**.

1. For **ID**, type in unique name.
2. For **Description**, type in brief description.
3. For **Products**, (*Select ones that apply, or All*)
4. For **Classifications**, (*Select ones that apply, or All*)
5. Click **Create**.
6. Click **Apply** in top right corner.

(To delete Windows Updates that were created and no longer used go to Policy > Node Policy > Agent Action > Windows Update > click Checkbox of desired update > Tasks > Delete)

## Configuring GenianSyncer Software

GenianSyncer Software is designed to get Microsoft Updates and Patches from Microsoft website and sync with a Policy Server that cannot access the internet. GenianSyncer Software gets installed on a Windows machine to be able to download Microsoft Updates and Patches from the Microsoft website and be used as an internal repository. You can then set up the Policy Server to periodically sync with the Windows Machine to proxy to endpoint devices using the “Update Windows” Agent Action.

## To Download and Install GenianSyncer Software

1. Contact **Genians** to get **GenianSyncer Software**.
2. **Download GenianSyncer.zip**.
3. **Unzip GenianSyncer.zip**.
4. **Run GenianSyncer.exe**. (*New dialog window will appear*)
5. Click **Get Started** in new GenianSyncer dialog window. (*New dialog window will appear*)
6. Enter **Policy Server Address**.
7. Update **Options**. (*You can specify Classifications and Products to narrow down the scope of the files you will download*)
8. **Specify a folder to Download to** by clicking the **three dotted icon**.
9. Click **Register License** to activate a GenianSyncer.
  - **Download**. (*e.g. C:#Program Files [x86]#Geni#GenianSyncer*)
  - Click **Upload License File**.
  - Select **License**.
  - Enter **Genian Data URL**. (*e.g. https://geniupdate.geninetworks.com/geniupdate/v###.php*)
    - **How To Find Genian URL?**
    - Login to **Policy Server CLI**.
    - `cat /disk/data/system/logs/centerd | grep geniupdate.geninetworks.com` (*e.g. https://geniupdate.geninetworks.com/geniupdate/v450.php*)
    - Copy this URL into **Genian Data URL**.
    - Exit **Policy Server CLI**.
  - Select **Speed** option. (*You can limit the upload or download speed by specifying the Maximum speed*)
  - Click **OK**. (*New dialog window will appear*)
10. Click **Download From Policy Server** to access the Policy Server.
11. Enter a **Policy Server IP Address** or **Hostname**. Then enter **Username** and **Password** and click **OK**.
12. Click on **Download From Internet** to download the files from Microsoft. (*This must be done upon the first time of setting this up*)
13. Click **Upload To Policy Server** to upload the updates and patch files to the Policy Server.

14. Enter a **Policy Server IP Address** or **Hostname**. Then enter **Username** and **Password** and click **OK**.
15. **No uploaded files found** (If “No uploaded files found. Would you like to upload the GENIAN DATA?”) Click **\*\*OK\*\***.
16. Click **OK** when files have been uploaded to the Policy Server successfully.

### To Verify Updates and Patches Uploaded Successfully

1. Go to **Policy** in the top panel.
2. Go to **Node Policy > Agent Action > Windows Update** in the left Policy panel.
3. Click the **desired Update name** in Windows Update Settings window.
4. Find and click **Update** tab. (You will see the new Updates and Patches)

### To Configure Update Service Settings

(This is instructing the Agent to look for the Updates and Patches from the Policy Server versus the internet)

1. Go to **Preferences** in the top panel.
2. Go to **General > Agent > Update Service** in the left Preferences panel.
3. Find **Windows Update: Check for Updates** section. Select **Local Repository**.
4. Click **Update**.

### To Configure Appliance Settings

(This is instructing the Policy Server to Proxy Updates and Patches to Agents)

1. Go to **System** in the top panel.
2. Go to **System**, click **Policy Server IP Address > Appliance** tab.
3. Find **Proxy for Windows Updates** section. Select **On to Proxy Services**.
4. Click **Update**.

## 14.4.29 Shut Down System

You can control the power options (e.g. Sleep, Restart, and Shutdown) and control how long the Windows device stays up and running after it wakes from sleep.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find and click **Control Power Options** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Power Control Action**, specify how to control the power of the device. (*Sleep, Restart, Shutdown*)
2. For **Disable abort-shutdown**, toggle **On** or **Off** to select if the endpoint user can abort the shutdown.
3. For **Waiting time**, adjust the time to delay applying the policy after user input. (*Seconds - hours*)
4. For **Uptime for Power Control**, specify how long after computer awakening to execute the power control action.
5. For **Show Title bar**, toggle **On** or **Off** to select if the message box title bar will be displayed.
6. For **Message Contents**, specify the message contents, text and height. You can use HTML formatting and macros to display information from Genians.
7. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
8. Click **Update**.

### 14.4.30 Controlling Network Folder Sharing

You can collect shared network folder information, control access, and specify permissions.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Network Folder Sharing** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Collecting Shared Folder Information**, select **Off** to not collect info about shared folders over the network.
2. For **\*\* Stopping Folder sharing\*\***, turn **On** to stop folder sharing.
  - **Delay Timeout**, specify the time when the shared folder access is revoked. (*seconds - months*)
  - **Read-only Folder Exception**, turn **On** to allow access to the folder with read-only permissions.
  - **Stopping Everyone Folder Only**, turn **On** to stop sharing the folder with everyone permissions.
  - **Administrative Shares Exception**, select **Off** to disable access to the Administrative Share.
3. For **Folder Sharing Expiry Notification**, select Custom Message or Default Message in Pop-up window.
4. Click **Update**.
5. Go to **Policy > Node Policy** in the left Policy panel.
6. Click the **desired Policy ID** in Node Policy window.



7. Find Agent Action. Click Assign.
8. Find **Control Network Folder Sharing** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

### 14.4.31 Controlling Screen Lock

You can control the screen lock on your Windows devices which requires users to authenticate upon wake from sleep. You can also force to use specific wallpaper image. (e.g. *Library Nodes*, or *Store Front Nodes*)

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Screen Lock** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Lock Screen Scan**, select **Off** to disable the collection of info on the configured Screen Lock.
2. For **Re-authentication**, turn **On** to require User Authentication from Wake or Screen Lock.
3. For **File Integrity Check Interval**, adjust time interval to check Screen Lock integrity. (*minutes - hours*)
4. For **Lock Screen Enforcement**, turn **On** enforce a Screen Lock.
  - **Waiting Time**, specify the time before the Screen Lock starts. (*minutes - hours*)
  - **User Waiting Time**, this will not apply if this time is longer than Waiting Time.
  - **Displaying Logon Screen**, displays logon screen upon Resume.
  - **Genian Lock Screen Message**, type message to display on Screen Lock.
  - **File**, upload a file to be used for Screen Lock.
  - **File Name**, define a name for the Screen Lock File.
  - **User-configured Lock Screen**, select **Off** to not allow a User to configure Screen Lock.
5. For **Wallpaper Image Enforcement**, turn **On** to enforce a Desktop Wallpaper:
  - **File**, upload a file to be used for Wallpaper.
  - **File Name**, define a name for the Wallpaper File.
  - **Position**, specify the position of the Wallpaper File. (*Center, Tile, Stretch*)
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.

9. Find **Agent Action**. Click **Assign**.
10. Find **Control Screen Lock** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

### Add Authentication Code to Unlock Screen Lock

You can enable a Authentication Code for when users are unable to authenticate and unlock their screens from Screen Lock. Users can sometimes be offline and will need to authenticate to unlock their screens. The option below provides a button to generate a Agent Code to give to the Administrator to then get a Authentication Code to enter into the Screen Lock.

---

**Note:** **Control Screen Lock** must already be configured and enabled in the Node Policy. (*Default Policy*)

---

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Authenticate User Using Genian Agent** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.
8. Go to **Policy > Node Policy > Agent Action**, click on **Authenticate User Using Genian Agent**.

Under **Agent Action: Miscellaneous**:

1. For **Authentication Enforcement**, turn **On** Screen Lock Authentication.
2. For **Page Background Color**, optional setting to change the background color.
3. For **Displaying Unlock Screen**, turn **On** to display a **Unlock Screen Button**.
4. Click **Update**.

---

**Note:** User clicks "Unlock Screen Button" to generate "Agent Code" and gives to Administrator. Administrator then uses this to get "Authentication Code" for user to enter in and "Unlock Screen Lock."

---

### 14.4.32 Manage ARP Table

You can manage the ARP Table on the devices by Deleting Static ARP Entries, or preventing ARP conflicts.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Manage ARP Table** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.

2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Deleting Static ARP Entries**, turn **On** to delete static ARP entries.
2. For **Static ARP for IP Conflict-prevention**, turn **On** to use Static ARP Entries for IP Conflict-prevention to prevent from ARP Spoofing.
  - **Node Group**, Optional setting to apply **Static ARP for IP Conflict-prevention** to specific Node Groups.
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Manage ARP Table** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

---

**Note:** Go to Management > Node > IPAM Tab > IP Policy to configure Conflict-prevention Settings.

---

### 14.4.33 Manage Files

You can manage files on the Windows devices by copying, deleting, moving, and renaming files. You can also run specific files.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Manage Files** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Source Path**, specify a source file to be managed.
2. For **Management Action**, specify action to take on source file. (*Run, Delete, Copy, Move, Rename*)
  - **CLI Parameter**, specify a command line parameter.
3. For **Account Options**, specify a account to manage file from drop-down.

4. For **Restart Options**, specify whether to Prompt or Restart.
5. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Manage Files** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

### 14.4.34 Notify User

You can notify users with informational messages or warnings. The message may be displayed using a slide-out notification, HTML, or redirection to a URL.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Notify User** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Contents for Slide-out Box Notification**, type in contents to display in slide-out box notification.
2. For **CWP Page Redirection**, turn **On** to redirect to CWP page when a user clicks a slide-out notification.
  - **CWP Page Redirection URL**, click **Use Template** or specify a URL for CWP redirection when a user clicks a slide-out notification.
3. For **Enforcing Notification**, specify whether to disable to force closing a notification.
  - **Notification Message Type**, specify a message type for a user notification. (*Informational, Warning*)
  - **Generating Log for User Read Notification**, specify whether to generate a log when a user reads a notification.
4. For **Automatic pop-up**, Enable to display detailed message contents in a pop-up badge, rather than only a preview.
5. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
6. Enter in **CWP Message**, **Conditions**, and adjust **Agent Actions** based off of your network requirements.
7. Click **Update**.
8. Go to **Node Policy** in the left Policy panel.
9. Click the **Default Policy** in Node Policy window.

10. Find **Agent Action**. Click **Assign**.
11. Find **Notify User** in the **Available** section. Select and drag it into the **Selected** section.
12. Click **Add**.
13. Click **Update**.

### 14.4.35 Uninstall Programs

You can control software on your Windows devices by removing programs that you do not allow.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Uninstall Programs** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Program**, specify programs to be uninstalled on the endpoint, using the name listed in the Windows Control Panel.
2. For **Notification Before Uninstalling**, specify whether to notify a user before uninstalling a program.
  - **Contents**, add contents to notify user.
3. For **Account Options**, specify a account to uninstall a program from drop-down.
4. For **Restart Options**, specify whether to Notify User or Auto-Restart.
5. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Uninstall Programs** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

### 14.4.36 Run Script

You can setup Batch or VB scripts to run on the end users Windows devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Run Script** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Script Format**, specify a script format to run. (*VB Script, Batch Script*)
2. For **Script**, type and enter script to be run.
3. For **Account Options**, specify an account to run a script from drop-down.
4. For **Restart Options**, specify whether to Prompt or Restart.
5. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Run Script** in the **Available** section. Select and drag it into the *Selected* section.
11. Click **Add**.
12. Click **Update**.

### 14.4.37 Scan Condition Settings

You can scan Windows condition settings to include processes, files, system, and authenticated users.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Scan Condition Settings** in the Agent Action window.

Under **General** section:

#. For **CWP Message**, add message to be displayed in accordance with the Policy. #. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section: (*Must have Conditions added for this plugin to work*)

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Enter in **Conditions**, and adjust **Execution Interval**.
5. For **Periodic Interval**, choose from seconds, minutes, hours, days weeks, or months. (*Default is 12 hours*)
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Scan Condition Settings** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

### 14.4.38 Terminate Process

You can kill specific processes that are running on the end users Windows devices and schedule the frequency to verify that they continue to not run.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Terminate Process** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Process Terminated Event Notification**, turn **On** to notify a user when a process is terminated.
  - **Contents**, type to enter contents to terminate a specific process.
2. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Terminate Process** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

### 14.4.39 Check Required Application Installation

The Check Required Application Installation Plugin provides basic options to inspecting the Antivirus, Disk Encryption, and Patch Management. Condition values will continue to be added.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Check Required Application Installation** in the Agent Action window.

Under **General** section:

1. For **Applications**, select that you want Antivirus, Disk encryption, and Patch Management.
2. For **Products**, select that you want the detailed product.

Under **Plugin Settings** section:

1. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
2. Click **Update**.
3. Go to **Node Policy** in the left Policy panel.
4. Click the **Default Policy** in Node Policy window.
5. Find **Agent Action**. Click **Assign**.
6. Find **Check Required Application Installation** in the **Available** section. Select and drag it into the **Selected** section.
7. Click **Add**.
8. Click **Update**.

### Supported Anti-Virus Products

| Vendor                      | Product Name                           | Product Version |
|-----------------------------|----------------------------------------|-----------------|
| Avira GmbH                  | Avira Antivirus Pro                    | 15.x            |
| Avira GmbH                  | Avira Free Antivirus                   | 15.x            |
| Avira GmbH                  | Avira Endpoint Security                | 15.x            |
| ESET                        | ESET Endpoint Security                 | 12.x            |
| ESET                        | ESET Internet Security                 | 12.x            |
| ESET                        | ESET Smart Security                    | 12.x            |
| ESET                        | ESET NOD32 Antivirus                   | 12.x            |
| Bitdefender                 | Bitdefender Antivirus Plus             | 23.x            |
| Bitdefender                 | Bitdefender Internet Security          | 23.x            |
| Bitdefender                 | Bitdefender Total Security             | 23.x            |
| Bitdefender                 | Bitdefender Antivirus Free Edition     | 1.x             |
| AhnLab, Inc.                | AhnLab V3 Lite                         | 3.x             |
| AhnLab, Inc.                | AhnLab V3 Lite                         | 4.x             |
| AhnLab, Inc.                | AhnLab V3 Net for Windows Server       | 9.x             |
| AhnLab, Inc.                | AhnLab V3 Endpoint Security            | 9.x             |
| AhnLab, Inc.                | AhnLab V3 Internet Security            | 9.x             |
| AVG Technologies CZ, s.r.o. | AVG Business                           | 18.x            |
| AVG Technologies CZ, s.r.o. | AVG Internet Security Business Edition | 18.x            |
| AVG Technologies CZ, s.r.o. | AVG AntiVirus Business Edition         | 18.x            |

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Table 3 – continued from previous page

| Vendor                      | Product Name                           | Product Version |
|-----------------------------|----------------------------------------|-----------------|
| AVG Technologies CZ, s.r.o. | AVG AntiVirus Free                     | 18.x            |
| AVG Technologies CZ, s.r.o. | AVG Internet Security                  | 18.x            |
| Kaspersky Lab               | Kaspersky Total Security               | 19.x            |
| Kaspersky Lab               | Kaspersky Total Security               | 20.x            |
| Kaspersky Lab               | Kaspersky Internet Security            | 19.x            |
| Kaspersky Lab               | Kaspersky Internet Security            | 20.x            |
| Kaspersky Lab               | Kaspersky Anti-Virus                   | 19.x            |
| Kaspersky Lab               | Kaspersky Anti-Virus                   | 20.x            |
| Kaspersky Lab               | Kaspersky Free                         | 19.x            |
| Kaspersky Lab               | Kaspersky Free                         | 20.x            |
| Kaspersky Lab               | Kaspersky Small Office Security        | 19.x            |
| Kaspersky Lab               | Kaspersky Small Office Security        | 20.x            |
| Kaspersky Lab               | Kaspersky Security Cloud               | 19.x            |
| Kaspersky Lab               | Kaspersky Endpoint Security            | 11.x            |
| Kaspersky Lab               | Kaspersky Security for Windows Servers | 10.x            |
| G Data Software AG          | G Data Security Client                 | 14.x            |
| G Data Software AG          | G Data TotalSecurity                   | 25.x            |
| G Data Software AG          | G Data AntiVirus                       | 25.x            |
| G Data Software AG          | G Data Internet Security               | 25.x            |
| Malwarebytes Corporation    | Malwarebytes Free                      | 3.x             |
| McAfee, Inc.                | McAfee All Access                      | 16.x            |
| BullGuard Ltd.              | BullGuard Antivirus                    | 10.x            |
| BullGuard Ltd.              | BullGuard Premium Protection           | 10.x            |
| BullGuard Ltd.              | BullGuard Internet Security            | 10.x            |
| ESTSecurity Corp.           | ALYac(For Public Use)                  | 2.x             |
| ESTSecurity Corp.           | ALYac                                  | 3.x             |
| ESTSecurity Corp.           | ALYac                                  | 4.x             |
| Hauri, Inc.                 | ViRobot 7.0                            | 10.x            |
| K7 Computing Pvt Ltd        | K7 AntiVirus Premium                   | 10.x            |
| K7 Computing Pvt Ltd        | K7 Total Security                      | 10.x            |
| K7 Computing Pvt Ltd        | K7 Ultimate Security                   | 10.x            |
| F-Secure Corporation        | F-Secure PSB Workstation Security      | 10.x            |

### Supported Data-Protection Products

| Vendor                      | Product Name                    | Product Version |
|-----------------------------|---------------------------------|-----------------|
| Jetico, Inc.                | BestCrypt Volume Encryption     | 4.x             |
| Jetico, Inc.                | BestCrypt                       | 9.x             |
| Jetico, Inc.                | BCArchive                       | 2.x             |
| Bitdefender                 | Bitdefender Internet Security   | 23.x            |
| Bitdefender                 | Bitdefender Total Security      | 23.x            |
| Kaspersky Lab               | Kaspersky Total Security        | 19.x            |
| Kaspersky Lab               | Kaspersky Small Office Security | 19.x            |
| G Data Software AG          | G Data TotalSecurity            | 25.x            |
| AVG Technologies CZ, s.r.o. | AVG AntiVirus Business Edition  | 18.x            |
| AVG Technologies CZ, s.r.o. | AVG Business                    | 18.x            |
| AVG Technologies CZ, s.r.o. | AVG Internet Security           | 18.x            |
| McAfee, Inc.                | McAfee All Access               | 16.x            |

## Supported Patch-Management Products

| Vendor               | Product Name                      | Product Version |
|----------------------|-----------------------------------|-----------------|
| Kaspersky Lab        | Kaspersky Small Office Security   | 19.x            |
| F-Secure Corporation | F-Secure PSB Workstation Security | 12.x            |

### 14.4.40 Deploy Files

You can deploy files in Windows by uploading a file to the Policy Server, or providing a download link. Additionally, this agent action allows for actions to be taken after the file is deployed.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Deploy Files** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
2. Set **Time Object**, **Retry Interval** and **Retry Attempts**
3. Select **Upload** or **URL** for the **File Deployment Method**.
  - If **Upload**: Use the prompt to upload the desired file to the Policy Server.
  - If **URL**: Use the prompt to specify a web address to download the file from.
4. For **Verifying Digital Signature**, select **On** or **Off**.
5. For **Post Deployment Action**, select **Run File** or **Download**.

Files are deployed to **C:\Program Files\Geni\Genian\Patch** by default.

- If **Run File**: Use the prompt to select an **Execution Path** + optional file name and a **Command Line Parameter** for the distributed file. For **Execution Account** select **Root** or **Logon Account**. For **Restart Options** select **Do Nothing**, **Prompt**, or **Restart**.
  - If **Download**: Use the prompt to specify a **Destination Path** and optional file name for the distributed file.
6. Click **Update**.
  7. Go to **Node Policy** in the left Policy panel.
  8. Click the **Default Policy** in Node Policy window.
  9. Find **Agent Action**. Click **Assign**.
  10. Find **Collect Network Information** in the **Available** section. Select and drag it into the **Selected** section.
  11. Click **Add**.

12. Click **Update**.

## 14.5 Controlling macOS

You can control macOS devices with the Agent installed using these plugins:

### 14.5.1 Authenticate User Using Genian Agent

Policy Server communicates with the Agent to authenticate users on Mac OS devices.

#### Add the Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Authenticate User Using Genian Agent** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

#### Authenticate User Using Genian Agent

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Authenticate User Using Genian Agent** in the Agent Action window.
4. Enter in **Conditions**, optional settings.

Under **Appearance**:

1. For **Image**, Specify an image for the Agent authentication dialog box.
2. For **Displaying Titlebar**, Specify whether to display a title bar on the Agent authentication dialog box.
3. For **Dialog Box Color**, Specify a dialog box color.
4. For **Font Color**, Specify a font color.
5. For **Help Message**, Specify a Help Message, and if to display with HTML .
6. Click **Update**.

## 14.5.2 Check Required Application Installation

Checks if the required software is installed on the user's PC. You can check if an application is installed on your PC by selecting a specific product name.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Check Required Application Installation** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, Select the **Applications** and **Product**
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action** section, click **Assign**.
7. Find **Check Required Application Installation** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.5.3 Change Hostname

You can control the name of a macOS device.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Change Hostname** in the Agent Action window(select the macOS version).

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions: **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Control Method**, specify a if you would like to change the Hostname to a **User Defined** value, or a value based on the **Hostname Rule of the Node Policy**
  - If **User Defined**: enter a hostname.

2. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Policy** you wish to edit in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Change Hostname** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

---

**Note:** The name cannot contain all special and blank characters except the minus sign (-), and must be less than 63 bytes.

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### 14.5.4 Collecting Computer OS Information

The Policy Server collects Operating System information from end users macOS devices using the Agent.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Computer OS Information** in the Agent Action window (*Notice there are three. One for Windows, one for MacOS and another for Linux*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Collect Computer OS Information** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.5.5 Collecting Hardware Information

Policy Server communicates with the Agent to collect hardware information that is installed on end users macOS devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Hardware Information** in the Agent Action window. (*Notice there are two. One for Windows, and another for MacOS*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Plugin Settings**, adjust **CPU, Memory, and Disk Space Utilization Thresholds** based off of your network requirements.
4. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Collect Hardware Information** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

## 14.5.6 Collecting Monitor Information

Policy Server communicates with the Agent to collect information about the monitor that is connected to your Mac OS device.

### Add Agent Action to a Policy

1. Go to **Node Policy** in the left Policy panel.
2. Click the **Default Policy** in Node Policy window.
3. Find **Agent Action**. Click **Assign**.
4. Find **Collect Monitor Information** in the **Available** section. Select and drag it into the **Selected** section.
5. Click **Add**.
6. Click **Update**.

## Collect Monitor Information

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Monitor Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.

## 14.5.7 Collecting Network Information

Policy Server communicates with the Agent to collect network information on end users macOS devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Network Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Update Interval**, adjust Periodic Interval. (*Seconds - hours*)
2. For **Collecting Open Port Information**, turn **On** to collect open port information.
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Collect Network Information** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.5.8 Collecting Printer Information

Policy Server communicates with the Agent to collect printer information on end users Mac OS devices.

### Add the Agent Action to a Policy

1. Go to **Policy > Node Policy** in the left Policy panel.
2. Click the **desired Policy ID** in Node Policy window.
3. Find **Agent Action**. Click **Assign**.
4. Find **Collect Printer Information** in the **Available** section. Select and drag it into the **Selected** section.
5. Click **Add**.
6. Click **Update**.

### Collect Printer Information

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Printer Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.

## 14.5.9 Collecting Software Information

Policy Server communicates with the Agent to collect software information that is running on end users macOS devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Software Information** in the Agent Action window. (*Notice there are two. One for Windows, and another for MacOS*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.



2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Collect Software Information** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

### 14.5.10 Collecting Antivirus Software Information

Policy Server communicates with the Agent to collect antivirus software information that is installed on your macOS devices.

#### List of Supported Antivirus by Version

Check all Antivirus supported with Genian ZTNA.

| Vendor      | Product                       | Genian Version |
|-------------|-------------------------------|----------------|
| AhnLab      | AhnLab V3 for Mac             | 5.0.13         |
| Avast       | Avast Mac Security            | 5.0.9          |
| AVG         | AVG Antivirus                 | 5.0.9          |
| BitDefender | Bitdefender Antivirus for Mac | 5.0.9          |
| ESET        | ESET Cyber Security           | 5.0.9          |
| ESET        | ESET Endpoint Antivirus       | 5.0.13         |
| Kaspersky   | Kaspersky Internet Security   | 5.0.9          |
| Sophos      | Sophos Endpoint               | 5.0.17         |
| Sophos      | Sophos Home                   | 5.0.17         |
| Symantec    | Norton Antivirus              | 5.0.9          |

#### Collect Antivirus Software Information

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Antivirus Software Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Action** section:

1. For **Boolean Operator**, leave as default: **OR**
2. For **Settings**, leave the default and click **Add** button to include others if they are not listed.

3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action** section, click **Assign**.
7. Find **Collect Antivirus Software Information** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

### 14.5.11 Deploy Files

You can deploy files in macOS by uploading a file to the Policy Server, or providing a download link. Additionally, this agent action allows for actions to be taken after the file is deployed.

#### Add Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Node Policy** in the left Policy panel.
3. Click the **Default Policy** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Deploy Files** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

#### Deploy Files

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Find and click **Deploy Files** in the Agent Action window.

Under **Settings** section:

1. Select **Upload** or **URL** for the **File Deployment Method**.
  - If **Upload**: Use the prompt to upload the desired file to the Policy Server.
  - If **URL**: Use the prompt to specify a web address to download the file from.
2. For **Verifying Digital Signature**, select **On** or **Off**.
3. For **Post Deployment Action**, select **Run App**, **Run File**, **Download** or **Install Package**.

Files are deployed to `/Users/Shared/Genians/Resources` by default.

- If **Run App**: Use the prompt to select an **Execution Path** + optional file name and a **Command Line Parameter** for the distributed file. For **Restart Options** select **Do Nothing**, **Prompt**, or **Restart**

- If **Run File**: Use the prompt to select an **Execution Path** + optional file name and a **Command Line Parameter** for the distributed file. For **Execution Account** select **Root** or **Logon Account**. For **Restart Options** select **Do Nothing, Prompt**, or **Restart**.
  - If **Download**: Use the prompt to specify a **Destination Path** and optional file name for the distributed file.
  - If **Install Package**: Use the prompt to select an **Execution Path** For **Restart Options** select **Do Nothing, Prompt**, or **Restart**.
  - Leave forms blank to leave the file in the default location.
4. For **Excution Interval**, select a time to execute and if applicable, adjust Periodic Interval.(Seconds - Months).
  5. Click **Update**

## 14.5.12 Controlling Screen Lock

You can control the screen lock on your Mac OS devices which requires users to authenticate upon wake from sleep.

### Add the Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Control Screen Lock** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

### Control Screen Lock

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Screen Lock** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Lock Screen Scan**, select **Off** to disable the collection of info on the configured Screen Lock.
2. For **Screen Lock Enforcement**, turn **On** enforce a Screen Lock.
  - **Waiting Time**, specify the time before the Screen Lock starts. (*minutes - hours*)

- **User Waiting Time**, this will not apply if this time is longer than Waiting Time.

3. Click **Update**.

### 14.5.13 Controlling WLAN

Policy Server communicates with the Agent to collect SSID information.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control WLAN** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **SSID Information Scope**, choose to collect information about all **Detected** SSID or only those that are **Connected**.
  - For **Detected SSIDs** define a time value for:
    - **Update Interval** - Specify the time interval to update the SSID information.
    - **SSID Time-based Threshold** - Specify the minimum time duration to start collecting SSID information.
2. For **Disabling Wireless Connection**, choose **On** or **Off** to prohibit connection to certain SSIDs.
  - For **On** choose how allowed SSIDs will be defined, and configure enforcement options:
    - **How to Define Allowed SSID(s)** - Choose From **WLAN Group**, **SSID Name**, or **regular expression**, and fill in the prompt or menu.
    - **Delay Enforcement Policy** - Enter a number of **seconds**, or **minutes** to wait before disconnecting a prohibited connection.
    - **Disabled Connection Notification and Resolution** - Choose From **No Notifications**, **Slide-Out Notification**, or **Allow connection using an agent Authentication Code**
      - \* For **Agent Authentication Code**, enter a **Connection Time Limit**, and a Custom **HTML Message** to the end-user.
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Control WLAN** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.5.14 Manage ARP Table

The ARP protocol thus makes network traffic communications a relatively simple and straightforward affair. However, ARP is also inherently vulnerable from a security perspective. ARP requires no authentication whatsoever of the addressing information it receives from any network peer. All ARP replies are cached in the ARP table as described above; existing table entries are automatically overwritten by the most recent information received. This lack of authentication makes ARP an easy target for cyber-security exploitation.

In particular, ARP is highly vulnerable to attacks such as “ARP Spoofing” and “ARP Poisoning.” The point of such attacks, the nature of which will be discussed further below, and which can be initiated from some compromised network device or from the hacker themselves if they have acquired physical access to the network in question, is to compromise the integrity of a local network’s ARP table by associating an attacker’s MAC address with the IP address of a particular target host. In this way, network traffic intended for a particular destination will instead be forwarded on to the attacker’s host location. That traffic can then be modified, stolen, or simply observed in order to support some additional cyberattack purpose in an on-demand fashion. ARP-related security breaches are very difficult to detect and defend against precisely because the ARP information is maintained and transmitted only within the L2 broadcast domain. Vigilant network administrators cannot tell, simply by looking at an ARP table, whether it’s been compromised or not, unless they have established some manual system to keep track of the expected IP-to-MAC address relationships.

ZTNA provides a plugin to manage ARP tables to solve these problems. Delete static ARP to prevent vulnerabilities bypassing ZTNA.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Manage ARP Table** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Deleting Static ARP Entries**, To remove static ARP set by the user of the Node that Agent is installed. (Except static ARP added by AAS)
2. For **Anti ARP Spoofing (AAS)**, To add Conflict Prevention Nodes to ARP table as Static.
  - **Node Group** : To apply specific Node Group (If not selected, it applies to all Nodes to which Agent Action is assigned)
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Manage ARP Table** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.5.15 Manage Files

You can manage files in macOS by copying, deleting, moving, and renaming files. You can also run specific files.

### Add Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Node Policy** in the left Policy panel.
3. Click the **Default Policy** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Manage File** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

### Manage Files

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Find and click **Manage File** in the Agent Action window.

Under **General** section:

1. For **Manage Files**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" filed.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **\*\*AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. Select a **Management Action** for the source file: **Run App, Run File, Delete, Copy, Move, Rename**
2. For all Actions, define a **Source Path**, specifying the **source file** to manage.
3. Configure Action Specific options:
  - If **Run App**: Use the prompt to select a **Command Line Parameter**. For **Restart Options** select **Do Nothing, Prompt, or Restart**
  - If **Run File**: Use the prompt to select a **Command Line Parameter**. For **Execution Account** select **Root** or **Logon Account**. For **Restart Options** select **Do Nothing, Prompt, or Restart**.
  - If **Delete**: Proceed to the next step.
  - If **Copy, Move or Rename**: Define a **Destination Path**.
4. For **Excution Interval**, adjust Periodic Interval.(Seconds - Months)
5. Click **Update**

## 14.5.16 Notify User

You can notify users with informational messages or warnings. The message may be displayed using a slide-out notification, HTML, or redirection to a URL.

### Notify User configuration

1. For **Contents for Slide-out Box Notification**, add message to be displayed on notification title.
2. For **CWP Page Redirection**, if you turn **On**, redirected to CWP page when user click notification.
  - **CWP Page Redirection URL** Click **Use Template** the button to use a template or enter the URL manually
3. For **Enforcing Notification** whether to show agent notifications again when they are closed. (*On / Off*)
  - **Notification Message Type** : Choose message type (*Normal, Warning*)
  - **Generating Log for User Read Notification** : Generating audit log When user checked message (*On / Off*)

### Configure Notify User through Node Policy

1. Go to **Node Policy** in the left Policy panel.
2. Click the **Default Policy** in Node Policy window.
3. Find Agent Action section, click **Assign**.
4. Find and double click newly created **Agent Action**. (e.g. Notify User)
5. Click **Add**.
6. Click **Update**.

### Configure Notify User through Enforcement Policy

#### 1. Create Group for Enforcement Policy

1. Go to **Policy** in the top panel.
2. Go to **Groups > Nodes** in the left
3. Click **Tasks > Create**
4. Click the **Add** button
5. After setting the condition of the target, click the **Add** button.
6. Click the **Create** button.

#### 2. Create Action for Enforcement Policy

1. Go to **Policy > Enforcement Policy > Agent Action**
2. Click **Tasks > Create**
3. Select **Notify User** plugin on the list.
4. Click **Create** button.

#### 3. Create Enforcement Policy

1. Go to **Policy > Enforcement Policy**
2. Click **Tasks > Create**, Follow **Enforcement Policy Wizard**

3. For **General** tab, Please input **ID** and click **Next** button.
4. For **Node Group** tab, Please move Node Group you created to **Selected**
5. Click **Finish** button.
6. Click **Apply** button on the top right.

### 14.5.17 Scan Condition Settings

You can scan macOS condition settings to include processes, files, system, and authenticated users.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Scan Condition Settings** in the Agent Action window.

Under **General** section:

#. For **CWP Message**, add message to be displayed in accordance with the Policy. #. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section: *(Must have Conditions added for this plugin to work)*

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. *(Seconds - months)*
4. Enter in **Conditions**, and adjust **Execution Interval**.
5. For **Periodic Interval**, choose from seconds, minutes, hours, days weeks, or months. *(Default is 12 hours)*
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Scan Condition Settings** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

### 14.5.18 Shut Down System

You can control the power options (e.g. Sleep, Restart, and Shutdown) and control how long the Mac OS device stays up and running after it wakes from sleep.



## Add the Agent Action to a Policy

1. Go to **Node Policy** in the left Policy panel.
2. Click the **Default Policy** in Node Policy window.
3. Find **Agent Action**. Click **Assign**.
4. Find **Control Power Options** in the **Available** section. Select and drag it into the **Selected** section.
5. Click **Add**.
6. Click **Update**.

## Control Power Options

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Click the desired **Policy ID** in Node Policy window.
4. Find and click **Control Power Options** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Power Control Action**, specify how to control the power of the device. (*Sleep, Restart, Shutdown*)
2. For **Disable abort-shutdown**, toggle **On** or **Off** to select if the endpoint user can abort the shutdown.
3. For **Waiting time**, adjust the time to delay applying the policy after user input. (*Seconds - hours*)
4. For **Uptime for Power Control**, specify how long after computer awakening to execute the power control action.
5. For **Show Title bar**, toggle **On** or **Off** to select if the message box title bar will be displayed.
6. For **Message Contents**, specify the message contents, text and height. You can use HTML formatting and macros to display information from Genians.
7. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
8. Click **Update**.

## 14.5.19 Terminate Process

You can configure the agent to automatically terminate a process when it is detected as running.

### Add Agent Action to a Policy

1. Go to **Policy** in the top panel.
2. Go to **Node Policy** in the left Policy panel.
3. Click the **Default Policy** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Terminate Process** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

### Configure Plugin

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Find and click **Terminate Process** in the Agent Action window.

Under **Conditions** section:

1. Click **Add**, add message to be displayed in accordance with the Policy.
2. For **Criteria** select **Process**, then configure the **Operator**, **Value**, and **Description**.

Under **Settings**:

1. Select **On**.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Execution Interval**:

1. Adjust Periodic Interval.(Seconds - Months)
2. Click **Update**

## 14.5.20 Update macOS

With this agent action, you can control if the macOS device gets updates and how often. You can also determine the whether to install updates automatically, or just download updates to allow the user to install on their own.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Update macOS** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Execution Interval**, specify the time interval to execute an action on a scheduled basis. (*hours - months*)
2. For **Scheduled Check**, turn **On** to check for updates on a scheduled basis.
3. For **Operation Mode**, specify whether to **check for updates** or to **install the updates**.
  - **Scheduled Installation**, specify whether to install the updates on a scheduled basis.
4. For **Restart Options**, specify whether to **Prompt** or **Restart**.
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find Update macOS in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.

### 14.5.21 Controlling External Device

- External devices are all devices that can be connected to the macOS system.
- You can control an external device by disabling or removing the external device so that it can request approval for a set period of time.

#### Step 1. Create Device Group

- A device group is a function that defines a set of devices required for control. It can be used for blocking or exception on the policy.
1. Go to **Policy** in the top panel.
  2. Go to **External Device Group** in the left Policy panel.
  3. Click **Tasks > Create**.
  4. Find **General** section enter unique **ID name**. (*e.g. "USB Storage Devices"*)
  5. Select **OS Type > macOS** in Device Group Setting section.
  6. Click **Conditions > Add\*** and select **Device Name** to control.
  7. Find **Settings** section enter the following:
  8. If the device type is USB Disk, you can specify following information.
    - **USB Vendor**: Specify USB Vendor name.
    - **USB Model**: Specify USB Model name.
    - **USB Serial No.:** Specify USB Serial Number.

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**Note:** Conditions must be defined in accordance with the language settings of the endpoints operating system.

---

9. Click **Add**.
10. Click **Save**.

## Step 2. Create External Device Policy

- Control External Device Policy defines the device groups to block or allow the target to perform device control.
  - When the plugin is uploaded, the device policy for the basic output device is provided as a template. (Device Control Policy ID: Data Prevention)
1. Go to **Policy** in the top panel.
  2. Go to **Policy > External Device Policy** in the left Policy panel.
  3. Click **Tasks > Create**
  4. Find **General** section enter unique **ID name**. (e.g. "USB Storage Policy")
  5. Find **Node Group** section click **Assign** and choose **Node Group**
  6. Find **External Devices** section click **Assign** and choose **USB Storage Devices**. (You can select **Default Device Group** below.)
  7. Click **Save**.
  8. Click **Apply**.

### External Device Exceptions :

|                            |                                                                                                                                                                                                                       |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bluetooth Tethering</b> | <ul style="list-style-type: none"> <li>• Network adapters that connects Android or iPhone via Bluetooth</li> </ul>                                                                                                    |
| <b>CD/DVD</b>              | <ul style="list-style-type: none"> <li>• Devices in CD-ROM Drive Class</li> </ul>                                                                                                                                     |
| <b>Local Printer</b>       | <ul style="list-style-type: none"> <li>• Printer connected directly to local PC</li> </ul>                                                                                                                            |
| <b>USB Disk</b>            | <ul style="list-style-type: none"> <li>• USB type storage device (system profiler's SPUS-BDataType information)</li> </ul>                                                                                            |
| <b>USB Network Adapter</b> | <ul style="list-style-type: none"> <li>• Network adapter connected via a USB port</li> </ul>                                                                                                                          |
| <b>USB Tethering</b>       | <ul style="list-style-type: none"> <li>• Network adapter connected via USB cable to the mobile device (network's hardware port is iPhone USB)</li> <li>• Android cannot connect to macOS via USB Tethering</li> </ul> |

1. Click the **Create** button.

### Step 3. Configure Control External Device Plugin

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control External Device**.
4. Find **Agent Action > Control Methods** section and choose to **Disable** or **Uninstall**.
5. Click **Update**.

### Step 4. Enable Agent Action on Node Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Control External Device** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.
7. Click **Update**.

## 14.5.22 Controlling Network Folder Sharing

You can collect shared network folder information, control access, and specify permissions.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Network Folder Sharing** in the Agent Action window.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Collecting Shared Folder Information**, select **Off** to not collect info about shared folders over the network.
2. For **\*\* Stopping Folder sharing\*\***, turn **On** to stop folder sharing.
  - **Delay Timeout**, specify the time when the shared folder access is revoked. (*seconds - months*)
  - **Read-only Folder Exception**, turn **On** to allow access to the folder with read-only permissions. (Read smb\_read\_only value)
  - **Stopping Everyone Folder Only**, turn **On** to stop sharing the folder with everyone permissions. (Read smb\_guest\_access value)
3. For **Folder Sharing Expiry Notification**, select Custom Message or Default Message in Pop-up window.
4. Click **Update**.
5. Go to **Policy > Node Policy** in the left Policy panel.
6. Click the **desired Policy ID** in Node Policy window.

7. Find Agent Action. Click Assign.
8. Find **Control Network Folder Sharing** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

## 14.6 Controlling Linux

You can control Linux devices with the Agent installed using these plugins:

### 14.6.1 Collecting Network Information

Policy Server communicates with the Agent to collect Ipv4 and Ipv6 network information on end users Linux devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Network Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
2. Click **Update**.
3. Go to **Node Policy** in the left Policy panel.
4. Click the **Default Policy** in Node Policy window.
5. Find **Agent Action**. Click **Assign**.
6. Find **Collect Network Information** in the **Available** section. Select and drag it into the **Selected** section.
7. Click **Add**.
8. Click **Update**.

## 14.6.2 Collecting Software Information

Policy Server communicates with the Agent to collect software information that is running on end users Linux devices and displays it on The [Software Information - Software] List tab of the node information.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Software Information** in the Agent Action window. window (*Notice there are three, one for Windows, one for MacOS and another for Linux*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Collect Software Information** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

## 14.6.3 Scan Condition Settings

You can scan Linux condition settings to include processes, files, system, and authenticated users.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Scan Condition Settings** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section: (*Must have Conditions added for this plugin to work*)

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Enter in **Conditions**, and adjust **Execution Interval**.
5. For **Periodic Interval**, choose from seconds, minutes, hours, days weeks, or months. (*Default is 12 hours*)

6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Scan Condition Settings** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

#### 14.6.4 Collecting Computer OS Information

The Policy Server collects Operating System information from end users Linux devices using the Agent.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Computer OS Information** in the Agent Action window (*Notice there are three, one for Windows, one for MacOS and another for Linux*)

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
4. Set **Time Object**, **Retry Interval** and **Retry Attempts**
5. Click **Update**.
6. Go to **Node Policy** in the left Policy panel.
7. Click the **Default Policy** in Node Policy window.
8. Find **Agent Action**. Click **Assign**.
9. Find **Collect Computer OS Information** in the **Available** section. Select and drag it into the **Selected** section.
10. Click **Add**.
11. Click **Update**.



## 14.6.5 Collecting Hardware Information

Policy Server communicates with the Agent to collect hardware information about Linux devices.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Hardware Information** in the Agent Action window. *(Notice there are three. One for Windows, one for MacOS and another for Linux)*

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Condition**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Plugin Settings**, adjust **CPU, Memory, and Disk Space Utilization** Thresholds based off of your network requirements. **Motherboard info** is also collected.
4. For **Execution Interval**, adjust Periodic Interval. *(Seconds - hours)*
5. Set **Time Object, Retry Interval** and **Retry Attempts**
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Collect Hardware Information** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

## 14.6.6 Controlling Network Interface

You can control wired and wireless network interfaces on end users linux devices by disabling wired, wireless mode.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control Network Interface** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Network Type**, specify the Network type to be disabled. (*Wired, Wireless, or both*)
2. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Control Network Interface** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

### 14.6.7 ZTNA Connection Manager

Controls Zero trust network access Connection Manager options and actions.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **ZTNA Connection Manager** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Connection Manager**, specify the type of connection manager.
  - **Site**: Set "Site Settings Information" in Connection Manager.
2. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **ZTNA Connection Manager** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.6.8 Update Linux

Checks for linux updates and report.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Update Linux** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
2. Click **Update**.
3. Go to **Node Policy** in the left Policy panel.
4. Click the **Default Policy** in Node Policy window.
5. Find **Agent Action**. Click **Assign**.
6. Find **Update Linux** in the **Available** section. Select and drag it into the **Selected** section.
7. Click **Add**.
8. Click **Update**.

## 14.6.9 Collecting Antivirus Software Information

Policy Server communicates with the Agent to collect antivirus software information that is installed on your Linux devices.

### List of Supported Antivirus

Check all Antivirus supported with Genian ZTNA by version.

| Vendor        | Product                  | Genian Version |
|---------------|--------------------------|----------------|
| Cisco Systems | ClamAV                   | 5.0.46         |
| Sophos        | Sophos server protection | 5.0.48         |

## Collect Antivirus Software Information

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Antivirus Software Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
2. Click **Update**.
3. Go to **Node Policy** in the left Policy panel.
4. Click the **Default Policy** in Node Policy window.
5. Find **Agent Action**. Click **Assign**.
6. Find **Collect Antivirus Software Information** in the **Available** section. Select and drag it into the **Selected** section.
7. Click **Add**.
8. Click **Update**.

## 14.6.10 Terminate Process

You can kill specific processes that are running on the end users Linux devices and schedule the frequency to verify that they continue to not run.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Terminate Process** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Terminate Process**, set up a process that should not be used on the device through that option.
2. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)

3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Terminate Process** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

### 14.6.11 Manage ARP Table

Checks for linux updates and report.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Manage ARP Table** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. For **Deleting Static ARP Entries**, turn **On** to delete static ARP entries.
2. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
3. Click **Update**.
4. Go to **Node Policy** in the left Policy panel.
5. Click the **Default Policy** in Node Policy window.
6. Find **Agent Action**. Click **Assign**.
7. Find **Manage ARP Table** in the **Available** section. Select and drag it into the **Selected** section.
8. Click **Add**.
9. Click **Update**.

## 14.6.12 Deploy Files

You can deploy files in Linux by uploading a file to the Policy Server, or providing a download link. Additionally, this agent action allows for actions to be taken after the file is deployed.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Deploy Files** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. Select **Upload** or **URL** for the **File Deployment Method**.
  - **Upload**: Use the prompt to upload the desired file to the Policy Server.
  - **URL**: Use the prompt to specify a web address to download the file from.
2. For **Post Deployment Action**, select **Run File**, **Download** or **Install Package**.

Files are deployed to `/usr/share/genians/resource` by default.

- **Run File**: Use the prompt to select an **Execution Path** + optional file name and a **Command Line Parameter** for the distributed file. For **Execution Account** select **Root** or **Logon Account**.
  - **Download**: Use the prompt to specify a **Destination Path** and optional file name for the distributed file.
  - **Install Package**: Use the prompt to select an **Installation Path**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
  4. Click **Update**.
  5. Go to **Node Policy** in the left Policy panel.
  6. Click the **Default Policy** in Node Policy window.
  7. Find **Agent Action**. Click **Assign**.
  8. Find **Collect Network Information** in the **Available** section. Select and drag it into the **Selected** section.
  9. Click **Add**.
  10. Click **Update**.

### 14.6.13 Notify User

You can notify users with informational messages or warnings. The message may be displayed using a slide-out notification or redirection to a URL.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Notify User** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings** section:

1. For **Contents for Slide-out Box Notification**, type in contents to display in slide-out box notification.
2. For **CWP Page Redirection**, turn **On** to redirect to CWP page when a user clicks a slide-out notification.
  - **CWP Page Redirection URL**, click **Use Template** or specify a URL for CWP redirection when a user clicks a slide-out notification.
3. For **Enforcing Notification**, specify whether to disable to force closing a notification.
  - **Notification Message Type**, specify a message type for a user notification. (*Informational, Warning*)
  - **Generating Log for User Read Notification**, specify whether to generate a log when a user reads a notification.
4. For **Automatic pop-up**, Enable to display detailed message contents in a pop-up badge, rather than only a preview.
5. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
6. Click **Update**.
7. Go to **Node Policy** in the left Policy panel.
8. Click the **Default Policy** in Node Policy window.
9. Find **Agent Action**. Click **Assign**.
10. Find **Notify User** in the **Available** section. Select and drag it into the **Selected** section.
11. Click **Add**.
12. Click **Update**.

### 14.6.14 Collecting Monitor Information

Policy Server communicates with the Agent to collect information about the monitor that is connected to your Windows.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Collect Monitor Information** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**
3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - months*)
4. Click **Update**.
5. Go to **Node Policy** in the left Policy panel.
6. Click the **Default Policy** in Node Policy window.
7. Find **Agent Action**. Click **Assign**.
8. Find **Collect Monitor Information** in the **Available** section. Select and drag it into the **Selected** section.
9. Click **Add**.
10. Click **Update**.

### 14.6.15 Checking Password Validation

Policy Server communicates with the Agent to collect check the strength of a Linux password

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Checking Password Validation** in the Agent Action window.

Under **General** section:

1. For **CWP Message**, add message to be displayed in accordance with the Policy.
2. For **Label**, add labels to help categorize your plugins with custom labels that appear in the "Description" field.

Under **Agent Actions** section:

1. For **Boolean Operator**, choose **AND** or **OR** to add optional conditions.
2. For **Settings**, click **Add** and select your optional conditions. **Criteria/Operator/Value**

Under **Plugin Settings**:

1. Select **On** or **Off** for:
  - **Display Account with Strong Password**: Specify whether to display an account with a strong password.
  - **Immovable Dialog Box** - Specify whether to lock Dialog Box in the center of the screen.



- The settings below may be defined for both **Logged On Users** and **Logged Off Users**.
1. For **Password Check Options**, select **None**, **Protection** (check for password), or **Strength** (Checks password against password policy. See: *Managing Users and Groups*)
    - For **Action**, select **Force Password Change** (Which will mandate a password to be added, or mandate a password is made compliant, depending on the main password check option chosen), or **Check Password Strength** (Can be selected to check password strength without additional action, regardless of the main password check option. See: *Managing Users and Groups*).
  2. For **Maximum Password Age**, Specify the period of time (*days - months*) that a password can be used before the system requires the user to change it Enter 0 to Disable.
    - For **Expiry Notification**, Specify the period of time that users are notified before password expiration (*days - months*).
  3. For **Execution Interval**, adjust Periodic Interval. (*Seconds - hours*)
  4. Click **Update**.
  5. Go to **Node Policy** in the left Policy panel.
  6. Click the **Default Policy** in Node Policy window.
  7. Find **Agent Action**. Click **Assign**.
  8. Find **Checking Password Validation** in the **Available** section. Select and drag it into the **Selected** section.
  9. Click **Add**.
  10. Click **Update**.

## 14.6.16 Controlling External Device

- External devices are all devices that can be connected to the Linux system.
- You can control an external device by disabling or removing the external device so that it can request approval for a set period of time.

### Step 1. Create Device Group

- A device group is a function that defines a set of devices required for control. It can be used for blocking or exception on the policy.
1. Go to **Policy** in the top panel.
  2. Go to **External Device Group** in the left Policy panel.
  3. Click **Tasks > Create**.
  4. Find **General** section enter unique **ID name**. (*e.g. "USB Storage Devices"*)
  5. Select **OS Type > Linux** in Device Group Setting section.
  6. Click **Conditions > Add\*** and select **Device Name** to control.
  7. Find **Settings** section enter the following:
  8. If the device type is USB Disk, you can specify following information.
    - **USB Vendor**: Specify USB Vendor name.
    - **USB Model**: Specify USB Model name.

- **USB Serial No.:** Specify USB Serial Number.

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**Note:** Conditions must be defined in accordance with the language settings of the endpoints operating system.

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9. Click **Add**.
10. Click **Save**.

## Step 2. Create External Device Policy

- Control External Device Policy defines the device groups to block or allow the target to perform device control.
  - When the plugin is uploaded, the device policy for the basic output device is provided as a template. (Device Control Policy ID: Data Prevention)
1. Go to **Policy** in the top panel.
  2. Go to **Policy > External Device Policy** in the left Policy panel.
  3. Click **Tasks > Create**
  4. Find **General** section enter unique **ID name**. (e.g. "USB Storage Policy")
  5. Find **Node Group** section click **Assign** and choose **Node Group**
  6. Find **External Devices** section click **Assign** and choose **USB Storage Devices**. (You can select **Default Device Group** below.)
  7. Click **Save**.
  8. Click **Apply**.

### External Device Exceptions :

1. Click the **Create** button.

## Step 3. Configure Control External Device Plugin

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Agent Action** in the left Policy panel.
3. Find and click **Control External Device**.
4. Find **Agent Action > Control Methods** section and choose to **Disable** or **Uninstall**.
5. Click **Update**.

## Step 4. Enable Agent Action on Node Policy

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Click the **desired Policy ID** in Node Policy window.
4. Find **Agent Action**. Click **Assign**.
5. Find **Control External Device** in the **Available** section. Select and drag it into the **Selected** section.
6. Click **Add**.

7. Click **Update**.



## DETECTING ANOMALIES

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**Note:** This feature required Professional or Enterprise Edition

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An **Anomaly** is a signature of abnormal activity that may indicate a security breach, or an outside entity searching for network or device vulnerabilities.

A **Vulnerability** is an opening that can be exploited to cause damage to a device, or to network security.

Genian ZTNA inspects network traffic to identify abnormalities in the network and marks endpoint devices that have Anomalies. You can configure custom **Anomaly Definitions** or use the seven pre-defined definitions provided by default to detect endpoint devices that are exposed to major Anomalies such as **Ad hoc Networks, ARP Bombing, ARP Spoofing, MAC+IP Clones, Port Scanning** and more.

### 15.1 Understanding Anomaly Detection

**Network Sensor** listens for abnormalities in network traffic and identifies endpoints with **Anomaly** and blocks them based on your access policies. You can configure Anomaly Definitions to detect abnormal network traffic such as **Ad hoc Network, ARP Bomb, Spoofed ARP, MAC+IP Clones**, and more.

For an anomaly to be detected, anomalies definitions must be assigned to node policies.

#### 15.1.1 ARP Bomb

While the network sensor is monitoring ARP, it detects a device that generates excessive ARP packets and designates it as a critical Node. It detects abnormal ARP behavior and prevents attempts to disable network access or disable network access control. An attacker Node continually keeps sending request packets to the target Node, thereby causing its cache to fill up quickly. Soon the target Node will spend more of its resources to maintain its cache, which may lead to buffer overflow. And real mapping would never be entered in the cache.

### 15.1.2 MAC+IP Clones

The IP protocol uses IP and MAC addresses to identify the destination of the communication. Since there is no verification procedure at this time, it is easy to steal. If you have cloned the MAC / IP of the malicious device on the network, it is very difficult to check the normal system and the stolen system at the packet level.

However, Genian ZTNA can detect MAC / IP theft in a variety of ways. The network sensor periodically sends an ARP request to check the operation status of the device. If two replies are received at the same time, suspend the MAC / IP clone and designate the Node as a critical Node. In addition, if the user changes the MAC on the endpoint where the Agent is installed and the MAC is already being used by another device, the device is designated as a critical Node.

In addition, Genian ZTNA provides industry-leading platform detection to detect when a Node is changing to another platform, allowing administrators to see when changes are made, and to block devices when unauthorized platform changes are detected.

### 15.1.3 Multi-Homed / Ad hoc Network

Detects direct client-to-client communication (*Agent required*)

### 15.1.4 Port Scanning

Detects any device trying to scan TCP or UDP ports. Genian ZTNA uses a honeypot IP for detecting scanning devices.

### 15.1.5 Rogue DHCP Server Detection

The DNS value assigned by the DHCP server with IP can be compared to the DNS set on the sensor to detect an unusual DHCP server.

### 15.1.6 Rogue Gateway

Detects a Node having a rogue gateway configured (*Agent required*)

### 15.1.7 Sensor MAC Clones

Detects whether a Sensor MAC address is cloned (*No configuration settings required*)

### 15.1.8 Spoofed ARP

While ARP Enforcement is a technology used to block communication of network devices, ARP Spoofing is mainly used in malicious codes and is used for eavesdropping communication of other parties. Genian ZTNA can detect ARP packets through a network sensor to detect devices attempting to be spoofed.

In addition, it provides a function to block devices that attempted spoofing and to return to normal MAC through ARP cache detox.

## 15.1.9 Unauthorized Service Request

Detects the service that are not authorized but requested.

## 15.1.10 SNMP Disabled

Genian ZTNA allows SNMP Trap interworking with external systems to receive network control and de-control requests and designate the device as a dangerous node. In addition, the tag assignment feature allows SNMP Trap to perform control over the received device.

Please refer to *Tagging Assets Using Event* for tag assignment function.

## 15.2 Pre-Requisites for Anomaly Detection

To detect Anomalies, Administrators need to preconfigure components such as the Network sensor or Agent.

### 15.2.1 Anomaly Detection Mechanism

Anomalies are detected by Sensor or Agent.

To Detect Anomalies, both Sensor and Agent must be pre configured.

If Anomalies are detected by **Agent**, Administrators should assign the appropriate Agent action under the Node Policy.

| Anomalies ID                 | Detection Mechanism                  | Required Configuration                         |
|------------------------------|--------------------------------------|------------------------------------------------|
| Multi-Homed / Ad hoc Network | Agent                                | Collect Network Information Agent plugin       |
| ARP Bomb                     | Network Sensor                       | Add Virtual IP to Sensor Interface             |
| Spoofed ARP                  | Network Sensor                       | Add Virtual IP to Sensor Interface             |
| MAC+IP Clone                 | Network Sensor / Agent(ARP Spoofing) | Enable Network Sensor MAC + IP Clone Detection |
| Malware Detection            | Agent                                | Collect Malware Information Agent plugin       |
| Port Scanning                | Network Sensor                       | Add Virtual IP to Sensor Interface             |
| SNMP Disabled                | Policy Server                        | SNMP Trap Options                              |
| Rogue DHCP Server Detection  | Network Sensor                       | Network Sensor DHCP Server Scan                |
| Sensor MAC Clones            | Network Sensor                       | Network Sensor MAC + IP Clone Detection        |
| Unauthorized Service Request | Network Sensor                       | Add Virtual IP to Sensor Interface             |
| Rogue Gateway                | Agent                                | Collect Network Information Agent plugin       |

## 15.2.2 Configuration Details

### Add Virtual IP to Sensor Interface

- Refer to: [Add Virtual IP to Sensor Interface](#)

### Configuring Network Sensor DHCP Server Scan

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the left Policy panel
3. Find **Sensor** and Click **Checkbox**
4. Click **Tasks > Edit Network Sensor Settings**
5. Go to **Sensor Settings > Network Scan > DHCP Server Scan** and choose **On** to the configure features
6. Click **save**

### Configuring Policy Server SNMP Trap Options

1. Go to **Preferences** in the top panel
2. Go to **General > Log** in the left Policy panel
3. Go to **Log > SNMP Trap Options > SNMP Trap** and choose **On** to the configure features
4. Enter **Community String**
5. Click **Update**

### Configuring Network Sensor MAC + IP Clone Detection

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the left Policy panel
3. Find **Sensor** and Click **Checkbox**
4. Click **Tasks > Edit Network Sensor Settings**
5. Go to **Sensor Settings > Node Status Scan > MAC+IP Clone Detection** and choose **On** to the configure features
6. Click **save**

## 15.3 Creating Anomaly Definition

You can create custom Anomaly definitions to apply to Node Groups.

By default, there are eight pre-defined **Anomaly Definitions** that are frequently used. With the steps provided below, you can create your own Anomaly Definitions.



### 15.3.1 To Create an Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Tasks > Create**.

Under **General**:

1. For **ID**, type unique name.
2. For **CWP Message**, enter message to be presented to user.
3. For **User-defined Severity**, choose **Low**, **Medium**, or **High** for Anomaly severity.
4. For **Status**, must be **Enabled** to be active.
5. For **Node Group Exception**, optional setting to choose group to be an exception to this Anomaly.

Under **Anomaly Event**:

1. For **Event**, choose which Anomaly Definition to use.
2. For **Options**, customize the options as needed based on selected **Event**.
3. Click **Create**.

### 15.3.2 To Delete an Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Checkbox** of desired **Anomaly Definition**.
4. Click **Tasks > Delete**.
5. Click **OK**.
6. Click **Apply**.

## 15.4 Detecting Anomalies

Once the configured **Anomaly Definition** is assigned to the **Node Policy** you would like to apply, any anomaly will be almost immediately detected either by a **Network Sensor** or by an **Agent**. You may see the results in a variety of ways.

- Find **Anomaly** column in **Node Management**.
- Edit Node View for **Anomaly View**.
- Trace **Anomaly Logs**.
- Glance **Dashabord Widget** for **Anomaly** tab.
- Filter **Status & Filters**.

Furthermore, you can be notified about any pre-defined anomalies that are detected.

For notifying a user about the anomalies detected, see: *Sending Events*

### 15.4.1 Assign Pre-Configured Anomaly Definitions to existing Node Policy

By default, Node Policies are not detecting anomalies. For creating anomaly definitions see: *Creating Anomaly Definition*

To add Anomaly Definitions to a Node Policy and actively detect anomalies:

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy** in the left Policy panel.
3. Find and click on **\*\* [Policy Name] \*\*** in the main Node Policy window.
4. Find **Anomaly** section. Click **Assign**.
5. Select **Anomaly** from **Available** column, and move to **Selected** column.
6. Click **Add**.
7. Click **Update**.

### 15.4.2 See Detected Anomalies

Detected Anomalies can be viewed by the following methods:

#### Anomaly Column in Node Management

1. Go to **Management > Node** in top panel.
2. Find **Anomaly** column and see an icon. (*You might be able to see its details by clicking on the icon displayed*)

#### Anomaly View in Node Management

1. Go to **Management > Node** in top panel.
2. Find **Menu (3 dots and lines)** button that places next to Tasks button and click on that.
3. Find **Views** and select **Anomaly View**.
4. **Threat Detected** and **Threat Definition** columns will appear. (*A column may be configurable by clicking **Edit Columns***)

#### Anomaly Logs

1. Go to **Log > Log** in the top panel.
2. Go to **Logs > Anomaly Logs** in the left Log panel.

## Anomaly Tab in Dashboard

1. Go to **Dashboard** in the top panel.
2. Go to **Anomaly** tab.

## Status & Filters

1. Go to **Management > Node** in the top panel.
2. Go to **Status & Filters > Anomaly Detection** or **Node with Anomaly** in the bottom left panel.

### 15.4.3 Clear Anomaly Detection Records

1. Go to **Management > Node** in top panel.
2. Find and click **Checkbox** of desired Nodes.
3. Click **Tasks > Node and Device > Clear Anomaly Records**.
4. Click **OK**.

## 15.5 Blocking Anomalies

### 15.5.1 Identify Nodes through Node Group and Block them through New Enforcement Policy

You may create a dedicated Node Group and an Enforcement Policy accordingly.

#### Create Anomaly Node Group

This will group together all Nodes that will be identified by the default Policy using enabled Anomaly Definitions.

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: Unique Name. (*e.g. Anomaly Group*)
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add** in **Condition** section.
8. For each **Anomaly** you want to add, use the followings:
  - **Options**: Anomaly
  - **Operator**: Detected is one of
  - **Value**: (*One of the listed Anomalies*)
9. Click **Add**.
10. Keep adding **Conditions** as needed.

11. Click **Save**.

## Create Enforcement Policy To Block Anomalies

This will block all Anomalies identified within the Node Policy and are listed in the Anomaly Group from Step 1.

1. Go to **Policy** in the top panel.
2. Go to **Enforcement Policy** in the left Policy panel.
3. Click on **Tasks > Create**.
4. **Action** tab, click **Next**.
5. Under **General** tab:
  - **ID:** Unique Name. (*e.g. Anomaly Enforcement Policy*)
  - **Description:** Anomaly Policy to block all Nodes detected as Anomalies.
  - **Status:** Enabled.
  - Click **Next**.
6. **Node Group** tab, find and double click **\*\* Group\*\*** (*e.g. Anomaly Group*)
7. **Permission** tab, double click on **PERM-DNS**. Click **Next**.
8. **Redirection** tab, click **Next**.
9. **Agent Action** tab, click **Finish**.
10. Click **Apply**.

## 15.6 ARP Bomb

Genian ZTNA can detect high volumes of ARP request packets sent in a variety of ways. The Network Sensor counts how many ARP packets sent by each Node. If the ARP requests are sent more than the specified value, Genian ZTNA suspects the ARP Bomb and designates the Node as critical.

### 15.6.1 Possible Causes

The following is a short list of some commonly known causes of elevated ARP traffic.

- Looped switch configuration
- Duplicate IP's on the Network
- Failing Network Interface in a device
- Invalid Subnet Mask on a device
- Denial of Service attack leveraging ARP (typically from malware infected endpoints)

If an ARP Bomb anomaly is detected in your network, but you confirm that there is no problem, you can reduce the sensitivity of the ARP Bomb detection, or assign an exempt node group under the **Policy > Node Policy > Anomaly Definition > ARP Bomb** .

## 15.6.2 Configure Settings for ARP Bomb in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **ARP Bomb**.
4. Find **Anomaly Event** section to configure more options.
  - For **Event Duration**, optional setting to specify how long the ARP request packets are sent:
  - For **Number of Allowable ARP Requests**, optional setting to specify the threshold to trigger the anomaly detection.
  - For **Attribute to Match**, optional setting to find a Node sending the excessive ARP packets.
5. Click **Update**.

## 15.6.3 Create Node Group For ARP Bomb Nodes

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: ARP Packet Bombed.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add in Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly.
  - **Operator**: Detected is one of.
  - **Value**: ARP Bomb.
9. Click **Add**.
10. Keep adding **Conditions** as needed.
11. Click **Save**.

## 15.7 MAC+IP Clones

Genian ZTNA can detect MAC / IP theft in a variety of ways. The Network Sensor periodically sends an ARP request to check the operation status of Nodes. If two MAC's answer to a request for one IP, Genian ZTNA designates the more recently detected Node as a critical Node.

In addition, if the user changes the MAC on the endpoint where the Agent is installed and the MAC is already being used by another device, that device is then designated as a critical Node. Genian ZTNA provides industry-leading platform detection to detect when a Node is changing to another platform, allowing administrators to see when changes are made, and to block devices when unauthorized platform changes are detected.

### 15.7.1 Configure Settings for MAC+IP Clones in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **MAC+IP Clones**.
4. Find **Anomaly Event** section to configure more options.
  - For **MAC Spoofing Detection**, optional setting to specify whether an interface's MAC address is manually changed is also detected.
5. Click **Update**

### 15.7.2 Create Node Group For MAC+IP Cloned

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: MAC+IP Cloned.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add in Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly
  - **Operator**: Detected is one of
  - **Value**: MAC+IP Clones
9. Click **Add**.
10. Keep adding **Conditions** as needed.
11. Click **Save**.

## 15.8 Multi-Homed / Ad hoc Network

A Genian Agent can immediately detect a multi-homed configuration and Ad hoc network connections in a variety of ways. If a computer having more than one IP address configured connects to more than one network and one of them is not on the trusted network, then Genian ZTNA designates the Node as a critical one.

This anomaly definition requires installing an Agent on the endpoint and enabling an Agent Action In the node policy.

See: *Controlling Network Interface*.

## 15.8.1 Configure Settings for Multi-Homed / Ad hoc Network in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Multi-Homed / Ad hoc Network**.
4. Find **Anomaly Event**: section to configure more options
5. For **Trusted Network Scope**: *(An option may be configurable in Policy > Object > Network.)*
6. For **Sensor Network as Trusted**: *(This prevents from not being on the trusted network if a Sensor changes its management scope.)*
7. For **Agent Control** select **Yes** to configure more options and you may specify the followings:
  - **Response**: Disabling Device or Generating Logs.
  - **Interface Disabled Notification**: Yes or No.
  - **External Device Exceptions**: optional setting to specify the device to be an exception to this Anomaly. *(The name must be the exact match, therefore, you had better configure Interface Type Exception instead)*
  - **Interface Type Exception**: Wired, Wireless or Virtual.
8. Click **Update**.

## 15.8.2 Create Node Group For Multi-Homed / Ad hoc Network Connected

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: Multi-Homed / Ad hoc Network Connected.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add in Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly.
  - **Operator**: Detected is one of:
  - **Value**: Multi-Homed / Ad hoc Network.
9. Click **Add**.
10. Keep adding **Conditions** as needed.
11. Click **Save**.

## 15.9 Port Scanning

Genian ZTNA can detect port scanning run in a variety of ways. The Network Sensor monitors the network traffic flow to check the access event of ports. If a port scan is run to find a virtual IP address in order to exploit a known vulnerability, Genian ZTNA suspends the Port Scan and designates the Node as a critical one. In addition, if the ports are scanned more than the specified value within a period of time, then designated as a critical Node.

### 15.9.1 Configure Settings for Port Scanning in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Port Scan**.
4. Find **Anomaly Event** section to configure more options.
  - For **Event Duration**, optional setting to specify how long the port scan is run:
  - For **Number of Allowable Ports**, optional setting to specify the threshold to trigger the anomaly detection.
  - For **Attribute to Match**, optional setting to find a Node running the port scan.
5. Click **Update**.

### 15.9.2 Create Node Group For Port Scan Run

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: Port Scan Run.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add** in **Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly
  - **Operator**: Detected is one of
  - **Value**: Port Scanning
9. Click **Add**.
10. Keep adding **Conditions** as needed.
11. Click **Save**.



## 15.10 Rogue Gateway

A Genian Agent can immediately detect a rogue gateway configuration in a variety of ways. If a gateway address (or default gateway) configured on a Node is not on the trusted network, Genian ZTNA designates the Node as a critical one. This anomaly definition requires installing an Agent on the endpoint and enabling an Agent Action In the node policy.

See: *Controlling Network Interface*.

### 15.10.1 Configure Settings for Rogue Gateway in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Rogue Gateway**.
4. Find **Anomaly Event** section to configure more options.
5. For **Trusted Network Scope**: *(An option may be configurable in Policy > Object > Network.)*
6. For **Sensor Network as Trusted**: *(This prevents from not being on the trusted network if a Sensor changes its management scope.)*
7. For **Agent Control** select **Yes** to configure more options and you may specify the followings:
  - **Response**: Disabling Device or Generating Logs.
  - **Interface Disabled Notification**: Yes or No.
  - **External Device Exceptions**: optional setting to specify the device to be an exception to this Anomaly. *(The name must be the exact match, therefore, you had better configure Interface Type Exception instead)*
  - **Interface Type Exception**: Wired, Wireless or Virtual.
8. Click **Update**.

### 15.10.2 Create Node Group For Rogue Gateway Configured

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: Rogue Gateway Configured.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add** in **Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly
  - **Operator**: Detected is one of
  - **Value**: Rogue Gateway
9. Click **Add**.
10. Keep adding **Conditions** as needed.

11. Click **Save**.

## 15.11 Spoofed ARP

Genian ZTNA can detect any spoofed ARP packets sent in a variety of ways. The Network Sensor listens for ARP replies on a network and checks of them whether there may be any changes or differences between the ARP sender MAC address and the Ethernet source MAC address. If two responses are sent are different from each other, Genian ZTNA suspends the spoofed ARP packets sent and designates the Node with the Ethernet source MAC address as a critical one. In addition, if the number of response packets allowed are more than the specified value, that Node is then designated as a critical one.

---

**Note:** If you use Virtual Router Redundancy Protocol (VRRP), the sender MAC address may differ from the Ethernet source MAC address, a real MAC address. Genian ZTNA discovers any cases of VRRP, HSRP or GLBP so that these cases will not be detected as an Anomaly.

---

### 15.11.1 Configure Settings for Spoofed ARP in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Spoofed ARP**.
4. Find **Anomaly Event** section to configure more options.
  - For **Event Duration**, optional setting to specify how long the spoofed ARP response packets are sent:
  - For **Number of Allowable Spoofed ARP Responses**, optional setting to specify the threshold to trigger the anomaly detection.
5. Click **Update**.

### 15.11.2 Create Node Group For Spoofed ARP Sent

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: Spoofed ARP Sent.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add** in **Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly
  - **Operator**: Detected is one of
  - **Value**: Spoofed ARP
9. Click **Add**.

10. Keep adding **Conditions** as needed.
11. Click **Save**.

## 15.12 Unauthorized Service Request

Genian ZTNA can detect an unauthorized service requested in a variety of ways. The Network Sensor monitors the network traffic flow to check the access event of ports. If an unwanted service is requested on any virtual IP addresses, Genian ZTNA suspends the Unknown Service Request and designates the Node as a critical one. In addition, if the service requests are more than the specified value within a period of time, then designated as a critical Node.

### 15.12.1 Configure Settings for Unauthorized Service Request in Anomaly Definition

1. Go to **Policy** in the top panel.
2. Go to **Policy > Node Policy > Anomaly Definition** in the left Policy panel.
3. Click **Unauthorized Service Request**.
4. Find **Anomaly Event** section to configure more options:
  - For **Event Duration**, optional setting to specify how long the unauthorized services are requested:
  - For **Number of Allowable Service Requests**, optional setting to specify the threshold to trigger the anomaly detection.
  - For **Attribute to Match**, optional setting to find a Node sending the excessive unauthorized service requests.
5. Click **Update**.

### 15.12.2 Create Node Group For Unauthorized Service Requested

1. Go to **Policy** in the top panel.
2. Go to **Policy > Group > Node** in the left Policy panel.
3. Click on **Tasks > Create**
4. For **ID**: Unauthorized Service Requested.
5. For **Status**: Enabled.
6. For **Boolean Operator** select **OR**.
7. Find and click on **Add in Condition** section.
8. For each **Anomaly** you want to add use the followings:
  - **Options**: Anomaly.
  - **Operator**: Detected is one of:
  - **Value**: Unauthorized Service Request.
9. Click **Add**.
10. Keep adding **Conditions** as needed.
11. Click **Save**.



## MANAGING LOGS AND EVENTS

The Policy Server provides a centralized Log View. Information collected from endpoint devices, network devices, and other third-party devices are used to generate logs for security and management purposes. From here, Logs can then be sent outwards to another storage location, such as a SIEM solution.

Log view consists of four main sections.

- Panel A: Status and Filter.
- Window B: Time Graph and Chart.
- Panel C: Predefined Logs that are grouped by severity, or popular use cases.
- Window D: Result window of your searching and filtering.

Log display and generation options may be configured under **General > Log** in the **Preferences** section.

The screenshot shows the Genier NAC Log View interface. At the top, there are navigation tabs: Dashboard, Management, Log, Policy, Preferences, and System. The 'Log' tab is active. On the left, there is a sidebar with a 'LOGS' section containing various log categories like Anomaly Logs, Error Logs, Warning Logs, Log Filter, Internal AD Disabled fourth, Malware Detected, New Device Detected, and New Platform Detected. The main area is divided into four sections:

- Panel A:** A status bar at the top of the log view showing 'Logs', 'Status Logs', and a time filter set to '1 Week'. It includes a search bar and a 'Save' button.
- Window B:** A time graph and chart showing log activity over time. The x-axis represents time from 00:00 to 10:00. A legend on the right indicates severity levels: ERROR (red), ANOMALY (orange), WARN (yellow), and INFO (green).
- Panel C:** A sidebar on the left containing predefined log filters and categories, such as 'Log Filter' and 'Internal AD Disabled fourth'.
- Window D:** A table displaying the results of the search and filtering. The table has columns for Time, Log ID, Sensor, IP, MAC, Username, Full Name, Name, Description, and Remarks. The data shows various system events like 'IP Address changed', 'IP Address detected', and 'CLI Logout'.

## 16.1 Managing Logs

You can find specific data by searching, filtering, tagging, and visualizing in real time. By default, Genian ZTNA provides Logs based on severities, and pre-defined Log Filters based on common usage.

### 16.1.1 Configuring Log Options

You can configure options about when Logs are generated and what additional info may be recorded, such as nodes, host names, node platforms, and node descriptions.

1. Connect to the Web Console.
2. Go to the **Preferences > General > Log** menu.

#### Remarks Column Elements

1. In the Logs option selection, check the items you want to add.
2. Click the **Update** button below.
3. Go to the top Log menu and verify that the newly added Audit Log Remarks column displays additional information.

#### Available Columns:

- Node Name
- Node Description
- Hostname
- Domain
- DNS
- Platform
- Job Title
- Switch Name
- Switch Port
- Sensor Group Name

#### Generating Node Status Logs

- Select **On** or **Off** for recording node status (Up/Down)

## Generating Agent Status Logs

- Select **On** or **Off** for recording Agent status (Running/Inactive)

### 16.1.2 Searching Logs

Using the **Search** section you can search for specific information within the logs. You can also use **Operators**, and **Special Characters** to assist you in your searches.

1. Go to **Log** in the top panel.

In the top of the view pane, configure search parameters from left to right:

1. Select either **Logs**, and/ or **Status Logs**.
2. Select your desired time period to search.
3. **Select Add filters to configure the following parameters:**
  - IP
  - MAC
  - Username
  - Full Name
  - Name
  - Sensor
  - Remarks
  - Description
  - Log Types (Error, Anomaly, Warning, Information)
  - Log ID's (Agent, Authentication, Policy, SSID, System, and many more)
4. Click **Search**.

---

**Note:** Clicking the "?" next to "Filter" will bring up help options to assist you with using special characters in your searches.

---

### 16.1.3 Time Graph and Chart

#### Time Graph

The Time Graph shows you the amount of log activity per day. By default, Genian ZTNA shows the Time Graph in a **Stacked** format meaning that all Log Types that are received for that time are sorted and stacked onto one another graphically. You can choose to see these same logs in a Logarithmic view by clicking on the **Graph Icon** in the top right side of the view pane and selecting **Logarithmic**.

---

**Note:** If you want to disable the Time Graph from being seen you can simply un-check the **Time Graph check box**

---

## Chart

The Chart function allows you to see popular Log data for that seven-day period. These include **Top 10 IPS, MACs, Devices**, and more. You can access this function by clicking on the **Graph Icon** in the top right side of the view pane.

### 16.1.4 Real Time Monitoring

You can view logs in real-time as the events occur so that you can react quickly and take immediate action. You can view these events within in the same browser or you can view events in a new separate window.

#### Viewing Logs in Real-Time

1. Click **Log** in the top panel.
2. Find and click on **Real-Time Monitoring**.
3. Find **Update Interval** option on the upper right corner to set your refresh rate. (*e.g. 5,10,15,30,60 Seconds*)
4. Find and click on **View in New Window** to view in a separate window.

### 16.1.5 Creating Log Filter

By default there are a few Log Filters that are provided, but you can create custom **Log Filters** and save them as your commonly used filters for easy access.

#### Create a New Log Filter

1. Go to **Log** in the top panel.
2. Click on **Logs**.
3. Find the top of the view pane and enter your search criteria for which log set and time period to search, as well as which filters to apply.
4. Click **Save** in the top right.
5. For **Name**, type unique name.
6. For **Description**, type what this Log Filter contains.
7. For **Tree & Log Monitor:** (Checked displays New Filter under **Log Filter**, unchecked will keep it hidden from list)
8. For **Columns to Display:**, Choose which columns you would like to display in your New Log Filter.
9. Configure notifications if desired. See: *Sending Events*
10. Click **Save**.



### Edit Log Filters

1. Go to **Log** in the top panel.
2. Go to **Log Filter** in the left Log panel.
3. Find and click the "**Magnifying Glass**" Icon.
4. Use the *step 3* from above to reconfigure the search.
5. Click **Edit** to proceed or configure additional settings.
6. Click **Update**.

### Delete Log Filters

1. Go to **Log** in the top panel.
2. Select **Log Filter** in the left **Log** panel.
3. In main window find **Log Filter Name**, click on **Checkbox**.
4. Click **Tasks > Delete**.
5. Click **OK**.

## 16.1.6 Tagging Assets Using Event

### Assign Tag using Log Filter

1. Create a Log Filter as shown in [:Creating Log Filter](#) through step 4.
2. Click the **dropdown-list** beside **Tag** and select the **Assign:**
  - **From:** This option acts as a conditional statement. If the origin of the log is of the selected class (**Node**, **External device**, **User**, or **WLAN**), then a tag will be assigned to the attribute defined in the **To** option.
  - **To:** The [Node/External device/User/WLAN] to which the tag is assigned.
  - **Tag:** Select which **Tag** to assign.

---

**Note:** If you want to delete a Tag, Select the **clear**

---

### Verification:

- Click on the IP after searching for the target to which the tag is assigned.
- Check the Tag assigned to the target in the **General Tab**.

## 16.2 Sending Events

The Policy Server can send events internally to administrators, end users, networking devices, or externally to third-party security products such as SIEM using various protocols.

---

**Note:** To send emails notifications, Outbound email and admin email notification settings must both be configured. See *Setting up Outbound Mail Server (SMTP)*, *Administrator Accounts*.

---

### 16.2.1 Define Event Criteria for Export

#### Use an existing Log Filter or Create a new one

1. Select the **edit** option under the desired log filter.
2. Log export may be configured further by checking **Notification** (Local Admin), **SYSLOG**, **SNMP Trap**, and/or **Webhook**.

#### Add Macros To Log Export Message Box

Genian ZTNA uses Macros as a placeholder text that gets replaced with specific data when inserted into the Log Notifications message box. You can add and customize these Macros to present the data however you like. If the Log Notifications message block is left empty then a default set of Macros will be used.

1. Go to **Preferences** in the top panel.
2. Go to **General > Log** in the left **Preferences** panel.
3. Find **Log Options: Remarks column Elements** section in main **Log** panel.
4. Select options to **Enable** this data to be added to **Logs**. (*Node Status Logs and Agent Status Logs are optional*)
5. Go to **Log** in the top panel.
6. Go to **Log Filter** in the left **Log** panel.
7. Find and click **Log Filter Name**.
8. Click **Edit** at the top right of view pane.
9. Find and select **Notification, SYSLOG, SNMP Trap, and/or Webhook**.
10. Find and click **Help for Macro** button just above **Notification** section title.
11. Choose the desired **MACRO** to add to the message body. (*Some Message{ \_SWNAME}{SWPORT}*)
12. Click **Update**.

#### Default Message Syntax

- Notification

```
SMS - [site Name] {_HEADMSG}: Log Filter Name
Email Subject - [Site Name] {_HEADMSG}: Log Filter Name
Email Contents - {_DATETIME} {_LOGTYPE} {_LOGID} {_SENSORNAME} {_IP} {_MAC} {_FULLMSG}
↳ {_DETAILMSG}
```

- SYSLOG

```

Default - {_DATETIME} {_LOGTYPE} {_LOGID} {_SENSORNAME} {_IP} {_MAC} {_FULLMSG} {_
↪DETAILMSG}
CEF - CEF:0|GENIANS|Genian NAC|{_VERSION}|{_LOGFILTERNAME}|{_LOGFILTERDESC}|1|rt={_
↪DATETIME} cs1Label=Log Type cs1={_LOGTYPE} cs2Label=Log ID cs2={_LOGID} dvchost={_
↪SENSORNAME} dst={_IP} dmac={_MAC} msg={_FULLMSG} cs3Label=Detail Message cs3={_
↪DETAILMSG}

```

- SNMP Trap

```
{_DATETIME} {_LOGTYPE} {_LOGID} {_SENSORNAME} {_IP} {_MAC} {_FULLMSG} {_DETAILMSG}
```

**Note:** SMS Notifications are limited to 500 per-month.

- Webhook (POST)

```

{
"datetime": "{_DATETIMEZ}",
"ip": "{_IP}",
"mac": "{_MAC}",
"sensorip": "{_SENSORIP}",
"sensorname": "{_SENSORNAME}",
"logid": "{_LOGID}",
"logidstr": "{_LOGIDSTR}",
"logtype": "{_LOGTYPE}",
"userid": "{_USERID}",
"fullname": "{_USERNAME}",
"userdept": "{_USERDEPT}",
"position": "{_POS}",
"nodename": "{_NNAME}",
"hostname": "{_HOSTNAME}",
"platform": "{_PLATFORM}",
"nodedesc": "{_DESC}",
"domain": "{_DOMAIN}",
"dnsname": "{_DNSNAME}",
"switchname": "{_SWNAME}",
"switchport": "{_SWPORT}",
"detail": "{_DETAILMSG}"
}

```

## Macro Definitions

Administrators can select and send necessary information when sending events by using predefined macros.

| Macro Format  | Contents                                                       |
|---------------|----------------------------------------------------------------|
| {_FULLMSG}    | Full Log Message                                               |
| {_HEADMSG}    | Log Message Header                                             |
| {_TAILMSG}    | Data After Header (KEY=VALUE, ...)                             |
| {_EXTRAINFO}  | All Additional Information                                     |
| {_IP}         | Log Node IP                                                    |
| {_IP_HTML}    | Log Node IP(Hyperlink)                                         |
| {_MAC}        | Log Node MAC                                                   |
| {_MAC_HTML}   | Log Node MAC(Hyperlink)                                        |
| {_SENSORIP}   | Log Sensor IP                                                  |
| {_SENSORNAME} | Log Sensor Name                                                |
| {_LOGID}      | Log ID                                                         |
| {_LOGIDSTR}   | Log ID String                                                  |
| {_LOGTYPE}    | Log Type                                                       |
| {_DATETIME}   | Log Time and Date (2009/11/27 14:22:32)                        |
| {_DATETIMETZ} | Log Time and TimeZone                                          |
| {_DETAILMSG}  | Log Details                                                    |
| {_USERID}     | Authenticated User ID                                          |
| {_USERNAME}   | Authenticated User Name                                        |
| {_USERDEPT}   | Authenticated User Department                                  |
| {_POS}        | Authenticated User Job Title (Additional Information Required) |
| {_NNAME}      | Node Name (Additional Information Required)                    |
| {_HOSTNAME}   | Hostname (Additional Information Required)                     |
| {_PLATFORM}   | Platform (Additional Information Required)                     |
| {_DESC}       | Node Description (Additional Information Required)             |
| {_DOMAIN}     | Domain (Additional Information Required)                       |
| {_DNSNAME}    | DNSName (Additional Information Required)                      |
| {_SWNAME}     | Switch Name (Additional Information Required)                  |
| {_SWPORT}     | Switch Port (Additional Information Required)                  |

## 16.2.2 Sending Logs

You can send Events to external locations like SIEM solutions using several methods.

---

**Note:** To send emails notifications, Outbound email and admin email notification settings must both be configured. See *Setting up Outbound Mail Server ( SMTP ) , Administrator Accounts*.

---

1. Select a **log filter**, click **edit**.
2. Click **Checkbox** for **Notification** (Administrator email / sms), **Syslog**, **SNMP Trap**, or **Webhook**.
3. Configure settings and Update.

## Example Integration: Splunk

Integrate with Splunk using the following process:

1. In Splunk configure a Local UDP input under **Settings > Data Inputs**.
2. Configure your desired **data input port** and enter your Genians policy server IP into the "Only accept connection from" section. (optional)
3. In Genians ZTNA, select syslog under the log filter of your choice.
4. Input the **Sever Address** of your splunk server. For **Protocol**, select **UDP**, and for **server port**, select the **data input port** you defined on Splunk.
5. In the SYSLOG message section, enter the value: `{_DATETIME},LOGTYPE={_LOGTYPE},LOGID={_LOGID},IP={_IP},MAC={_MAC},DETAIL={_DETAILMSG}`
  - This is necessary for the proper display of information in Splunk.

## SNMP Trap Example

SNMP Trap is mainly used for device-to-device event transmission, and the transmission setting method is as follows.

1. Check SNMP trap in selected search filter of Genian ZTNA.
2. Enter the server address of the SNMP Trap server.
3. Enter the Community string defined in the SNMP Trap server.
4. In the SNMP Trap message, enter values of `{_DATETIME},LOGTYPE={_LOGTYPE},LOGID={_LOGID},IP={_IP},MAC={_MAC},DETAIL={_DETAILMSG}`.

## 16.2.3 Integration Guide For Slack

This document describes how to integrate Genian ZTNA with Slack using webhook. This integration provides the ability to send notifications for any Genian ZTNA log files to the Slack Workspace and channel of your choice. In this example, we will create a Slack Notification for newly detected MAC addresses.

The main steps of this integration are as follows:

- Configure a Slack app to accept inbound Posts
- Test that the Slack app properly
- Configure a Genian ZTNA log filter to send Posts to Slack

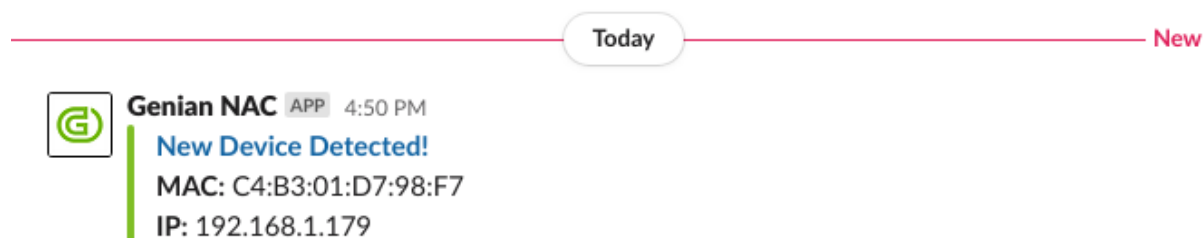
### Slack App Configuration

The steps below demonstrate how to configure Slack to accept webhook Posts from Genian ZTNA.

1. Navigate to [api.slack.com/apps](https://api.slack.com/apps), and select **Create an App**
2. Name your App and select a workspace to apply it to.
3. Select **Incoming Webhooks**, and set **Activate Incoming Webhooks to On**
4. Select **Add New Webhook to Workspace** and select one or multiple channels to post your message to. Save the channel URL as it will be input into Genian ZTNA later.
5. Use the curl utility in a command line to test sending a webhook to a channel.

6. Copy the sample Curl request from this page, and paste it into a command terminal. Ensure that the webhook URL in the sample request matches that of the channel you wish to test, as shown at in the channel list at the bottom of the page, and that the curl function is supported by your terminal.
7. After entering, if the message posts successful to your channel, Slack has been properly configured to receive webhook posts.

## Configuring Log Export to Slack



These steps will select logs from Genian ZTNA, and export them to the Slack webhook app, including those imported from external systems. To see how to import logs from external systems see: [Receiving Events](#)

1. Navigate to the **Log** tab, then select the **Add filters** option. Narrow your search to select which events to send to Slack. For our example we will search for "New MAC Detected" in the description, and click **Search**. Other filter variables may also be used to narrow your search. Ensure that your search returns only the desired results. Click **Save**
2. Next, assign a name and a description to your filter, then select **Webhook** from the bottom of the screen.
  - Set **Method** to **POST**
  - Set **URL** to the channel URL shown in the previous section of this guide.
  - Set **Character Set** as **UTF-8**
  - In the **POST DATA** section, select which log fields to send to Slack. For help with the syntax, click the question mark icon labelled **Help for Macro**
  - For this example we will show a way to post the newly detected MAC Address and the corresponding IP Address to the channel of your choice, as shown by the `{_IP}` & `{_MAC}` macros.
  - The **title\_link** content will create a hyperlink from the message title to the newly detected MAC address on your Policy Server. Be sure to input your Policy Server IP or FQDN in the indicated area.

```
{
 "attachments": [
 {
 "fallback": "New Device Detected!",
 "color": "#7FBE26",
 "title": "New Device Detected!",
 "title_link": "POLICY SERVER ADDRESS/mc2/faces/frontpage.xhtml?
↪forceForwardUrl=1&folder=monitor&framePage=frame.xhtml&selectedTree=BBA&
↪selectedPage=nodeMgmt.xhtml?nid=All&mac={_MAC}&macequal=true&isselect=true",
 "text": "*MAC:* {_MAC}\n*IP:* {_IP}",
 }
]
}
```

- For **Content-Type** set to **Application/json**

## 16.3 Receiving Events

These options may be found under **General > Log** in the **Preferences** section.

---

**Note:** SNMP Trap is only available in On-Premise edition.

---

### 16.3.1 Receiving SNMP Traps

- Enable or Disable by selecting *On* or *Off* From the drop down menu to the right of the **SNMP Trap** Label.
- If enabled, enter a `community string` into the form.

### 16.3.2 Receiving Syslog

A Server Rule set must be added before receiving syslogs. For different receiving criteria, different rules may be configured.

1. Click the **Add** button to the right of the **Server Rules** label, and fill out the pop-up form.
2. Enter a name for the Rule.
3. For **Filter**,select a variable by which to evaluate incoming syslogs for allowance. Choose from **Program** , **Host**, **Match**, or **Netmask**. This option allows for syslogs from a given source location/ program, or a given message content to be allowed.
4. Define a **Filter Value**. If the **Filter** variable of the imported syslog matches the **Filter Value** , the syslog will be merged into the policy server logs.
5. Define a prefix for **IP**, **MAC** and **Username** values. This prefix will trigger the filter to import the values immediately following as IP Addresses, MAC addresses and Usernames.
6. Define the character set which the syslogs will be imported in.
7. Click **Add** at the bottom of the pop-up window.
8. Click **Update** at the bottom of the Log Preferences page.

Imported events can be used to assign tags to nodes, devices, users and Wlans, which can be used to dictate policy.

For more information see: *Tagging Assets Using Event*.

## 16.4 Report

A Report is a function that shows the information that an administrator wants in a chart and a table for easy viewing. Administrators can use reports to efficiently document and archive or report data. Types of reports include Query Reports, Time Graph Reports, and Automatic Reports.

## 16.4.1 Managing Reports

Query Report function, the Administrator can output the result of the query (SQL statement) desired by the Administrator as an Excel file in the report format. Query Reports define the report by setting up the query statement, and the report is created by the file creation operation on the defined report.

### Generate Query Report

1. Go to **Log > Report** in the top panel.
2. Go to **Tasks > Generate Query Report**.

Under **General**:

1. For **Title**, type unique name.
2. For **Description**, type what this report will do.
3. For **Status**, select **Enabled**.
4. For **Auto Generating**, select **Enable** for executing at set times.

Under **Advanced**:

1. For **File Format**, choose Excel or CSV from drop-down.
2. For **Query**, add custom query.
3. Click **Save**.

### Example Queries

#### Collect Open Ports Of Nodes

```
SELECT NL_IPSTR as IP, NL_MAC as MAC, NL_FQDN as HOSTNAME, GROUP_CONCAT(NI_PORT) as_
↪OPENPORT
from vwNODELIST_ALL JOIN NODEINFOALL_OPENPORT ON (NI_NODEID = NL_NODEID)
where NL_ACTIVE = '1'
GROUP BY NL_NODEID
```

#### List Of IPs With The Same MAC

```
SELECT * FROM (
 SELECT NL_IPSTR, COUNT(NL_MAC) CNT
 from vwNODELIST_VALID
 GROUP BY NL_IP
 ORDER BY NL_IP
) A WHERE CNT > 1
```

The Administrator uses the Time Graph Report to show the information about the Node Group and the whole Node, the operation, the Agent installation, and the number of operation Agent Nodes **in** a Graph Format.



---

## Generate Time Graph Report

1. Go to **Log > Report** in the top panel.
2. Go to **Tasks > Generate Node Report**.

### Under **General**:

1. For **Title**, type unique name.
2. For **Description**, type what this report will do.
3. For **Status**, select **Enabled**.
4. For **Auto Generating**, select **Enable** for executing at set times.

### Under **Advanced**:

---

**Note:** Repeat these steps under **Advanced** to add more **Node Options** to the report.

---

1. For **Node Options**, select **All Nodes** or **Node Group** from drop-down.
2. If **Node Group** is selected then for **Node Group** select desired group from drop-down.
3. For **Criteria**, select what to report on.
4. For **Name**, use default or type unique name.
5. For **Description**, type what this report will do.
6. For **Graph Type**, select **Line**, **Bar**, or **Face graph** from drop-down.
7. For **Graph Color**, select desired color from drop-down.
8. For **Generating Logs**, select desired criteria from drop-down.
9. Click **Add** then **Update**.
10. Go to **Report Definition > Time Graph Report**.

### Under **Graph** tab:

1. Select desired **Time Period** and click **Generate**

### Under **Table** tab

1. Select desired **Time Period** and click **Generate**.
2. Click **Export** to export report locally in **Excel** format.

## Create Automatic Reports

Automatic Report creation is the automatic generation and emailing portion of the Query Report.

---

**Note:** To send emails notifications, Outbound email and admin email notification settings must both be configured. See *Setting up Outbound Mail Server (SMTP)*, *Administrator Accounts*.

---

1. Go to **Log > Report** in the top panel.
2. Go to **Automatic Report** in left **Report** panel.
3. Go to **Tasks > Create** to create Automatic Report.

Under **General**:

1. For **Name**, type unique name.
2. For **Description**, type what this report will do.
3. For **Recipient**, select **Administrator** or **Admin Role**.
4. Double click available names in left column.
5. For **Report**, Double click available reports.
6. For **Auto-generating**, select **Enable** from drop-down and choose how often to run this report.
7. Click **Save**.

### Exporting Reports

1. Go to **Log > Report** in the top panel.
2. Go to **Report Definition**, click on desired **Report** name in left **Report** panel.
3. Click **Tasks > Generate Report**. (*File should appear to click on*)
4. Click on **Report Filename** to download. (*e.g. 20180801110000.xlsx*)
5. Open **Report Filename** and save locally.

### How to Delete Reports

1. Go to **Log > Report** in the top panel.
2. Find **Report Definition** in the main window and click **Checkbox**.
3. Go to **Tasks > Delete**.
4. Click **OK** to verify deletion.

## 16.5 How to add additional information elements in Logs

Genian ZTNA can add additional information in audit logs or generate Agent/Node status Logs.

| Remarks Column Elements | description                                  |
|-------------------------|----------------------------------------------|
| Node Name               | Display Node Name in Node details            |
| Node Description        | Display Description in Node details          |
| Hostname                | Display Hostname in Node details             |
| Domain                  | Display Domain in Node details               |
| DNS                     | Display DNS Name in Node details             |
| Platform                | Display Platform in Node details             |
| Job Title               | Display Authenticated User's Job Title       |
| Switch Name             | Display the name of connected Switch         |
| Switch Port             | Display the name of connected Switch port    |
| Sensor Group Name       | Display the name of node's sensor group name |

### 16.5.1 How to configure Remarks Column Elements

1. Go to **Preferences** in the top panel
2. Go to **General > Log** in the left Preferences panel
3. Find **Log Options > Remarks Column Elements** and choose elements Click **checkbox**
4. Click `update` button

### 16.5.2 How to Generate Node/Agent Status Logs?

1. Go to **Preferences** in the top panel
2. Go to **General > Log** in the left Preferences panel
3. Find **Generating Node Status Logs** and choose **On**
4. Find **Generating Agent Status Logs** and choose **On**
5. Click `update` button



## MANAGING SYSTEMS

Systems consist of Policy Server and Network Sensor. You can customize admin interface, manage admin roles, configure network settings, and control systems maintenance.

### 17.1 Shutdown and Restart System

**Warning:** To avoid system corruption, never remove device power source, or manually power off device before properly shutting down Genian ZTNA.

#### 17.1.1 Control Power Through Web console

1. Click **System** in the Menu Bar.
2. Select the IP address of the desired device from the view pane.
3. Click the **Power** tab.
4. Click **Restart** or **Shutdown**

#### 17.1.2 Control Power Through Command Line Interface

See: *Command Line Interface*

1. Connect to policy server or network sensor through command line.
2. Enter Global configuration mode.
3. To:
  - Restart: Enter command **restart system** or **reboot**
  - Shutdown: Enter command **shutdown service** or **halt**

---

**Note:** Device will remained powered on, but will now be safe to power off manually.

---

## 17.2 Managing Administrators

To manage administrative users, you can define administrative roles and assign a role to users.

By default, administrative roles are provided:

- **superAdmin**, Full Administrative Privileges
- **ipAppManager**, IP Address provisioning (The Enterprise Edition only)
- **Auditor**, Log and event analysis

### 17.2.1 Administrator Accounts

You can manage your Administrators by adding, deleting, and adding various restrictions

#### To Add Administrator

1. Go to **Management > User** in the top panel
2. Click **Tasks > Add User**

#### General

1. For **Username**, type a username
2. For **Name**, type in full name
3. For **Administrator Role**, select a optional Role for Administrator
4. For **Description**, type optional description
5. For **Purpose**, select **Disabled**
6. For **Status**, select **Enabled** (*You can choose **\*\*Disable\*** to disable the account temporarily*)
7. For **Expiry**, click **Checkbox** and choose date and time by clicking in empty space

#### Password Reset

1. For **Password**, type password
2. For **Password Confirmation**, re-type password

#### Authentication Restrictions

1. For **Number of Auth IPs**, specify the number of authorized IPs this account can use (*0-256 or leave blank*)
2. For **Number of Auth MACs**, specify the number of authorized MACs this account can use (*0-256 or leave blank*)
3. For **Number of Auth Devices**, specify the number of authorized devices this account can use (*0-256 or leave blank*)
4. For **Auth IPs**, specify IP Addresses separated by commas or leave blank to not restrict
5. For **Auth MACs**, specify MAC Addresses separated by commas or leave blank to not restrict

6. For **Auth Node Groups**, specify Node Groups separated by commas or leave blank to not restrict

### Setting Login

1. For **Web Console IP1**, Specify comma-separated IP addresses or enter them in CIDR form
2. For **Web Console IP2**, Specify comma-separated IP addresses or enter them in CIDR form
3. For **2-step authentication**, Select Text message or Google Authentication (OTP) or Disable to disable it
4. For **Time Zone**, Select the time zone for that administrator.
5. For **API Key**, If you are using the REST API, click the Generate API KEY button to generate the API key.

### Notification

1. For **Notification Option**, Check if you want to receive notifications about user registration request, IP request, or external device request. The Administrator can receive an New event occurrence alarm for selected item.
2. For **Mobile Phone**, If you want to receive notifications by SMS, enter your phone number with your country code.
3. For **Email**, Enter an email to receive email notifications. (Required)

### Management Restrictions

**The management restriction setting is an item that you set when you create a non-Superadmin administrator account to restrict the permissions of the administrator account.**

- Restricted administrator role to Sensor Manager, IP Manager, User Manager, etc.
- *Restrict administrator privileges*

### Trusted Connection Settings

Set up a trusted client that calls the REST API externally.

1. For **IP Pattern**, Sets the IP pattern of trusted clients calling the REST API.
2. For **URL Pattern**, Sets the trusted URL pattern for REST API calls.

### User Information

1. For **Company**, type Company Name
2. For **Department**, select optional department (*To create Department go to Users > Departments > Tasks > Create*)
3. For **Email**, type in Email address
4. For **Mobile Phone**, type in phone number using format of your choice (*e.g. 123-456-7890, or 1234567890*)
5. For **Job Title**, select optional Job Title (*To create Job Title go to Users > Job Titles > Tasks > Create*)
6. For **Telephone**, type in phone number using format of your choice (*e.g. 123-456-7890, or 1234567890*)

---

**Note:**

The administrator can receive **Find ID/PWD authentication mail, User Account/IP/External Device/User Change request approve mail, Node list's bulk action Send Email** by User Information Email.

---

### Remove Administrator

1. Go to **Management > User** in the top panel
2. Find and click **Checkbox** of user to delete
3. Click **Tasks > Remove User**
4. Click **Ok**

### Configure Administrator Role Options

**activate, edit, or add a predefined Administrator Role.**

- assign the registered administrator role to users.
  - restrict menus and restrict permissions with detailed settings.
1. Go to Preferences in the top management menu.
  2. Select **Administrator Role** in the left panel.
  3. From the right screen, select Administrator.

### Create Administrator Role

1. Click the **Tasks > Create** button.
2. For **General**, Administrator role ID, description, landing page URL, status, menu restrictions.
3. For **Permission Setting**, Detailed permission settings for systems, policies, administration, logs, and subscription systems.
4. Click **Save** button.

### Administrator role settings

1. Go to **Management > User** in the top panel
2. Click the user ID to assign the administrator role.
3. In the General entry, select the Role you want to assign a value for the Administrator Role option.
4. Click the Update button at the bottom.
  - Specify permissions within Management Console.



## 17.2.2 Administrator Roles

You can manage Administrator Roles by creating, assigning, and removing them depending on your requirements. By default, 3 administrative roles are provided:

| Role ID           | Role Name                             | Description / Access Level                                                 |
|-------------------|---------------------------------------|----------------------------------------------------------------------------|
| auditor           | Audit Administrator                   | Log and event analysis                                                     |
| ipAppManager      | IP Request System administrator       | IP Application Administrator (Web Console X) (The Enterprise Edition only) |
| ipManager         | Administrator for managing IP usage   | IP Application/Approval (Web Console)                                      |
| logAuditor        | Audit log administrator               | Read only access to the Logs Tab                                           |
| mediaManager      | External device usage administrator   | Access to external device requests                                         |
| nodeAuditor       | Node audit administrator              | Node Management menu and Log menu only                                     |
| superAdmin        | Super Administrator                   | Full Administrative Privileges                                             |
| userManager       | User Account administrator            | Administrator role with access to User Management menu only                |
| insightsConnector | Integration service role for Insights | Administrator role to integrate with the Genian EDR product InsightsE      |

### To Create an Administrator Role

1. Go to Preferences in the top panel
2. Go to User Authentication > Administrator Role in the left Policy panel
3. Click Tasks > Create
4. Configure basic permission options. (More precise permission controls available on account level)
5. Click Save

### To Assign an Administrator Role

1. Go to Management > User in the top panel
2. Find User and click Username
3. Under General tab, select Administrator Role from the drop down menu.
4. Click Update

### To Delete an Administrator Role

1. Go to Policy in the top panel
2. Go to Group > User in the left Policy panel
3. Find User and click Checkbox
4. Click Tasks > Delete
5. Click Ok

## 17.2.3 2-Step Authentication

Genian ZTNA uses 2-Step Authentication (AKA 2 Factor Authentication , 2fa , mfa ) with OTP Google Authenticator to add a second level of authentication to an account log-in. Once Google Authenticator is installed a QR Code will display so you can scan it with your smartphone or tablet. A six digit code will then be presented to then enter as the final step in your 2-Step Authentication. (*Google Authenticator six-digit code is continuously changing so enter it in quickly*)

### Step 1. Enable 2-Step Authentication For Administrator Account

1. Go to **Management > User** in the top panel
2. Go to **Administrators** in the left User Management panel
3. Find and click **Username** of Administrator account in the main Administrators window
4. Find and click **Administrator** tab
5. Find **General: 2-Step Authentication** section in the main window
6. Click **OTP (Google Authenticator)** in drop-down
7. Find **Notification Options** section. Enter the following:
  - **Mobile Phone** (*e.g. 123-456-7890*)
  - **Display Phone Number** (*This is an optional number you want visible to sender*)
  - **Email** (*Multiple Email Addresses separated by commas*)
8. Click **Update**

### Step 2. Enable 2-Step Authentication For The Policy Server

1. Go to **Preferences** in the top panel
2. Go to **General > Console** in the left Preferences panel
3. Find **Web Console: 2-Step Verification Methods** section in the main Console window
4. Click **Checkbox** for **OTP (Google Authenticator)**
5. Click **Update**

### Step 3. Setup Google Authenticator

1. On your **Mobile Phone** go to **App Store** to download **Google Authenticator**
2. Logout from Policy Server UI and Login again
3. 2-Step Authentication wizard appears to setup Google Authenticator
4. Click **Start**
5. Select **Mobile Phone** type, **Android** or **iPhone**
6. Select **Application Method** to Install via **QR Code** (*QR Code will appear as an example*)
7. Click **OK** then **Next** (*Make sure you have Google Authenticator installed on Mobile Phone and ready to scan QR Code*)
8. Select **QR Code** in drop-down and then click **Generate Security Key**
9. Using **Mobile Phone** scan the **QR Code** that was just generated

10. Mobile Phone will present a **6 digit code** that you will need to remember and quickly enter it into the **Google Authenticator Wizard**
11. Click **OK**

## 17.3 Command Line Interface

### 17.3.1 Connecting to Command Line Interface

#### Web Console

##### For On-Premise Policy Servers Only:

Genian ZTNA allows you to connect to the CLI for an appliance directly from the Web Console. To connect, navigate to the **System** tab, and select the **Terminal Icon** in the **IP** column of the appliance you want to access. Authenticate with your administrator username and password. If your appliance is using a different administrator credential set than your Web Console, you must authenticate in the terminal using the appliance administrator credentials.

#### External Terminal

**Attention:** External SSH access only allowed from Approved IP. See: *Initializing the System* to add approved remote access sources.

You can connect to the Genians policy server or network sensor from a dedicated SSH client or any command line with SSH support. Any other inbound connection attempts will be denied.

1. Use standard procedure for your chosen utility to select SSH connection to your Genian policy server or network sensor IP Address.
2. Log in with Genian ZTNA Username and password.

### 17.3.2 CLI Commands

The first connection of the equipment is divided into console mode and shell mode. In console mode, you can check basic system status and support configuration. This document identifies and describes how to use commands in console mode.

## Basic Commands

| Command            | Explanation                                                                                 |
|--------------------|---------------------------------------------------------------------------------------------|
| enable             | Enables Global Configuration mode                                                           |
| exit               | Exits the current mode                                                                      |
| help               | Displays available commands                                                                 |
| history            | Displays a list of past commands used                                                       |
| quit               | Exits console mode                                                                          |
| configure terminal | Global mode to set configurations immediately                                               |
| configure batch    | Global mode to set configurations after system restarts                                     |
| clear arp          | Deletes the system arp entry                                                                |
| clear screen       | Initializes the display screen                                                              |
| clock set          | Sets system date and time                                                                   |
| do backup          | Performs a system backup                                                                    |
| do cdbackup        | Performs a system backup to the connected optical disk                                      |
| do cdrestore       | Restores the backup file from the connected optical disk                                    |
| do initdisk        | Initializes the disk                                                                        |
| do restore         | Restores from a backup file                                                                 |
| do cert-reissuance | Reissue Certificate                                                                         |
| geniup             | If a Genians Update Server is specified, proceed with the upgrade to the latest Server file |
| halt               | Prepare the system power shutdown mode                                                      |
| kill pid           | Terminates process based on pid                                                             |
| kill pname         | Terminates process based on the name                                                        |
| ping               | Generates an ICMP request for IP test to a remote device                                    |
| reboot             | Reboots the system                                                                          |
| restart system     | Restarts the OS                                                                             |
| shutdown service   | Terminates the Insights OS service                                                          |
| traceroute         | Displays the routing path for IP                                                            |
| show               | Proceed to show command section                                                             |

## Show Commands

| Command            | Explanation                                                     |
|--------------------|-----------------------------------------------------------------|
| show arp           | Displays the IP to MAC address mapping                          |
| show backup        | Displays the list of backup files                               |
| show configuration | Displays the current system configuration                       |
| Show cpu           | Displays the CPU information                                    |
| show filesystem    | Displays the file system of the appliance                       |
| show hosts         | Displays a list of hosts                                        |
| show interface     | Displays the network interfaces of the appliance                |
| show logging       | Displays a list of system logging messages                      |
| show memory        | Displays the memory statistics                                  |
| show processes     | Displays the current running processes                          |
| show route         | Displays the current configured routes                          |
| show sensor        | Displays a list of sensors. Options: all/active/passive/unknown |
| show superadmin    | Displays a list of configured administrator accounts            |
| show time          | Displays the current system time                                |
| show uptime        | Displays how long system has been up and running                |
| show version       | Displays the current running system version                     |

## Inspecting and Searching Commands

You can view available commands by entering the ? character into a blank terminal.

### Example:

```
genian> ?
exit Exit from current mode
help Show available commands
history Show a list of previously run commands
quit Exit from the console
configure Enter configuration mode
clear Clear Operation
clock Manage system clock
disable Turn off privileged command.
do Do system command
geniup Upgrade system software
halt Prepare to Power Shutdown mode
kill Kill
ping Send ICMP echo request
reboot Halt and perform a cold restart
restart Restart service
show Show system information
shutdown Shutdown
traceroute Trace route information to destination
```

You can view the function of a command by entering the ? character after an entered command.

### Example:

```
genian> show?
show Show system information
```

You can view available command modifiers by entering the ? character after an entered command and a blank space.

### Example:

```
genian> show ?
arp ARP table
backup Database backup list
configuration Display the system configuration
cpu Display cpu information
dataserver Display database server status
dhcp Display the DHCP server information
enforcer Enforcer status and information
filesystem Filesystem statistics
ha High Availability status
hosts Static host table
interface Network interface status and information
logging Display system local logging message
memory Memory statistics
nodeinfo Node status and information
processes Active process list
route Display system routing table
superadmin Display super administrator
time Display the system clock
uptime Display system uptime
version System hardware and software information
```

## 17.4 Configuring Network

You can connect through command line console change the interface IP address, or configure the interface for DHCP

### 17.4.1 Configuring Interface IP Addresses

---

**Note:** Many common issues can be resolved by rebooting the appliance, which reloads your configurations, and purges outdated settings. After verifying configurations, rebooting is a good next step in troubleshooting.

---

#### Checking Interface IP Address

Before making changes, check the configuration of the interface.

Enter "show configuration | grep interface [interface name]" as seen below:

```
genian# show configuration | grep interface eth1
interface eth1 address 192.168.50.43 255.255.255.0
interface eth1 gateway 192.168.50.1
genian# exit
```

If an interface has an IP/ Gateway and DHCP enabled, it will not function. One must be removed.

#### Configure the Interface as a Static IP

To define an IP address and gateway for an interface(eth0, eth1, etc.) or sub interface(eth0.10, eth0.20,etc.):

```
genian> enable
genian# configure terminal
genian(config)# interface eth1 address X.X.X.X X.X.X.X
genian(config)# interface eth1 gateway X.X.X.X
genian(config)# exit
```

To Remove a Static IP from an interface:

```
genian> enable
genian# configure terminal
genian(config)# no interface eth1 address X.X.X.X X.X.X.X
genian(config)# no interface eth1 gateway X.X.X.X
```

#### Configure the Interface as a DHCP Client

To configure the interface or sub interface as a DHCP Client:

```
genian> enable
genian# configure terminal
genian(config)# interface eth1 dhcp enable
genian(config)# exit
```

To Remove DHCP Client Status from an interface:

```
genian> enable
genian# configure terminal
genian(config)# no interface eth1 dhcp enable
```

## 17.4.2 Add Alias IP to Sensor Interface

If there is more than one logical subnet in a broadcast domain (VLAN), you need to configure Alias IP on the sensor's interface so that it can be recognized.

### Add Alias IP

Alias IP can only be configured on the Web console.

1. Go to **System** in top panel
2. Go to **System > System** in the left panel
3. Click desired Network Sensor IP
4. Click **Sensor > IP Address** tab
5. Click desired interface name for adding alias IP
6. Click **Add an Alias IP** button beside of Sensor IP
7. Enter following information for alias IP
  - IP Address: Management IP for sensor
  - Subnet Mask
  - Gateway
  - Managed IP Range : let this value blank if you want restricts unused IP addresses in the managed network
8. Click **Update**

### Delete Alias IP

1. Go to **System** in top panel
2. Go to **System > System** in the left panel
3. Click desired Network Sensor IP
4. Click **IP Address** tab
5. Click desired interface name for adding alias IP
6. Click **Delete** link on desired alias IP under **Sensor IP**

### 17.4.3 Add Virtual IP to Sensor Interface

Virtual IP addresses may be configured on each sensor to aid in anomaly detection. Virtual IP addresses may be automatically assigned from the pool of unused IP addresses or manually assigned.

Adding Virtual IP Manually - Administrator can manually specify and add virtual IPs

Adding Virtual IP automatically - Unused IP are randomly assigned as virtual IPs by the number of Virtual Honeypot IPs configuration. - If the Administrator change a virtual IP numbers, Genian ZTNA check the existing virtual IPs and assign additional virtual IPs.

Virtual IP Conflict Prevention - Adding Virtual IP Manually : If the IP of the new node and the virtual IP are the same, the virtual IP will be automatically changed to unused IP. - Adding Virtual IP automatically : If the IP of the new node and the virtual IP are the same, the new node will not be registered.

#### Viewing Virtual IP Addresses

1. Go to **System** in top panel.
2. Go to **System > System** in the left panel.
3. Click desired Network Sensor IP.
4. Click **Sensor > IP Address** tab.
5. Assigned Virtual IP addresses will be displayed on Virtual Honeypot IP.

#### Enable or Disable Automatic Virtual IP Assignment

1. Go to **System** in top panel.
2. Go to **System > System** in the left panel.
3. Click desired Network Sensor IP.
4. Click **Sensor > Sensor** tab.
5. Click desired interface name of Virtual IP.
6. Under **Virtual Honeypot IPs** , enter the number of Virtual IP Addresses to automatically assign from the unused IP pool. Enter 0 to disable.
7. Click Update.

#### Adding Virtual IP Manually

1. Go to **System** in top panel.
2. Go to **System > System** in the left panel.
3. Click desired Network Sensor IP.
4. Click **Sensor > IP Address** tab.
5. Click desired interface name for adding Virtual IP.
6. Click **Add** button beside of Virtual IP.
7. Define the Virtual IP, and choose to **enable** or **disable**.
8. Click Update.



9. If desired, repeat to add additional Virtual IP addresses.

### Removing Virtual IP Manually

1. Go to **System** in top panel.
2. Go to **System > System** in the left panel.
3. Click desired Network Sensor IP.
4. Click **Sensor > IP Address** tab.
5. Click desired interface name for adding Virtual IP.
6. Click the **Delete** text beside of the Virtual IP interface to be removed.
7. If desired, repeat to remove additional Virtual IP addresses.

## 17.4.4 Adding And Deleting Network Sensors

---

**Note:** Many common issues can be resolved by rebooting the appliance, which reloads your configurations, and purges outdated settings. After verifying configurations, rebooting is a good next step in troubleshooting.

---

As your network changes, you may add or delete sensors.

- If you add additional remote locations you can add Network Sensor Appliances to the sites.
- To monitor additional broadcast domains with an existing sensor, you may use multiple wired interfaces on that appliance if supported.
- For an Appliance with a single wired interface, you can monitor multiple VLANs over a 802.1Q trunk port by configuring sub interfaces.

### Add Network Sensor Hardware

If you have added a new remote location, here are the steps to adding an additional Network Sensor hardware to your Policy Server.

1. Go to *Installing Genian ZTNA*. (During the Installation, you will be prompted to link the Sensor with a Policy server IP or FQDN)
2. After Installation, you should see **Network Sensor** in the UI Management pane under **System > System > Sensor**.

### Delete Network Sensor Hardware

---

#### Note:

If you delete the network sensor, the connected VLAN and all node information are deleted together.

---

1. Disconnect **Network Sensor** hardware from the network and power down.
2. Access **Policy Server Webconsole** to delete Network Sensor.
3. Go to **System** in the top panel.

4. Go to **System > System** in the System Management panel.
5. Find and click on the **Checkbox** of desired Network Sensor.
6. Go to **Tasks > Delete System**.
7. Click **OK** to confirm.

### Add Interfaces on an Existing Sensor

This option allows you to monitor separate LANs or VLANs on a single sensor appliance without the use of a trunk port. **One wired interface is required for each network.**

**Network Sensors cannot be added through Webconsole, Administrator must be configured through CLI by adding sub-interfaces to the existing eth0 or eth1 interface.**

1. Connect through **SSH client** to Network Sensor. See: *Administration Console* .
2. Enter the following commands below for each Network Sensor to be added:

For this example, interface eth0 is already configured. The interface eth1 will be configured to monitor a separate LAN:

```
genian> enable
genian# configure terminal
genian(config)# interface eth1 address X.X.X.X X.X.X.X
genian(config)# interface eth1 gateway X.X.X.X
genian(config)# exit
```

Or setup the interface as a DHCP client:

```
genian> enable
genian# configure terminal
genian(config)# interface eth1 dhcp enable
genian(config)# exit
```

### Delete A Specific Network Sensor Interface

---

#### Note:

This deletes a single Network Sensor and all Nodes and Node information

---

1. Connect through **SSH client** to Network Sensor: *Administration Console*
2. Enter the following commands below for each Network Sensor interface to be removed:

```
genian> enable
genian# configure terminal
genian(config)# no interface eth1 address X.X.X.X X.X.X.X
genian(config)# no interface eth1 gateway X.X.X.X
genian(config)# exit
```

If the interface is configured as a dhcp client , use the following method:

```
genian> enable
genian# configure terminal
genian(config)# no interface eth1 dhcp enable
genian(config)# exit
```

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the System Management panel.
3. Find and click on the **IP Address** of desired Network Sensor.
4. Find and click **Delete** in General tab.
5. Click **OK** to confirm.

### Add VLANs (Sub-Interfaces) to an Existing Interface

This option is used when the Network Sensor is installed in trunk port mode. By configuring sub interfaces off of the main physical interface, up to 128 VLANs (Recommended 64 VLANs) configured on that trunk port may be monitored through a single physical interface. When added, a sub interface will show up in the Genians Web Console as a separate sensor/node. This is because for every VLAN that is monitored, an IP address will be assigned to the sensor within that VLAN.

---

#### Note:

Up to 128 VLANs can be added to Genian ZTNA, and more than 128 VLANs cannot be set. Genians recommends to set 64 VLANs.

---

- Ensure the Genians Network Sensor is connected to a properly configured .1q trunk port. See "*VLANs*" in *Preparing Network*
- Connect through **SSH client** to Network Sensor. See: *Administration Console*.
- Enter **ALL** VLANs you wish to monitor using commas to separate values and hyphens to denote ranges. Note that each Vlan ID will determine the suffix after `eth0.` in the sub interface name.

```
genian> enable
genian# configure terminal
genian(config)# interface eth0 vlan 10,20,30-50
```

- Enter the following commands below for each Network Sensor to be added:

```
genian> enable
genian# configure terminal
genian(config)# interface eth0.30 address X.X.X.X X.X.X.X
genian(config)# interface eth0.30 gateway X.X.X.X
genian(config)# exit
```

- Or configure the interface as a DHCP client.

```
genian> enable
genian# configure terminal
genian(config)# interface eth0.30 dhcp enable
genian(config)# exit
```

---

**Note:** If you want to monitor an untagged vlan, including the Native VLAN on a trunk/dot1q port, this can only be done on interface eth0. Specific VLAN interfaces (eth0.x) only monitor tagged traffic.

---

## Delete A Specific VLAN Network Sensor

---

**Note:**

This deletes a single VLAN Network Sensor and all Nodes and Node information.

---

- Connect through **SSH client** to Network Sensor. *Administration Console*.
- Enter ALL VLANs you wish to monitor, and exclude the Vlan to be deleted.

```
genian> enable
genian# configure terminal
genian(config)# interface eth0 vlan 10,20,40-50
```

- Enter the following commands below for the Vlan Sensor Interface to be removed:

```
genian> enable
genian# configure terminal
genian(config)# no interface eth0.30 address X.X.X.X X.X.X.X
genian(config)# no interface eth0.30 gateway X.X.X.X
genian(config)# exit
```

- If the interface is configured as a DHCP client , use the following method:

```
genian> enable
genian# configure terminal
genian(config)# no interface eth1 dhcp enable
genian(config)# exit
```

1. Go to **System** in the top panel.
2. Go to **System > Sensor** in the System Management panel.
3. Find and click on the **IP Address** of desired Network Sensor.
4. Find and click **Delete** in General tab.
5. Click **OK** to confirm.

## 17.4.5 Change Network Sensor Interface Type

---

**Note:** Many common issues can be resolved by rebooting the appliance, which reloads your configurations, and purges outdated settings. After verifying configurations, rebooting is a good next step in troubleshooting.

---

Changing the network configuration may change the interface type of the network sensor from the access port to the trunk port, or vice versa. This chapter describes how to change the sensor interface type.

## Access Port to Trunk Port

First, ensure the Genians Network Sensor is connected to a properly configured .1q trunk port. See *"VLANs" in Preparing Network*

Check existing interface configuration and save existing config. If there are any settings other than IP or Gateway on the interface you want to change, you must transfer the settings to the new interface.

---

**Note:** This example assumes that the physical interface is eth0.

---

```
genian# show config
...
interface eth0 address 192.168.50.22 255.255.255.0
interface eth0 gateway 192.168.50.1
interface eth0 management-server enable
interface eth0 node-server enable
interface eth0 radius-server enable
...
```

Create VLAN interface on physical interface

```
genian(config)# interface eth0 vlan 10,20,30-35 // Replace by your_
->VLAN IDs separated by comma or hyphen
```

If your trunk port has a native VLAN, eth0 will be the native VLAN. any other VLAN interface name will be **ethX.VLANID**. If you don't have the native VLAN, You should delete eth0 interface settings.

```
genian(config)# no interface eth0 address X.X.X.X X.X.X.X
genian(config)# no interface eth0 gateway X.X.X.X
genian(config)# no interface eth0 management-server enable // Optional
genian(config)# no interface eth0 node-server enable // Optional
genian(config)# no interface eth0 radius-server enable // Optional
```

Setup static IP of VLAN interface and Gateway

```
genian(config)# interface eth0.10 address X.X.X.X X.X.X.X
genian(config)# interface eth0.10 gateway X.X.X.X
```

Or setup DHCP (In case not using static IP)

```
genian(config)# interface eth0.10 dhcp enable
```

Restore other config for Management interface (Optional)

```
genian(config)# interface eth0 management-server enable
genian(config)# interface eth0 node-server enable
genian(config)# interface eth0 radius-server enable
```

**Make sure all VLAN interfaces are properly setup ether static IP or DHCP.**

To configure running network sensor on VLAN interface:

1. Login to administrator Web UI and go to **System** menu
2. Click Network Sensor IP and go to **Sensor** tab
3. Click interface name

4. Change **Sensor Mode** from **Inactive** to **Host**
5. Click **Update** on bottom

When an interface is removed from the CLI settings, any sensors or nodes that were registered in the management console are not automatically deleted. To delete a sensor that no longer exists and the node it detects, follow these steps:

1. Goto **System** menu
2. Select **System > Sensor** on left panel
3. Click **IP** on desired sensor (You can identified by interface name on hostname column)
4. Click **Delete** on bottom

## Trunk Port to Access Port

Delete VLAN

```
genian(config)# no interface eth0 vlan 10,20,30-35 // Replace by your VLAN IDs,
↳separated by comma or hypen
```

Delete all VLAN interface settings

```
genian(config)# interface eth0.X address X.X.X.X
genian(config)# interface eth0.X gateway X.X.X.X
```

Setup eth0 address, gateway and other settings

## 17.5 Configuring High Availability

Genians can be set up using two Appliances in a active/standby configuration, one acting as a primary while the other as a secondary. These two Appliances communicate with each other to synchronize data and will failover from one to the other in the event of a system failure.

- **Group** – VRRP Group ID
- **Linkupdelay** – Time to wait until interface is activated
- **No-Virtual-Mac** – Does not convert MAC Address info to Virtual-MAC when switching to Master
- **Nopreempt** – Device as Master takes precedence regardless of priority
- **Priority** – Priority Value. Highest Value is Master
- **Timeout** – Wait time for VRRP packet loss
- **Virtual-IP** – Shared IP for devices and UI

---

### Note:

All-in-One (Policy Server + Network Sensor) is not supported.

---

### 17.5.1 Serial Connection to Server if SSH is not established

- Protocol: **Serial**
- Port: **COM1**
- Baud Rate: **115200** (9600 for Mini-PC)
- Data Bits: **8**
- Parity: **None**
- Stop Bits: **1**

### 17.5.2 How to configure Servers for High Availability

1. Connect the prepared equipment to the network.
2. Connect to each Server by connecting to Command Line Interface
3. Run a show configuration to see current configuration. (*Record Master Server device-id as this needs to be the same on both Policy Servers*)
4. Enter Global Config mode: config terminal
5. On each Server enter the following configurations:

### 17.5.3 Master Policy Server

```

1. Interactive Wizard
2. Manual Configuration

Select installation type: 2

Enter administrator username (4-31 characters) [admin]: admin

Password must contain at least one alphabet, number and special character
Enter administrator password (minimum 9 characters): *****
Re-enter Password:

Welcome to Genian ZTNA
Username: admin
Password:
The privileged EXEC mode password is the same as the console login password.
For security reasons please change your password.

Type 'enable' to access privileged EXEC mode for password change.
genian> enable
Password:

genian(config)# hostname PRIMARY
PRIMARY(config)# interface eth0 address [IP address] [Subnetmask]
PRIMARY(config)# interface eth0 gateway [Gateway IP]
PRIMARY(config)# ip default-gateway [Gateway IP]
PRIMARY(config)# ip name-server [DNS IP]
PRIMARY(config)# data-server username [username]
PRIMARY(config)# data-server enable
PRIMARY(config)# data-server password [password]

```

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```
PRIMARY(config)# data-server access-list [Secondary DB IP,Admin IP]
PRIMARY(config)# data-server replica serverid 1
PRIMARY(config)# data-server replica enable
PRIMARY(config)# log-server enable
PRIMARY(config)# log-server cluster-peers [Primary Policy Server real IP,Secondary_
↪Log Server real IP]
PRIMARY(config)# log-server publish-port eth0
PRIMARY(config)# interface eth0 management-server enable
PRIMARY(config)# interface eth0 node-server enable
PRIMARY(config)# interface eth0 ha priority 200
PRIMARY(config)# interface eth0 ha group 20
PRIMARY(config)# interface eth0 ha linkupdelay 30
PRIMARY(config)# interface eth0 ha nopreempt enable
PRIMARY(config)# interface eth0 ha timeout 20
PRIMARY(config)# interface eth0 ha virtual-ip [Virtual IP]

PRIMARY(config)# show configuration
cli-pass change interval 0D
cli-pass history num 0
cli-pass minimum age 0D

data-server enable
data-server password *****
data-server replica enable
data-server replica serverid 1
data-server username root

device-id xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx (*Use same device-id for both Policy_
↪Servers*)

hostname PRIMARY

interface eth0 address [IP address] [Subnetmask]
interface eth0 gateway [Gateway IP]
interface eth0 ha group 20
interface eth0 ha linkupdelay 30
interface eth0 ha nopreempt enable
interface eth0 ha priority 200
interface eth0 ha timeout 20
interface eth0 ha virtual-ip [Virtual IP]
interface eth0 management-server enable
interface eth0 node-server enable

ip default-gateway [Gateway IP]
ip name-server [DNS IP]

log-server enable
log-server cluster-name GENIAN
log-server cluster-peers [Primary Policy Server real IP,Secondary Log Server real IP]
log-server publish-port eth0
```



## 17.5.4 Secondary Policy Server

```

1. Interactive Wizard
2. Manual Configuration

Select installation type: 2

Enter administrator username (4-31 characters) [admin]: [Admin ID]
Password must contain at least one alphabet, number and special character
Enter administrator password (minimum 9 characters):
Re-enter Password:

Welcome to Genian ZTNA
Username: [Admin ID]
Password:
The privileged EXEC mode password is the same as the console login password.
For security reasons please change your password.

Type 'enable' to access privileged EXEC mode for password change.
genian> en
Password:
genian# configure terminal

genian(config)# hostname SECONDARY
SECONDARY(config)# device-id xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx (From PRIMARY_
↳server)
SECONDARY(config)# interface eth0 address [IP address] [Subnetmask]
SECONDARY(config)# interface eth0 gateway [Gateway]
SECONDARY(config)# ip default-gateway [Gateway]
SECONDARY(config)# ip name-server [DNS]
SECONDARY(config)# data-server username [username]
SECONDARY(config)# data-server enable
SECONDARY(config)# data-server password [password]
SECONDARY(config)# data-server access-list [Primary DB IP,Admin IP]
SECONDARY(config)# data-server replica serverid 2
SECONDARY(config)# data-server replica enable
SECONDARY(config)# data-server replica masterhost [PRIMARY DB IP]
SECONDARY(config)# data-server replica username [PRIMARY DB username]
SECONDARY(config)# data-server replica password [PRIMARY DB password]
SECONDARY(config)# log-server enable
SECONDARY(config)# log-server cluster-peers [Secondary Policy Server real IP,Primary_
↳Log Server real IP]
SECONDARY(config)# log-server publish-port eth0
SECONDARY(config)# interface eth0 management-server enable
SECONDARY(config)# interface eth0 node-server enable
SECONDARY(config)# interface eth0 ha priority 100
SECONDARY(config)# interface eth0 ha group 20
SECONDARY(config)# interface eth0 ha linkupdelay 30
SECONDARY(config)# interface eth0 ha nopreempt enable
SECONDARY(config)# interface eth0 ha timeout 20
SECONDARY(config)# interface eth0 ha virtual-ip [Virtual IP]

SECONDARY(config)# show configuration
cli-pass change interval 0D
cli-pass history num 0
cli-pass minimum age 0D

```

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```
data-server enable
data-server access-list [Admin IP]
data-server password *****
data-server replica enable
data-server replica masterhost [PRIMARY DB IP]
data-server replica password *****
data-server replica serverid 2
data-server replica username [username]
data-server username [username]

device-id xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxx

hostname SECONDARY

interface eth0 address [IP address] [Subnetmask]
interface eth0 gateway [Gateway]
interface eth0 ha group 20
interface eth0 ha linkupdelay 30
interface eth0 ha nopreempt enable
interface eth0 ha priority 100
interface eth0 ha timeout 20
interface eth0 ha virtual-ip [Virtual IP]
interface eth0 management-server enable
interface eth0 node-server enable

ip default-gateway [Gateway]

log-server enable
log-server cluster-name [Cluster name]
log-server cluster-peers [Secondary Policy Server real IP,Primary Log Server real IPP]
log-server publish-port eth0
```

## 17.5.5 Primary Sensor

```
device-id xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxxx

interface eth0 vlan 10,11,12
interface eth0.10 address [IP address] [Subnetmask]
interface eth0.10 gateway [Gateway]
interface eth0.10 ha group 100
interface eth0.10 ha priority 200
interface eth0.11 address [IP address] [Subnetmask]
interface eth0.11 gateway [Gateway]
interface eth0.12 address [IP address] [Subnetmask]
interface eth0.12 gateway [Gateway]

ip default-gateway [Gateway]
ip name-server [DNS]

node-server ip [Policy Server IP]
```

## 17.5.6 Secondary Sensor

```

device-id xxxxxxxx-xxxx-xxxx-xxxx-xxxxxxxxxxxx

interface eth0 vlan 10,11,12
interface eth0.10 address [IP address] [Subnetmask]
interface eth0.10 gateway [Gateway]
interface eth0.10 ha group 100
interface eth0.10 ha priority 100
interface eth0.11 address [IP address] [Subnetmask]
interface eth0.11 gateway [Gateway]
interface eth0.12 address [IP address] [Subnetmask]
interface eth0.12 gateway [Gateway]

ip default-gateway [Gateway IP]
ip name-server [DNS IP]

node-server ip [Policy server IP]

```

### Attention:

Network Sensor HA is available in the multi VLAN environment.

And the failover condition is as below.

- When the Network Sensor is down.
- When the link or interface between Network Sensor and Switch is down.
- If HA is enabled on all VLAN interfaces, failover proceeds if even one interface is down.

## 17.5.7 How to test HA

```

-----PRIMARY-----
PRIMARY# show ha Status

Status: MASTER
Priority: 200
Group: 50
LinkupDelay: 30
Timeout: 10
Preempt: 0
VirtualIP: [Virtual IP]

-----SECONDARY-----
SECONDARY# show ha Status

Status: SLAVE
Priority: 100
Group: 50
LinkupDelay: 30
Timeout: 10
Preempt: 0
VirtualIP: [Virtual IP]

```

## 17.5.8 How to test DB replication

```

-----PRIMARY-----
PRIMARY(config)# show dataserver replicastatus
Replication health is good. (Confirm left message is displayed)
===== Primary Replication Status =====
Host : [Master DB IP displayed]
File : mysqld.000009
**Position : 123456 (The log position value between the two servers_
↳must increase equally.)

===== Secondary Replication Status =====
Host : [Slave DB IP displayed]
Slave_IO_Running : Yes
Slave_IO_State : Waiting for master to send event
Slave_SQL_Running : Yes
Slave_SQL_Running_State : Slave has read all relay log; waiting for the slave I/O_
↳thread to update it
Master_Log_File : mysqld.000009
Read_Master_Log_Pos : 123456 (The log position value between the two servers_
↳must increase equally.)
Relay_Master_Log_File : mysqld.000009
Exec_Master_Log_Pos : 123456
Last_Errno : 0
Last_Error :
Last_IO_Errno : 0
Last_IO_Error :
Last_SQL_Errno : 0
Last_SQL_Error :
Relay_Log_File : mysqld-relay-bin.000026
Relay_Log_Pos : 123456
-----SECONDARY-----
SECONDARY# show dataserver replicastatus
Replication health is good. (Confirm left message is displayed)

===== Primary Replication Status =====
Host : [Master DB IP displayed]
File : mysqld.000009 (Check Primary Replication Files)
Position : 123456 (Check Primary Replication Position)

===== Secondary Replication Status =====
Host : [Slave DB IP displayed]
Slave_IO_Running : Yes (Must be marked as YES)
Slave_IO_State : Waiting for master to send event
Slave_SQL_Running : Yes (Must be marked as YES)
Slave_SQL_Running_State : Slave has read all relay log; waiting for the slave I/O_
↳thread to update it
Master_Log_File : mysqld.000009 (Verify that it is the same as the primary_
↳replication file)
Read_Master_Log_Pos : 123456
Relay_Master_Log_File : mysqld.000009
Exec_Master_Log_Pos : 123456
Last_Errno : 0
Last_Error :
Last_IO_Errno : 0
Last_IO_Error :
Last_SQL_Errno : 0

```

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```
Last_SQL_Error :
Relay_Log_File : mysqld-relay-bin.000026
Relay_Log_Pos : 123456
```

**Attention:** Please run the Database Replication confirmation command at Primary and Secondary respectively.

## 17.5.9 Bonding Configuration

Bonding is a technology that logically combines multiple physical interfaces into one logical interface. Bonding is used to increase service availability in case that one physical interface fails.

### Bonding settings

#### Policy Server & Network Sensor

```
genians(config)#interface bond0 slave eth0,eth1
genians(config)#interface bond0 address [PolicyServer IP] [Subnetmask]
genians(config)#interface bond0 gateway [gateway IP]
genians(config)#bonding parameters mode=1

#Bonding parameter#
#mode=0: for balance-rr
#mode=1: for active-backup (recommended)
```

#### Warning:

- No settings should exist on the interface prior to the Bonding setting.
- Equipment reboot is required to apply the Bonding parameters setting.
- In some environments (virtual appliances) using Bonded interfaces, the function of other non-bonded interfaces may be impaired.

### Checking Bonding Interface Status

Bonding interfaces have statuses in the form of Active/Active, Active/Backup. Below is an example of how to check the current status, and an example output:

```
Genians$ cat /proc/net/bonding/bond0
Ethernet Channel Bonding Driver: v3.7.1 (April 27, 2011)

Bonding Mode: load balancing (round-robin)
MII Status: up
MII Polling Interval (ms): 100
Up Delay (ms): 0
Down Delay (ms): 0

Slave Interface: eth1
MII Status: up
```

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```
Speed: 1000 Mbps
Duplex: full
Link Failure Count: 0
Permanent HW addr: 00:0c:29:21:be:a9
Slave queue ID: 0

Slave Interface: eth2
MII Status: up
Speed: 1000 Mbps
Duplex: full
Link Failure Count: 0
Permanent HW addr: 00:0c:29:21:be:b3
Slave queue ID: 0
```

## 17.6 Initializing the System

Genian ZTNA Appliances, and logical components such as Policy Servers, Network Sensors and Wireless Sensors may be configured individually. Settings include OS Update Proxy, SSH Access Restrictions, SNMP Agent, Hardware Usage Alerts, System Time and log management.

Default Settings are configured for both Network Appliances and Sensors, this allows configurations to be cloned onto other Network Appliances and Sensors when added onto the network. This eliminates the need for the Administrator to configure each one. As a Remote Site is added and a Network Sensor is installed it will inherit the configurations from the Network Appliance settings. If Additional VLANs are configured then these VLANs will inherit configurations from the Sensor settings. These settings are optional and can later be reconfigured on individual appliances.

### 17.6.1 Device Appliance Automatically

When Genian ZTNA Device is first registered, the administrator must change the appliance configuration for the device registered.

If you are in an environment where multiple network sensors are registered, you can specify the initial settings so that the preferences are automatically applied when registering new equipment.

1. Go to **System** in top panel
2. Go to **System Defaults > Network Appliance** in the left System Management panel

---

**Note:** The above settings are optional and will be the default settings for all additional policy servers.)

---

### Configure Appliance Settings

1. Go to **System** in top panel
2. Find and click **Policy Server IP** in the main System window
3. Find and click **Appliance** tab in the main System window

---

## Allow Remote Access via SSH

1. Find **Security** section and enter **Approved SSH Source IP**
  - Individual IP's may be allowed (e.g. *192.168.1.10*).
  - Entire Subnets may also be allowed, regardless of individual IP. (e.g. *192.168.1.0/24*).
  - Access from all sources may also be permitted (e.g. *0.0.0.0/0*).

---

**Note:** Be mindful of NAT when accessing an appliance across network segments. The external NAT address must be allowed.

---

2. Click **Update**

## Proxy For Windows Updates

1. Find **Proxy for Windows Updates** section and select **On** in drop-down
2. Select **Network Group** for Proxy Service to use
3. Click **Update**

## Setup SNMP Agent

1. Find **SNMP Agent** section and select **On** in drop-down
2. Enter the following:
  - **Username**
  - **Authentication Password** (*SHA, minimum length – 8 characters*)
  - **Privacy Password** for data encryption (*AES, minimum length – 8 characters*)
3. Click **Update**

## Edit Asset Management Thresholds

1. Find **Asset Management** section
2. Enter the following:
  - **Data Disk Threshold** generates log if Data Disk is over this threshold (*Default is 90*)
  - **Memory Threshold** generates log if Memory is over this threshold (*Default is 90*)
  - **CPU Threshold** generates log if CPU is over this threshold (*Default is 95*)
3. Click **Update**

### Edit System Date And Time

1. Find **Date** and **Time** section
2. Select **Country** and closest **City** from drop-downs for **System TimeZone**
3. Click **Update**

### Change Character Set

1. Find **Miscellaneous** section
2. Select **Character Set** from drop-down
3. Click **Update**

### Configure Sensor Log Settings

1. Go to **System** in the top panel
2. Select **Network Sensor IP** in the view pane.
3. Select the **Appliance** tab in the view pane.

Under: **Miscellaneous** Configure:

- Default Character Set
- Sensor Debug Logging
  - Log Location - (**Local, Policy Server, Local & Policy Server**)

---

**Note:** If logging is set to save to the Policy Server, individual log entries will be sent by Syslog over TLS using port 6514. If Syslog over TLS fails, standard syslog on port 514. For Cloud-Managed ZTNA, **Unique Ports** are used. You can check these port assignments under **System > Service > Port**

---

## 17.6.2 Network Sensor Settings Automatically

configure preferences for all network sensors that are added since the policy server is configured.

Initial settings are optional, and subsequently unique settings for individual network sensors can be changed on each sensor.

### Configure Sensor Default Settings

This will be the initial sensor setting for the network sensor to be registered in the future.

1. Go to **System** in the top panel
2. Go to **System > System Defaults > Network Sensor** in the left System Management panel, and set the applicable options:
  - Sensor Operater



Specifies the mode in which the network sensor operates. Depending on your network environment, you can set it up as a combination of operation mode and operation mode as follows:

| Sensor Mode    | Sensor Operating Mode    | Description                                                                                                     |
|----------------|--------------------------|-----------------------------------------------------------------------------------------------------------------|
| Inactive       | Monitoring / Enforcement | Network sensors do not work regardless of operating mode when network sensor behavior mode is inactive setting  |
| Host           | Monitoring               | Network Sensor Management Scope Perform only scans of the network; do not perform network control (recommended) |
| Host           | Enforcement              | Network Sensor Management Scope Perform scanning and network enforcement for the network (recommended)          |
| Mirror(local)  | Monitoring               | Network Sensor Management Scope Perform traffic monitoring only for the network; do not perform network control |
| Mirror(local)  | Enforcement              | Network Sensor Management Scope Perform traffic monitoring and network control over the network                 |
| Mirror(Global) | Monitoring               | Network Sensor Inoperative                                                                                      |
| Mirror(Global) | Enforcement              | Perform network control over IP communications outside the network sensor's management scope                    |

- **Traffic Monitoring:** (*Mirror Only*)
  - Collection Interval
  - Time for Average
  - Minimum Update Value
  - Update Fluctuation
  - Destination based Status Collection
- **Node Registration:**
  - Maximum Registration for a MAC
  - IP Utilization Alert
- **Node Information Scan:**
  - Port / Service Scan: Configure options for SNMP, WMI, and NMAP scanning
  - NetBIOS Name Queries
  - Scan Interval
- **Network Scan:**
  - DHCP Server Scan
  - UPNP Scan
  - HP SLP Scan
  - SIP Scan
- **Node Status Scan:**
  - MAC+IP Clone Detection
- **Subnet Node Scan:**

- Execution Interval
- Scans per Second
- **DHCP:**
  - DHCP Service
  - DHCP Node IP Update
- **Virtual Honeypot IP:**
  - Virtual Honeypot IPs
- **IPAM:**
  - New Node Policy
  - Sensor IP Conflict Prevention
- **Miscellaneous:**
  - MAC Exception

### Configure Sensor Log Settings

1. Go to **System** in the top panel
2. Select **Network Sensor IP** in the view pane.
3. Select the **Appliance** tab in the view pane.

Under: **Miscellaneous** Configure:

- Default Character Set
- Sensor Debug Logging
  - Log Location - (**Local, Policy Server, Local & Policy Server**)

---

**Note:** If logging is set to save to the Policy Server, individual log entries will be sent by Syslog over TLS using port 6514. If Syslog over TLS fails, standard syslog on port 514. For Cloud-Managed NAC, **Unique Ports** are used. You can check these port assignments under **System > Service > Port**

---

## 17.7 Managing Backup And Restore

You can schedule backups to run automatically, and restore from backups in the event of system failure.

---

**Note:** This option is not available in Cloud Version

---

## 17.7.1 Configuring Backup

### Schedule Recurring Backup Time

1. Go to **Preferences** in the top panel
2. Go to **General > Backup** in the left Preferences panel
3. Find **Backup** section in the Backup window. Click **On** for Scheduled Backup
4. Specify **Time** to have Backup recur
5. Specify **Threshold** for minimum disk volume
6. Click Update

### Configure the Repository Type

1. Go to **Preferences** in the top panel
2. Go to **General > Backup** in the left Preferences panel
3. Find **Backup** section in the Backup window. Select proper **Type** from drop down
4. Click Update

| Store Type                               | Description & Value                                                                                                                          |
|------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| Local Disk                               | Save to Policy Server Local Disk                                                                                                             |
| External Storage(External HDD, SSD, etc) | Save to an external USB-type attached disk on the policy server                                                                              |
| CIFS Storage                             | Perform a CIFS-enabled backup using Windows Sharing.                                                                                         |
| NFS Storage                              | Mount directories on Unix or Linux file systems to perform backups.                                                                          |
| FTP SERVER                               | Transfer backup files via File Transfer Protocol (FTP). (For security reasons, it is not recommended that passwords be passed in plain text) |
| SFTP SERVER                              | Transfer backup files via Secure File Transfer Protocol (SFTP) (recommended for secure encryption based on SSH)                              |

---

**Note:** If you specify a storage device in a backup file as a type other than a local disk, you can respond to the loss of backup files when the Backup File Retention setting is set to ON.

---

## 17.7.2 Restoring From Existing Backup

### Locate a Backup File and Restore

1. Click **Preferences** in the top panel
2. Go to **Configuration > Backup** in the left panel
3. Click **Download Backup File** button
4. Copy **Backup** file that you want to restore from the list and then exit out

5. Login to Policy Server through CLI Connecting Command Line Console
6. Type **enable** and **Admin Password** to get into **Global Mode**
7. Enter "do restore <filename> all" to restore backup

### Restore from HA Configuration

If HA is configured, please contact [Slack](#)

## 17.8 Setting up Outbound Mail Server ( SMTP )

This function supports Email alerts, and log alerts which are configurable under administrator profiles and log filters.

### 17.8.1 Setup Email Account

1. Go to **Preferences** in the top panel
2. Go to **General > Miscellaneous** in the left **Preferences** panel
3. Choose Mail Server type: **Not Used** (disabled) or **SMTP** or **Google Mail**

#### SMTP

1. **Server Address** : type server address (*e.g. smtp.gmail.com*)
2. **Server Port** : type port number (*e.g. SMTP = 25, SSL = 465, TLS / STARTTLS = 587*)
3. **Sender Address** : type address for sender (*Email Address to be displayed as from*)
4. **Sender Name** : type name of sender (*Name to be displayed as from*)
5. **Connection Security** : Choose same server port type with **Server Port** option.
6. **Username** : type username
7. **Password** : type and re-type password
8. **Default Country Code** : choose default country code for sending an SMS
9. Click **Update**
10. Click **Test** to test configuration settings and send e-mail

#### Google Mail

1. **Sender Address** : type address for sender (*Email Address to be displayed as from*)
2. **Sender Name** : type name of sender (*Name to be displayed as from*)
3. **Authorization** : Request Authorization Code
4. **Authorization Code** : Enter an Authorization Code you copied.
5. **Default Country Code** : choose default country code for send a SMS
6. Click **Update**

- Click **Test** to test configuration settings and send e-mail

## 17.9 Managing Requests

Depending on the type of request provided by Genian ZTNA, different forms can be used. You can change the request input according to the purpose(request type) or change the administrator's approval method, so that the user can receive additional information or grant approval rights to non-administrators.

### 17.9.1 Setting Property Values for User Purposes

You can change the request inputs according to the purpose so that the user can receive additional information or change the request approval method to grant approval rights to non-administrators.

The items that can be set in user purpose are divided into request processing options, application information input in request, and account information input in request.

- Go to **Preferences** in the top panel.
- In the left **Properties** column, select **Purpose > User** .
- Select **Create** in the **task** menu.

#### User Request Processing Options

The request processing option sets the approval method for the request.

You can select one approval method from the following:

| Method                                  | Explanation                                                                                                      |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Approval using the Approval menu</b> | Only <b>Administrator Account</b> with approval authority can approve requests                                   |
| <b>Email Approval</b>                   | Approval authority can be subdivided into <b>Administrator</b> and <b>Applicant</b> (objects with user accounts) |
| <b>Instant Approval</b>                 | No separate request approval, all requests are granted automatically.                                            |

#### Enter Request Field

Request Field can be set to use the items defined in Genian ZTNA. Through the Request Field item, the purpose of use and period of use can be received from the applicant, and the item to receive the request approval result can be specified.

| Field                                     | Usage                                                                                                              |
|-------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| <b>Description(Reason)</b>                | Request input the reason for applying for a user account.                                                          |
| <b>Mobile No-tification (AlarmMoblie)</b> | Requests the applicants Mobile Phone #, which can be used for approval notification (SMS settings required)        |
| <b>Ex-piry(UserUsePeriodDate)</b>         | The applicant can set the validity period for the user account they are requesting.                                |
| <b>Email(AlarmEmail)</b>                  | Requests the applicants Email Address, which can be used for approval notification (Mail Server settings required) |

### Enter User Information Field

User Information Field can collect items defined as account information and values defined through custom fields as input from users.

For custom field related parts, please refer to *Using custom fields to enter additional information to account*.

## 17.9.2 Setting Property Values for IP Request Purposes

The IP Request System can be used for asset and user management in environments where IP's are statically assigned, or where additional oversight to IP assignment is need.

You can change the request input according to the purpose to receive additional information, or change the administrator's approval method to grant approval to non-administrators.

The items that can be set in the application are divided into the application approval method, processing option, and application information input.

The purpose of IP request can be set for IP request, IP Return, Device Change, and User Change, and each item provides the following functions.

1. Go to **Preferences** in the top panel.
2. Select **Purpose > Request** from the **Properties** column on the left.
3. Select one of **IP request, IP Return, Device Change, or User Change** according to the purpose of creation.
4. Select **Create** in the **task** item.

| Item                 | Explanation                                                                              |
|----------------------|------------------------------------------------------------------------------------------|
| <b>IP Request</b>    | Request to be assigned an IP and can be set for multiple purposes.                       |
| <b>IP Return</b>     | Request to Return IP (remove association between the IP and the User/Device associated). |
| <b>Device Change</b> | Request to change which MAC is approved to use a specific IP.                            |
| <b>User Change</b>   | Request to change user account is approved to use an IP.                                 |

## Setting the Approval Method for IP Request Purposes

This is to set the approval method for IP request. **Approval authority is granted to non-administrators by setting the approval method.**

You can select one approval method from the following:

| Method                                   | Explanation                                                                         |
|------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Instant Approval</b>                  | No separate request approval, all requests are granted automatically.               |
| <b>Email Approval + Instant Approval</b> | Approval occurs after the request email is answered.                                |
| <b>Email Approval</b>                    | After the request email is answered, additional administrator approval is required. |

## IP Request Approval Settings

You can specify the processing method according to the purpose in the IP request item.

| Method                                  | Explanation                                                                                                       |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------|
| <b>IPAM Policy for Request</b>          | IPAM policy (Allow) is applied when request is approved.                                                          |
| <b>IP host number (Range Start)</b>     | Set the first IP number in the IP band that can be assigned an IP                                                 |
| <b>IP host number (Range End)</b>       | Set the last IP number in the IP band that can be assigned an IP                                                  |
| <b>Authentication for IP User</b>       | Set limits on which users can use the assigned IP                                                                 |
| <b>Hostname Rule</b>                    | Set hostname requirements for which devices can use the IP                                                        |
| <b>Updating Department IP Ownership</b> | When applying for IP use on a department-based basis, change the ownership department assigned to the existing IP |
| <b>IP Request with Denied MAC</b>       | Delete existing node registered with the same MAC when request is approved                                        |
| <b>Node Group</b>                       | Specify which User Groups can use the IP                                                                          |
| <b>User Group</b>                       | Specify which User Groups can use the IP                                                                          |

## Request Field Options

Request Field Options allows you to set items created by Request in custom fields. It is possible to collect any value input from the user rather than the IP request input information defined through the custom field.

For custom field related parts, please refer to *Using custom fields to enter additional information in IP requests*.

## 17.10 Editing System Messages

Genian ZTNA provides the ability to change multilingual (Korean, Japanese, English, Chinese) messages displayed in the Genian ZTNA system.

You can use the Change Message feature to insert or change words and phrases to suit your site.

1. Go to **Preferences** in the top panel.
2. Select **Message** in the **Captive Web Portal** item on the left.
3. Click on the **Message ID** you want to change.
4. Edit the **Message content** corresponding to the **Language** you want to change. (Korean, Japanese, English, Chinese)

5. Click the **Update** button.

### 17.10.1 Check Message Status

Message classification can be divided into system message and application mode (only on/off toggle is displayed) setting message, each of which can be used as follows.

| Status*                 | Explanation                                                     |
|-------------------------|-----------------------------------------------------------------|
| <b>System Message</b>   | Always enabled, but the content of the message can be changed.  |
| <b>Application Mode</b> | Can be disabled, and the content of the message can be changed. |

### 17.10.2 Check Message Type

Messages are categorized by the following types:

| Type               | Explanation                                                     |
|--------------------|-----------------------------------------------------------------|
| <b>Web Console</b> | Requests and System Messages provided shown in the Web console. |
| <b>CWP</b>         | Messages related to node status shown in the CWP page.          |
| <b>Agent</b>       | Messages shown in the agent pop-up notification window.         |
| <b>Log</b>         | Messages shown in the Policy Server audit record.               |
| <b>Message</b>     | Notification messages related to user authentication.           |

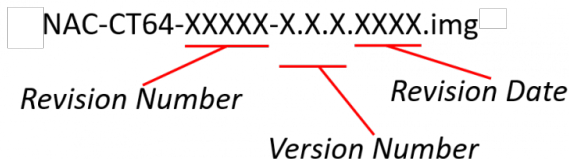
## 17.11 Managing System Software

**Warning:** Updates are only available for licensed Policy Servers with an active Maintenance subscription.

### 17.11.1 Checking System Software Versions

Software packages are identified by four parts. Name, Revision Number, Version Number, and Revision Date.

- **NAC-CT** – Policy Server Software
- **NAC-SS** – Sensor Software
- **NAC-AGENT** – Agent Software



In addition to the software installed on the Policy Server or the Network Sensor, the Policy Server may also store a software image to be used for updating at a later time. For example, a Policy Server with version 5.0.19 installed may have a copy of Version 5.0.20 that can be used for updating the Policy Server, Network Sensors, or Agents at a later time.

**System > Update > Genian Software** will display the newest version of software stored on your Policy Server, even if it is not installed.



You can see the software version installed on individual Policy Servers and Sensors by navigating to **System** in the top panel. All appliances will be shown in the view pane along with the installed software.

## Updating Policy Server and Network Sensor

You can update the Policy Server and Sensor through the WEBUI or CLI.

---

**Note:** For **Genians Cloud Managed Edition** the Policy Server, will update automatically. Network Sensor upgrades must be manually initiated.

---

### Update the Policy Server and Sensor Automatically

1. Go to **System** in the top panel
2. Go to **Update > Genian Software** in the left System Management panel.
3. Find **Available Version** software in Genian Software window. Click **Update from Genian Cloud**
4. Select either **Download Only** retrieve the update and install manually, or **Download and Apply** to automate the installation to all eligible components.
  - If choosing **Download Only**: See steps 7-13 under "Update the Policy Server and Sensor Manually"

### Update the Policy Server and Sensor Manually

This is done by obtaining Genian ZTNA Software from Genians and storing it locally on your machine to then upload onto the servers.

#### Prepare System Files for upload

1. Extract contents from the .iso file.
2. **Select desired software version from the /images directory in the .iso.**
  - For **Policy Server**, select file beginning with **NAC-CT** (*Includes network sensor files*)
  - For **Network Sensor**, select file beginning with **NAC-SS**

### Update the Policy Server and Sensor by WEBUI

1. Go to **System** in the top panel
2. Find **Update** section in the left System Management panel. Go to **Genian Software**
3. Find and click **Upload File** button in Genian Software window
4. Click **Select File** in Upload window
5. Locate **Genian Software** in **File Upload** window. Double click on desired file
6. Click **Upload**
7. Go to **System** in the top panel
8. Go to **System > System** in the left System Management panel
9. Find **Policy Server/Sensor** in System window. Click **Checkbox**

10. Click **Tasks**
11. Click **Update Specific System Image** (If you selected Policy Server and ALL sensors in Step 9, Click Update Latest System Images)
12. **Enable** or **Disable** Database Backup before upgrade.
13. System will automatically update and reboot.

### Update the Policy Server and Sensor by CLI(Command Line Interface)

Genian ZTNA provides updates to policy servers and network sensors through the CLI.

**Genians highly recommends CLI upgrades for following case:**

- Upgrade server separately, such a Policy server or DB server
- HA configuration

**CLI update Command :** `geniup`

#### Command Option

- `-h` : help
- `-f [image filename]` : Update software image from file
- `-u [URL]` : Specify image URL
- `-d` : Allow downgrade
- `-c` : Don't check image validation (Package, Owner)

1. Connect SSH with terminal emulator that supports Zmodem.
2. Use command `rz` and upload an image file on server.

```
Genians$ cd /tmp
Genians$ rz
```

3. Use `geniup` command and options to proceed with the upgrade.

```
Genians$ geniup -cf [image filename]
System software upgrade from
Current Version :
Target Version :
Do you want to upgrade this target version ? (y/N):
Do you want to backup current database ? (Y/n):
Do you want to restart system after upgrade ? (Y/n):
```

For the details, please check the *Command Line Interface* documents.

**Warning:** Genians highly recommends a backup be completed prior to performing a CLI upgrade.

## Upgrade methods by Configuration

### How to upgrade Policy Server/Network Sensor

Different version of policy server and network sensor may cause abnormal operation. Please upgrade both server to the same version.

1. Access shell mode by typing @shell
2. Stop Policy server service.

```
Genians$ alder stop
```

3. Upgrade Policy server (Don't reboot policy server).
  4. Upgrade Network sensor.
  5. Reboot Policy server.
- 

### How to upgrade Individual Policy Server/DB Server

The DB Server should not be upgraded during the Policy server upgrade process.

1. Access to shell mode.
2. Stop Policy server service.

```
Genians$ alder stop
```

3. Upgrade DB server.
  4. Reboot DBserver.
  5. Upgrade Policy server.
- 

#### Note:

The policy server and the DB server do not necessarily have to be the same version. Please refer to the release note and check the DB server revision before performing an upgrade.

---

---

### How to upgrade HA configuration

The Master system should not be changed during the upgrade process.

1. Upgrade Slave server (Don't reboot policy server).
2. Stop Slave server service

```
Genians$ alder stop
```

3. Upgrade Master server
  4. Reboot Master server
  5. Reboot Slave server
-

## Updating Agent

---

**Note:** For **Genians Cloud Managed Edition** the Policy Server, will distribute the agent update automatically.

---

You can update your Agent by uploading a updated zip file through the UI.

1. Go to **System** in the top panel
2. Go to **Update > Genian Software** in the left System Management panel
3. Find **Available Version** software for Agent in Genian Software window
4. Click **Download**
5. Navigate to **Preferences > Agent** and select an **Automatic Update Target** to determine which networks to distribute the agent updates to.

## Updating Agent Plugins

Individual agent plug-in files can be uploaded and updated via the Web Console.

---

**Note:** For individual plug-in files, please contact Genians Technical Support.

---

1. Go to **System** in the top panel.
2. Select **Update > Genian Software > Agent Plugins** in the left System Management panel.
3. Click **Tasks** and select **Upload Plugins**.
4. Click the **Select File** button to select the plug-in file (extension: gpf) to be uploaded.
5. Click **Upload**.

## checking Agent Plugin Versions

**To check the plugin versions installed on the Policy Server:**

1. Go to **System** in the top panel.
2. Select **Update > Genian Software > Agent Plugins** in the left System Management panel.
3. Check the information in the **Version** column of the Plugin of interest.

**To check the plugin versions installed on an endpoint:**

1. Go to **Management > Node** in the top panel.
2. Select the node you want to inspect and then navigate to the **Software** tab
3. Near the top right corner of the **Programs** table, toggle the **Include Agent** switch.
4. Check the information in the **Version** column of the Plugin of interest, which will be displayed as **Genian Agent Plugin - [Plugin Name]**.

## Update Policy Server Plugin

Upload and update policy server plug-in files through the Web console.

The Policy Server Plug-in is used to apply features that are specific to the site, or features that require limited application, without including them in the product.

---

**Note:** It works in module form rather than Genian ZTNA product image and does not require a version upgrade when applying the feature.

---

1. Go to **System** in the top panel.
2. Go to **Update > Genian Software** in the left System Management panel
3. Click the Upload Plugins item in Task Selection.
4. Click the `Select File` button to select the plug-in file (file extension: `.gwp`) to upload.
5. Click the `Upload`

## Define Separation by Plug-in Key

The plug-ins for policy servers supported by Genian ZTNA are as follows:

| Module                    | Description                                                        | Example                                          |
|---------------------------|--------------------------------------------------------------------|--------------------------------------------------|
| Web Module                | Plug-in for displaying separate pages, such as pop-up pages        | OTP authentication utility                       |
| Widget Module             | Plug-in for widget purposes defined by the specified item          | RSS Reader Widget                                |
| Widget definition module  | Plug-ins that allow administrators to define widgets based on data |                                                  |
| Report Module             | Plug-in for report purposes defined by the specified item          | Query reports, trend reports, node group reports |
| Report definition module  | Plug-ins that allow administrators to define reports based on data |                                                  |
| Service Module            | Plug-in intended to invoke the Rest                                | SSO Rest Service Module                          |
| External Integrate Module | Plug-in related to interlocking with other systems                 | CISCO ISE Integrate Module                       |
| Periodic Working Module   | Feature-related plug-ins that require periodic operations          | AWS Connector                                    |

### 17.11.2 ZTNA Operational Data Management

Download the latest data from the Genian Cloud Server.

- **CVE Update information**, Information about vulnerabilities in platforms.
- **Node information**, Data for gathering platform information
- **OS Update Information**, Information about updating your device operating system
- **PI Update Information**, Data for classifying platform information
- **Platform Information**, Data for detecting operating systems

### 17.11.3 Setting up automatic update of Genian data

automatically update the latest data with the Genian Cloud Server and periodic version checks.

1. Go to **Preferences** in the top panel.
2. Select **General > Miscellaneous** item on the left
3. Set the time and action in the Genian Data Settings topic

*(Genian Data updates are set to work by default.) (To update Genian data, the 'Internet Access' option must be enabled in Miscellaneous settings.)*




### 17.11.4 Manually update Genian data

1. Go to **System > Update > Genian Software** in the top panel.
2. Click the `Update`` button at the top left.
3. If there is a new version, the update will be done automatically.

## 17.12 Preferences Settings for Admin Console

You can configure **Console** with your preferred settings

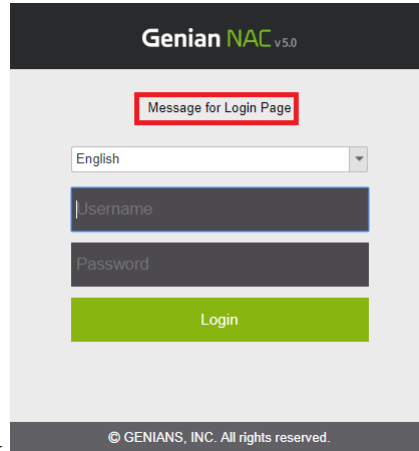
### 17.12.1 Web Console

1. Go to **Preferences** in the top panel
2. Go to **Preferences > General > Console** tab in left panel
  - **Console Name**, you can set a console name, that name appears on the left side of the sub menu bar and on the tooltip of the Agent icon in the tray menu (*Note: You must logout and login again to see the changes for the console name and must run an agent for the agent tooltip.*)
  - **Tree View Criteria**, you can choose either **Sensor** or **Group** displayed as a tab in **Tree View** in the left upper panel and will see the Nodes accordingly
  - **Management View Criteria**, you can choose either **By Node** or **By Device** (*This can be configured in **View Criteria** by clicking a menu button (  ) in Node Management page.*)
  - **Management View**, you can choose one of 10 Views (*This can be configured in **Views** by clicking a menu button (  ) in Node Management page.*)
  - **Sorting Tree**, you can decide how to sort the tree menu in the left panel of **Node Management**, **Switch Management** and **WLAN Management**
  - **Displaying IP Available**, you can specify whether to show an IP address not assigned yet
  - **Language**, **Date Format**, **Time Format**, you can set with preferred options
  - **Company Logo for Web Console**, you can choose **On** to see its options, **Background Color** and **Image** and the default logo in the left top (  ) will be replaced with the one you configured

- **Number of Results**, you can specify how many rows are displayed in a single page of Node Management.

(This can be configured in right top drop-down menu with numbers (   ), next to **Search** button, in Node Management page.)

- **Session Timeout**, you can set the desired session timeout in seconds
- **Message for Login Page**, you can enter a message using html (or plain text also possible option), that message



appears on login box

- **2-Step Verification Methods**, you must tick the checkbox to enable **2-Step Authentication** (Go to Management > User > Administrator tab > find General section) for the administrator's authentication
- **Find Username / Reset Password**, you can decide whether to display **Find Username / Reset Password** for an administrator who forgot his or her username or password. If you choose **On**, more options, **Verification Methods** (Text message / Email), Find / **Reset Options** (Username / Password) and **Security Question** settings, will appear
- **Exported Dashboard Title**, you can set the display title for the document you would export a dashboard to. (Go to Dashboard and click **Export** button on right top to export a dashboard as PDF, DOCX, PPTX)

## 17.13 Download Mobile App

Genian ZTNA Monitor discovers all the Nodes, allows or denies IP or MAC, and manages an external device request. You can download the Genian ZTNA Mobile App for IOS and Android.

1. Go to **System** in the top panel
2. Go to **Update > Genian Software** in the left System Management panel
3. Find **Genian ZTNA Monitor for Mobile**, click **Checkbox** for either **iOS** or **Android**
4. Scan the **QR code** to download the software or click the link to go to GooglePlay to download
5. Click **Close**

## 17.14 Managing Policy Server With SNMP

You can download the Genian ZTNA MIB file to use in a Network Management System (NMS) type solution.

### 17.14.1 Download Genian ZTNA MIB File

1. Go to **Preferences** in the top panel
2. Go to **General > Log** in the left Preferences panel
3. Find **SNMP Trap Options** section in the main Log window
4. Select **On** from the drop-down
5. Enter **Community String**
6. Click **Download GENIAN MIB** (*Zip file will download to the local machine*)
7. Click **Update**
8. Unzip the **GENIAN-MIB.zip** file
9. Add the **GENIAN-MIB.mib** file to your desired **Network Management System**

## 17.15 Controlling Services

If there is an error or problem related to the service provided by the Policy Server, you can restart the services from the UI.

1. Go to **System** on the top panel.
2. Select **Service > Control** in the **System Management** item on the left.

### 17.15.1 Policy Application

If any Network Sensors in the environment are not operating according to the policy set on the Policy Server, you can force an application of all policies.

- Click the **Apply** button under **Apply Policy**

### 17.15.2 Stop / Start Services

You can manually Stop or Start all services provided by the Policy Server, Network Sensors, and Agents.

- Click the **Stop** or **Start** button under **The Service is [running / temporarily unavailable]**



### 17.15.3 Restart Web Application

If there is a problem with the web-related services provided by Genian ZTNA or a need to restart occurs, you can use the web application restart function.

1. Select **Web Console** (Policy Server Management interface) or **CWP** (Captive Web Portal) or **IP Request System** from the dropdown under **Restart Web Application**.
2. Click **Restart**.

## 17.16 Restrict administrator privileges

You can limit the privileges of administrators, to specific views, devices, and capabilities.

1. For **Node Management Scope**, Restriction by specifying node groups, network sensors, and node types
2. For **Node Management Task**, restrict the types of operations that can be performed on the Node Management screen
3. For **Node Management View**, restrict the selectable views on the Node Management screen
4. For **Node Management Tab**, restrict the selectable details tabs of a node
5. For **User Management Scope**, restrict departments that the admin can perform user management on
6. For **User Management Task**, Restrict the types of actions that can be performed on the User Management screen
7. For **Log Scope**, Limit available Log filters in the LOG menu
8. For **Disabling File Export**, Restrict File (Excel) Export Functions
9. For **Dashboard Widget**, Restrict Dashboard widget features

### 17.16.1 Create network sensor individual administrator accounts

**Set permissions to manage only nodes under a specified network sensor by specifying the network sensor managed by the administrator.**

- This setting is recommended for use with *Configure Administrator Role Options*.

1. Create an administrator account.
2. Select the administrator account you created.
3. Go to the Set Management Restrictions topic.
4. **Node Management Scope** : Select Administration Sensor, click Assign button to assign Network Sensor
5. **Node Management View** : Select a Node View and drag it to the right
6. Click the Modify button at the bottom
7. Log in with the account you created to verify that only the nodes on the specified network sensor are visible on the Manage Nodes screen.

## 17.17 Setting up debug in Genian ZTNA device CLI mode

Set up debug of Genian ZTNA equipment by accessing CLI mode on individual equipment. Debug setting in CLI mode is as follows.

---

**Note:** Genian ZTNA has Center debug activated as default.

---

### 17.17.1 Setting Up HA Configuration Debug

You can check the normal status by setting debug for VRRP protocol that provides high availability function of Genian ZTNA device, or find out the cause when a problem occurs.

#### Configuring remote access for Genian ZTNA device SSH access

For SSH access to the Genian ZTNA device, the following security items must be set.

1. Go to **System** on the top panel.
2. Select **System** from the **System** item on the left.
3. Click **Policy Server IP**.
4. Select the **Appliance tab**.
5. In **Security**, enter **Approved SSH Source IP 1**. (IP of the terminal performing SSH connection)
6. Click the **Update** button.

#### Accessing the CLI console via SSH

##### 1. CLI console access through SSH access program

The CLI (Command Line Interface) console can be accessed through SSH (default port: 3910).

```
ssh "Genian ZTNA device IP" -p 3910
Example
ssh 192.168.50.10 -p 3910
```


---

**Note:**

Cloud Policy Server does not provide an SSH CLI console.

---

## 2. CLI console access through SSH connection from the web console

1. Go to **System** on the top panel.
2. Select **System** from the **System** item on the left.
3. SSH connection destination IP address right  Click the icon.
4. SSH connection is performed using Username and Password in the pop-up window.

### Setting up debug in the CLI console

1. SSH connection is performed using **Username, Password**.
2. Enable global configuration mode through **enable** command.
3. Enter the configuration mode through the **configure terminal** command.
4. Enter the **debug vrrpd all** command to enable debugging.
5. Confirm that debug is enabled by entering the **show configure** command.

```
debug vrrpd category 0xffffffff
debug vrrpd field 0x31d
```

Through the debug setting, it can be used as a means to determine whether the network sensor operates normally and if a problem occurs.

### 17.17.2 What you can set debug in CLI mode

| Item    | Explanation                                      |
|---------|--------------------------------------------------|
| centerd | Items to set debug on the Policy Server.         |
| sensord | Item to set debug for network sensor.            |
| vrrpd   | Item to set up VRRP debug related to redundancy. |

**Note:** The debug settings of the network sensor can be set in the policy server web console, please refer to *Configuring Network Sensor Debug via Policy Server Web Console*.

## 17.18 Configuring Network Sensor Debug via Policy Server Web Console

Debug settings that need to be set individually in the existing network sensor CLI mode can be set in the Policy Server Web console.

The part related to the debug setting operates as follows depending on whether the network sensor has a hard disk.

**Note:** Available from version 5.0.27 or later. If you want to keep the existing settings, use **Not Selected** for the save location.

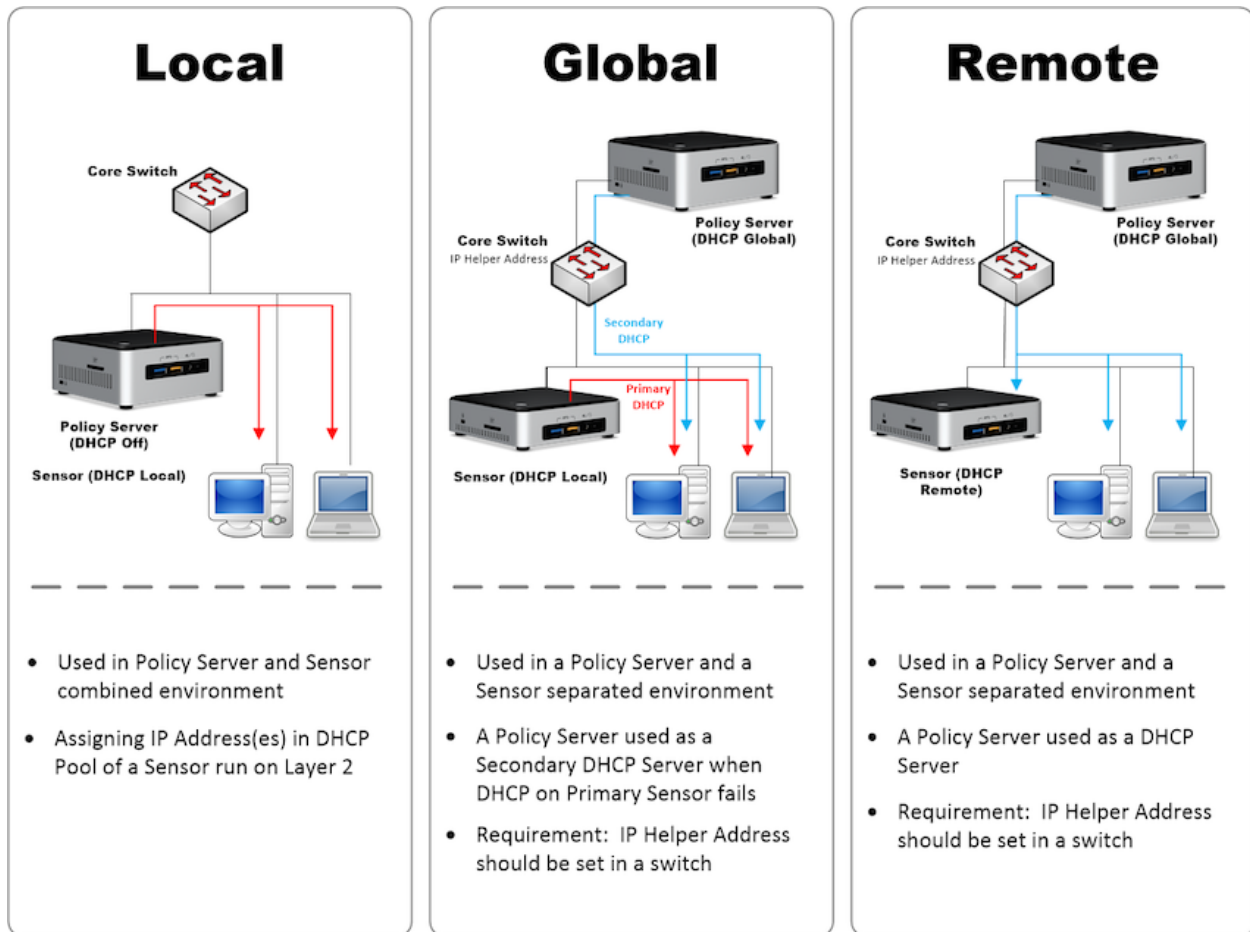
1. Go to **System** on the top panel.
2. Select **System** in the **System** item on the left.
3. Select the **checkbox** of the **network sensor** device to change the debug settings. (When changing multiple network sensors, select all the target checkboxes)
4. Select **Edit Appliance Settings** from the **Tasks** menu.
5. In the **Miscellaneous** item, select the **Sensor Debug Log** checkbox and change the setting to **ON**.
6. Select **Location**. (Select one of Local, Policy Server, Local & Policy Server.)
7. Click the **Run** button.

| Location                | Network sensor data disk | Explanation                                                                          |
|-------------------------|--------------------------|--------------------------------------------------------------------------------------|
| Not Selected            | O or X                   | It operates based on the settings in the network sensor.                             |
| local                   | O                        | Save data to disk on network sensor                                                  |
|                         | X                        | Save to Policy Server Data Disk                                                      |
| Policy Server           | O                        | Save to Policy Server Data Disk                                                      |
|                         | X                        | Save to Policy Server Data Disk                                                      |
| Local and Policy Server | O                        | Save both the data disk to the network sensor and the data disk of the policy server |
|                         | X                        | Save to Policy Server Data Disk                                                      |

## 17.19 Configuring DHCP Server

The Dynamic Host Configuration Protocol (DHCP) is a standardized network protocol used on IP networks. The DHCP is controlled by the Policy Server/Sensor that dynamically distributes network configuration parameters, such as IP addresses. You will be able to configure and manage the Built-In DHCP Options and configure Policy Server/Sensor to utilize the three DHCP Services. (Local, Remote, and Local & Remote)

| Topics         | Description                                                                                                 | etc                                         |
|----------------|-------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| Local          | Provides DHCP service for the network sensor's management scope                                             |                                             |
| Remote         | The network sensor does not provide DHCP services. the remote server provides DHCP services.                | Switch requires DHCP Helper Address setting |
| Local & Remote | Provides DHCP service to the network sensor's management scope and Local IP band for remote network sensors |                                             |



## 17.19.1 To Configure DHCP Services To Network Sensor In Operation

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the left System Management panel
3. Find and click **IP/Name** of **Network Sensor**
4. Find and click **Settings** tab
5. Click **Sensor Settings**
6. Find **DHCP** section and select **On** in **DHCP Service**
7. Based off of your network environment, choose one of the **Service Target** below
8. Find **Node IP Pool** section and **reserve** an **IP range** of IP Addresses (e.g.192.168.10.2-100)
9. Find **Lease Duration** and define when an **IP expires** (*Minutes, Hours, Days, or Months*)
10. All **other settings** are **optional**:
  - DNS Server
  - Domain Name
  - WINS Server
  - NTP Server

- Sensor IP Pool
- IP Assignment-Prevention Target
- DHCP Option
- Static DHCP

11. Click **Update**

## 17.19.2 DHCP service only on policy server

This section is used in a remote environment in which the network environment is a DHCP environment, the principal policy Server as a DHCP server, and the network sensor is a remote operating environment.

1. Go to **System** in the top panel
2. On the right screen, click the IP of the policy server.
3. On the Sensors tab, click Sensor Settings.
4. In the DHCP entry, set it as follows:
  - DHCP Service: On
  - Service Target: Local & Remote
  - Node IP Pool: Remote DHCP Set Network Sensor IP Scope
  - Set other custom settings as well.
5. Go to the left panel System > System Defaults > Network Sensor.
6. On the sensor setup screen, set it as below.
  - DHCP Service: On
  - Service Target: Remote
    - The current sensor does not provide DHCP server functionality, but provides DHCP services from other servers.
7. Click **Update**

## 17.20 Manage Custom Field

Genian ZTNA allows you to enter information by defining additional fields in nodes, device, users, ip request, and device lifecycle items.

A variety of information entered through custom fields allows administrators to manage the objectives of the information collected in detail.

Custom fields can set the following types of input methods:

## 17.20.1 Custom field input type

| Input Type                               | Description                                                           | Available Items                               |
|------------------------------------------|-----------------------------------------------------------------------|-----------------------------------------------|
| Single-line Text                         | Unlimited length of input string input                                | Node, Device, User, Request, Device Lifecycle |
| Single-line Text (Length limited)        | Enter a string with a maximum/minimum length specified                | Node, Device, User, Request, Device Lifecycle |
| Multi-lines Text                         | Enter string support for multiple rows                                | Node, Device, User, Request, Device Lifecycle |
| Single-line Text with Regular Expression | Enter the string that matches the pattern                             | Node, Device, User, Request, Device Lifecycle |
| Multi-lines Text with Regular Expression | Enter a string that matches a pattern that supports multiple rows     | Node, Device, User, Request, Device Lifecycle |
| Date                                     | Enter date through period/calendar                                    | Node, Device, User, Request, Device Lifecycle |
| Date with Time                           | Enter date and time through period/calendar                           | Node, Device, User, Request, Device Lifecycle |
| IP Address                               | Enter IP information in IPv4 format                                   | Node, Device, User, Request, Device Lifecycle |
| MAC Address                              | Enter ':' delimited MAC information                                   | Node, Device, User, Request, Device Lifecycle |
| Read Only                                | Enter a string that displays read-only                                | Node, Device, User, Request, Device Lifecycle |
| Custom Drop-down                         | Select list items defined by the administrator                        | Node, Device, User, Request, Device Lifecycle |
| Custom Drop-down (for Required)          | Select list items defined by the administrator                        | Node, Device, User, Request, Device Lifecycle |
| Custom Checkbox                          | Select Check List Items Defined by Administrator (Multiple Selection) | Node, Device, User, Request, Device Lifecycle |
| Default Drop-down                        | Select items defined by department name, rank name                    | Node, Device, User, Request, Device Lifecycle |
| Default Drop-down (for Required)         | Mandatory selection of items defined by department name, rank name    | Node, Device, User, Request, Device Lifecycle |
| Default List                             | Multiple selection of items defined by department name, rank name     | Node, Device, User, Request, Device Lifecycle |
| Default Checkbox                         | Select items defined by department name, rank name                    | Node, Device, User, Request, Device Lifecycle |
| User Selector                            | Select user accounts retrieved by user name                           | Node, Device, User, Request, Device Lifecycle |
| Multiple Users Selector                  | Multiple user accounts retrieved by user name                         | Node, Device, User, Request, Device Lifecycle |
| Node Selector                            | Select IP and Authentication Username Discovered Node                 | Node, Device, User, Request, Device Lifecycle |
| Department Selector                      | Select department name retrieved by department name                   | Node, Device, User, Request, Device Lifecycle |
| File Upload                              | Select Upload File                                                    | Node, Device, User, Request, Device Lifecycle |
| Security Question                        | Enter answers to user account security questions                      | <b>User Only</b>                              |
| International Phone Number               | Enter a country-specified phone number                                | Node, Device, User, Request, Device Lifecycle |

## 17.20.2 Creating custom fields

### Using custom fields to enter additional information in nodes

Set up custom fields on nodes so that administrators can enter information in custom fields, or receive information from users.

Set custom fields with information that the administrator can enter any setting value or collect from the User Authentication and Acceptance page.

Custom fields allow administrators to manage node information by classifying it in detail through a variety of information set up/entered.

---

**Note:** Up to 20 custom fields can be set as targets for nodes.

---

### Creating custom fields

1. Go to **Preferences** in the top panel
2. Go to **Properties > Custom Fields > Node** in the left Preferences panel
3. Click **Task** to select Create.
4. Enter the following items and click the **Save** bottom button.
  - **Key**, The database column in which custom fields are stored.
  - **Name**, The custom field name displayed in the Web console.
  - **Width**, The width of the custom field window.
  - **Description**, Custom field is the part where you enter the phrase that describes.
  - **Priority**, The order in which the custom field list displays.
  - **Input Type**, Select the input type for the custom field.
  - **Settings**, Select the width of the input window, whether to mark it \* like a password, or set it as required.


### Enter information in the custom field

1. Go to **Management > Node** in the top panel.
2. Click the IP of the node where you want to enter additional fields.
3. Enter additional field information in the remark entry at the bottom of the Node tab.
4. Click the **Modify** button at the top of the Node tab.



## Confirm Additional Field Inputs in Node View

Use the Manage View Edit feature to view the input set to Add to Multiple Nodes fields on the view screen.

1. Go to **Management > Node** in the top panel.
2. Select **edit columns** from the top task button right 
3. Move the custom field you added to the right of the edit columns window and click the **Update** button.

## Using custom fields to enter additional information in device

Set custom fields in the equipment information so that the administrator can enter information in the custom field or receive information from the user.

Set custom fields with information that the administrator can enter any setting value or collect from the User Authentication and Acceptance page.

Custom fields allow administrators to manage equipment information by classifying it in detail through various set-up/entered information.

---

**Note:** Up to 9 additional fields can be set for equipment information.

---

## Creating custom fields


1. Go to **Preferences** in the top panel
2. Go to **Properties > Custom Fields > Device** in the left Preferences panel
3. Click **Task** to select **Create**.
4. Enter the following items and click the **Save** bottom button.
  - **Key**, The database column in which custom fields are stored.
  - **Name**, The custom field name displayed in the Web console.
  - **Width**, The width of the custom field window.
  - **Description**, Custom field is the part where you enter the phrase that describes.
  - **Priority**, The order in which the custom field list displays.
  - **Input Type**, Select the input type for the custom field.
  - **Settings**, Select the width of the input window, whether to mark it \* like a password, or set it as required.

### Enter information in the custom field

1. Go to **Management > Node** in the top panel.
2. Click the IP of the node where you want to enter additional fields.
3. Enter the information in the custom field item on the device tab.
4. Click the `Modify` button at the top of the Node tab.

### Confirm Additional Field Inputs in Node View

Use the Manage View Edit feature to view the input set to Add to Multiple Nodes fields on the view screen.

1. Go to **Management > Node** in the top panel.
2. Select **Edit columns** from the top task button right 
3. Move the custom field you added to the right of the edit columns window and click the `Update` button.

### Using custom fields to enter additional information to account

Set up custom fields on your account so that administrators can enter information in custom fields, or receive information from users.

Use custom fields to receive additional information when creating user account applications, or to use it as information that can be collected from the consent page.

The custom field allows administrators to manage user account information by classifying it in detail through various information set up/entered.

---

**Note:** Up to nine additional fields can be set for user accounts.

---

### Creating custom fields

1. Go to **Preferences** in the top panel
2. Go to **Properties > Custom Fields > User** in the left Preferences panel
3. Click `Task` to select `Create`.
4. Enter the following items and click the `Save` bottom button.
  - **Key**, The database column in which custom fields are stored.
  - **Name**, The custom field name displayed in the Web console.
  - **Width**, The width of the custom field window.
  - **Description**, Custom field is the part where you enter the phrase that describes.
  - **Priority**, The order in which the custom field list displays.
  - **Input Type**, Select the input type for the custom field.
  - **Settings**, Select the width of the input window, whether to mark it \* like a password, or set it as required.

5. Go to **Preferences** in the top panel
6. Go to **Properties > Purpose > User** in the left Preferences panel
7. Select the type of user to apply the custom field you added earlier.
8. Assign the custom field you created to the **Request Field Options** or **Account Field Options** item and click the `Update` button.

### Enter information in the custom field

1. Go to **Management > User** in the top panel.
2. Select a **Users** in the left item.
3. Click the user ID to enter the information in the custom field.
4. Enter information in the custom field added to the **User Information** item below.
5. Click the `Modify` button at the top of the Node tab.

### Check with custom field information list

Use the Manage View Edit feature to view the input set to Add to Multiple Nodes fields on the view screen.

1. Go to **Management > User** in the top panel.
2. Select **Edit columns** from the top `task`
3. Move the custom field you added to the right of the edit columns window and click the `Update` button.

### Using custom fields to enter additional information in IP requests

You can set up custom fields in IP application entries to receive additional information from users.

---

**Note:** Up to 20 custom fields can be set for IP requests.

---

### Enter information in the custom field

1. Go to **Preferences** in the top panel
2. Go to **Properties > Custom Fields > Request** in the left Preferences panel
3. Click `Task` to select `Create`.
4. Enter the following items and click the `Save` bottom button.
  - **Key**, The database column in which custom fields are stored.
  - **Name**, The custom field name displayed in the Web console.
  - **Width**, The width of the custom field window.
  - **Description**, Custom field is the part where you enter the phrase that describes.
  - **Priority**, The order in which the custom field list displays.
  - **Input Type**, Select the input type for the custom field.

- **Settings**, Select the width of the input window, whether to mark it \* like a password, or set it as required.

### Apply custom fields added to purpose

The IP usage request custom field allows you to set various additional fields for each purpose through the usage function used to create IP requests.

---

**Note:** You must use the IP request function to receive input from users about items set to custom fields.

---

1. **Go to Properties > Purpose > Request > IP Request in the left Preferences panel**  
*(It is also available in IP request, IP return, and Device change.)*
2. Select the type of IP request to apply the custom field you added earlier.
3. Assign custom fields added to the 'Request Field Options' item below.
4. Click the `Update` button at the bottom.

### Check the fields you added from the list of applications

You can use the Administration View Edit feature to view the input set to Custom field in the IP request requested on the View screen.

1. Go to **Management > Request** in the top panel.
2. Go to **IP Request > Request / Return** in the top panel.
3. Verify that the custom field you added has been added to the column.
4. **If not added, double-check the settings or proceed to:**  
Select **Edit columns** from the top `task` Move the custom field you added to the right of the edit columns window and click the `Update` button.

### Using custom fields to enter additional information in the device lifecycle

Set up custom fields in the equipment lifecycle entry so that administrators can enter information in custom fields or receive information from users.

Use custom fields to receive additional information when creating user account applications, or to use it as information that can be collected from the consent page.

The custom field allows administrators to manage user account information by classifying it in detail through various information set up/entered.

---

**Note:** Up to 20 additional fields can be set for the device lifecycle

---

## Creating custom fields


1. Go to **Preferences** in the top panel
2. Go to **Properties > Custom Fields > Device Life-cycle** in the left Preferences panel
3. Click **Task** to select **Create**.
4. Enter the following items and click the **Save** bottom button.
  - **Key**, The database column in which custom fields are stored.
  - **Name**, The custom field name displayed in the Web console.
  - **Width**, The width of the custom field window.
  - **Description**, Custom field is the part where you enter the phrase that describes.
  - **Priority**, The order in which the custom field list displays.
  - **Input Type**, Select the input type for the custom field.
  - **Settings**, Select the width of the input window, whether to mark it \* like a password, or set it as required.

## Enter information in the custom field

1. Go to **Management > Node** in the top panel.
2. Click the IP of the node where you want to enter additional fields.
3. Enter the information in the custom field item on the device tab.
4. Click the **Modify** button at the top of the Node tab.

## Confirm Additional Field Inputs in Node View

Use the Manage View Edit feature to view the input set to Add to Multiple Nodes fields on the view screen.

1. Go to **Management > Node** in the top panel.
2. Select **Edit columns** from the top **task** button right 
3. Move the custom field you added to the right of the edit columns window and click the **Update** button.

## 17.21 Configure Collecting Networks and Node information

Genian ZTNA can collect node information by the following methods:

## 17.21.1 Configuring Node Network Connection Health Checks

Genian ZTNA can check node network connection status utilizing the Network sensor. Collected node connection status information can be used by Network usage trends and Node group's Criteria.

**Note:** Min Period is set as default for Node health check method.

1. Go to **system** in the top of panel
2. Go to **System > System** in the left System Management panel
3. Find the **Network Sensor** and click **CheckBox** (multiple choice available)
4. Click **Tasks > Edit Appliance Settings**
5. Find **Miscellaneous > Whether to check node status**
6. Click **CheckBox** and select **ON**
7. Find **Node health check method** and choose **Status Scans period**
8. Click **Run**

### Genian ZTNA Node health check method

Genian ZTNA Node health check method is listed below:

| Method          | Description                                                         | Recommendations                                            |
|-----------------|---------------------------------------------------------------------|------------------------------------------------------------|
| Min Period      | Set the period for sending ARP Request to perform node health check | Recommend to configure for managing Class C Network Sensor |
| Number of Count | Set the number of sending ARP Request to perform node health check  | Recommend to configure for managing Class C Network Sensor |

#### 1. Min Period option process flow

This guide describes the Min Period process flow based on default setting of Scan Period 15 second(s).

| Se-quence | Process                                                                                                   | Description                                                      |
|-----------|-----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|
| 1         | Check ARP packets from node to network sensor for the first 120 seconds (2 minutes)                       | Keep node status UP, if ARP packets received                     |
| 2         | The network sensor sends an ARP Request to the node during the inspection time of 180 seconds (3 minutes) | Keep node status UP when node response occurs within 12 (180/15) |
| 3         | Change the node state to DOWN if there are no packets or responses within 300 seconds (5 minutes)         | ARP requests are not sent to nodes once they are marked as down  |

## 2. Number of Count process flow

This guide describes the Number of Count process flow based on default setting of Scan times 256.

| Se-quence | Process                                                                                                   | Description                                                                                                          |
|-----------|-----------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------|
| 1         | Check ARP packets from node to network sensor for the first 120 seconds (2 minutes)                       | Keep node status UP, if ARP packets received                                                                         |
| 2         | The network sensor sends an ARP Request to the node during the inspection time of 180 seconds (3 minutes) | All nodes are checked every 4 seconds(256/1024). And Keep node status UP when node response occurs within 45 (180/4) |
| 3         | Change the node state to DOWN if there are no packets or responses within 300 seconds (5 minutes)         | ARP requests are not sent to nodes once they are marked as down                                                      |

### 17.21.2 Managing Port Scan List

You can view the open ports by Protocol, Port, Status, and the Network Service. You can create new ports, delete ports, and Enable/Disable these ports.

#### Current Port Status

Port Scans are updated when the Node Scan is run.

1. Go to **Preferences** in the top panel
2. Go to **General > Node > Port Scan** in the left Preferences panel

#### Creating New Ports

You can create new ports as needed if they are not already displayed.

1. Go to **Preferences** in the top panel
2. Go to **General > Node > Port Scan** in the left Preferences panel
3. Click **Tasks > Create**
4. For **Protocol**, leave default as **TCP**
5. For **Port**, type in the port number
6. For **Network Service**, type in the name of the Network Service
7. For **Status**, select **Enable** (You can select Disable to not scan for this port)
8. Click **Save**

## Deleting Ports

1. Go to **Preferences** in the top panel
2. Go to **General > Node > Port Scan** in the left Preferences panel
3. Click **Checkboxes** of ports you want to delete
4. Click **Tasks > Delete**
5. Click **OK** to confirm

## Enabling Ports

Enable ports to turn on and actively scan.

1. Go to **Preferences** in the top panel
2. Go to **General > Node > Port Scan** in the left Preferences panel
3. Click **Checkboxes** of ports you want to enable (*or toggle the **\*\*Switch\*** in Status Column\**)
4. Click **Tasks > Enable**

## Disabling Ports

Disable ports to turn off and not scan.

1. Go to **Preferences** in the top panel
2. Go to **General > Node > Port Scan** in the left Preferences panel
3. Click **Checkboxes** of ports you want to disable (*or toggle the **\*\*Switch\*** in Status Column\**)
4. Click **Tasks > Disable**

## 17.21.3 Configuring Node Information Scan

Genian ZTNA can specify whether to enable port scan and service scan to detect a Node's platform.

1. Go to **system** in the top of panel
2. Go to **System > Sensor** in the left System Management panel
3. Find the **Network Sensor** and click **CheckBox** (multiple choice available)
4. Click **Tasks > Edit Network Sensor Settings**
5. Find **Node Information Scan**
6. Find the **Port/Service Scan>, NetBIOS Name Queries**
7. Click **CheckBox** and select **ON**
8. Click **Save**



## SNMP Information Scan

Configure Collecting the Node information using SNMP(Simple Network Management Protocol).

**Note:** For Configuring SNMP Information Scan, please refer to *Browsing Switches*

## WMI Information Scan

Configure collecting the Node information using WMI if the node is authenticated through Active Directory integration. LDAP authentication integration settings(Bind DN, Bind Password) are used when performing WMI queries.

**Note:** For configuring WMI Information Scan, please refer to **LDAP(Active Directory)** on *Integrating User Directories*

## NMAP Scan Mode

NMAP scan mode speeds can be modified. This settings are valuable when NMAP scanning is performed in sensitive environments such as OT networks.

The differences between each SCAN options are as below:

| Scan Mode   | Description                                    | Details                                             |
|-------------|------------------------------------------------|-----------------------------------------------------|
| Fast Scan   | Use Insane(T5) template                        | Enable NMAP fastest Mode                            |
| Normal Scan | Use Normal(T3) template                        | Enable NMAP default Mode                            |
| Slow Scan   | Use Normal(T3) template + Scan delay 10seconds | Enable NMAP Default Mode and Allow Scan delay times |

## NMAP OS SCAN

Configure collecting the Node OS information using NMAP.

## NMAP TCP SCAN

Configure collecting the Node TCP information using NMAP.

| Options          | Description                           | Details                                                          |
|------------------|---------------------------------------|------------------------------------------------------------------|
| TCP SYN Scan     | Scan by TCP Syn                       | No TCP connection required                                       |
| TCP CONNECT Scan | Scan by TCP connection process        | Twice as many packete as a SYN scan                              |
| TCP FIN Scan     | Scan by TCP FIN BIT set packet        | Possible to bypass Stateless Firewall                            |
| TCP ACK Scan     | Scan by TCP ACK BIT set packet        | Can distinguish between Stateful Firewall and Stateless Firewall |
| TCP NULL Scan    | Scan by no BIT set on TCP flag header | Possible to by pass Stateless Firewall                           |

## NMAP UDP SCAN

Configure Collecting the Node UDP information using NMAP.

### 17.21.4 Setting Up Network Scan

Network Scan settings on the network sensor are used by default to detect additional services other than the services you detect, or to classify node types by determining which equipment uses a specific protocols.

1. Go to **System** in the top panel
2. Go to **System > Sensor** in the left panel
3. Select the checkbox for the network sensor whose network scanning settings you want to change.
4. Click **Tasks > Edit Network Sensor Settings**
5. In the Network Scan topic, select the options you want to change and change the settings.
6. Click **Save**

## DHCP Server Scan

Detects a DHCP server operating in the administrative band of a network sensor.

It is used to detect DHCP services and to detect targets that provide unusual DHCP services in risk detection.

## UPNP Scan

Gather information over HTTP through the Universal Plug and Play (UPNP) protocol. Used for platform classification to respond with requests for periodic UPNP.

## HP SLP Scan

The Hewlett Packard (HP) printer provides Service Location Protocol (SLP) to collect information as multicast using UDP 427 ports and classify node types as printers.

## SIP Scan

The Session Initiation Protocol (SIP) collects session status information for multimedia using UDP 5060 ports and classifies node types by VOIP.

## 17.22 Creating IP Request System Notice

When using IPAM, you can set Notification to display user considerations and notices to help you use the IP Request System comfortably.

### 17.22.1 IP Request System Notice

1. Go to **Preferences** in the top panel.
2. Select **IPAM > Notice** from the **General** item on the left.
3. Select **Create** from the **Tasks** menu.
4. After entering the notice items, click the **Save** button.

### 17.22.2 IPAM Startup Page setting

When connecting to IPAM, set the Startup Page screen to Notice so that the user can check in advance the matters that need to be noted when making a request.

1. Go to **Preferences** in the top panel.
2. Select **IPAM** from the **General** section on the left.
3. From the **Request Page Options** menu, select **Startup Page** as **Notice**.
4. Click the **Update** button.

## 17.23 Managing Administrator Connections

You can check the status of an administrator's web console connection, and forcibly terminate sessions that are not verified.

### 17.23.1 Checking the Administrator's Connection Status

To view all administrator connection information to the web console.

1. Go to **System** in the top panel.
2. Select **System > Session** on the left panel.
3. Check the active connection information on the right screen.

### 17.23.2 Closing an Administrator Connection Session

1. Go to the screen that displays the active connection information.
2. Check the check box on the left side of the linked administrators list.
3. Click the **TASK** button on the top and select **Delete**.
4. After deleting, check the message `Session was deleted.` at the top.

## 17.24 Windows operating system update environment

Windows Update feature provided by Genian ZTNA, you must set up an environment that performs updates in advance.

Please see *Update Windows* for the part where Windows operating system updates are applied to your device. (Agent action is required)

### 17.24.1 Windows operating system update preferences(Check for Updates from)

1. Go to **preferences** in the top panel
2. Go to **General > Agent > OS Update** in the left panel
3. Set **Windows update** items to suit your environment.

#### Setup the Windows Update "Check for Updates from"

The Windows operating system update preferences are divided into the search method for update files and the connection method to the update server provided by Microsoft. Depending on your network environment, you can change how you search and connect.

1. **Microsoft Windows Update** : How to communicate with the Microsoft-provided update server connected to the public network (Internet)
2. **WSUS** : How to communicate with WSUS servers connected to private networks
3. **Offline Scan File** : How to communicate with the Genian ZTNA policy server connected to a private network.

| Check for Updates from   | Download from                 | Firewall                                                                          |
|--------------------------|-------------------------------|-----------------------------------------------------------------------------------|
| Microsoft Windows Update | Microsoft / WSUS              | Allow all devices to communicate with the MS Update server                        |
|                          | Genian NAC (Download Only)    | Allow all devices to communicate with the MS Update server                        |
|                          | Genian NAC (Check + Download) | Allow communication with MS Update server on ZTNA Device                          |
| WSUS                     | Microsoft / WSUS              | Allow all devices to communicate with the WSUS                                    |
|                          | Genian NAC (Download Only)    | Allow all devices to communicate with the WSUS                                    |
|                          | Genian NAC (Check + Download) | Allow communication with WSUS on ZTNA Device                                      |
| Local Repository         |                               | Setting up in an environment where you cannot communicate with the Public network |

## Configure Proxy Server

**Download from** when the operating system updates, it can be set only when *Genian NAC* is used.

Used when the firewall cannot grant permission to both Genian ZTNA devices.

---

**Note:** Perform external network connection with the server IP set up at Proxy server setup.

---

## Proxy Server Exceptions

set up a domain that allows you to perform operating system updates on targets whose networks are blocked by Genian ZTNA.

## 17.25 Troubleshooting

- *Genian ZTNA log collection method*
- *Genian ZTNA diagnosis Method*
- *Network Sensor is not displayed in Web Console*
- *Sensor link state is displayed as Down*
- *Network Sensor is displayed as Failsafe*



---

**Note:** This feature requires Enterprise Edition

---

Genian ZTNA provides the REST API to get desired information from the policy server or to set security policy and various objects. An API key is required to call the API from the outside to the policy server. API Keys are created for each administrator and can be accessed or set according to the privileges granted to the administrator.

To create or verify an administrator API Key:

1. Go to **Management > User** in the top panel
2. In the left panel, select **Administrators**
3. Click **administrator name** to generate the API Key
4. Select **Administrator** tab
5. On **API Key**, Click **Generate API Key** button
6. Click **Update** at the end of the page

The API key set through the above process should be passed as parameter of Request URL as follows.

```
curl -X GET "https://nac.company.com/mc2/rest/logs?apiKey={API Key}"
```

List of APIs provided by Genian ZTNA can be found below.

- [https://\[Policy Server IP or FQDN\]:8443/mc2/swagger/index.html](https://[Policy Server IP or FQDN]:8443/mc2/swagger/index.html) (Admin must be authenticated to the Policy Server)
- [API Reference Guide for Enterprise Edition](#)
- [API Reference Guide for MSSP](#)





## LOG FORMAT

The logs generated by the Genian ZTNA consist of a column containing specified column values such as IP, MAC, and detailed text. The format of the text column is:

```
Log Messages. key1=value1, key2=value2, key3="value 3" . . .
```



## NODE GROUP TEMPLATES

You can import node group templates into your Policy Server to more easily organize and manage your network.

See: *Managing Node Groups*

### 20.1 Common Vulnerabilities

Ripple 20 by CVE Code

Urgent 11 by CVE Code



## FREQUENTLY ASKED QUESTIONS

### 21.1 What is the difference between ZTNA and existing NAC products?

The following features have been added to implement Zero-Trust security policies on top of the capabilities of existing NACs. Support for dynamic destination access control for communication/internal network->Cloud/from-home access between sensor managed nodes. ZTNA Client functionality to provide enhanced terminal security and secure communication environment for telecommuters. Cloud information collection for visibility and zero trust access control of the Cloud server band. Cloud Gateway functionality to provide dynamic access control for cloud server bandwidth and Internet access. Cloud Security Group Management for Automated Security Policy Management on Cloud Servers. Netflow (IPFIX)-based NTA capabilities that provide visibility into network traffic. Security news feeding service that informs you of the latest security news and related nodes. New Dashboard / Extended Node Type / Platform Image Based Grid View.

### 21.2 What is Zero Trust security policy and how does ZTNA provide it?

Any device that accesses a network is a concept that takes by default a policy that does not allow other than the services/servers that are essential to that device. To do this, the origin and destination must be categorized very precisely according to their role. (Micro Segmentation) ZTNA can manage node groups for destinations, including origin and Cloud, through node groups that provide more than 500 conditional expressions. The new ZTNA allows node groups to be used when setting up network access that is allowed to finely classified user terminals. When destination control is enabled through node groups, the security policy is automatically updated based on status/properties/Tags, etc., away from the IP/Subnet security policy provided by existing products.

### 21.3 Do I need new equipment or network configuration for dynamic destination control?

No, no new equipment or network configuration changes are required when operating ZTNA in an existing sensor-installed environment. Dynamic access control is possible without configuration changes through communication between sensors through standard VXLAN SGT. Genians' patented ARP-based virtual in-line access control method allows in-band access control by configuring out-of-band or building an in-line gateway sensor, so you can choose the appropriate method depending on the deployment environment.

## 21.4 How can dynamic destination control be applied when accessing servers (workloads) that exist in the cloud?

Cloud access control can be applied in two ways. The first method is to manage the IP list of devices that have access to the server by synchronizing it with a node group through the Security Group feature provided by the Cloud. The second method is to configure the Cloud Gateway to allow all communications to pass through the Cloud Gateway for access control. In this case, you can use an SSL-VPN-based G2C method for specific terminals only or a G2G method using IPSec for network-level connections.

## 21.5 Is the user's network traffic visibility provided when performing dynamic access control?

Yes, ZTNA provides standard Netflow (IPFIX)-based audit records for connections through sensors/gateways. This provides 5 Tuples, Policy information, as well as GeoIP, BGP AS, HTTPS Encrypted Traffic Analysis (ETA), HTTP Request information, etc.

## 21.6 What is the difference between the dynamic access control provided by ZTNA and the controller-type SDN?

The SDN method, which handles dynamic access control for all connections on one central controller, has a problem that all communication is interrupted in the event of a controller failure. In contrast, Genian ZTNA's dynamic access control method uses the standard VXLAN SGT method, and dynamic access control of previously authorized terminals operates normally even in the event of a policy server failure. In addition, it is provided through Genian's own ARP virtual inline method, so there is no need to change the physical network configuration or network settings at all.

## 21.7 What happens if a ZTNA sensor failure occurs when using dynamic destination access control?

If you are operating in out-of-band host sensor mode, the network access control function is disabled in case of sensor failure. If you're operating in an In-Band manner with Cloud Gateway, you can recover faster than your On-Prem Appliance system with simple instance reboot/replayability.

## 21.8 What are the benefits of ZTNA offered in ZTNA over traditional VPNs?

By default, ZTNA provides IPSec, SSL-VPN capabilities provided by traditional VPNs. The ZTNA Client is integrated within the NAC Agent and supports Zero Config. The PoP can be located in the Cloud, dramatically reducing WAN segment traffic and providing faster network access to users compared to traditional VPN methods where all traffic enters the company. The PoP can be located in various countries/continents, making it suitable for global companies. (Multiple PoP and Latency-based PoP automatic selection) Only devices that have passed the device integrity check provided by the NAC Agent can be controlled to allow network access, and access is controlled through continuous device health check while the network is in use.

## 21.9 Does ZTNA support Multi Cloud environments?

The use of one or more Cloud services is becoming more common due to the complexity of the Cloud environment. ZTNA provides an easy way to simplify and automate the establishment of different security policies for different Cloud providers. When security policies for Cloud servers/services are defined through ZTNA, security groups are automatically applied through the industry standard Terraform without the need for separate UI/API/CLI for each Cloud service.

## 21.10 Can Cloud Security Group Management be applied only to Public Cloud?

No, it is also applicable to private clouds such as VMWare/Citrix, or to HCI and Hybrid clouds such as Nutanix. Furthermore, you can support a variety of providers, including switches, security equipment, and SaaS services. We are providing sequential support according to your request.

## 21.11 What is the difference between ZTNA and SASE?

SASE's approach to service is to ensure that all network access control is through the Cloud Gateway, placing all security systems in the Cloud. This shifts the On-Premises-centric security system to Cloud-centric. ZTNA provides the ZTNA and Cloud Gateway you need to do this. Cloud Gateway offers a variety of tunneling methods, including IPSec, SSL-VPN, GRE, and VXLAN, to help different branch and telecommuters create secure communication channels. ZTNA allows users to create their own built-in SASE services.

## 21.12 Does ZTNA support Multi-Tenancy?

ZTNA supports Kubernetes-based multi-tenant environments that can serve multiple tenants in addition to traditional products for single tenants. This allows you to build a system that provides independent, managed services for multiple domains within the client company.

## 21.13 What is the product release cycle?

Genian ZTNA releases a new minor version every one months.

## 21.14 Can I downgrade my software version?

No, downgrade is not supported. For a downgrade, you should create a backup before you upgrade, and then reinstall software and restore backup data.

## 21.15 Is the communication between each component encrypted?

Yes, communication between each component is encrypted through TLS.

## 21.16 What if I exceed the license amount?

See step 1 on *Sizing Software and Hardware*

## 21.17 How can I check Windows update of endpoints?

See step 1 on *Update Windows*

## 21.18 How come the blocked Nodes cannot open the CWP through Genian ZTNA?

See step 1 on *Blocked Nodes are not redirected to CWP page*

## 21.19 What Regex engine does Genian ZTNA utilize?

Genian ZTNA utilizes Perl Compatible Regular Expressions. For information including syntax reference the following resources:

- [Perl Compatible Regular Expressions](#)
- [PCRE CheatSheet](#)
- [Regex Debugger](#)

## 21.20 Can User Credentials from Active Directory be used to access the Web Console?

Yes. To configure, you must configure authentication integration AND user database synchronization with an AD domain controller. Lastly the Active Directory user must be selected in the Genians user database and configured with a superAdmin role.

- [Integrating User Directories](#)
- [Synchronizing User Directories](#)
- [Administrator Roles](#)



## 21.21 Can Node info be imported from a wireless controller via SNMP?

No, this function is not supported.

## 21.22 Why can't I collect domain information from my Agentless environment?

Domain name and host name information in an Agentless environment is collected via two methods:

Method 1 - The Sensor extracts domain name and host name from netbios packets. Be sure to add a sensor interface in the subnet you wish to collect this information for.

Method 2 - WMI collection of domain, host name and other information is possible if configured. Reference the following information on how to configure this feature if domain or host name information is not being populated by the Sensor.

*WMI Node Info Scan*

## 21.23 Why is the Agentless device host name not collected?

Domain name and host name information in an Agentless environment is collected via two methods:

Method 1 - The Sensor extracts domain name and host name from netbios packets. Be sure to add a sensor interface in the subnet you wish to collect this information for.

Method 2 - WMI collection of domain, host name and other information is possible if configured. Reference the following information on how to configure this feature if domain or host name information is not being populated by the Sensor.

*WMI Node Info Scan*

## 21.24 Why can't I collect device information in my Agentless environment, even after configuring Agentless WMI collection?

In Windows 10 version 2004 there are known issues with WMI functioning properly due to DCOM version issues. The recommendation is to upgrade to a later version. If upgrading to a later version is not possible, please contact your technical support representative.

## 21.25 Why there is 'Agent Not Installed' policy even though we are using Agentless?

The default enforcement policy is created based on Agent-installed. you can use it after creating/deleting a policy according to your environment.

## 21.26 When is the update cycle of Genian data?

The Genian data is automatically updated at the set period when the inspection cycle is set at **Web Console > Preferences > Miscellaneous > Genian data settings > Scan interval** and the bottom **Automatic Update** item is set as **On**.

## 21.27 How can I collect wireless LAN SSIDs?

Please refer to the following documents. *Controlling WLAN*

## 21.28 How do I control access to the terminal wireless LAN?

Terminal wireless LAN access control can be performed in two ways. There are ways to **Disable** wireless network adapter (*Controlling Network Interface*) and restrict wireless LAN AP access using *Controlling WLAN*.

## 21.29 How do you control terminals that share and use networks using wired/wireless?

Anomaly definition policies (*Understanding Anomaly Detection*) can be restricted using the **Multi-Homed / Ad hoc Network** policy.

## 21.30 How do you control unnecessary administrator web access?

Session management(session-control) allows unnecessary access sessions to be forcibly terminated.

## TROUBLESHOOTING

This section describes common errors, their potential causes and how to resolve them.

### 22.1 Genian ZTNA log collection and diagnostic method

#### 22.1.1 Genian ZTNA log collection method

Genian ZTNA supports debug dumps for each component when an issue arises. The dump file is used for issue analysis.

##### How to Collect the Agent Log

###### Collecting via Web Console

1. Navigate to the **Management > Node** tab
2. Click the check-box beside the Node(s) you wish to collect logs from, and select to **Tasks > Bulk Actions**, or select an individual node IP.
3. Select **Run Node Tasks** from the dropdown, or use the **Node Tasks** menu if viewing a single node.
4. Select **Collect Agent Logs** and click **Run** if applicable.
5. After collection is complete, the logs can be viewed and searched in **Log > Debug Logs**.

###### Collecting via Endpoint

- Right-Click the **Agent Icon** on the endpoint
- Select the **About Genian Agent(A)**
- Click the `Save Error Logs`
- Log dump file is stored in **C:\*\* on Windows** , **\*\*/Users/Shared/Genians** on Mac
- In form of `GnAgent _[DateTime].zip` on Windows and `Genians _[DateTime].zip` on Mac

---

##### Note:

- Log collection in an Active Directory environment requires domain administrator-level privileges.
  - For LINUX devices, you must go directly to the debug storage path and collect it. `/var/log/genians`.
-

## How to Collect the Policy Server and Network Sensor

The Policy Server and Network Sensor come with a feature for centrally collecting and exporting error logs. The log can be uploaded to a JIRA issue or saved locally.

### Collecting via Web Console

1. Navigate to the **System** tab
2. Click the check-box beside the Appliance you wish to collect logs from.
3. Select to **Tasks > SysCollect**
4. Select if Center, Sensor, and/or Agent logs should be included for collection, and click **Start**.
5. After collection is complete, the logs can be viewed and searched in **Log > Debug Logs > system > agent**.

### Collecting via Command Line Interface

Follow the below steps, as shown in the code box:

- Connect to the Policy Server or Sensor through console or SSH.
- Login.
- Enter configuration mode.
- Enter shell mode.
- Use the command `syscollect.sh` to generate a compilation of the component logs.
- Select if you would like to upload logs.
- Select which components to collect logs from.

```
genian> en
genian# @shell
Genians$ syscollect.sh
Do you want upload to GENIANS IMS ? (Y/n)
Do you want to trace centerd ? (y/N)
Do you want to trace sensord ? (y/N)
Do you want to collect agent logs ? (y/N)
```

## Collect network communication packets between components

### Usage example

```
tcpdump -i eth0 port 80 and udp
- Capture for udp through 80 port on interface eth0

tcpdump -i eth0 -e
- Include ethernet information on interface eth0 and capture it.
```

(continues on next page)

(continued from previous page)

```

tcpdump -i eth0 net 192.168.
- Captures a packet starting at 192.168 on interface eth0

tcpdump -i eth0 host [IP address] and ARP[7] == 2
- Capture for arp Reply packets on interface eth0

tcpdump -i eth0 -w file1 port 80 and udp
- Save captures for port 80 and udp packets on interface eth0 as ABC files

```

## Option Definition

```

-v: When parsing and printing, produce (slightly more) verbose output. For example,
↳the time to live,
 identification, total length and options in an IP packet are printed. Also
↳enables additional packet
 integrity checks such as verifying the IP and ICMP header checksum.
-n: Don't convert addresses (i.e., host addresses, port numbers, etc.) to names
-e: Print the link-level header on each dump line. This can be used, for example, to
↳print MAC layer addresses
 for protocols such as Ethernet
-w: Write the raw packets to file rather than parsing and printing them out.
-A: Print each packet (minus its link level header) in ASCII.
-q: Quick (quiet?) output. Print less protocol information so output lines are
↳shorter.

```

## Conditional expression

```

host : Capture all packets containing the IP address you entered.
dst host : Filter by Destination IP Address
src host : Filter by Source IP Address
ether host : Capture all packets that contain the entered MAC address.
ether dst : Filter by Destination MAC addr of Ether Frame
ether src : Filter by Source MAC addr of Ether Frame
net : Capture to the network subnet
dst net: Capture to the network destination subnet.
src net: Capture to the network source subnet.

```

## Export Log Files From Genian ZTNA

Genian ZTNA shell mode supports the SCP command for sending files through SSH.

Navigate to **/disk/data/temp/** and use the following command format to send the logs to their destination:

## Usage example

```
scp [filename] [username]@[destinationIP]:[destinationPath]
```

## 22.1.2 Genian ZTNA diagnosis Method

This section provides an overview of the major processes used by Genian ZTNA that can be examined to troubleshoot issues.

### Genian ZTNA Process Description

#### Policy Server Processes

```
centerd: Policy and node management processes
sensord: Network Sensor Process
mysql: Node and policy information is stored in the database
httpd: Web service Daemon
java: As a Java process for running the WebUI, Interworking between Web and Database
procmond: A process monitor daemon used by Genian ZTNA, Monitor abnormal termination
↳and perform re-execution
sshd: Daemon for providing SSH remote access
syslog-ng: SYSLOG Daemon
hbd: A daemon that performs actions (such as reboot) to normalize the system after a
↳certain period of time if a hardware or software failure occurs
mysqld_safe: Script to save restart and runtime information in Mysqld_error when
↳mysqld server fails
gnlogin: Providing services for executing CLI commands
crond: A daemon that performs scripts and commands on a specified cycle
```

#### Network Sensor Processes

```
sensord: Network Sensor Process
nmap: Scan tool that Network information of Node
procmond: A process monitor daemon used by Genian ZTNA, Monitor abnormal termination
↳and perform re-execution
sshd: Daemon for providing SSH remote access
syslog-ng: SYSLOG Daemon
hbd: A daemon that performs actions (such as reboot) to normalize the system after a
↳certain period of time if a hardware or software failure occurs
```

## Agent Processes

Process name : GnAgent.exe  
Description : Genian Agent  
Function : Agent integrity check, node policy reception and GnPlugin run management  
Execution cycle: Always  
Execution condition: Always after Windows logon

Process name: GnPlugin.exe  
Description: Genian Action Plugin  
Function: Perform action policy of node policy and send result  
Execution cycle: Always  
Execution condition: Always when an action policy exists **in** a node policy

Process name: GnStart.exe  
Description: Genian Starter  
Function: Agent integrity check, GnAgent execution management, Keep Alive transfer  
Execution cycle: Always  
Execution condition: Always

Process name: GnAccount.exe  
Description: Genian User Account Manager  
Function: when running the GnAgent process with a specific account instead of an OS\_  
↔logon account  
Execution cycle: When an event occurs  
Execution condition: Node Policy>Execution Account

Process name: GnDump.exe  
Description: Genian Agent Dump Utility  
Function: Dump Agent Debug Logs  
Execution cycle: None  
Execution condition: Operates only when executed manually

Process name: GnExLib.exe  
Description: Genian External Module  
Function: Register external authentication module (ex. dll)  
Execution cycle: None  
Execution condition: Works only when executed manually

Process name: GnScript.exe  
Description: Genians Software Install Manager  
Function: Install Agent  
Execution cycle: None  
Execution condition: Performed only during agent installation

Process name: GnUpdate.exe  
Description: Genian Updater  
Function: Update Genian Agent automatically  
Execution cycle: 6 hour  
Execution condition: None

Process name: GnUtil.exe  
Description: Genian Agent Utility  
Function: Compute the SHA1 hash value of a specific file  
Execution cycle: None  
Execution condition: Works only when executed manually

## System Log Description

### Policy Server Log

**Location:** /disk/data/logs

#### Elasticsearch

GENIAN.log: Elasticsearch process abnormal termination and restart error log, etc.

#### httpd

Error\_log: httpd error log  
Mod\_jk.log: Apache and Tomcat communicate using Apache JServ Protocol (AJP) to  
↪ communicate with each other and configure it using a module called mod\_jk  
- Apache and tomcat related error log

#### mysqld

Initdb.log: Logs generated during database initialization  
Check whether the table is abnormal when driving  
  
Mysqld.error: error log during mysql operation  
Slowquery.log: SQL Query Log **for** long-running jobs  
- Refer to when a specific action takes a long **time** during ZTNA operation

#### system

Agent: Agent log stored **in** PC **is** called **from** **policy** server **and** stored  
- call command: centerd -dfg  
  
centerd: Logs of actions performed by the Policy Server  
- Policy Server status, Node role status, Authentication, integration, Data sync etc  
  
sensord: Save the operation **and** error log performed by the network sensor  
- Network Sensor status, Node detection, UP / Down, policy reception etc  
  
messages: Hardware status related messages like dmesg  
  
procmond: Process terminated abnormally **and** restart log  
scanraw: Network scan information of Node **for** the platform's detection of the node  
updown: Agent Up / Down status log  
authsync: Database synchronization related logs  
dbmigration: Save database migration results  
gnlogin: console Login History Saving  
radius.log: Saving RADIUS Status **and** Node Authentication Logs



## tomcat

```
Catalina.out: The catalina.log file contains all log messages that are written to
↳Tomcat's system.out and system.err streams.
```

The catalina.out file can include:

- Uncaught exceptions printed by `java.lang.ThreadGroup.uncaughtException(..)`
- Thread dumps, **if** you requested them via a system signal

## System Inspection

Check script for the status of the Genian ZTNA system.

- Follow the below steps, as shown in the code box:
- Connect to the Policy Server Console directly or by SSH.
- Enter configuration mode.
- Enter shell mode.
- Use the `sysinspect.sh` command to check the system status.

```
genian> en
genian# @shell
Genians$ sysinspect.sh

=====Regular Inspection=====
1) Check Server/Service information
2) Check Service status
3) Check Disk & Memory information
4) Check Smartctl
5) Check Slow Query
6) Check Total Inspection
9) Check Setup Config
=====
Enter Select Number :
```

## Check Server/Service information

- ServerRole: Refer to the configuration of the server to indicate the role of the server.
- H/W duplication: Check if the server is redundant. If redundant, check if the server is master or slave.
- DB replication: Check if the DB is redundant
- ALIVE: If DB replication status of Master / Slave server is normal, ALIVE
- MISMATCH or result is broken: If DB replication state of Master / Slave server is abnormal
- System Uptime: Number of Users in Server, Server CPU Load
- Platform: The model name of the server
- Version: The version of the image installed on this server
- MAC Address List: MAC Address list output

- Service Version: The version of services used by the server
- Elasticsearch indices Health check: Check the status of Elasticsearch indexes
- green: normal, Yellow / Red: abnormal
- Last 7 days Log Backup Check(Today Warning): Ensure Log backup is working properly
- Last 7 days DB Backup Check(Today Warning): Ensure Policy / Node backup is working properly

### Check service status

Verify that all necessary processes are running on Genian ZTNA.

Necessary processes by component:

```
Policy Server:
Mysqld, elasticsearch, java, centerd, sensord, httpd, procmond, sshd, syslog-ng, ↵
↵radius (Need confirmation if using RADIUS server), vrrpd (Need confirmation if ↵
↵using HA configuration)

Network Sensor:
sensord, procmond, sshd
```

### Check Disk & Memory information

Check the server's hard disk capacity and memory. If the hard disk is full or there is no free memory, Genian ZTNA may encounter the following problems.

- Genian ZTNA operation is slow or does not work
- When a backup file is not created

### Check Smartctl

Check hard disk status If the RAW\_VALUE value of Reallocated\_sector\_ct is not 0, there is a problem with the hard disk. Genian ZTNA operation may be defective, requiring hard disk replacement

### Check Total Inspection

The server state described above is output at once

### Check Setup Config

- Check for any missing basic settings
- How to check sensor and node status through CLI command

How to Check Network Sensor Status:

```
genian# show enforcer
interface | mode | active | local | request | strict | max
bond0.100 | 2 | OFF | ON | OFF | OFF | 10
bond0.101 | 2 | OFF | ON | OFF | OFF | 10
```

### How to Check Node Status:

```

genian# show nodeinfo filter [IP address]
 IP | MAC | device | sta | up | age | idle |
↔expire | noderole
 172.29.20.183 | 00:E0:4C:36:0D:F8 | eth0 | 1 | 1 | 1728088 | 5 | -
↔3118306 | Denied by IPAM(10)

ARP Poisoning list
genian# show nodeinfo poisoning [IP address]
IP=172.29.111.55 MAC=00:05:1B:A3:E2:07 IF=bond0.111
TARGET=172.29.111.56 ACTIVE=1 LASTREQ=832 DSTTOXIC=0
TARGET=172.29.111.254 ACTIVE=1 LASTREQ=0 DSTTOXIC=0

```

## 22.2 Network

### 22.2.1 Network Sensor is not displayed in Web Console

#### Symptom

The Network sensor is not visible in Web Console.

#### Cause

- After the network sensor is installed, it registers with the policy server using port 443.
- If registration communication between policy server and network sensor fails, the sensor will not be recognized, and it will not be shown in the Web Console.

#### Resolution

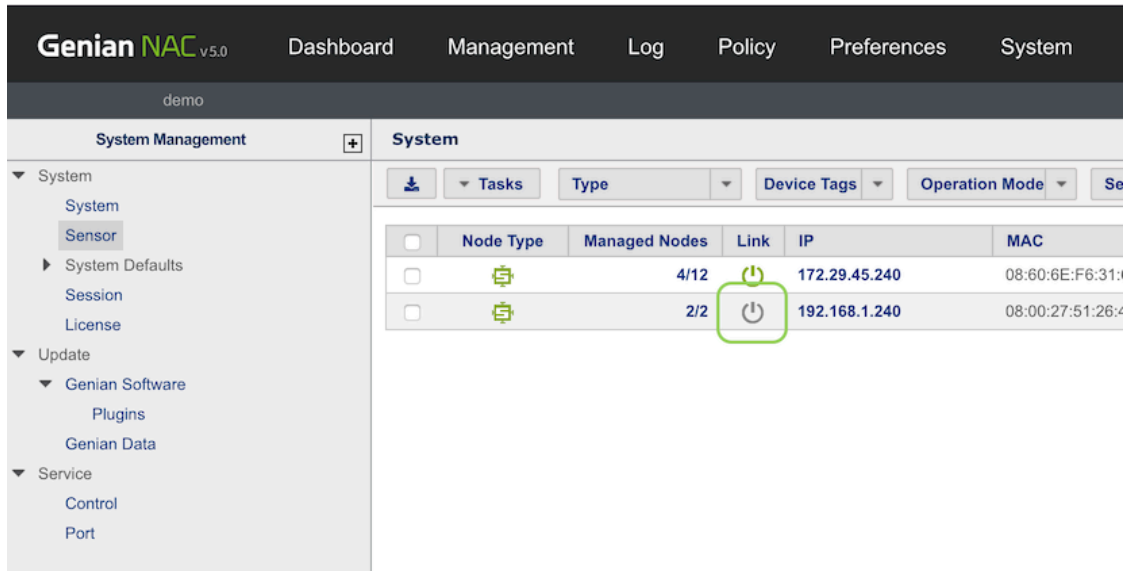
##### Check Connectivity

- Verify communication path between Policy Server and Network Sensor on port 443. Ensure necessary exceptions on firewalls or other appliances.
- Through SSH on the Policy Server and Network Sensor, inspect traffic using the command: `tcpdump -i eth0 host [Policy server or network sensor IP]` (If accessing Policy Server console, use Network Sensor IP for tcpdump host IP, and vice-versa)

### 22.2.2 Sensor link state is displayed as Down

#### Symptom

Sensor link state is displayed as Down in the node management or sensor management screen.



**Cause**

The network sensor periodically sends a keep-alive packet to the policy server to inform that it is operating normally. If this packet is not forwarded to the policy server, the link status is displayed as Down.

**The keep-alive packet communicates on the following ports:**

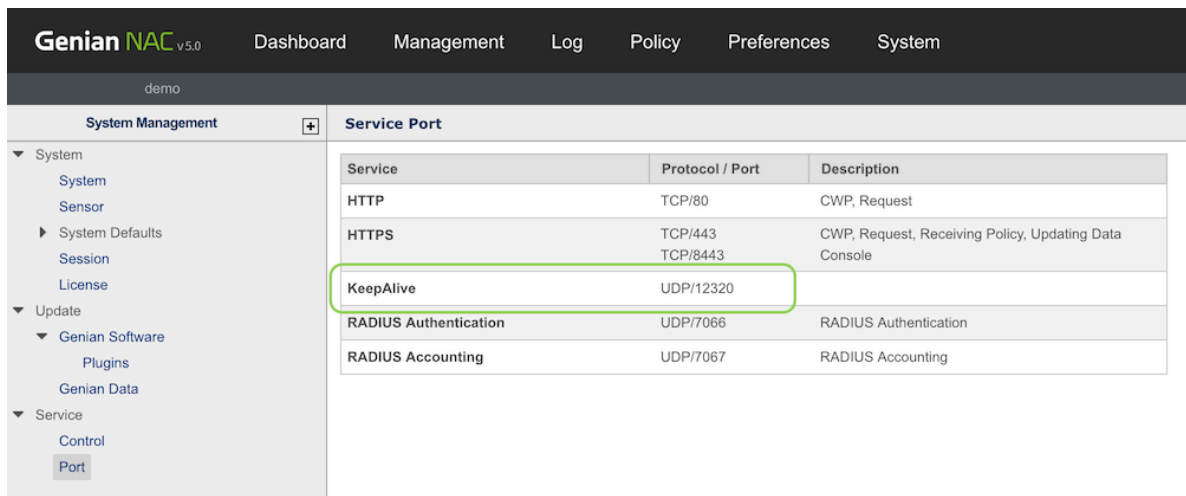
**On-Premises**

Allow for UDP / 3870 ports

**Cloud-managed**

(Varies)

Go to **System > Service > Port** and allow port in **Keepalive** section



## Resolution

In this case, the following should be confirmed:

1. The network sensor is turned on.
2. A communication path exists between policy server and network sensor on the keep-alive port. Ensure necessary exceptions on firewalls or other appliances.
3. Through SSH on the Policy Server, inspect traffic using the command to see if the keep-alive packet is reaching the policy server: `tcpdump -i eth0 host [Network Sensor IP] [keep-alive port]`, to check for keep-alive packet.

### 22.2.3 Network Sensor is displayed as Failsafe

#### Symptom

The Network Sensor is displayed as Failsafe in the Node management or Sensor management.

#### Cause

The Network Sensor periodically sends a UDP keepalive packet to the Policy Server, which will reply in the same session with an acknowledgement. If there is a Policy update, the Policy Server will notify the Sensor in the acknowledgement.

If the Sensor is made aware of new policy information, it will attempt to start a TCP session with the Policy server over HTTPS on port 443. If this TCP session fails to initiate 5 times, the Sensor status will display as Failsafe.

#### Resolution

##### Check Connectivity

- Verify communication path between policy server and network sensor on port 443. Ensure necessary exceptions on firewalls or other appliances.
- Through SSH on the Policy Server and Network Sensor, inspect traffic from the other component using the command: `tcpdump -i eth0 host [source IP]`

##### Check Network Sensor Interface Status

- Through SSH on the Network Sensor, enter the command: `show interface eth[#]`
- Default interface is eth0.

## Check Policy Server / Network Sensor Debug

Using SSH on the Policy Server and Network Sensor follow the steps below:

```
genian> en
genian# @shell
Genians$ Cat /disk/data/logs/system/centerd | grep "ERRMSG=SOAP"> network_err
Genians$ Cat ./network_err | grep [Policy Server or Network Sensor IP Address] 443
```

### 22.2.4 Running Genian Agent is not Detected in WebUI

#### Symptom

The node is currently up, and the agent is running, but the agent is marked as down in the Web Console.

#### Cause

The Genian Agent sends a keep-alive packet to the Policy Server once every two minutes to let you know its operational status.

The policy server changes the agent's operation status to "no action" by default when it does not receive the keep-alive packet from the Genian Agent for 10 minutes.

The following situations can disrupt this keep-alive packet resulting in a false down status:

1. Packet control in a firewall between Policy Server and Genian Agent.
2. A PC's antivirus solution preventing Genian Agent process from sending data.
3. The Agent is not properly generating the keepalive packet.

#### Resolution

##### Checking communication between Policy Server and Genian Agent

- Using SSH on the Policy Server and Network Sensor follow the steps below:

```
genian> en
genian# @shell
Genians$ tcpdump -i eth[interface number] host [Node IP address] [keep-alive port]
```

Example syntax: `tcpdump -i eth0 host 10.10.10.245 24378`

##### If no traffic keep-alive traffic is detected:

- Verify communication path between policy server and agent on the keep-alive port. Ensure necessary exceptions on firewalls or other appliances.
- (Windows) Enable local logging to determine that the agent is generating and sending the keepalive packet.

- In the Registry, find HKEY\_LOCAL\_MACHINE\SOFTWARE\Geni\Genian\Option or HKEY\_LOCAL\_MACHINE\SOFTWARE\WOW6432Node\Geni\Genian\Option
- Set `DWORD:DebugPrint (1)`

**If keep-alive traffic is detected:**

- There may be a problem with the Agent installation or Policy Server
- Use the Syscollect function on the Policy Server to send info to Genians engineers.
- Obtain logs from Agent and send to Genians engineers.

See: *Genian ZTNA log collection method*

## 22.2.5 Agent is Installed but not Running

### Symptom

The Genian Agent is showing as installed in the "Programs" section of an endpoint but it is not shown as running in the processes or services. It is not shown as installed in the Web Console.

### Cause

The Genian Agent sends a keep-alive packet to the Policy Server once every two minutes to let you know its operational status.

The policy server changes the agent's operation status to "no action" by default when it does not receive the keep-alive packet from the Genian Agent for 10 minutes.

The following situations can break the installation of the agent and render it inoperable:

1. Proper installation of agent is not possible due to hard disk problems. there may be associated error logs in the Web Console for Data Corruption.
2. An agent deployed via GPO may partially uninstall due to Node policy settings for "**Deleting Agent Not Running**"

### Resolution

#### Check Node Policy Settings for Agent Deletion

- Navigate to the last known node identity for the device, and check the "**Deleting Agent Not Running**" setting for the node. If the node has not been detected by the policy server for longer than the time specified, the agent has been uninstalled. The program registry itself preserved upon the agents deletion in GPO Deployments.

#### Check Agent File Integrity Logs

- Check the main Web Console Logs section for Agent Data Corruption
- Use the Syscollect function on the Policy Server to send info to Genians engineers.
- Obtain logs from Agent and send to Genians engineers.

See: *Genian ZTNA log collection method*

## Reinstall Agent

- In all cases, reinstalling the agent (Standard Install or GPO based) has the potential to fully restore the agents function.
- If data corruption problems persist, check your operating system and device hardware, and contact Genians Support.

## 22.2.6 502 Proxy Error

### Symptom

Information in the Web Console is not up to date, and the error message `ERRMSG='Error 502 fault: SOAP-ENV:Server [no subcode] "HTTP/1.1 502 Proxy Error"'` is present in the logs.

### Cause

- In large networks, the information takes time to be sent from the Sensor, to the Policy Server. This may exceed the default timeout values for connection and data transmission.

### Resolution

#### Increase the timeout values

1. Access the Policy Server by CLI
2. Check the timeout values using the **show configuration** command.
3. Enter Global configuration mode using the **conf t** command.
4. Increase the timeout values for connection and data transmission.
5. Wait for the new configuration to save.
6. Exit the command line.

```
genian> en
genian> show configuration
genian# conf t
genian(config)# management-server connection-timeout [value in seconds]
genian(config)# management-server data-timeout [value in seconds]
genian(config)# exit
Genians# exit
```



## 22.2.7 Switch is showing a macflap error

### Symptom

The switch you have installed a Genians Network Sensor to is reporting a mac flap involving the port that the sensor is connected to.

### Cause

The Network Sensor sends a spoofed Virtual MAC as part of its internal AP detection mechanism, which occasionally results in a mac flap.

For more info see: *Detecting Internal SSID*

### Resolution

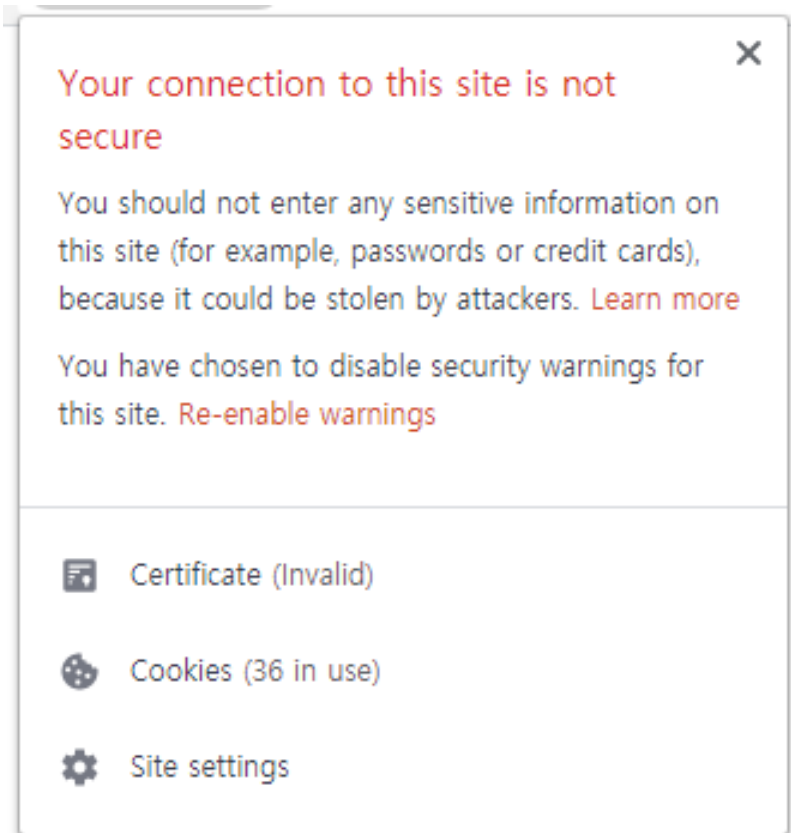
This feature can be disabled.

1. Log in with an Administrative account.
2. Go to **Preferences** in the top panel
3. Navigate to the **WLAN** section.
4. Under **Internal AP Detection** change **Virtual MAC** to **Off**
5. Click **Update**

## 22.2.8 How to solve SSL Certificate error

### Symptom

The SSL certificate error "Your connection to this site is not secure" occurs when a web browser can't verify the SSL certificate installed on a site



### Cause

- SSL certificates have a validity period. After this period has passed, browsers display a warning on the webpage, signifying that the SSL certificate expired (or invalid).

### Resolution

Uploading public certificate to resolve cert error

#### If you have your own certificate:

- Log in to the ZTNA Web Console
- Go to **Preferences > General > Certificate**
- Upload your own certificate
- Go to **System > Service > Control**
- Restart Web Console

#### If you need certificate:

- Log in to the ZTNA Web Console
- Go to **Preferences > General > Certificate > SSL Certificate**
- Enter Common Name, Country Code, Organization, Email to generate CSR
- Get certificate (.PEM) from Certificate Authority (such as VeriSign, Thawte, GeoTrust)

- Upload your new certificate
- Go to **System > Service > Control**
- Restart Web Console

---

**Note:** Please restart web service (httpd) after uploading certificate

---

## 22.3 Configuration

### 22.3.1 Node is not displayed in Web Console

#### Symptom

Case 1: None of the nodes except the Network Sensor are visible in the network subnet where the Network Sensor is installed.

Case 2: Only some nodes are visible while other active nodes are not detected.

#### Cause

Genian ZTNA can not scan nodes when the switch port configuration is mismatched with the Sensor interface settings.

Additionally, remote device/node discovery can be impacted when Radius Accounting, endpoint agent, or external API are not functioning properly.

#### Resolution

##### Switch

- Ensure that the port Genian ZTNA is on is properly configured to access the VLAN(s) you wish to monitor.
- Only Standard access ports (untagged) and 802.1Q Trunk (tagged) ports are supported by Genian ZTNA.

##### Network Sensor

- Check the interface settings by accessing the command line and using the command `show interface eth[#]`
- Be aware that interface eth0 can only function when attached to an access port or in the presence of a native VLAN on a trunk port.
- All tagged VLAN traffic can only be seen by a defined sub interface on that VLAN. For configuration, see: [Adding And Deleting Network Sensors](#)
- Try to ping resources on the subnet from the network sensor to ensure a communication path exists.

##### If using a Virtualized Sensor

- Ensure your hypervisor is properly configured to interface with the network and your switches. Hypervisors frequently require non-standard configurations to communicate across a LAN, or to accept traffic from a trunked interface.
- Refer to: [Installing Genian ZTNA](#) , under "**Prepare Network Connection.**"

## Endpoint Agent

- Without the presence of a Sensor, the agent may be used to register nodes.

See:

- *Installing Windows Agent*
- *Installing macOS Agent*

## RADIUS

- Without the presence of a Sensor, RADIUS Access-Request packets may be used to register nodes.

See RADIUS Section:

- *Authentication using RADIUS (802.1x)*

## API

- Without the presence of a Sensor, REST API may be used to register nodes.

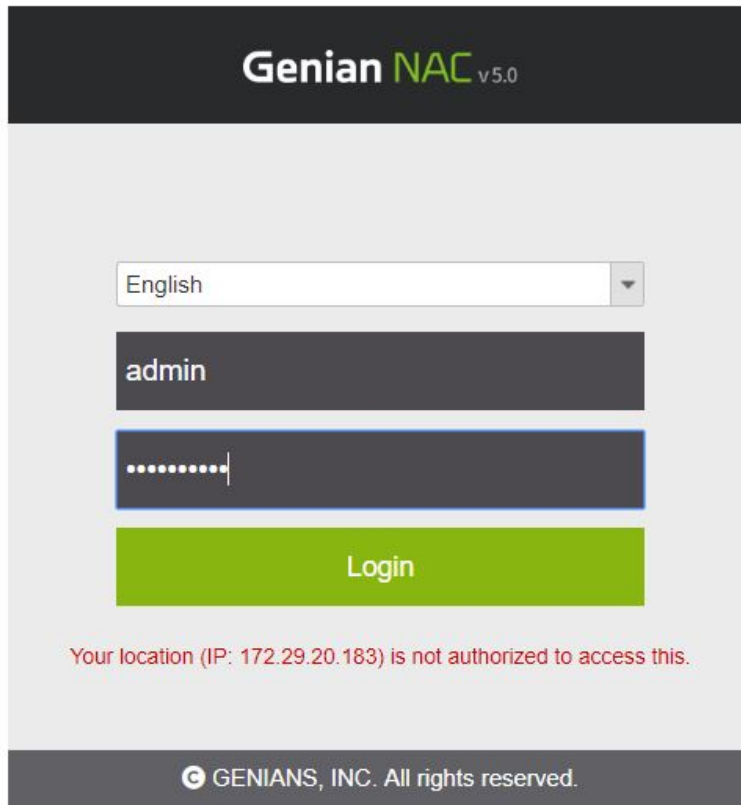
See:

- *API Guide*

## 22.3.2 Web Console login Failed

### Symptom

Authentication fails, and the message "Your location is not authorized to access this" is displayed.



### Cause

- The Policy Server controls access to Web Console with an Access list, which is specific to each administrative account.
- Access List is managed by a SuperAdmin account under "Web Console IP", under the administrator tab of each individual account.
- If the administrator's IP address is not in the "Web Console IP" list, the administrator can not access Web Console.

### Resolution

Verify that you have another account to login to Web Console with User Management modify permissions.

#### Next:

- Login to the WebConsole
- Navigate to Management > User > Click the User that you try login > Click the Administrator tab
- Confirm that the target IP is included in "Web Console IP1"
- Add IP address if IP address is not included. Hosts, subnets or 0.0.0.0/0 for all are accepted values.

If you do not have a login account for the Web Console:

- Follow the below steps, as shown in the code box.
- Login to Policy Server Console directly or through SSH.

- Enter Configuration mode.
- Allow your current IP access the the Policy Servers internal Data-Server.
- Set a password for the Data-Server.
- Enter shell mode.
- Authenticate to access the Mysql database.
- Update the allowed IP for the desired admin account.

```
genian> en
genian# conf t
genian(config)# data-server access-list [IP accessing console]
genian(config)# data-server password [Password]
genian(config)# exit
genian# @shell
Genians$ mysql -p[Password] -A ALDER
Genians$ update ADMIN set ADM_ALLOWIP = '0.0.0.0/0' where ADM_ID = 'admin'
Genians$ exit
```

### 22.3.3 SSH Login Failed

#### Symptom

SSH connection attempt fails with "Connection refused" message

#### Cause

- For security reasons, SSH connection is only allowed from designated IP addresses.
- If there is no IP address in the setting, the connection will not be established.

#### Resolution

##### Add Approved SSH Source IP

1. Go to System in the top panel.
2. Click the desired appliance's IP Address.
3. Click the Appliance tab.
4. Put into the IP Address in Approved SSH Source IP 1 or 2.
5. Click Update.
6. Check if SSH connection is available.

## 22.4 Operation

### 22.4.1 Lost Console Password

#### Symptom

The password for the Console has been lost.

#### Cause

Administrators can manage many solutions and neglect password management.

#### Resolution

**The Console password can be changed via the Web Console.**

1. Log in with an Administrative account.
2. Go to System in the top panel
3. Check the "checkBox" of the Policy Server IP Address.
4. Click the Tasks > Change CLI Password > Enter a new CLI Password to Reset Password.

### 22.4.2 A problem in which the node is assigned the wrong policy due to platform false positives

#### Symptom

Nodes that were defined as blocking exceptions due to node type conditions detected in the enforcement policy are assigned to a different policy and blocked.

#### Cause

The condition for the Node Group that corresponds with the Blocking Exceptions Enforcement Policy is based on Node-Type. If the detected platform of the node changes, it may no longer meet the conditions of the blocking exceptions Node Group and Enforcement Policy. The detected platform may change over time as more scans are conducted by the sensor, or the behavior of the node changes.

#### Resolution

Detected node types and node platforms may experience intermittent typos, or innaccurate detection. Therefore, the condition `detected is equal to` is not appropriate as a condition of exception handling policy.

If you want to use node-type conditions for defining blocking exceptions, you should use conditions such as `node type - Admin-Confirmed is equal to` and `node type - is - defined by Administrator`.

Method 1: To use exception group conditions as `node type - Admin-Confirmed is equal to` (recommended)

1. Go to **Web Console > Management > Status & Filter > Node Type** and select the node type to define the exception.

2. Select the upper left check box of the list screen to check the check box of all nodes in the list.
3. Select **Choose Task > Node and Device > Edit Node Fileds**.
4. Admin-Confirmed Node Type Item and Admin-Confirmed Platform` Check the item and click the bottom modify button.
5. Repeat the process with other node types if desired.
6. In the **Preferences > General > Node > Detection** topic, change the **Auto-Confirm Detected Platform** option to **On**.
7. Go to the **Enforcement Policy** menu and select the node group criteria for the exception handling policy **NodeType > Admin-Confirmed is equal to** condition to add the node type to define the exception.
8. If you have added all node types, click the 'Update' button and click the **Apply** button at the top of the screen to apply the policy.

**Attention:** Verified node types and platforms are field values that mean information verified by the administrator **Status & Filter > Change Management** If the administrator does not check and change them directly in the **Node Details** screen, the administrator does not change them. The first detected platform and node type are maintained information due to setting number 6.

Information that detects a node's platform and type differently than before can be monitored in the **Management > Status & Filter > Change Management** menu and the Dashboard widget **Detected / Admin-Confirmed Conflict**.

Method2: To use an exception group condition as the node type - is - defined by Administrator

1. Go to **Web Console > Management > Status & Filter > Node Type** and select the node type to define the exception.
2. Select the upper left check box of the list screen to check the check box of all nodes in the list.
3. Select **Choose Task > Node and Device > Edit Node Fileds**.
4. Check the New Node Type item, select the node type to be assigned, and click the **Save** button at the bottom.
5. Repeat the process with other node types if desired.
6. Go to the **Enforcement Policy** menu, add the node group conditions of the exception handling policy **node type > is > defined by Administrator** conditions, click the **Update** button, and click the **Apply Policy** button at the top of the screen to apply the policy.

**Attention:** If the group condition is defined as node type - is - defined by Administrator, any node type that is defined by an administrator will be added to the group, regardless of the node type.

In case of manually specifying node type, the node type will not be updated due to scanning, so it is possible to set up a policy with the detected is equal to, which will group nodes based on their originally detected type/platform.

The newly registered nodes must also be monitored to specify the node type to avoid accidentally blocking nodes that you intend to exempt from blocking.

Method 3: Use exception node group criteria as existing type/platform and disable scanning for the node(s)

1. Go to **Web Console > Management > Status & Filter > Node Type** and select the node type to define the exception.



2. Select the upper left check box of the list screen to check the check box of all nodes in the list.
3. Select **Task > Node and Device > Edit Node Options**.
4. Check the **Node Platform / Open Port Scan** item, select the **Off** option, and click the **Save** button at the bottom.

**Attention:** If you set node scanning scan OFF, scanning to that node is not performed. This does not result in node detection information renewal, which does not cause node type changes.

You must continue to perform these settings on newly added nodes that you wish to block.

### 22.4.3 Cisco Switch-port Information Is Not Showing

#### Symptom

Switches are visible but but the switch ports are not visible in node management, node info or the switch management views.

#### Cause

If using SNMPv3 , some IOS versions may require you to configure the snmp-server group to view all contexts you wish to monitor.

#### Resolution

In this example, the SNMP group used to gain switch visibility is not authorized to view the VLANs assigned to the switch ports. To gain visibility of the switch ports, the group must be given privilege for the contexts. (VLANs)

#### View Contexts

```
switch>en
switch#>conf t
switch(Config)>show snmp context
vlan-1
vlan-2
vlan-3
```

#### Enable Access

```
switch>en
switch#>conf t
switch(Config)>snmp-server [groupname] v3 priv context vlan-1
switch(Config)>snmp-server [groupname] v3 priv context vlan-2
switch(Config)>snmp-server [groupname] v3 priv context vlan-3
```

## 22.4.4 Blocked Nodes are not redirected to CWP page

With all systems utilizing Captive Portal technology, there are some inherent issues that are present due to the underlying protocols and functionality associated with a Captive Portal environment. This document will discuss the most common issues and available workarounds.

### Symptom 1

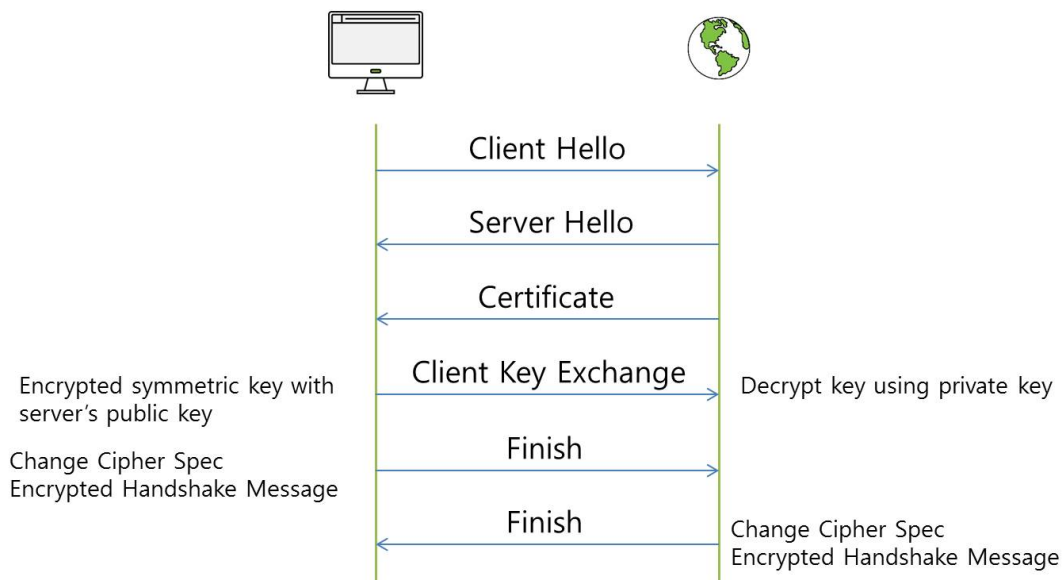
#### Certificate Warnings

The first issue is certificate warning messages being displayed to the end user upon a Captive Portal redirect. Language may vary but typically a message similar to "Your connection is not private" may be displayed to the end user as a warning. This issue is well known in Captive Portal environments and is the expected behavior.

#### Cause 1

The cause of this issue is the technology that is used during a Captive Portal redirect for an HTTPS website.

The diagram below depicts the flow when a host accesses an HTTPS website when no Captive Portal is present:

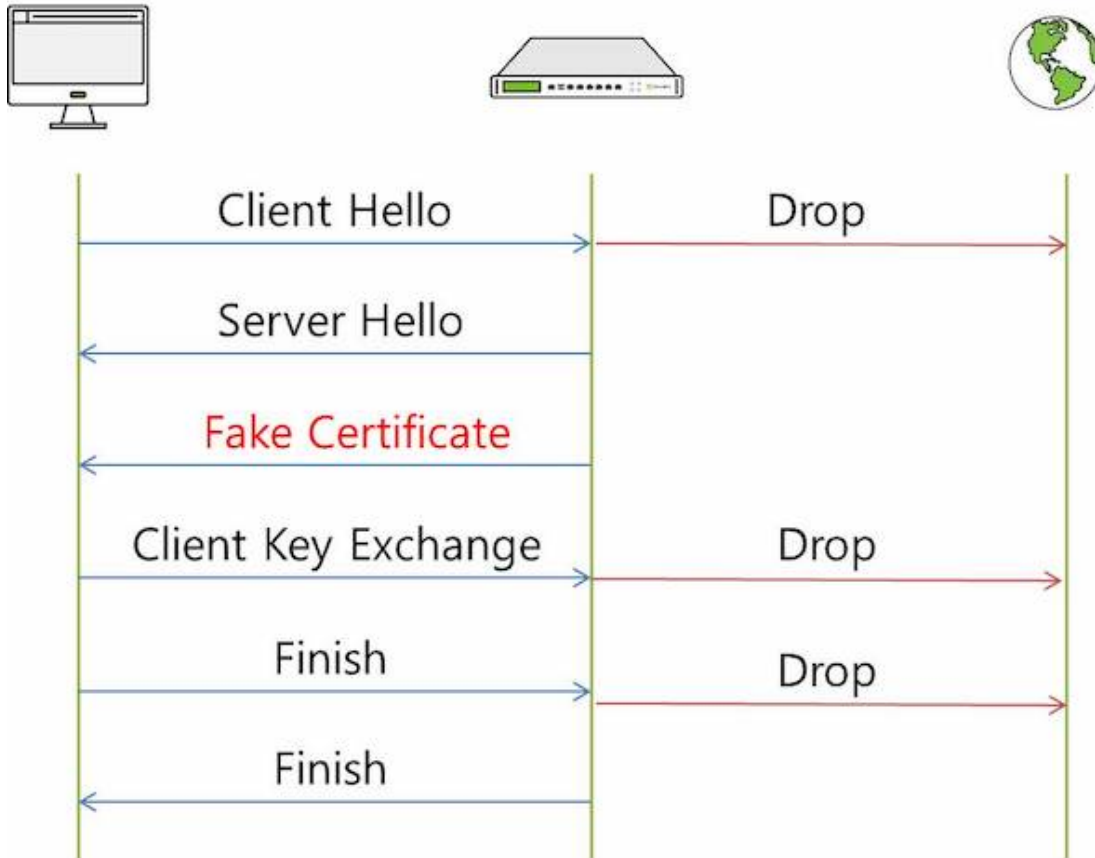


HTTPS communication requires intercommunication between the Web Server and the PC for encrypted communication before creating a cryptographic session.

1. Client hello: PC notifies Web Server of HTTPS communication request
2. Server Hello, Certificate: The server passes the certificate to the client, the client determines that the certificate is a trusted certificate
3. Client Key Exchange: The client sends the pre-master-secret key to the Web Server, Symmetric key sharing
4. Finish: After the end of the negotiation process, communication is exchanged by a symmetric key exchange

After that, encrypted communication is established between the PC and Web Server using the encrypted channel.

For comparison, the diagram below depicts the flow when a host accesses an HTTPS website when a Captive Portal is present:



The important point here is that the server certificate is transmitted to the CA certificate (FAKE Certificate) of the Captive Portal system so that the encrypted communication is not connected to the original target Web Server, but instead the session is established with the Captive Portal Web Server.

### Resolution 1

For the reasons listed above, end users must acknowledge the certificate warning, typically by clicking “Continue” before being redirected to the Captive Portal page.

Most modern operating systems now have built-in Captive Portal detection capability. Windows 10 Captive Portal Detection, Apple Captive Network Assistant and Android Connectivity Manager are all examples of this feature. These features function by sending out HTTP requests to various URLs pre-defined at the OS level to determine if the device is behind a Captive Portal. If no response is received, it is assumed the device is behind a Captive Portal. At that point, the operating system will automatically invoke an HTTP request using the default browser. Because the request is HTTP and not HTTPS, Captive Portal redirection occurs without any issues.

Captive Portal detection in general is not a perfect science, however, ensuring all packets are blocked the moment a device connects results in a higher probability of Captive Portal detection functioning properly, thereby bypassing the issue of certificate warnings. Genian ZTNA is constantly improving features and a new feature is being implemented which should ensure that the majority of the time endpoint device Captive Portal detection is triggered. This document will be updated with additional information when the feature is available.

## Symptom 2

### HSTS Websites – Browser Does Not Allow Redirect

What is HSTS? At a high level HSTS (HTTP Strict Transport Security) is a policy that, when enabled, forces a browser to use an HTTPS connection over a HTTP and allows for the SSL certificate to be cached on the browser for a predetermined length of time. With HSTS enabled, clients are protected from protocol downgrading, man in the middle attacks (which is what a Captive Portal redirection is) and cookie hijacking.

### Cause 2

Most modern browsers (Google Chrome, Mozilla Firefox, Microsoft Edge) come preloaded with a list of sites supporting STS (Strict Transport Security). Once enabled a timeout will be sent with the HTTPS header that contains a HSTS TTL “Strict-Transport-Security: max-age=31536000” (one year). The certificate received from the site will be honored until the timeout expires. Future attempts to access the site will reference the certificate and, if the certificate does not match, the browser will not allow the connection to site to be established. For users behind a Captive Portal, this is where they reach a dead end because accepting a certificate warning will not allow them to proceed.

### Resolution 2

For users visiting an HSTS website behind a Captive Portal the only option is to browse to a non-HSTS website. Therefore, when enabling a Captive Portal for the first time in a new environment, it is key to communicate to end users to visit a particular website (perhaps the organization’s website as long as it is not HSTS) if they are unable to access the other websites. This will allow users to be redirected to a captive portal properly. Some organizations even setup a specific page for this purpose (onboard.company.com, register.company.com, etc) and notify users in advance.

## Symptom 3

### CWP redirection fails in environments using Proxy Server

### Cause 3

Captive portals may not be able to provide proper redirection if internal hosts on the network are configured to use a proxy server.

### Resolution 3

By making the proper proxy exceptions on your proxy server, this will ensure captive portal redirection functions properly.

See: *Configuring Captive Web Portal* for info on creating proxy server exceptions.

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## 22.4.5 Changing Sensor Operation Without Web Console Access

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**Note:** This applies to on-premise systems only.

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### Symptom

You are unable to access the Web Console, but need to de-activate Network Sensors in your environment.

### Cause

There are many reasons this may occur, for example:

- Blockage of HTTPS traffic by Genians or another security system
- Failure of the Web Console to properly load

### Resolution

#### Control Sensors through the Policy Server CLI

- Use SSH on the Policy Sever as shown below, and access the shell:

```
genian> en
genian# @shell
Genians$
```

- To STOP sensors, use command `centerd -dfS [Sensor]`
- To stop one sensor, use the command referencing a single sensor IP: `centerd -dfS 10.10.10.100`
- To stop multiple sensors, use the command referencing a multiple sensor IPs(up to 32) separated by comma: `centerd -dfS 10.10.10.100,10.10.20.100`
- To stop all sensors, use the command referencing all sensors: `centerd -dfS all`
- To START sensors, use command `centerd -dfR [Sensor]`
- To start one sensor, use the command referencing a single sensor IP: `centerd -dfR 10.10.10.100`
- To start multiple sensors, use the command referencing a multiple sensor IPs(up to 32) separated by comma: `centerd -dfR 10.10.10.100,10.10.20.100`
- To start all sensors, use the command referencing all sensors: `centerd -dfR all`

## Check Sensors Status through the Policy Server CLI

- Type `exit` to exit the shell mode and re-authenticate.
- To show sensors, use command `show sensor [option]`
- Use the available options to filter results by sensor status: `all`, `active`, `passive`, `unknown`

## 22.4.6 ARP Enforcement does not block network access

### Symptom

A node which should be blocked from network access by an Enforcement Policy still has network access even though the Enforcement Policy is enabled and the associated Sensor is set to Enforcement Mode, and the local config on the sensor shows that the node is being blocked.

### Cause

- Some IDS/IPS or EDR solutions may detect and block the ARP Enforcement action of the sensor, because it is incorrectly identified as a network attack.

### Resolution

#### Add Exceptions for Genian ZTNA in conflicting Security Products

To resolve the issue, make an exception for the Sensor IP(s). Depending on the configuration of your enforcement policies, and your other network security solutions, additional exceptions may be required.

Example exception: [ESET Endpoint Security](#)

## 22.5 System

### 22.5.1 Web Console Error Page

#### Symptom

Error page appears when clicking specific menu in WebConsole:



## Cause

This can happen if there is an error in the Java process that supports the link between the Web APP and the Policy Server Database.

## Resolution

- Follow the below steps, as shown in the code box:
- Log in to the Policy Server console directly or by SSH.
- Enter Configuration mode.
- Enter shell mode.
- Use the `tail -f` command to display the most recent contents of the error log file in real time.
- Attempt to reproduce the error message by performing the action that created the error in the Web Console.
- Check for error logs to appear in the console. Document and share with Genians engineers.

```
genian> en
genian# @shell
Genians$ tail -f /disk/data/logs/tomcat/catalina.out
```

## 22.5.2 Compliant Node is Blocked

### Symptom

In Enforcement Policy, the node is assigned Perm-all authority, but its network communication is blocked. In the Web Console, the policy appears correctly applied to the node, but the policy is not actually applied.

### Cause

When a policy assigned to a node changes, the Policy Server instructs the Network Sensor to change the policy status of the node. In some cases the Network Sensor may not receive or act upon this input.

### Resolution

#### Check Connectivity

- Verify communication path between Policy Server and Network Sensor on port 443. Ensure necessary exceptions on firewalls or other appliances.
- Through SSH on the Policy Server and Network Sensor, inspect traffic using the command: `tcpdump -i eth0 host [Policy server or network sensor IP]` (If accessing Policy Server console, use Network Sensor IP for `tcpdump` host IP, and vice-versa)

## Checking Network Sensor Policy

You can view which Enforcement Policy the network sensor is applying to a node through the Command Line Interface.

- Enter the terminal for the Network Sensor and use the command `show nodeinfo filter [Node IP Address]`
- Check if "noderole" is properly assigned to the node.

## Check Policy Server and Network Sensor Logs

The Policy Server houses its internal logs in a file called **centerd**, while the Network Sensor uses a file called **sensord**. These files can be monitored to see if the node role have seen changed.

- Follow the below steps, as shown in the code box.
- Log in to the Policy Server or Network sensor console directly or by SSH.
- Enter Configuration mode.
- Enter shell mode.
- Use the `tail -f` command to display the most recent contents of the error log file in real time.
- Attempt to make a policy change to a node through the Web Console.
- Check for error logs to appear in the console.

```
genian> en
genian# @shell
```

### On the Policy Server:

```
Genians$ tail -f /disk/data/logs/centerd
```

Example node role logs from centerd:

```
Jul 17 16:06:26 Genians centerd[5788]: DBG|rolemgr.cpp|1720| 8015| Role Assign
↪Node=10.10.10.245 MAC=08:00:27:28:C9:1E NLVALID=1 StartBy=Changing IPAM Policy
↪QuickCheck=1491340468 Join=0

Jul 17 16:06:26 Genians centerd[5788]: DBG|rolemgr.cpp|1500| 8015| Role Assign Node.
↪ADDR=10.10.10.245 MAC=08:00:27:28:C9:1E NLVALID=1 StartBy=IPAM compliance status
↪changed.
```

### On the Network Sensor:

```
Genians$ tail -f /disk/data/logs/sensord
```

Example node role logs from sensord:

```
Jul 17 16:15:22 Genians sensord[6340]: DBG|eventframe.|1067| 8068| RECV Event NOTIFY
↪ SRC=10.10.10.4 DST=10.10.10.4 SEQ=6406 ID=NODEROLECHANGED(19) FLAGS=0 KERN=0

Jul 17 16:15:22 Genians sensord[6340]: DBG|eventframe.|1067|17655| SEND Event NOTIFY
↪ACK SRC=127.0.0.1 DST=10.10.10.4 SEQ=6406 ID=NODEROLECHANGED(19) FLAGS=1 KERN=1
```



## 22.5.3 Wrong Link State Displayed for Node

### Symptom

The link status showing in the Web Console is incorrect.

### Cause

- The Network sensor routinely confirms nodes link status. If many nodes are being managed by a sensor, there may be a delay time before the nodes link state is updated.
- This process can be impacted if there is a breakdown in communication between the Node and the Network Sensor, or the Policy Server and the Network Sensor.

### Resolution

#### Check Communication from the Sensor to the Node

- Follow the below steps, as shown in the code box.
- Log in to the Policy Server console directly or by SSH.
- Enter Configuration mode.
- Enter shell mode.
- Use the `arping -I` command to initiate a mac address request for that nodes IP, sent from the defined interface. this will serve to test communications from the Sensor to the Node.
- Check for errors appear in the console. Document and share with Genians engineers.

```
genian> en
genian# @shell
Genians$ arping -I [interface number] [IP Address]
```

Example Syntax: `arping -I eth0.10 192.168.10.10`

#### Gather System Logs

- There may be a problem with communications from the Policy Server to the Sensor.
- Use the Syscollect function on the Policy Server to send info to Genians engineers.

See: *Genian ZTNA log collection method*

## 22.5.4 Recovering from database crashes

Every Genian ZTNA's system configures, policies, collection stored on database. If a database problem occurs by H/W or S/W error, you can recover database by using backup file.

### Symptom

Web Console login failure, policy assignment and policy renewal failure, setting lookup failure, etc.

### Cause

Crashes occur in databases due to various problems. H/W problems Internal database engine problems, setup problems, etc.

### Resolution

Recover the database using the database information in the backup file.

```

Step 1 If the backup file is inside the equipment you want to restore, navigate to
↳Step3.

genian> en
genian# @shell
!!! WARNING !!! - SHELL PROMPT IS JUST FOR MAINTENANCE.
!!! WARNING !!! - USE AT YOUR OWN RISK.
Genians$ cd /disk/data/DBBACKUP
Genians$ rz [Backup File]
Genians$ ls
drwxr-xr-x 2 root root 4096 May 11 09:43 ./
drwxr-xr-x 36 root root 4096 Apr 21 13:50 ../
-rw-r--r-- 1 root root 193863371 May 11 09:43 ALDER-93180-20210511-094236.
↳tar.gz

Step 2 Connect to the gnlogin CLI.

genian$ gnlogin

Step 3 Verify the backup files at the time you restore them.

genian# show backup

Backup lists

ALDER-93180-20210511-094236

Step 4 Restore the database (select Database Only under Options).

genian# do restore [Backup File Name]
Are you sure to restore configuration files (y/N): n
Are you sure to restore agent files (y/N): n
Are you sure to restore custom files (y/N): n
Are you sure to restore database (y/N): y
Do you want to start service after restore? (Y/n): y

```

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Step 5 If the system is restarted and the database restore is successful, all systems will **function** normally.

## 22.5.5 Upgrade button is not displayed

### Symptom

ZTNA provides an upgrade button in the web console. (**System > Genian Software**) but the upgrade button may not be displayed for several reasons.

### Cause

- Your Server is already running the latest released version.
- Your current software version is Beta (5.0.XX-B)

### Resolution

- You can download the software when the next version is released
- You have to manually upload Release (5.0.XX-R) image once and click the manual upgrade button. (**System > Tasks > Update Specific System Image**)

## 22.5.6 Check and change the various network ports in use on the system

### Symptom

Genian ZTNA system service is not running normally.

### Cause

Problems can arise if normal communication for service execution fails.

### Resolution

#### Check the network port used by the system

You can check the port information for each service used by the Genian ZTNA system.

You can check whether communication between each configuration is performed normally by referring to the information during deployment.

1. Go to **System** on the top panel.
2. Select **Port** from the **Service** item on the left.

| Item                  | Explanation                                                                                             | Remarks      |
|-----------------------|---------------------------------------------------------------------------------------------------------|--------------|
| HTTP                  | The ports used by the CWP and IP Request systems are displayed.                                         | Changeable   |
| HTTPS                 | Ports used by CWP, IP Reuest system, policy reception, and node information update are displayed.       | Changeable   |
| HTTPS                 | The port used for WebUI access is displayed.                                                            | Changeable   |
| KeepAlive             | The port used for event transmission/reception and Sensor/agent operation status check is displayed.    | Unchangeable |
| Syslog                | The port used for the syslog listening service is displayed.                                            | Unchangeable |
| Radius Authentication | The port used for Radius user authentication is displayed.                                              | Changeable   |
| Radius Accounting     | The port used for Radius Accounting listening is displayed.                                             | Changeable   |
| Distribution Server   | The port used by operating system update search and download, and agent file distribution is displayed. | Unchangeable |
| Data Server           | The port used for the Database service is displayed.                                                    | Changeable   |
| Log Server            | The port used for log search and cluster service is displayed.                                          | Changeable   |
| SSH                   | The port used for the product remote CLI access service is displayed.                                   | Changeable   |

### Changing the network port used by the system

If using a known port is determined to be a problem, use that function to change the port.

### Changing HTTP service port

In Genian ZTNA system, services provided through HTTP protocol include Captive Web Portal (CWP) and IP Request system, and services are provided through known port 80.

The HTTP port in use can be changed through the following process.

---

**Note:** HTTP services are provided only by the Policy Server.

---

### Changing the Policy Server Port

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the *management-server http-port* command.

```
genian(config)# management-server http-port 20000
```

## Changing HTTPS service port

Services provided through HTTPS protocol in Genian ZTNA system include Captive Web Portal (CWP), IP Request system, policy reception, and node information update.

The service is provided over the known port 443, and you can change the port through the following process.

**Note:** HTTPS port is applied to policy server, network sensor, and agent by using policy reception and node information update function.

## Changing the Policy Server Port (HTTPS)

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the `management-server https-port` command.

```
genian(config)# management-server https-port 22000
```

## Changing the network sensor port (HTTPS)

1. Connect to the network sensor in CLI Mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Use the `node-server port` command to change to the same port as the policy server.

```
genian(config)# node-server port 22000
```

## Changing the web console connection port

The Genian ZTNA system supports the administrator's Web UI access through a custom HTTPS port. The service is provided over port 8443 and you can change the port with the following process.

### Changing the Policy Server Port (WebUI)

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the `management-server mgmt-port` command.

```
genian(config)# management-server mgmt-port 28443
```

### Changing the Radius Authentication Service Port

When using a Genian ZTNA device as a Radius Authentication Server, you can change the port. The service is provided through the known port 1812, and you can change the port with the following process.

1. Go to **Preferences** in the top panel.
2. Select **RADIUS Server** from the **Service** item on the left.
3. Enter **Authentication Port** in the **Authentication Server** settings.
4. Click the **Update** button.

### Changing the Radius Accounting service port

When using the Radius Accounting service on a Genian ZTNA device, you can change the port. The service is provided through the known port 1813 and you can change the port with the following process.

1. Go to **Preferences** in the top panel.
2. Select **RADIUS Server** from the **Service** item on the left.
3. Enter **Accounting Port** in the **Accounting Server** settings.
4. Click the **Update** button.

### Changing the Data Server service port

When using database service on Genian ZTNA device, you can change the service port. The service is provided through the known port 3306 and you can change the port by the following process.

---

**Note:** Separate work is required for individual database configuration and replication configuration.

---

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the `data-server port` command.

```
genian(config)# data-server port 23306
```

## Changing the LOG Server service port

When using Log Server for Genian ZTNA device, you can change the log search port and port for cluster configuration. The service is provided through known ports 9200 (log search) and 9300 (cluster), and the port can be changed through the following process.

**Note:** Separate settings are required for Log Server individual configuration and cluster configuration.

### Changing the Log Server Port (Log Search)

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the `log-server http-port` command.

```
genian(config)# log-server http-port 29200
```

### Changing Log Server Port (Cluster)

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the `log-server tcp-port` command.

```
genian(config)# log-server tcp-port 29300
```

### Changing the SSH service port

You can change the port for SSH remote access to the Genian ZTNA device. The service is provided through the port 22 used, and the port can be changed through the following process.

1. Connect to the policy server in CLI mode using SSH. (Refer to *CLI Console* for SSH connection method.)
2. Enable to Globe configuration Mode.

```
genian> enable
genian# configure terminal
```

3. Change the port using the `ssh port` command.

```
genian(config) # ssh port 23910
```

## 22.6 Interworking

### 22.6.1 Windows Update Failure

#### Symptom

Windows does not update on node.

#### Cause

- Genian ZTNA can control the windows update process in the following ways:
  - Which Updates will be required.
  - Update Scheduling.
  - Defining which location that the Windows checks for available updates (Genian ZTNA, Genian Proxy, or Microsoft Servers).
  - Where the Windows downloads the updates from (Genian ZTNA, or Microsoft Servers).
  - This level of customization introduces many different points of failure.

#### Resolution

##### Check the Windows Update Logs

The exact nature of an update failure can be determined through the log files.

For more Information, See:

- <https://docs.microsoft.com/en-us/windows/deployment/update/windows-update-logs>
- <https://docs.microsoft.com/en-us/windows/deployment/update/windows-update-errors>

### 22.6.2 LDAP Search Failed - Operations Error

#### Symptom

LDAP authentication integrations or synchronization fails.



## Cause

LDAP errors can have many causes.

## Resolution

Checking the error messages to determine the cause of the failure.

- Refer to: <https://ldap.com/ldap-result-code-reference/>

## 22.6.3 "Secret key mismatched" error occurs testing external RADIUS integration

### Symptom

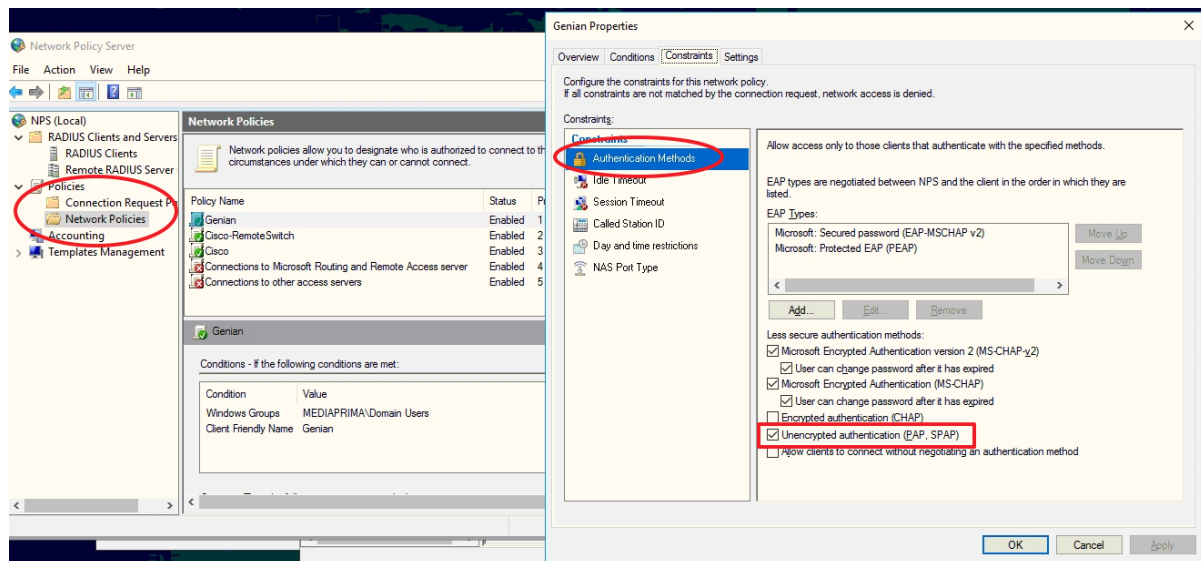
secret key mismatched error occurs when testing an integration of Genian ZTNA with an external RADIUS (Windows) server, using the built in test feature in the Web Console.

### Cause

If the Genian ZTNA Policy Server requests authentication with an unencrypted(PAP) method, but the RADIUS server does not allow non-encrypted authentication requests, the authentication is rejected and the authentication test window displays this error message.

### Resolution

Enable the RADIUS server to accept unencrypted authentication requests





## 23.1 What's New in Genian ZTNA 6.0

### 23.1.1 New UI Themes

- Improved unity of UI Components, Controls, and Elements
- Brighter and flatter UI by increasing UI color brightness

### 23.1.2 Improved UX

- Node management/switch management detailed screen in one screen
- Added Node Management Grid View
- Information synchronization UX improvement
- Node group setting UX improvement
- Dashboard UX Improvements
- Security consent page support in CWP design template

### 23.1.3 Cloud infrastructure support

- Policy server operation in the cloud
- Added Collector to collect information of cloud resources
- Added CLI-based cloud control function in control policy
- Added cloud security policy management function

### 23.1.4 Remote work infrastructure Support

- Added ZTNA Gateway/Client function using SSL-VPN
- Added FIDO (Biometric) authentication for MFA
- Always on ZTNA function to always use only ZTNA connection

### 23.1.5 Zero Trust Security policy support

- Permission policy added for intuitive role-specific permission assignment during micro segmentation
- Improved to use dynamic node group for the destination network of permission object
- Provides ZTNA Gateway for cloud-based security gateway configuration
- Provides IPSec tunneling that securely connects ZTNA Gateway and head office/branch offices

### 23.1.6 Traffic/Application Visibility and Control

- Netflow collection and application identification for packets passing through ZTNA
- Control at the application level when granting permission through control policy
- Provides Secure Web Gateway (Proxy) for URL-based application control

### 23.1.7 IP Mobility Support

- Standard VxLAN-based IP Mobility support via network sensor
- Private IP static via Always on ZTNA (using same IP at work/home)

### 23.1.8 Enhanced user authentication

- FIDO (Biometric) authentication for administrator, Captive Web Portal and Agent
- Google Authenticator Support for Captive Web Portal
- Hardware security chip TPM EK-based device authentication

## 23.2 Current Version

### 23.2.1 Genian ZTNA v6.0.19 Release Notes (JAN 2024)

Release Date: 2024/1/5, Last Updated: 2024/1/15 Description The last (R) mark is an additional release patch item.

## New Features and Improvements

| Key    | Description                                                                                                                           |
|--------|---------------------------------------------------------------------------------------------------------------------------------------|
| #25545 | Added device control feature to Linux Agent.                                                                                          |
| #25552 | Added User authentication management feature via Linux Agent CLI.                                                                     |
| #25751 | Improved search result output when searching for a username in IP/Device owner settings.                                              |
| #26131 | Improved support for DKNS redundancy by switching to K8s StatefulSets.                                                                |
| #26189 | Added macOS Agent DNS option to operate the network separately when connecting to ZTNA.                                               |
| #26251 | Added a check to limit the use of special characters or Hangul in the site name when creating a ZTNA site.                            |
| #26281 | Improved Webconsole to enable the return button when moving links in the node admin menu.                                             |
| #26311 | Improved login page to better support various authentication UIs in ZTNA.                                                             |
| #26539 | Improved UI of management details page by moving the Edit node details button to the bottom of the screen.                            |
| #26559 | Improved processing of period settings on the user registration page so that they are set according to the administrator's time zone. |
| #26667 | Added the ability to batch add node actions to multiple policies in the web console.                                                  |
| #26717 | Added support for Ubuntu 22.04 version and upgraded to OpenSSL 3.0 version.                                                           |
| #27099 | Improved to check active status of nodes when assigning DHCP IP in global DHCP environment.                                           |
| #27108 | Improved the ability to save macOS Agent ZTNA user access information.                                                                |
| #27109 | Improved macOS Agent to display the connection window if ZTNA reconnection fails after waking from sleep mode.                        |
| #27133 | Improved Dashboard sensor map, now color-coded to match the sensor operation status.                                                  |
| #27163 | Added a feature to periodically check whether the sensor daemon in the ZTNA product is deadlocked.                                    |
| #27197 | Added Linux Agent network share folder plugin.                                                                                        |
| #27199 | Improved quick search by adding more fields available for search criteria.                                                            |
| #27214 | Changed the Timezone default in System Preferences to the administrator WebBrowser Timezone.                                          |
| #27229 | Added a required field indicator to the Temporary User IP application password field.                                                 |
| #27225 | Improved support for Howry Virobot Security 1.0 products in the Antivirus Information Collection plugin.                              |
| #27260 | Improved Linux Agent e-signatures to be signed in an executable state.                                                                |
| #27313 | Improved the web console application management list to show set conditions.                                                          |
| #27315 | Added device keepalive and sorting to the web console dashboard Center/Sensor device status widget.                                   |
| #27315 | Added device Up/Down status display and sorting function to the web console dashboard center/sensor device status widget.             |
| #27348 | Improved error page output to prevent providing unnecessary information.                                                              |
| #27357 | Improved SAML IDP IP-Port output format for SAML authentication integration settings.                                                 |
| #27364 | Improved support for TLSv1.3 in ZTNA Client.                                                                                          |
| #27447 | Improved Linux Agent software information collection to collect software installed via snap in addition to debian package format.     |
| #27455 | Updated Hauri ViRobot API used by the Windows Agent antivirus data collection plugin.                                                 |
| #27456 | Added an approval reason column to the IP Application System application result.                                                      |
| #27465 | Improved macOS Agent UI of action plugin detailed settings screen.                                                                    |

## Issues Fixed

| Key    | Description                                                                                                                                        | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26180 | Fixed an issue where the bottom back button would activate even when nothing was selected in the web console.                                      | 6.0.10            |
| #26900 | Fixed an issue that was causing errors when an IP that is being used by another MAC was assigned when the host made a DHCP DISCOVERY request.      | 6.0.0             |
| #27064 | Fixed an issue where if the device control plugin version changes after booting in safe mode, it was controlled only by the previous policy.       | 6.0.0             |
| #27080 | Fixed an issue where the number of nodes in the authority control policy did not match the count in the control policy widget.                     | 6.0.7             |
| #27120 | Fixed an issue where removing a registered item from the Node Policy Node Action Assignment screen would not display in the Assignable list.       | 6.0.17            |
| #27173 | Fixed an issue where the access device/access port information in the node list for a switch was not deleting in Web Console Switch Management.    | 6.0.0             |
| #27179 | Fixed an issue where sensors failed to receive IPM policies when using DKNS, causing them to not operate normally.                                 | 6.0.0             |
| #27220 | Fixed an issue where logging in to the web console via the Mobile NAC Monitor app would fail if the password contained %.                          | 6.0.14            |
| #27227 | Fixed an issue where the WebConsole login page was outputting a JavaScript console error log.                                                      | 6.0.7             |
| #27236 | Fixed an issue where the text on the CWP session expiration page was output to the system locale.                                                  | 6.0.0             |
| #27238 | Fixed an issue where the cloud version ID/PASSWORD find phrase would display in the English ID/PASSWORD find phrase.                               | 6.0.0             |
| #27247 | Fixed an issue where no results were displayed when moving the node list through the WMI collection information widget link.                       | 6.0.0             |
| #27371 | Fixed an issue where the same standalone plugin with no coverage could be assigned to multiple policies.                                           | 6.0.0             |
| #27396 | Fixed an issue where the contents of the Last Operation Time column are displayed incorrectly when exporting the node list.                        | 6.0.16(LTS)       |
| #27405 | Fixed an issue where the wireless LAN policy could not be modified after copying.                                                                  | 6.0.0             |
| #27413 | Fixed an issue where other language settings were not reflected when editing only local language items in the Multilingual Message component.      | 6.0.0             |
| #27420 | Fixed an issue where adding a sensor to a sensor group was not immediately reflected when the node management scope limit was set to sensor group. | 6.0.0             |
| #27426 | Fixed an issue where the web console color selection palette did not display the image correctly.                                                  | 6.0.7             |
| #27429 | Fixed an issue that prevented license information from being read when using OpenSSL 3.0.                                                          | 6.0.0             |
| #27433 | Fixed an issue where changes were not reflected when modifying the WebConsole application object.                                                  | 6.0.7             |
| #27435 | Fixed an issue where the Add button in the application settings would not click when the screen size of the web console browser was small.         | 6.0.11            |
| #27439 | Fixed an issue where the dashboard screen would not display correctly if the administrator's login ID was not in English.                          | 6.0.0             |
| #27442 | Fixed an issue where sorting of the Last Operation Time column on the Web Console node management list screen did not work.                        | 6.0.16 (LTS)      |
| #27443 | Fixed an issue where the antivirus real-time monitoring status was reported as inactive after Windows Agent's PC was rebooted.                     | 6.0.0             |

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Table 2 – continued from previous page

| Key    | Description                                                                                  | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------|-------------------|
| #27482 | Fixed an issue where group copy failed when copying a wireless LAN group on the web console. | 6.0.0             |

## 23.3 Previous Version

### 23.3.1 Genian ZTNA v6.0.18 Release Notes (NOV 2023)

Release Date: 2023/11/14, Last Updated: 2023/11/14 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                       |
|--------|-----------------------------------------------------------------------------------------------------------------------------------|
| #25533 | Added an option to clean cache information in Policy Server Agent Windows Update settings.                                        |
| #26325 | Improved the httpd startup script to check whether procmond is running and execute httpd.                                         |
| #26482 | Improved to now compress department codes with a hash function to prevent the column size from exceeding size limit when storing. |
| #26545 | Upgraded to GNOS kernel version 5.15.0                                                                                            |
| #26575 | Added the ability to turn on/off the IP management system.                                                                        |
| #26907 | Improved so you now have the ability to set multiple URLs for the search filter webhook setting URL in the web console audit log. |
| #26913 | Added Exosphere support to Windows Agent antivirus data collection plugin.                                                        |
| #26921 | Added external authentication integration plugin to replace Windows Agent GnExlib.                                                |
| #26929 | Improved logs to include USB information collected by the Windows Agent hardware information collection plugin.                   |
| #26942 | Improved the logging in Tomcat debug when modifying device information in node details.                                           |
| #26955 | Improved to better retrieve and execute ES account information when executing the sysinspect script.                              |
| #27068 | Added the ability to search items in the node group condition item list.                                                          |
| #27077 | Improved the event socket not configured log when restarting the sensor.                                                          |

#### Issues Fixed

| Key    | Description                                                                                                                                      | Affects Version/s |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25805 | Fixed an issue where the IP Change Prohibited (Designated IP range)-Single IP Violated icon was not displayed in the Web Console IP Matrix View. | 6.0.0             |
| #26742 | Fixed an issue where the disable NMAP TCP SCAN setting in the Network Sensor node information scan setting was not being applied.                | 6.0.0             |
| #26777 | Fixed an issue where the policy last modified time was not updating when modifying the WebConsole node policy/control policy settings.           | 6.0.0             |
| #26859 | Fixed an issue where the storage device information was not collected if the Linux Agent was not partitioned.                                    | 6.0.0             |
| #26864 | Fixed an issue where the Windows Agent's information collection plugin was intermittently not updating.                                          | 6.0.0             |
| #26904 | Fixed an issue where the Risk Detection icon was not displayed in the web console node list.                                                     | 6.0.13            |

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Table 4 – continued from previous page

| Key    | Description                                                                                                                                              | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26933 | Fixed an issue where the calendar component used in the web console input field were displayed in only English.                                          | 6.0.0             |
| #26951 | Fixed an issue where the virus treatment log entries were not being recorded when using the antivirus information collection plugin.                     | 6.0.0             |
| #26992 | Fixed an issue where the agent plug-in was operating based on the time zone of the policy server instead of the local node time.                         | 6.0.0             |
| #27017 | Fixed an issue in where the log was not saved when changing the log server credentials before the log server was started.                                | 6.0.0             |
| #27040 | Fixed an issue where if the date information collected from the agent was 'unknown' or 'no information' it was displayed as '1970-01-01'.                | 6.0.0             |
| #27048 | Fixed an issue where the login screen and area would overlap when entering more than 3 lines for the web console login screen banner.                    | 6.0.8             |
| #27057 | Fixed an issue where tomcat was displayed as tomcat9 in the log history when restarting tomcat, even though it was not tomcat9.                          | 6.0.15            |
| #27059 | Fixed an issue where a tag name could be entered with a space when adding a tag in the web console.                                                      | 6.0.0             |
| #27111 | Fix an issue where the job title synchronization failed if there was no job title information in the local DB when performing job title synchronization. | 6.0.6             |
| #27119 | Fixed an issue where longer names used for the URL button of the Windows Agent authentication window were being cut off.                                 | 6.0.0             |
| #27148 | Fixed an issue where the failure count was not resetting after a successful login when using 2FA for web console login.                                  | 6.0.0             |

### 23.3.2 Genian ZTNA v6.0.17 Release Notes (OCT 2023)

Release Date: 2023/10/4, Last Updated: 2023/10/4 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                         |
|--------|---------------------------------------------------------------------------------------------------------------------|
| #25714 | Added option to set Security Pledge expiration date.                                                                |
| #26133 | Added Linux security configuration plugin to Linux Agent.                                                           |
| #26152 | Improved to detect HTTPS web-based applications via compose environment SWG.                                        |
| #26263 | Improved diagram view layout within the webconsole node details.                                                    |
| #26284 | Improved auto-renewal of self-signed certificates.                                                                  |
| #26312 | Improved node bulk registering process to better handle csv duplicate entries.                                      |
| #26330 | Added the ability to use GenianNAC user DB for Keycloak authentication.                                             |
| #26360 | Added Linux Agent ZTNA connection manager two-factor authentication feature.                                        |
| #26407 | Improved the display of policy servers in the IP management matrix view.                                            |
| #26410 | Improved error messaging in case error occurred in SP after SAML authentication-linked Idp authentication.          |
| #26412 | Improved to switch to login screen when administrator session is forcibly terminated.                               |
| #26468 | Improved the number of list output per page of the node-detailed software/history management list to be changeable. |
| #26473 | Improved to validate input values when setting up SNMP Agent.                                                       |
| #26488 | Added option to create an agent shortcut icon on the Windows desktop.                                               |

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Table 5 – continued from previous page

| Key    | Description                                                                                                                                             |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------|
| #26491 | Improved to output the contents of the web console node management description column to match the column size.                                         |
| #26524 | Improved RestAPI functionality to handle locale as an Accept-Language value when calling key configuration information.                                 |
| #26538 | Removed animations from dashboard widgets.                                                                                                              |
| #26544 | Applied the latest GNOS kernel patch (5.10.181).                                                                                                        |
| #26547 | Improved UI of the web console popup window for IP application processing reason input.                                                                 |
| #26555 | Added gnlogin command to be able to check IP information cached in sensor when using FQDN in network object.                                            |
| #26564 | Added support for ARM-based NanoPI H/W so it can be used as a network sensor.                                                                           |
| #26611 | Added authentication flow to force Agent installation when logging into Keycloak is required.                                                           |
| #26612 | Improved how the current location in the web console dashboard sensor map is accessed.                                                                  |
| #26627 | Improved to prevent CWP from re-displaying the authentication screen after agent has already authenticated.                                             |
| #26640 | Improved WebConsole so that when adding multiple NodeGroup conditions the previous item is selected when continuing to add.                             |
| #26653 | Improved so when changing the properties of a web console node, only one item in the same category can be selected.                                     |
| #26665 | Added 'Available OS Type' option when assigning agent action when creating policy.                                                                      |
| #26681 | Improved UI by adding split screen function in the grid mode of web console node management page.                                                       |
| #26734 | Improved the error message displayed when an incorrect date is entered for the useful life start date/end date in the web console equipment properties. |
| #26753 | Improved the error message displayed when entering a semicolon at the end of a query string in the web console query report.                            |
| #26775 | Added the ability to view the full contents of Linux Agent pop-up messages.                                                                             |
| #26803 | Added audit log for shared folder control via plugin.                                                                                                   |
| #26827 | Improved the popup message of the Start Backup Now button in the web console.                                                                           |
| #26875 | Improved the message output to CWP when hostname is restricted.                                                                                         |
| #23544 | Removed support for the Genian API.                                                                                                                     |

## Issues Fixed

| Key    | Description                                                                                                                                  | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #24713 | Fixed an issue where an unused daemon startup error occurred when changing the policy server to a sensor-only image.                         | 6.0.0             |
| #25759 | Fixed an issue in Korean version where an English message would display when entering values that did not fit format in calendar.            | 6.0.0             |
| #25815 | Fixed an issue where there was no response when approving or rejecting an IP new/returning application while the approval popup was enabled. | 4.1.3 6.0.1       |
| #26235 | Fixed an issue where macOS Agent failed to get the motherboard information of new model (M2 series) macs.                                    | 6.0.0             |
| #26369 | Fixed an issue where the date display was incorrect when searching for the previous year in the Node/Log/Wireless LAN report.                | 6.0.0             |
| #26439 | Fixed an issue where the application object condition, Application Category, was not allowed in the Secure Web Gateway.                      | 6.0.14            |
| #26447 | Fixed an issue that caused web console to lag when performing the reapply node policy command for a specific node.                           | 5.0.0             |

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Table 6 – continued from previous page

| Key    | Description                                                                                                                                                                | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26463 | Fixed an issue where syscollect, a system information collection tool, might not work in a closed network environment.                                                     | 6.0.0             |
| #26464 | Fixed an issue that caused images to appear broken when uploading and previewing images from the web console announcement creation screen.                                 | 6.0.0             |
| #26476 | Fixed an issue where an error page was displayed when running Check performance results by action menu.                                                                    | 6.0.0             |
| #26487 | Fixed an issue where an error page was displayed when there was no value in the CVE detail view.                                                                           | 6.0.0             |
| #26529 | Fixed an issue that caused an error page due to incorrect sensor's IP/MASK setting in the Network Sensor IP Utilization Top status widget.                                 | 6.0.0             |
| #26558 | Fixed an issue where the network address of a network object was not modified when only the TTL of the FQDN option was modified.                                           | 6.0.0             |
| #26560 | Fixed an issue where the search was not performed when AND was present in the search term in the node management screen.                                                   | 6.0.0             |
| #26573 | Fixed an issue with the RestAPI where if import data in a language different from the session, the specified language setting parameter name is incorrect.                 | 6.0.0             |
| #26578 | Fixed an issue where the UserID and Department Name columns were blank in the IP Usage Application result search.                                                          | 6.0.0             |
| #26581 | Fixed an issue where the loading bar was intermittently not displayed in the web console.                                                                                  | 6.0.0             |
| #26586 | Fixed an issue where the Apply Change Policy button would not display when copying a nodegroup and would instead apply immediately.                                        | 6.0.0             |
| #26588 | Fixed an issue where the tab position was last when adding a new dashboard tab in the web console but random after refresh.                                                | 6.0.0             |
| #26605 | Fixed an issue where some information was missing from the audit log to the wireless LAN AP detection/wireless LAN AP information change log.                              | 6.0.0             |
| #26610 | Fixed an issue where English was displayed on agent installation regardless of the user's default locale setting.                                                          | 5.0.0             |
| #26652 | Fixed an issue where the IP start/end time of the data imported through node attribute import in the node management list had a 9 hours difference from the entered value. | 6.0.0             |
| #26673 | Fixed an issue where the MAC was blocked when the IP usage time expired for a node set to Do not change (designated IP subnet) if the new node policy MAC was blocked.     | 6.0.0             |
| #26680 | Fixed an issue where the last line word of the password blacklist file was not restricted.                                                                                 | 6.0.0             |
| #26689 | Fixed an issue where the node IP was incorrectly recorded in the debug recorded when removing the Do Not Change setting.                                                   | 6.0.0             |
| #26692 | Fixed an issue in the webconsole system management software where clicking the upload button without selecting a file would not end the process.                           | 6.0.0             |
| #26721 | Fixed an issue where the verification success audit log was still recorded as an error log when uploading an agent.                                                        | 6.0.1             |
| #26740 | Fixed an issue where modifying information in an application would not be reflected and an error would be displayed.                                                       | 6.0.13            |
| #26746 | Fixed an issue where the description of the two-factor authentication grace period in a RADIUS policy was incorrect.                                                       | 6.0.11            |
| #26771 | Fixed an issue where the center daemon process would not run normally when setting the policy server node-server enable through gnlogin.                                   | 6.0.0             |
| #26801 | Fixed an issue that was causing primefaces default system errors to display in the web console.                                                                            | 6.0.0             |
| #26815 | Fixed an issue where the contents were not displayed when selecting a node group in the web console node port.                                                             | 6.0.0             |

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Table 6 – continued from previous page

| Key    | Description                                                                                                                                            | Affects Version/s |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26836 | Fixed an issue where a department information search error occurred in the node-group condition if a department name with the tag 'department' existed | 6.0.0             |
| #26843 | Fixed an issue where the agent package was created twice during the initial startup of the center daemon, causing a delay in startup time.             | 6.0.0             |
| #26845 | Fixed an issue where the agent icon was retained when deleting an agent on a node assigned the Windows Update node action.                             | 6.0.0             |

### 23.3.3 Genian ZTNA v6.0.16 Release Notes (SEP 2023)

Release Date: 2023/9/18, Last Updated: 2023/9/18 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                          |
|--------|----------------------------------------------------------------------------------------------------------------------|
| #26187 | Improved the visitor search on the user registration page to include the administrator's email.                      |
| #26371 | Added deadlock monitoring to periodically check for deadlocks and restart the sensor daemon.                         |
| #26381 | Added USER_COMPANY column to the user management list.                                                               |
| #26450 | Improved scrolling functionality to better navigate the node detail history list page.                               |
| #26479 | Improved to unblock blocked nodes when shutting down the device through the network sensor re-boot/poweroff command. |
| #26535 | Improved the WLAN monitoring to run on sensors with DKNS on physical hardware.                                       |
| #26563 | Improved to allow the sensor to manage alias IP subnets without setting alias IP on the network sensor interface.    |
| #26619 | Added option to use NMAP HNAP when performing NMAP scan.                                                             |
| #26644 | Changed the Policy Server CA certificate installation option to ON by default.                                       |
| #26668 | Improved the Enable CWP SSL preference to be On by default.                                                          |
| #26729 | Added AhnLab V3 support to macOS Agent Antivirus Information Collection plugin.                                      |
| #26730 | Improved ZTNA macOS Agent display UI.                                                                                |
| #26792 | Enhanced validation for events received from the policy server.                                                      |
| #26807 | Improved Policy Server/Agent events Push Notification processing.                                                    |

#### Issues Fixed

| Key    | Description                                                                                                                            | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26299 | Fixed an issue where authentication-linked users could log in using a domain address other than the one they use.                      | 6.0.0             |
| #26300 | Fixed an issue where the timezone of CWP device application and alarm message did not match the user.                                  | 6.0.0             |
| #26314 | Fixed an issue where labels were not visible in the IP application if those fields were removed from the IP application list settings. | 6.0.0             |
| #26341 | Fixed an issue where Tibero/Altibase/DB2 databases running user information synchronizations were only getting the ID.                 | 6.0.8             |
| #26354 | Fixed an issue where an unconnected localDB account was displayed when linking authentication.                                         | 6.0.0             |
| #26372 | Fixed an issue where after activating URL Filter, ZTNA Client's web access could not communicate through SWG.                          | 6.0.12            |

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Table 8 – continued from previous page

| Key    | Description                                                                                                                                                                                 | Affects Version/s |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26380 | Fixed an issue where the IP application form was not being downloaded from the IP management system.                                                                                        | 6.0.0             |
| #26382 | Fixed an that was causing a http 400 error to occur when setting or adding an Idp in SAML2 authentication connection.                                                                       | 6.0.0             |
| #26408 | Fixed an issue where the sensor daemon could terminate if a condition that does not belong to the node group was added to the node group.                                                   | 6.0.0             |
| #26425 | Fixed an issue where the condition did not include the parent department when selecting a user department in a nodegroup condition.                                                         | 6.0.0             |
| #26431 | Fixed an issue were if accessing management console from a terminal using a proxy, if two IPs are passed in the http header, the accessible IP was also restricted.                         | 6.0.0             |
| #26432 | Fixed an issue with the incorrect placement of logo in the Windows Agent.                                                                                                                   | 6.0.0             |
| #26459 | Fixed an issue where ZTNA Client Split Tunneling was not working when using the IP static option.                                                                                           | 6.0.11            |
| #26490 | Fixed an issue where the ZTNA connection port would attempt to connect to the default port when using a custom server domain.                                                               | 6.0.15            |
| #26511 | Fixed an issue where the report auto-generation log ID was incorrectly being entered into the web console audit log.                                                                        | 6.0.1             |
| #26551 | Fixed an issue where only the result of the last condition was displayed when checking macOS Agent multiple action performance conditions.                                                  | 6.0.0             |
| #26606 | Fixed an issue in the macOS authentication window where logins were not performed when pressing the Enter key once.                                                                         | 6.0.0             |
| #26643 | Fixed an issue in the Windows Agent where even if you removed the agent self-authentication window action policy, the previously displayed authentication window continued to be displayed. | 6.0.0             |
| #26687 | Fixed an issue where the time in the WebConsole node management last action time column was not displayed in the administrator's timezone.                                                  | 6.0.0             |
| #26751 | Fixed an issue where sensord deadlock was being incorrectly checked.                                                                                                                        | 6.0.0             |
| #26840 | Fixed an issue where some contents of the webconsole node details were not being displayed.                                                                                                 | 6.0.4             |
| #26889 | Fixed an issue where the Self-Sign certificate was not reissued.                                                                                                                            | 6.0.2             |
| #26898 | Fixed an issue where html was being displayed as text in the WebConsole dashboard license warning message.                                                                                  | 6.0.15            |
| #26901 | Fixed an issue where building with an incorrect endianness was preventing policy updates.                                                                                                   | 6.0.5             |
| #26930 | Fixed an issue where the search filter was not working when the audit log alarm transmission failure message was disabled.                                                                  | 6.0.16            |

### 23.3.4 Genian ZTNA v6.0.15 Release Notes (JULY 2023)

Release Date: 2023/7/12, Last Updated: 2023/7/12 Description The last (R) mark is an additional release patch item.

## New Features and Improvements

| Key    | Description                                                                                                                            |
|--------|----------------------------------------------------------------------------------------------------------------------------------------|
| #22197 | Added OAUTH 2.0 ROPC RADIUS integration for use in 802.1x environments.                                                                |
| #25540 | Changed the validity of Self-sign CA certificates deployed through the agents to 10 years.                                             |
| #25782 | Added Linux Agent password validation plugin.                                                                                          |
| #26031 | Added motherboard manufacturer, CPU name, and CPU manufacturer to the node group conditions.                                           |
| #26037 | Improved user application detail screen to include display pop-up showing the reason for rejection.                                    |
| #26043 | Improved SNMP Agent settings to allow selection of authentication and encryption methods.                                              |
| #26139 | Improved policy server to collect ZTNA Client session information of the sensor in HA environments.                                    |
| #26148 | Improved so that node information can be updated immediately if the device is different from the existing node when the agent logs on. |
| #26171 | Improved CWP notices so that administrator usernames are not posted.                                                                   |
| #26183 | Improved so that the end-of-use date no longer defaults to the same day when applying for an IP.                                       |
| #26186 | Improved event key mismatch logs by adding the authentication key validity log type in the operating system update.                    |
| #26192 | Added the ability to download Service Provider Metadata as XML in WebConsole SAML authentication connection settings.                  |
| #26196 | Added VXLAN connectivity between gateways for IP Mobility implementation.                                                              |
| #26254 | Improved to better display ZTNA Client information on the web console in HA environments.                                              |
| #26279 | Improved UI/UX to the Add widgets menu in the web console dashboard to improve visibility.                                             |
| #26301 | Improved UI/UX of the access allowed IP setting window.                                                                                |
| #26329 | Added the ability to force off the Windows logon screen display setting when controlling the Windows Agent screensaver                 |
| #26348 | Added Title to the Node Blocking Rate status widget when displayed in the control policy list.                                         |
| #26336 | Added the ability to perform RADIUS secondary authentication through an external service.                                              |
| #26462 | Improved the web console login screen to prevent customer information from being displayed in the browser title bar.                   |

## Issues Fixed

| Key    | Description                                                                                                                                                   | Affects Version/s |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25148 | Fixed an issue where the web console smart help was not linking to the related page from some menus.                                                          | 6.0.7             |
| #25916 | Fixed an issue where the number of assignable IPs was reduced after an authentication fallback failed.                                                        | 6.0.14            |
| #26097 | Fixed an issue where export did not work when the Active value of a sensor was abnormal in the web console node management menu.                              | 6.0.0             |
| #26181 | Fixed an issue where the tray icon was not displayed when switching the Linux Agent terminal to an already logged in user in a multi-user environment.        | 6.0.0             |
| #26194 | Fixed an issue where setting the HTTP/HTTPS port change in a multisensor environment would add an unnecessary IPTALBES rule.                                  | 6.0.0             |
| #26204 | Fixed an issue that was causing a 'File read failed. ERRMSG=Is a directory' message when installing Policy Server.                                            | 6.0.0 6.0.15      |
| #26236 | Fixed an issue that was causing the page selection on the node details software list tab not to display correctly.                                            | 6.0.0             |
| #26250 | Fixed an issue in the Linux Agent network information collection plugin where collection was missing if there was an interface with no name or the same name. | 6.0.12            |

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| Key    | Description                                                                                                                                                                  | Affects Version/s |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #26272 | Fixed an issue where authentication was not processed correctly when authenticating with <code>account@domain</code> in the SMTP authentication linking environment.         | 6.0.0             |
| #26280 | Fixed an issue where some sensors were registered as authorized during the re-registration process after deleting a multisensor device.                                      | 6.0.8             |
| #26288 | Fixed an issue where checkboxes were displayed in the list UI after modifying the web console custom field.                                                                  | 6.0.0             |
| #26317 | Fixed an issue that was causing error to occur when adding the same condition to the user/new application option in the usage setting for visitor usage.                     | 6.0.0             |
| #26321 | Fixed an issue where the OS type combo box on the device group screen of the web console was intermittently displayed as an empty value.                                     | 6.0.15            |
| #26335 | Fixed an issue where the tray icon was intermittently not displayed when switching Windows Agent logon users.                                                                | 6.0.0             |
| #26377 | Fixed an issue where batch setting of sensors and modification of operating mode could not be done in the web console system menu.                                           | 6.0.8             |
| #26411 | Fixed an issue where the ulogd debug file could cause low disk space.                                                                                                        | 6.0.0             |
| #26444 | Fixed an issue where Korean search was not available in the software settings window of the Web Console node group condition.                                                | 6.0.14            |
| #26497 | Fixed an issue in the Windows Agent Wireless Connection Manager where connection failed when server certificate verification of wireless profiles (EAP-TTLS) was turned off. | 6.0.7             |
| #26549 | Fixed an issue where dnsmasq daemon would restart intermittently.                                                                                                            | 6.0.12            |
| #26587 | Fixed an issue where the contents of the WebConsole node management department name column were abnormally displayed.                                                        | 6.0.5             |

### 23.3.5 Genian ZTNA v6.0.14 Release Notes (MAY 2023)

Release Date: 2023/5/9, Last Updated: 2023/5/16 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                 |
|--------|-----------------------------------------------------------------------------------------------------------------------------|
| #25045 | Added ability to control through control policy using the collected application information.                                |
| #25204 | Improved Flow logs to record application information when saving.                                                           |
| #25517 | Improved so you can now sort columns in the node list that you previously could not.                                        |
| #25704 | Improved so CWP redirects are possible even when blocked devices are using a proxy.                                         |
| #25882 | Improved option UX of the Linux Agent.                                                                                      |
| #25921 | Improved agent logs in Linux Agent to be compressed on the 10th of every month, and the option to auto delete after 1 year. |
| #25940 | Added agent package creation tool to install Linux Agent and Agent in an offline environment.                               |
| #25959 | Improved logs to record when an IP applied through the IP application system expires and is automatically returned.         |
| #25990 | Added support for User additions/updates through SAML Assertion Attribute.                                                  |
| #25993 | Added the ability to save/restore existing data when updating operational information data.                                 |
| #26105 | Improved readability of node management operation state chart by adjusting the column width.                                |
| #26167 | Upgraded to PostgreSQL 10 version and improved to synchronize Postgres DB information.                                      |
| #26331 | Added multilingual processing and chart time zone settings to dashboard widget settings.                                    |

## Issues Fixed

| Key    | Description                                                                                                                                              | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25944 | Fixed an issue where software updates in the web console were displaying a version lower than the agent's current version.                               | 6.0.0             |
| #25977 | Fixed an issue where an error message, when creating a node group condition, was being cut off.                                                          | 6.0.9             |
| #26023 | Fixed an issue where the certificate expiration date was not recorded in the log when the custom certificate not named ssl.cer.                          | 6.0.0             |
| #26026 | Fixed an issue where the sensor was displayed as down because policy server and sensor time synchronization could not be performed properly.             | 6.0.0             |
| #26027 | Fixed an issue where the Prevent Change (IPM) icon was not displayed when registering as a new node after setting to change prohibition to an unused IP. | 6.0.0             |
| #26099 | Fixed an issue where when manually registering 'IP and User ID' nodes, the pre-registered IP was not being assigned.                                     | 6.0.11            |
| #26102 | Fixed an issue where the tab menu was partially hidden when setting the calendar in the node detail settings.                                            | 6.0.4             |
| #26132 | Fixed an issue where the preset sensor IP could not be changed to another IP in the same subnet from the ZTNA Client settings.                           | 6.0.4             |
| #26138 | Fixed an issue where a node set to password change enforcement policy failed ZTNA Client authentication could not change password.                       | 6.0.0             |
| #26233 | Fixed an issue where if connecting through ZTNA Client, and there were Korean characters in the interface name, the log would not work correctly.        | 6.0.0             |
| #26320 | Fixed an issue where an error occurred when creating a security group policy if the In/Outbound source address had multiple lines.                       | 6.0.3             |

### 23.3.6 Genian ZTNA v6.0.13 Release Notes (MAR 2023)

Release Date: 2023/4/4, Last Updated: 2023/4/4 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                           |
|--------|---------------------------------------------------------------------------------------------------------------------------------------|
| #25035 | Added the option to use Passkey as primary user authentication to CWP page.                                                           |
| #25337 | Added option to search only logs that occurred at a specific time to log search filters.                                              |
| #25501 | Added the option to use Passkey as primary user authentication to the web management console.                                         |
| #25550 | Added info popup to Agent Actions section that lists usage and also added ability to delete policy from the Agent Action page.        |
| #25613 | Added ability to manually define what antivirus data was collected to the Linux Agent.                                                |
| #25630 | Improved Log search to allow bulk call to webhook.                                                                                    |
| #25710 | Added the syslog-ng daemon to the monitoring list of procmond so that it can be restarted when shutting down.                         |
| #25860 | Improved so that when a tag is added the tag descriptions are also recorded in the log.                                               |
| #25874 | Changed the API Status logging cycle from 1 day to 10 minutes to more accurately analyze the policy server's usage status and timing. |
| #26022 | Added related settings to allow REST API calls when using Passkeys authentication.                                                    |

## Issues Fixed

| Key    | Description                                                                                                                                                            | Affects Version/s |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #24674 | Fixed an issue that was causing an error message to appear when assigning a department to a device in the CWP settings when using SSL.                                 | 6.0.0             |
| #25817 | Fixed an issue where the Agent Version Status widget search was adding incorrect search conditions when moving the node list.                                          | 6.0.0             |
| #25846 | Fixed in issue where the 'Automatically include known gateways' setting was not being applied to Ad Hoc Network connection an flagging it as a risk.                   | 6.0.0             |
| #25926 | Fixed an issue where the ARM platform DKNS was not upgrading through WebUI.                                                                                            | 6.0.12            |
| #25936 | Fixed an issue where the 'operate regardless of the management role permission' setting in the Restrict node management Commands section was not working.              | 6.0.0             |
| #25996 | Fixed an issue where site information could not be edited if a cloud sites VPC was deleted remotely.                                                                   | 6.0.2             |
| #26005 | Fixed an issue where files with Korean paths were not uploading when using Genian-Syncer.                                                                              | 6.0.0             |
| #26008 | Fixed an issue that prevented copying of policies from the node group details screen.                                                                                  | 6.0.0             |
| #26019 | Fixed an issue where international SMS transmissions would fail if {_FULLMSG} was included in the search filter alarm.                                                 | 6.0.0             |
| #26020 | Fixed an issue where Printer Info plugin was data without content resulting in empty fields and inaccurate quantities.                                                 | 6.0.0             |
| #26039 | Fixed an issue where if user authentication allowed IP is set, ZTNA client alternative authentication would fails.                                                     | 6.0.0             |
| #26053 | Modified so that ARP poisoning is not performed when the sensor's operation mode is Inline and the range is Global.                                                    | 6.0.0             |
| #26095 | Fixed an issue where ZTNA Client connection option is intermittently disabled.                                                                                         | 6.0.6             |
| #26118 | Fixed an issue where when setting the exclusion of virtual printer some general printers were being incorrectly marked as virtual printers.                            | 6.0.0             |
| #26119 | Fixed an issue where when registering batches in CSV with Windows Agent and wireless LAN control plug-in MAC case comparison errors where causing nodes to be blocked. | 6.0.0             |
| #26160 | Fixed an issue that would cause the integrity check to fail or not work correctly when downloading files using WGET.                                                   | 6.0.0             |
| #26170 | Fixed an issue in the English CWP design template where using special characters in names would cause problems adding/deleting components.                             | 6.0.7             |
| #26198 | Fixed an issue with the macOS Agent Secondary authentication error when connecting to second ZTNA network.                                                             | 6.0.2             |
| #26219 | Fixed an issue where an error would occur when copying a policy if a label was set as an action.                                                                       | 6.0.0             |
| #26242 | Fixed an issue where Linux agents installed on Gooroom OS were displaying Windows icons in the node list in the WEB console.                                           | 6.0.8             |



### 23.3.7 Genian ZTNA v6.0.12 Release Notes (FEB 2023)

Release Date: 2023/2/6, Last Updated: 2023/2/6 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                             |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------|
| #24094 | Added detailed failure reason to the sensor upgrade log.                                                                                |
| #25049 | Added ability to send user popup notifications to the Linux Agent.                                                                      |
| #25440 | Added 'Auto Logout of Unused Nodes' to select unused automatic logout ranges in Node Policy.                                            |
| #25622 | Added a script (monitor-network-traffic.sh) that can check the real-time traffic volume of the sensor interface.                        |
| #25718 | Improved ZTNA Site to better support using the same network assignment on multiple sensors on the ZTNA client.                          |
| #25726 | Added 'ZTNA NAT IP Exception Band' to site settings.                                                                                    |
| #25748 | Added ability to collect nodes monitor information to Linux Agent.                                                                      |
| #25752 | Improved Memory and Monitor widget output.                                                                                              |
| #25762 | Added 'Use virtual network' option to ZTNA Client > Client network settings to be able to choose virtual when on and physical when off. |
| #25866 | Improved ZTNA RADIUS secret settings to take precedence over RADIUS client settings.                                                    |
| #25911 | Improved to allow secondary DNS when settings ZTNA fixed IP.                                                                            |
| #25914 | Added support for ZTNA Client to operate in the ARM architecture environment.                                                           |

#### Issues Fixed

| Key    | Description                                                                                                                                                         | Affects Version/s |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25002 | Fixed an issue where the platform and type of the node registered with the NAT IP node registration function were changed to unknown.                               | 6.0.0             |
| #25675 | Fixed an issue where the Agentless AD SSO function was not working if there is no LDAP authentication setting.                                                      | 6.0.0             |
| #25756 | Fixed an issue where the proxy server settings did not work when the agent execution account in Windows Agent, Web Browser Option Control Plug-in was Local System. | 6.0.0             |
| #25801 | Fixed an issue where the 2-step verification setting screen was displaying on the list of all users.                                                                | 6.0.7             |
| #25859 | Fixed an issue where the sensor malfunctioned if Ubuntu 20.04 kernel version and the module version of the sensor were different.                                   | 6.0.0             |
| #25888 | Fixed an issue where the Google verification code was not being issued when synchronizing Google G Suite information.                                               | 6.0.0             |

### 23.3.8 Genian ZTNA v6.0.11 Release Notes (JAN 2023)

Release Date: 2022/12/7, Last Updated: 2022/12/7 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                                    |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------|
| #24755 | Added Genius update notice to the web management console.                                                                                      |
| #24836 | Added secondary authentication grace time option to the ZTNA-Client.                                                                           |
| #25072 | Improved assigning tags to nodes by adding a table.                                                                                            |
| #25232 | Added descriptive tooltips to items when setting CLI tool commands for control policies.                                                       |
| #25269 | Improved RADIUS policy to now be able to use username as an additional attribute value.                                                        |
| #25506 | Improved macOS Agent operation when switching local user accounts.                                                                             |
| #25564 | Added function to update or newly register a node with the changed information when the Linux Agent and local network information are changed. |
| #25576 | Added an Always Connected ZTNA option to automatically connect the client at any time when using the Windows Agent or ZTNA-Client.             |
| #25579 | Improved node audit records to be deleted together according to the time of audit record cleanup (3 years).                                    |
| #25592 | Added support for fixed IP assignment for ZTNA-Client users.                                                                                   |
| #25623 | Improved ZTNA-Gateway redundancy by allowing multiple sensors to be added to the ZTNA-Client settings of one site.                             |
| #25641 | Improved loading times when adding columns related to services and IP policies in the node list.                                               |
| #25656 | Improved RADIUS logs to include reason for failure instead of just the generic 'user authentication failed'.                                   |
| #25666 | Improved RADIUS log to externally link through audit log filter.                                                                               |
| #25727 | Improved output timestamp when using history command in CLI environment.                                                                       |
| #25731 | Modified the number of nodes in the equipment to be displayed based on the status of all nodes when clicking on node details.                  |
| #25735 | Improved IPAM license status screen to include agent limit.                                                                                    |
| #25741 | Added ability to assign user information to a node during manual node registration.                                                            |

#### Issues Fixed

### 23.3.9 Genian ZTNA v6.0.10 Release Notes (DEC 2022)

Release Date: 2022/12/7, Last Updated: 2022/12/7 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                      |
|--------|------------------------------------------------------------------------------------------------------------------|
| #24820 | Improved audit log screen to show log data usage.                                                                |
| #24968 | Added a back button to the detail page when moving to the node detail information page from another screen.      |
| #25186 | Added log collection scope options (Create, Terminate, Update, Block) in Flow logs.                              |
| #25278 | Added Windows Agent to Microsoft store.                                                                          |
| #25470 | Improved so you can check the history management tab without switching screens when clicking in node management. |

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| Key    | Description                                                                                                                                                |
|--------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #25480 | Improved device name in system management to be more accurate by collecting all storage device information from system information.                        |
| #25494 | Improved Windows Agent password validation plug-in to check for change even when the password is changed directly in Windows instead of through the agent. |
| #25513 | Added the feature to Linux Agent to send version information regardless of whether software information collection action is applied.                      |
| #25567 | Improved Linux Agent network information collection plugin to collect all multi-input IP and DNS settings information.                                     |
| #25625 | Improved New user registration form to mark required fields.                                                                                               |
| #25639 | Improved so when changing the ssh port in the CLI environment the DB reflects change immediately.                                                          |
| #25657 | Improved IPAM Console temporary use section to allow you to add/delete the result item.                                                                    |

### Issues Fixed

| Key    | Description                                                                                                                                                                                                              | Affects Version/s |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25430 | Fixed an issue in Node Management Search where the agent action condition (AgentActionName) was not included in query.                                                                                                   | 6.0.7             |
| #25543 | Fixed an issue where the authentication user icon was not displaying in the node management list when authenticating a user with SAML2.                                                                                  | 6.0.0             |
| #25549 | Fixed an issue where RADIUS audit records were not saved when creating a new site.                                                                                                                                       | 6.0.0             |
| #25553 | Fixed an issue where the XSS-related text in the detailed information was broken when exporting the audit log to excel.                                                                                                  | 6.0.0             |
| #25575 | Fixed an issue where selecting a date through the calendar in the node report search bar would select a different date if the Policy Server timezone and the administrator account's timezone were different.            | 6.0.0             |
| #25604 | Fixed an issue that was disabling/deleting the agent installation message (SystemPolicy_K1) in CWP's message management and on the CWP page.                                                                             | 6.0.0             |
| #25608 | Fixed an issue with Windows Agent and Wired Authentication Manager when using GTC authentication and reconnecting after reboot the authentication was automatically performed without a separate authentication request. | 6.0.0             |
| #25616 | Fixed an issue where the dashboard's default widgets were not being added after site creation.                                                                                                                           | 6.0.1             |
| #25621 | Fixed an issue where adding a login header image in the management console settings would display a blank space instead of the image.                                                                                    | 6.0.7             |
| #25652 | Fixed an issue where an error page would be displayed when clicking on the CVE status widget in the dashboard and then clicking at the bottom of the screen.                                                             | 6.0.0             |
| #25669 | Fixed an issue where the nodes list was not retaining the adjusted column sizes after refresh.                                                                                                                           | 6.0.7             |
| #25671 | Fixed an issue where the Pre-Shared Key could not be obtained from the Hub site when the IPSec setting was changed to Branch site.                                                                                       | 6.0.1             |
| #25723 | Fixed an issue where the iptables rule was not removed after disabling ZTNA IPSec causing NAT to not work properly.                                                                                                      | 6.0.1             |
| #25734 | Fixed issue where hyperlink in Windows Agent notification message would launch Internet Explorer even when Edge was set as default browser.                                                                              | 6.0.4             |
| #25745 | Fixed an issue in the Linux agent file distribution plug-in where even when the distribution option was set to 'execute file' and the execution account to 'Root account' the file was not executed.                     | 6.0.8             |

### 23.3.10 Genian ZTNA v6.0.9 Release Notes (NOV 2022)

Release Date: 2022/11/16, Last Updated: 2022/11/16 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                                                                                   |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #23573 | Windows Agent has improved load balancing when auto-updating agents on a large number of nodes.                                                                                               |
| #24504 | Added compatibility to use Naver Cloud as a Cloud Provider                                                                                                                                    |
| #24705 | Added the ability for the agent to recognize when network communication is blocked and display the captive portal.                                                                            |
| #24841 | Added feature to delete the contents set in sub-items when changing the setting in the custom rule of the Windows Firewall Control Plug-in to All.                                            |
| #25077 | Added alternative SMS and email authentication option in environments where Passkeys cannot be used.                                                                                          |
| #25096 | Improved RADIUS MAC authentication node group check so that it can be compared using Calling-Station-ID.                                                                                      |
| #25134 | Improved Linux Agent to be able to use the essential features through the CLI.                                                                                                                |
| #25212 | Improved so that the checkbox does not appear if the period item is set as a required item on the CWP new user registration screen.                                                           |
| #25231 | Removed overlapping condition 'If MAC is the same' when adding a node group condition.                                                                                                        |
| #25312 | Added Always Connect option feature to Linux Agent, ZTNA Connection Manager action.                                                                                                           |
| #25321 | Added toggle button to setting items section of action policies.                                                                                                                              |
| #25322 | Added last deauthentication time column to the user management view to help distinguish dormant users.                                                                                        |
| #25333 | Improved support for MS EAP-TTLS authentication type in Radius server.                                                                                                                        |
| #25388 | Added help for the 'Allow SSID-Regular Expression' option to the 'Allow SSID' item in the WLAN Control Plug-in.                                                                               |
| #25407 | Improved UI so current date and the selected date can be distinguished when selecting a date using the calendar.                                                                              |
| #25416 | Improved Linux Agent so if the agent and the policy server time zones are different, it is converted and displayed in the time zone of the administrator logged in to the management console. |
| #25438 | Improved filelist process in files used for file synchronization in HA configuration.                                                                                                         |
| #25446 | Improved Sophos support of Linux Agent Vaccine Information Collection Plug-in.                                                                                                                |
| #25479 | Improved to not display html syntax in device application processing notification message.                                                                                                    |
| #25450 | Added Linux Agent feature to restore the settings set as an action when the agent is deleted.                                                                                                 |
| #25457 | Added ability to send messages to the node where the agent is installed using the REST API.                                                                                                   |
| #25496 | Improved macOS Agent's load balancing when auto-updating agents on a large number of nodes.                                                                                                   |
| #25510 | Improved guide message to display when an unsupported site is selected when adding a ZTNA Gateway.                                                                                            |

#### Issues Fixed

| Key    | Description                                                                                       | Affects Version/s |
|--------|---------------------------------------------------------------------------------------------------|-------------------|
| #25081 | Fixed an issue where some device change approvals were not being handled in REST API.             | 6.0.0             |
| #25117 | Fixed an issue where agent-related widgets were not searched when moving the node list.           | 6.0.0             |
| #25159 | Fixed an issue where the header list were not all being deleted when using webhook in log search. | 6.0.0             |
| #25219 | Fixed an issue where Master file were not synchronized to Slave in HA redundancy configuration.   | 6.0.0             |

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| Key    | Description                                                                                                                                                                            | Affects Version/s |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25317 | Fixed an issue where nodes with time object condition were not released from the node group even after the end time.                                                                   | 6.0.0             |
| #25340 | Fixed an issue that prevented the macOS Agent operating system information collection plug-in from collecting the installation date.                                                   | 6.0.4             |
| #25345 | Fixed an issue where the sensor auto-upgrade function was not working when upgrading the policy server.                                                                                | 6.0.0             |
| #25350 | Fixed an issue where logged in admin UI session was terminated after email approval/rejection of new IP application.                                                                   | 6.0.0             |
| #25381 | Fixed an issue where certificates were not reissued when using the reissue button in the cloud version.                                                                                | 6.0.2             |
| #25390 | Fixed an issue where the IP of the domain was not renewed when using a FQDN network object.                                                                                            | 6.0.0             |
| #25399 | Fixed an issue where the number of nodes in the Windows Update Status was being displayed incorrectly when setting a label on a Windows Update Action.                                 | 6.0.0             |
| #25400 | Fixed an issue where dashboard page was not displaying properly when moving the node list through the status widget by agent version.                                                  | 6.0.2             |
| #25418 | Fixed an issue that caused the Node Management page excel export option not to work.                                                                                                   | 6.0.0             |
| #25428 | Fixed an issue where uploading and downloading of the agent installation file was not possible after restoring the backed up agent file.                                               | 6.0.0             |
| #25439 | Fixed an issue where the platform of the node with agents installed were changed to Unknown when manually updating GPDB via CLI commands.                                              | 6.0.0             |
| #25443 | Fixed an issue where logs were still based on the equipment certificate even when using a custom certificate.                                                                          | 6.0.0             |
| #25462 | Fixed an issue where a web page error would occur when clicking on Window and Genian Monitor.                                                                                          | 6.0.0             |
| #25477 | Fixed an issue where a large number of duplicate pop-up messages were displayed when waking from sleep mode while using the macOS Agent wireless LAN control plug-in.                  | 6.0.0             |
| #25498 | Fixed an issue where the screen saver option in macOS Agent, Appearance and Personalization plug-in did not work properly with the entered time.                                       | 6.0.2             |
| #25559 | Fixed an issue in Windows Agent Wireless Connection Manager action where if the SSID was Korean, it would be not recognized would register as an incorrect SSID.                       | 6.0.0             |
| #25568 | Fixed an issue where an applied policy incorrectly showed an unchecked checkbox making it appear inactive.                                                                             | 6.0.4             |
| #25574 | Fixed an issuer where the message that popped up from the macOS Agent or agent was not displaying correctly.                                                                           | 6.0.0             |
| #25289 | Fixed an issue where when the macOS Agent Device Control plugin was using the Network Interface Control option caused a persistent block log despite the interface being already down. | 6.0.3             |

### 23.3.11 Genian ZTNA v6.0.8 Release Notes (Oct 2022)

Release Date: 2022/10/15, Last Updated: 2022/10/17 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                |
|--------|----------------------------------------------------------------------------------------------------------------------------|
| #23677 | Improved so that by registering a sensor in the policy server, only sensors approved by the administrator operate.         |
| #25006 | Improved to extract Application Name statistics from Flow Log and display them as a Pie Chart.                             |
| #25015 | Added VPN connection interworking feature (Genian Linux PAM) when logging into Linux Agent and Linux OS.                   |
| #25095 | Added file distribution action plugin to Linux Agent.                                                                      |
| #25161 | Improved so that when changing the switch port VLAN through the control policy a port bounce will reinitiated DHCP.        |
| #25176 | Improved the way File Upload component file names are saved and downloaded.                                                |
| #25189 | Improved to change both local port and mgmt port when changing the management console port in CLI.                         |
| #25191 | Improved image icon to better reflect when status changed to 'Stop Agent Service'.                                         |
| #25205 | Improved node details to better display output message of recent execution results in operating system update information. |
| #25223 | Added web browser linkage downloaded from Snap when accessing a web browser through the tray icon of Linux Agent.          |
| #25266 | Added debug log for user info to password validation plugin.                                                               |
| #25316 | Added option to always output risk audit log related to incorrect DHCP server collection information.                      |

#### Issues Fixed

### 23.3.12 Genian ZTNA v6.0.7 Release Notes (Oct 2022)

Release Date: 2022/10/15, Last Updated: 2022/10/17 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                                  |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------|
| #24699 | Added biometric (Passkeys) secondary authentication feature to agent authentication.                                                         |
| #24744 | Added biometric (Passkeys) secondary authentication feature to management console.                                                           |
| #24745 | Added biometric (Passkeys) secondary authentication feature to users (CWP).                                                                  |
| #24781 | Added Laboratory features that were displayed when creating a node group to the regular menus, and laboratory related text has been removed. |
| #24803 | Improved report e-mail form, settings, and list lookup so they can be edited in one place.                                                   |
| #24814 | Added biometric (Passkeys) secondary authentication feature to REST API.                                                                     |
| #24913 | Added biometric (Passkeys) secondary authentication feature to ZTNA Connection Manager.                                                      |
| #24929 | Added network control (block) function through application identification.                                                                   |
| #24950 | Added function to provide 'EAP-TTLS' profile through Wired Connection Manager.                                                               |
| #25025 | Added function to provide 'EAP-TTLS' profile through Wireless Connection Manager.                                                            |
| #25059 | Improved to display additional information in preview for uploaded certificate file.                                                         |
| #25078 | Improved to lock the screen even when the monitor is extended while using the screen lock with the agent authentication window.              |

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| Key    | Description                                                                                                          |
|--------|----------------------------------------------------------------------------------------------------------------------|
| #25107 | Updated icon design by applying fontawesome pro version (v6.1.1).                                                    |
| #25112 | Added optional feature on how agents are deleted from Linux Agent.                                                   |
| #25125 | Changed the order of screen output to improve convenience when creating users."                                      |
| #25137 | Added ARP Management Actions Plugin feature to Linux Agent.                                                          |
| #25138 | Added feature to provide result message of the Windows update action to GnPMS execution results.                     |
| #25160 | Added Sophos Endpoint Agent antivirus information collection path.                                                   |
| #25164 | Improved audit log where if the owner is reset for every authentication to log only when the information is updated. |
| #25201 | Added macOS agent status recheck feature.                                                                            |
| #25214 | Improved certificate file registration for RADIUS and Management Console external certificates, LDAP.                |

### Issues Fixed

| Key    | Description                                                                                                                                                                           | Affects Version/s |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #22592 | Fixed an issue in the CWP design template component setting where the position of the component moved to the bottom of the template when a specific component was turned off and on.  | 5.0.33            |
| #24676 | Fixed an issue where the administrator session was maintained when using the REST API and a duplicate login warning window was output when logging in from the management console.    | 6.0.0             |
| #24914 | Fixed an issue where Windows patch files uploaded via Genian Syncer could not be downloaded.                                                                                          | 6.0.1             |
| #25029 | Fixed an issue where the message did not pop up when blocking WLAN control in macOS Agent.                                                                                            | 6.0.0             |
| #25074 | Fixed an issue where the GPDB.info file was not updated when upgrading an image in a closed network causing the function to not work properly.                                        | 6.0.0             |
| #25080 | Fixed an issue when changing settings in the management console synchronization could not be performed at the time of information synch.                                              | 6.0.0             |
| #25103 | Fixed an issue where node registration was not possible when connecting to ZTNA with the OpenVPN Client app on mobile (Android/IOS).                                                  | 6.0.0             |
| #25115 | Fixed an issue where the IP address column was not removed from the IP management application result list in the management console.                                                  | 6.0.0             |
| #25130 | Fixed an issue where dialogs created via GnMonitor's menu button did not close, making it impossible to fix.                                                                          | 6.0.0             |
| #25136 | Fixed an issue where the count of the Satisfied/Dissatisfied column on the node management screen differently from the action execution result on the node information detail screen. | 6.0.0             |
| #25151 | Fixed an issue where the group matching was not possible when there are multiple software with the same name.                                                                         | 6.0.0 6.0.7       |
| #25163 | Fixed an issue where vaccine information was not immediately collected from nodes that were deleted and newly re-registered.                                                          | 6.0.0             |
| #25181 | Changed to use the default browser of the operating system when performing two-factor authentication via Google Authenticator for the first time.                                     | 6.0.2             |
| #25209 | Fixed an issue where the 'Notification Message' was hidden on the detail screen of the node without agent installed.                                                                  | 6.0.5             |
| #25218 | Fixed an issue where the loading bar was displayed when clicking the icon to the right of the regulation and permission labels on the control policy screen.                          | 6.0.3             |

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| Key    | Description                                                                                                                       | Affects Version/s |
|--------|-----------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #25222 | Fixed an intermittent Database Access error when using the Linux Agent for a long time.                                           | 6.0.4             |
| #24287 | Fixed an issue where the secret key could not be generated through RADIUS Google Authenticator.                                   | 6.0.7             |
| #25296 | Fixed an issue where that the default logo of the agent authentication window was displayed in Korean on an English window.       | 6.0.0             |
| #25301 | Fixed an issue where the macOS network shared folder showing release and garbled text.                                            | 6.0.4             |
| #25318 | Fixed an issue that could close the password validation popup window while using a weak password.                                 | 6.0.0             |
| #25343 | Fixed an issue where the sharing control notification popup for the management folder was displayed every time the PC was booted. | 6.0.0             |

### 23.3.13 Genian ZTNA v6.0.6 Release Notes (AUG 2022)

Release Date: 2022/8/15, Last Updated: 2022/8/15 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                                 |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------|
| #22375 | Added Application detection function of network flow.                                                                                       |
| #24571 | Added ZTNA connection manager plugin to Linux agent to support OpenVPN based SSL VPN.                                                       |
| #24601 | Added Webgui access to the squid access log through Audit > Flow.                                                                           |
| #24693 | Added background image support on the certified window lock screen.                                                                         |
| #24698 | Added Always Connect to ZTNA Network option on macOS.                                                                                       |
| #24791 | Improved to check only the details of the set range when setting the management IP control range in the matrix view.                        |
| #24847 | Added SAML authentication method to the management console.                                                                                 |
| #24884 | Added screensaver information collection to the Linux agent's shape and personal settings plug-in.                                          |
| #24903 | Added search function to condition section of the node group detailed screen.                                                               |
| #24925 | Improved the description of authentication when using REST API.                                                                             |
| #24935 | Added Search filter, Radius, Flow menu to the bottom of the Audit menu.                                                                     |
| #24966 | Add parameters so that when moving the node list through a link in the policy management screen, the output is from the node point of view. |
| #24970 | Added Real Interface Support for SoftEther Virtual-Hub.                                                                                     |
| #24975 | Improved loading speed of Excel exported files.                                                                                             |
| #24976 | Added Flow Application Name Statistics Widget to the Dashboard.                                                                             |
| #24978 | Improved the dashboard Big Number widget to query so that the output is in the selected order.                                              |
| #24980 | Added server domain setting to connect to ZTNA.                                                                                             |
| #25001 | Added search by department name function on the user screen.                                                                                |
| #25019 | Improved the Edit button placement in Settings screen.                                                                                      |
| #25030 | Added Selection Capacity option when adding Cloud Sensor.                                                                                   |
| #25033 | Improved to allow radius certificate registration in Windows 11 terminals regardless of EAP-TLS ON/OFF setting.                             |
| #25046 | Improved to output permission information to the Kernel Debug function.                                                                     |
| #25047 | Added Node Custom Field Modifying Node Registration API.                                                                                    |
| #25054 | Added entire log compression function for error reporting to Linux Agent.                                                                   |

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| Key    | Description                                                                                                                 |
|--------|-----------------------------------------------------------------------------------------------------------------------------|
| #25071 | Added Linux Agent functions to re-enforce the action when registering nodes.                                                |
| #25082 | Improvement Cloud Sensor UX.                                                                                                |
| #25100 | Removed port related warning when mysql client is running on a server where mysql is not activated.                         |
| #25110 | Linux Agent updated to support Openvpn (2.5.7) and OpenSSL (1.1.1Q).                                                        |
| #25149 | Improved to collect Windows Guest Accounts information.                                                                     |
| #25206 | Fixed an issue that was causing the MacOS agent daemon operation to stop working, but not completely terminate the process. |

### Issues Fixed

| Key    | Description                                                                                                                                                                   | Affects Version/s       |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| #24675 | Fixed an issue where the creation time of the NAC deb file was displayed incorrectly in the management console.                                                               | 5.0.41                  |
| #24835 | Fixed an issue where Mac information could be stored in lowercase when registering nodes registered by agents.                                                                | 6.0.4                   |
| #24930 | Fixed an issue where the output from NAC webUI would sometimes omit the IP of the ZTNA terminal.                                                                              |                         |
| #24947 | Fixed an issue where the user modification API (PUT /users/user_id) is called, and the contents of the last modification time column are not modified.                        | 4.0.146 5.0.43<br>6.0.0 |
| #24998 | Fixed an issue where if the department information and position information are synced, and if the data source division value is changed, the sync is not performed normally. | 4.0.0                   |
| #25016 | Fixed an issue of an error in the component output from Vaccine information in a new node group.                                                                              | 5.0.31                  |
| #25018 | Fixed an issue when creating a multi-site, an error message is displayed on the collector.                                                                                    | 6.0.3                   |
| #25039 | Fixed an issue when downloading ZTNA Profile would stay in the loading screen.                                                                                                | 6.0.0                   |
| #25044 | Fixed an issue in the Genian Software file upload feature that would result in "undefined" message.                                                                           | 5.0.2                   |
| #25048 | Fixed an issue in Linux Agent that caused the tray icon to intermittently not be visible.                                                                                     | 5.0.42 (LTS) 6.0.0      |
| #25083 | Fixed an issue where an error screen was displayed when adding a query report type report to a custom report.                                                                 | 6.0.1                   |
| #25091 | Fixed an issue in which the node is not filtered, and the entire node list is displayed on the Management > Node List screen when you click the IP or MAC of the audit log.   | 4.1.M1                  |
| #25094 | Fixed an issue in macOS agent that was causing repeated re-authentication during alternate AD account authentication.                                                         | 5.0.7 6.0.0             |
| #25127 | Fixed issue where ZTNA isolation function was not working properly.                                                                                                           | 6.0.6 (RC)              |
| #25200 | Fixed an issue with error outputting specific items in Korean in the English UI.                                                                                              | 4.1.0                   |
| #25215 | Fixed an issue where the operating system information collection plug-in would cause GNPLUGIN to enter suspend state.                                                         | 5.0.37 6.0.0            |
| #25225 | Fixed an issue where the monitor information collection plug-in would cause GN-PLUGIN.EXE to terminate.                                                                       | 5.0.0 6.0.0             |
| #25288 | Fixed an issue causing Register Node" error when using node registration REST API."                                                                                           |                         |

### 23.3.14 Genian ZTNA v6.0.5 Release Notes (JUN 2022)

Release Date: 2022/6/16, Last Updated: 2022/8/15 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                                                             |
|--------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #17371 | Improved Agent Debug log to now save in English instead of Korean.                                                                                                      |
| #21428 | Added an option to macOS Agent to apply policy application function according to the internal/external state.                                                           |
| #23901 | Improved UI screen output performance.                                                                                                                                  |
| #24157 | Added notSans fonts to Applied Themes.                                                                                                                                  |
| #24183 | Ported the NAC sensor module to the XGate UTM equipment, added a function that operates in the same way as the NAC sensor in UTM.                                       |
| #24242 | Improvements to Genian ZTNA Theme UX/UI Style Application.                                                                                                              |
| #24330 | Improved so that KB Kookmin Bank PentaSSO can be continuously authenticated.                                                                                            |
| #24600 | Added a function to specify the start time of user's account activation.                                                                                                |
| #24655 | Added RADIUS External Authentication feature.                                                                                                                           |
| #24664 | Added digital signature function to ensure the integrity of files transferred from the Linux Agent server to the agent.                                                 |
| #24671 | Added links to the node list from the allocation IP on the ZTNA Client Sessions list screen.                                                                            |
| #24672 | Improved DHCP IP allocation when using ZTNA Client.                                                                                                                     |
| #24726 | Removed the ZTNA connection manager ID/PW storage option.                                                                                                               |
| #24748 | Improved Java list queries performance with code refactoring.                                                                                                           |
| #24753 | Improved node list called by ajax to tie and call several cases instead of a single case.                                                                               |
| #24756 | Added custom plug-in replacement for authentication with MagicPass products.                                                                                            |
| #24768 | Added the ability to kill Linux Agent process plug-in.                                                                                                                  |
| #24782 | Library upgraded for vulnerability inspection.                                                                                                                          |
| #24786 | Improved web console to start even if there is a space before and after the data-server username of local.conf.                                                         |
| #24787 | Improved audit log so when the sensor name is set, the management equipment name is displayed as the sensor name.                                                       |
| #24810 | Improved Pagination Select menu UI.                                                                                                                                     |
| #24816 | Added a function to automatically move the cursor to the password input box when an ID is entered as long as the length set in the Windows Agent authentication window. |
| #24818 | Improved isolation between ZTNA Client terminals on the same site.                                                                                                      |
| #24825 | Added a default Radius policy with conditions if you are not a ZTNA client.                                                                                             |
| #24832 | Improved so that unused IPs can be displayed when selecting all nodes in the tree on the Management > Node List screen.                                                 |
| #24850 | Improved to allow ZTNA Client communication between users when isolated between terminals.                                                                              |
| #24858 | Improved the SoftEthervpn Foreground debug message as the standard output.                                                                                              |
| #24862 | Added features to enable usernames search in IP/equipment owner settings.                                                                                               |
| #24865 | Improved ZTNA Client Split Tunneling.                                                                                                                                   |
| #24871 | Improved Cloud Provider Site Management Settings.                                                                                                                       |
| #24874 | Patched security vulnerability in the IP application system when switching management screen.                                                                           |
| #24876 | Added Mac/Equipment certification restriction option to user application.                                                                                               |
| #24879 | Added latest platform version information to Linux Agent.                                                                                                               |
| #24894 | Improved transmitting UDP event packets from the NAC process when the size is larger than the MTU.                                                                      |
| #24899 | Added App Database Rule.                                                                                                                                                |
| #24900 | Added ZTNA Client OpenVPN compatibility option.                                                                                                                         |

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| Key    | Description                                                                                                          |
|--------|----------------------------------------------------------------------------------------------------------------------|
| #24910 | Improved ZTNA isolation so setting value changes are reflected without disconnection.                                |
| #24921 | Improved to enable LDAP server connection using certificate in LDAP certification and LDAP information vaporization. |
| #24922 | Improved search field autocomplete function in Flow log search bar.                                                  |
| #24924 | Added authentication user ID parameter to Get node list (GET /nodes) API.                                            |
| #24932 | Improved default group display order of Policies > User.                                                             |
| #24945 | Improved output format of the IP owner/IP owner department that is exported to Excel list of nodes.                  |
| #24983 | Added SOPHOS Server Protection Collection Function to Linux Agent.                                                   |
| #25104 | OpenSSL upgraded to the latest version (OpenSSL 1.1.1Q).                                                             |

## Issues Fixed

| Key    | Description                                                                                                                                        | Affects Version/s       |
|--------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------|
| #24551 | Fixed an issue where sensor related functions do not work normally in universal OS.                                                                | 6.0.4                   |
| #24580 | Fixed an issue in Document Search & Deleting Custom Plug that failed with no user message.                                                         | 5.0.42 (LTS)            |
| #24625 | Fixed an issue where an agent version upgrade was treated as a new addition rather than an update to the agent software list.                      | 4.0.M8                  |
| #24663 | Fixed an issue that caused data to be stored incorrectly if a comma exists in the condition setting.                                               | 5.0.0 6.0.0             |
| #24725 | Fixed an issue where the Linux Agent was not displayed on Debian11 based platforms.                                                                | 5.0.0 6.0.0             |
| #24741 | Fixed an issue where the detailed screen was not displayed when moving between information among node details.                                     | 5.0.38                  |
| #24751 | Fixed an issue where when deleting the branch site (VXLAN OV) IPSEC connection is not deleted.                                                     | 6.0.3                   |
| #24784 | Fixed an issue where the result of the IP application form was displayed in a language other than the one being used.                              | 4.0.114 5.0.11          |
| #24792 | Fixed an issue where the Linux Agent Authentication Allow MAC policy function did not work.                                                        | 5.0.41 6.0.0            |
| #24798 | Fixed an issue where the node's authenticated user was not found when syncing Google G Suite information and SAML authentication.                  | 5.0.19                  |
| #24811 | Fixed an issue where the old value is refilled when saving user ID/PW is canceled and saved again in Windows Agent Wireless Connection Manager.    | 5.0.0 6.0.0             |
| #24839 | Fixed an issue causing occur error when exporting Excel from IP/MAC status.                                                                        | 4.0.M7                  |
| #24845 | Fixed an issue where an error appeared due to incorrect data format when calling the IP application system automatic rejection processing API.     | 5.0.14                  |
| #24846 | Fixed an issue where the IP range is updated in IP application but is not displayed as an IP allocation band set for use.                          | 5.0.13                  |
| #24867 | Fixed an issue activating the Printer Shared Folder Control option did not result in control.                                                      | 4.0.125 5.0.22<br>6.0.0 |
| #24886 | Fixed an issue when using a quick search on some screens, the pop-up position cannot be moved to the mouse.                                        | 6.0.0                   |
| #24891 | Fixed an issue causing Ubuntu 20.04 DKNS failures when upgrading through webUI.                                                                    | 6.0.5 (R)               |
| #24896 | Fixed an issue where IP restriction range set is not checked when IPs belonging to a subnet does not exist, another available subnet is allocated. | 4.1.0                   |
| #24904 | Fixed icon display error in Management (Node/Switch/Wireless LAN/User) LEFT menu on modification mode.                                             | 6.0.5 (R)               |

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Table 28 – continued from previous page

| Key    | Description                                                                                                                                                              | Affects Version/s            |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| #24906 | Fixed an issue where the node group cannot be changed even if the time related node group conditions of the vaccine information/pledge.                                  | 3.0_0910                     |
| #24919 | Fixed an issue causing an error when executing an email as a defined report type.                                                                                        | 5.0.43 6.0.0                 |
| #24939 | Fixed an issue where synchronization was not possible due to incorrect application of the Paging parameter value when synchronizing information through REST API Server. | 5.0.38                       |
| #24942 | Fixed an issue where when MAC tag is set to unused IP, MAC tag is assigned to all unused IP nodes and improved status & filter screen.                                   | 6.0.5 (R)                    |
| #24946 | Fixed an issue causing error page output when moving to the Radius policy detail screen.                                                                                 | 5.0.30                       |
| #24967 | Fixed an issue where an existing sub-department does not change when a parent department is assigned to a parent department.                                             | 4.0.M9                       |
| #24969 | Fixed an issue where when the sensor is restarted, the DHCP server does not work.                                                                                        | 6.0.3                        |
| #24977 | Fixed OpenVPN error "Line is too long" when importing client profile.                                                                                                    | 6.0.0                        |
| #24981 | Fixed an issue where a virtual interface (Teredo Tunneling Pseudo-Interface) on the PC was falsely detected as a MAC/IP Clone.                                           | 5.0.0 6.0.0                  |
| #24984 | Fixed an issue where Subnetscan was not working for the band added as Secondary IP.                                                                                      | 5.0.42 (LTS)                 |
| #24997 | Fixed problem of UI cutting off in vertical scroll when content lengthens in custom rule dialog window.                                                                  | 6.0.5 (R)                    |
| #25000 | Fixed an issue that was causing Linux Agent to display message incorrectly.                                                                                              | 5.0.42 (LTS) 6.0.0           |
| #25043 | Fixed an issue where a web server (HTTPD) with a registered external certificate was still using the default private certificate.                                        | 5.0.42 (LTS)                 |
| #25090 | Fixed an issue where using Host Name Change real-time detection function would cause a memory allocation failure.                                                        | 4.0.114 5.0.11               |
| #25132 | Fixed an issue where the Ubuntu universal OS version was not adding agent state condition.                                                                               | 5.0.42 (LTS)<br>5.0.43 6.0.1 |
| #25135 | Fixed an issue where the DB backup file was not normally created.                                                                                                        | 6.0.3                        |
| #25153 | Fixed an issue where changeable items were not reflected until screen update.                                                                                            | 6.0.1                        |
| #25179 | Fixed an issue where sending an attached file, the MIME format is incorrect, so the attachment size is displayed as 0kB and cannot be read.                              | 5.0.16                       |

### 23.3.15 Genian ZTNA v6.0.4 Release Notes (MAY 2022)

Release Date: 2022/5/15, Last Updated: 2022/8/15 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                     |
|--------|-----------------------------------------------------------------------------------------------------------------|
| #18856 | Improvements to the Information sync screen.                                                                    |
| #21768 | Improved to meet changed data structure in Elasticsearch 7.0.                                                   |
| #22495 | Added Internet Kill Switch related function to Windows firewall plug-in.                                        |
| #23372 | Added a function to check the SHA2-256 to the hash value option of the Linux agent action inspection condition. |
| #23947 | Improved the Agent by addressing vulnerabilities identified with Secure coding check.                           |
| #24008 | Added URL Filtering function.                                                                                   |
| #24156 | Added feature making it possible to set prohibit changes when registering csv nodes in bulk.                    |

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| Key    | Description                                                                                                                                                     |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #24168 | Improved the management screen by integrating the switch port list and detailed screen to it.                                                                   |
| #24320 | Added encryption function for generated log files to Linux Agent.                                                                                               |
| #24328 | Added auto proxy configuration settings function to macOS.                                                                                                      |
| #24333 | Added option to use Web Filter objects in rules.                                                                                                                |
| #24344 | Improved to operate sites in the ON-Prem environment.                                                                                                           |
| #24373 | Added the option to apply URL Filter control policy.                                                                                                            |
| #24433 | Improved Linux Agent so it checks for OS updates using the update item instead of version name.                                                                 |
| #24440 | Improved REST API input parameter validation.                                                                                                                   |
| #24450 | Added agent deletion function through Linux Agent authentication code.                                                                                          |
| #24451 | Added installation time information to macOS Agent operating system information collection plug-in.                                                             |
| #24463 | Improved TLS communication in Linux agent by changing the cipher suite used.                                                                                    |
| #24464 | MacOS Agent operating system information collection plug-in added installation time information.                                                                |
| #24468 | Added ability to control by WebFilter object and file type.                                                                                                     |
| #24471 | Improved the items related to departments, positions, and tags on the node list so they could be output with the converter.                                     |
| #24486 | Added column size adjustment options to the node list screen.                                                                                                   |
| #24492 | Improved readability of the Bytes column of the Flow log by converting to KB, MB, GB, etc for easier reading.                                                   |
| #24494 | Improved compatibility with DKNS (Cloud Gateway) in Oracle Cloud Infrastructure environment.                                                                    |
| #24495 | Added loading bar to editing user information section.                                                                                                          |
| #24500 | Improved Site Management ZTNA to display the NAT IP or IP attempting to connect to the sensor name when the ZTNA Client error message is displayed in the list. |
| #24501 | Added a column to set the URLFILTER to the site list.                                                                                                           |
| #24507 | Added new platform information for Linux Agent.                                                                                                                 |
| #24534 | Improved build script performance for expansion of agent build servers.                                                                                         |
| #24543 | Improved value alignment in the Flow log destination IP column values.                                                                                          |
| #24545 | Added a subnet parameter to the sensor which made it possible for the unused IPs to be assigned in a large subnet.                                              |
| #24548 | Improved so that node information is displayed as a tooltip in the IP link of the audit log.                                                                    |
| #24562 | Improved the agent to use the default web browser.                                                                                                              |
| #24572 | Added functions to be able to enter the description when entering a network address.                                                                            |
| #24575 | Improved to use the default browser defined by the user in the agent.                                                                                           |
| #24583 | Patched Java Libs used by WebUI for possible vulnerabilities.                                                                                                   |
| #24594 | Improved so that when a node policy is applied immediately the selected item appear in a modal window instead of a windows pop-up.                              |
| #24599 | Improved Web Access UI to combine WebFilter objects to create objects.                                                                                          |
| #24602 | Improved node management search bar style.                                                                                                                      |
| #24613 | Improvement of selection items when adding cloud sensors.                                                                                                       |
| #24614 | Added IPSEC's Advance setting function to hub site settings.                                                                                                    |
| #24616 | Added integrity verification function for Linux Agent policy and management server information.                                                                 |
| #24633 | Improvement made to allow units other than time units when setting the node group condition.                                                                    |
| #24634 | Added readonly option to conf engine options.                                                                                                                   |
| #24636 | Improved IPsecVPN encryption method so it can be changed in each Hub.                                                                                           |
| #24639 | Added Security violation detection log as a default filter.                                                                                                     |
| #24643 | Improved to output the node list in terms of widget data criteria (node/equipment).                                                                             |
| #24656 | Improved Flow Log UI performance by changing the default from 1 week to last 24 hours.                                                                          |
| #24709 | Patched a vulnerability that exposed the stored information of cache memory to the Side Channel Attack.                                                         |
| #24728 | Improved to encrypt button link parameters in the IP use application form.                                                                                      |

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| Key    | Description                                                                                                         |
|--------|---------------------------------------------------------------------------------------------------------------------|
| #24918 | Improved process for assigning an IP to a user so that the IP is limited to the management IP control range option. |
| #25062 | Added macOS Ventura support to MAC Agent.                                                                           |
| #25064 | Patched web service vulnerabilities to avoid exposing Apache WAS information.                                       |

## Issues Fixed

| Key    | Description                                                                                                                                                         | Affects Version/s  |
|--------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| #21894 | Fixed an issue where a node with an unclassified node type would not be deleted when the IP/MAC usage timeout expires.                                              | 5.0.31             |
| #24192 | Fixed an issue where tags would be displayed as many times as the number of authenticated nodes.                                                                    | 4.0.138 5.0.35     |
| #24449 | Fixed an issue that caused the button to become unresponsive in the Uninstall a Program plugin.                                                                     | 5.0.42 (LTS) 6.0.0 |
| #24502 | Fixed the problem that the value of the option that has not been changed is corrected when the policy is modified.                                                  | 5.0.44             |
| #24523 | Fixed an issue where certain columns were missing when exporting users.                                                                                             | 4.0.7              |
| #24554 | Fixed the problem that the paging output option was restored when the condition was deleted on the node group detail screen.                                        | 5.0.12             |
| #24560 | Fixed an issue where files in the C:\program Files (x86) path could not be executed.                                                                                | 5.0.0 6.0.0        |
| #24568 | Fixed an issue where allowed APs were blocked by WLAN control.                                                                                                      |                    |
| #24576 | Fixed an issue where the 'Login IP Restriction Subnet Support' off option in the adv settings was not reflected when setting the device batch in system management. | 4.0.13             |
| #24592 | Fixed an issue where related data did not appear on the page moved to the button created when system log collection was completed.                                  | 5.0.40             |
| #24620 | Fixed an issue where the node list was not displayed when viewing the filter and status menus.                                                                      | 5.0.42 (LTS) 6.0.0 |
| #24626 | Fixed an error log output when clicking the close list button on the node detail screen.                                                                            | 5.0.38             |
| #24628 | Fixed an issue where the integrity check function did not work properly in macOS Agent.                                                                             | 5.0.27 6.0.0       |
| #24630 | Fixed the problem that the tooltip of the control policy column of the node registered in the center was displayed incorrectly.                                     | 5.0.27             |
| #24637 | Fixed an issue where an error would occur when changing the infrastructure System from Site to Cloud to On-Premises.                                                | 6.0.0              |
| #24645 | Fixed an issue where editing of the management view was not reflected in the status & filter tag screen.                                                            | 5.0.9              |
| #24646 | Fixed and issue where the macOS Agent's Desc.ico file does not satisfy the integrity test.                                                                          | 5.0.28 6.0.0       |
| #24649 | Fixed a blocking malfunction in Windows Firewall control plug-in when multiple rights objects were registered in the control policy.                                | 5.0.28 6.0.0       |
| #24652 | Fixed an issue where the dashboards agent installation status widget's contents of the execution date column was not displayed.                                     | 6.0.0              |
| #24665 | Fixed the problem that free space on the local disk does not work when performing a backup through an external storage device.                                      | 4.0.19             |
| #24680 | Fixed an issue where the policy server would not detect agent installation node as in the down state.                                                               | 5.0.36             |
| #24685 | Fixed an issue where blocked IPs set to be used were assigned when using the Allow Blocked IPs option.                                                              | 4.0.12             |

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| Key    | Description                                                                                                                                            | Affects Version/s            |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------|
| #24701 | Fixed an issue where the external authentication linkage function does not work when the BASE64 encryption method is used.                             | 5.0.0 6.0.0                  |
| #24707 | Fixed an issue where the node list was not displayed when moving.                                                                                      | 5.0.33                       |
| #24718 | Fixed an issue where the ZTNA version Dashboard Widget Palette Add Preview images feature was showing a blank preview.                                 |                              |
| #24729 | Fixed an issue where an error occurred when approval/rejection of one or more items were done individually.                                            | 4.0.113 5.0.10               |
| #24733 | Fixed an issue where the action policy was not executed when there were many script contents to be executed.                                           | 4.0.16 5.0.0 6.0.0           |
| #24742 | Fixed an issue where the inequality sign (>) was outputting as > in the processing message of the system management.                                   | 5.0.42 (LTS)<br>5.0.45 6.0.2 |
| #24767 | Fixed an issue where the domain information of the node was not being updated by NETBIOS scan.                                                         | 4.0.M3                       |
| #24785 | Fixed an issue that caused a Google auth code issuance error in G Suite sync settings after changing Google API client ID.                             | 6.0.4                        |
| #24797 | Fixed a collection error due to incorrect data format when registering a switch through SNMP information collection.                                   | 4.1.4                        |
| #24802 | Fixed the problem that the real-time monitoring forced control option for V3 vaccine did not work.                                                     | 5.0.0 6.0.0                  |
| #24817 | Fixed an issue where the list of sub-department users by department of all users is not displayed.                                                     | 5.0.45 6.0.4                 |
| #24885 | Fixed an issue where when uploading an image from a custom button the table of contents pages does not moved to another page.                          | 5.0.12                       |
| #24895 | Fixed an issue where agent plug-ins on Windows 7 systems would abnormally terminate when collecting vaccine information.                               | 5.0.0 6.0.0                  |
| #24897 | Fixed a database error in macOS related settings where an audit log would occur.                                                                       | 5.0.45 6.0.2                 |
| #24905 | Fixed the problem where the node is changed to the UP state when the agent is in the Down state.                                                       | 5.0.47 (R) 6.0.4             |
| #24936 | Fixed an issue where there are items that were output in button format instead of drop-down type components.                                           | 5.0.31                       |
| #24949 | Fixed an issue where deleting the device in System > System Management, nothing was printed in the Tomcat log and Center log.                          | 6.0.0                        |
| #24971 | Fixed an issue where the block target list was causing the sensor daemon to hang.                                                                      | 4.0.117                      |
| #24999 | Fixed an issue where if there are more than 32 virtual sensors, they could not be displayed in the list.                                               | 5.0.32                       |
| #25003 | Fixed an issue where the failure to transmit the DHCP information of the node collected from the sensor would cause the center to restart.             | 4.0.114 5.0.11               |
| #25037 | Fixed an issue where searching from the node group menu would bring up the error system message.                                                       | 5.0.38                       |
| #25050 | Fixed an issue where call-trace causes a memory allocation failure in the ENFORCER kernel module.                                                      | 5.0.40                       |
| #25060 | Fixed an issue where removing agent information by long-term down, the agent platform information was not updated even after reinstallation and logon. | 4.0.61 5.0.0                 |
| #25067 | Fixed an issue where the debug log was duplicated in multiple directories.                                                                             | 5.0.42 (LTS)                 |
| #25068 | Fixed an issue where plug-in was closing when using macOS Appearance and Personalization actions.                                                      | 5.0.15 6.0.0                 |
| #25085 | Fixed an issue where creating a node was incorrectly matching the registration date/updown status node group conditions.                               | 4.0.0                        |

### 23.3.16 Genian NAC v6.0.3 Release Notes (APR 2022)

Release Date: 2022/4/15, Last Updated: 2022/5/3 Description The last (R) mark is an additional release patch item.

#### New Features and Improvements

| Key    | Description                                                                                                                                                     |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|
| #17595 | Added macOS Agent Device Control plugin.                                                                                                                        |
| #21279 | Improved to be able to attach files when sending email through AWS SES.                                                                                         |
| #24178 | Added Clam Antivirus information collection for Linux Agent.                                                                                                    |
| #24319 | Added function to handle re-registration event when Linux Agent node is deleted.                                                                                |
| #24262 | Improved the problem that mail is delivered to all users when using the Forward All option after not specifying an approver when filling out an IP application. |
| #24263 | Improved to display the authentication user domain and authentication source in the audit log when linking SMTP authentication.                                 |
| #24267 | Improved to be able to set 3 or more authentication servers in Agentless AD SSO environment.                                                                    |
| #24278 | Improved to be able to change the plugin of node action even if node action is assigned as condition to node group.                                             |
| #24281 | The commands supported in the web console action selection menu have been improved so that they are also available as REST APIs.                                |
| #24294 | Improved so when the RADIUS daemon is started, ADSDOMAINNAME not defined is not displayed when configuration is valid.                                          |
| #24312 | When using syslog TLS, it has been improved to use only 1.1 or later.                                                                                           |
| #24316 | Added a method to delete setting values by matching IP address and HOST in Windows Agent DNS control plug-in.                                                   |
| #24330 | Improvements have been made so that the PentaSSO extension plug-in can periodically update the authentication status.                                           |
| #24458 | Improved so that the wireless connection manager window is not displayed if there is no AP that can be connected.                                               |
| #24469 | It has been improved so that the DHCP node IP update function can be used even when registering a node through a switch.                                        |
| #24493 | Added ESET Endpoint Security Antivirus information collection for macOS Agent.                                                                                  |
| #24340 | Improvements have been made to enable OTP and Webhook 2FA authentication in the macOS Agent agent authentication window.                                        |
| #24301 | Improved so that passwords are not stored in plain text when setting up SFTP for backup.                                                                        |
| #24545 | When requesting an IP within a large subnet, added the sensor's subnet parameter to the REST API so that an unused IP in the subnet can be assigned.            |

#### Issues Fixed

| Key    | Description                                                                                                                                            | Affects Version/s |
|--------|--------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------|
| #22689 | Fixed a problem where the web console device name was not changed when changing the hostname in CLI.                                                   | 5.0.33            |
| #23710 | Fixed an issue where authentication could not be canceled when using the authentication restriction function in the macOS Agent authentication window. | 5.0.17            |
| #24181 | Fixed an issue where the agent deletion method option did not apply in macOS Agent.                                                                    | 5.0.41            |
| #24187 | Fixed the problem that the hide option does not work when using wired in Windows Agent Wireless Connection Manager.                                    | 5.0.0             |

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| Key    | Description                                                                                                                                                                 | Affects Version/s     |
|--------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
| #24241 | Fixed the problem of detecting/registering the network sensor as a normal node when there are multiple network sensors in the same band.                                    | 5.0.46                |
| #24244 | Fixed an issue where an error message was displayed during backup in the HA configuration policy server.                                                                    | 4.0.119 5.0.16        |
| #24245 | Fixed an issue where Windows Agent was displayed as an internal network in the tray icon tooltip when it was unable to communicate with the policy server.                  | 5.0.43                |
| #24266 | Fixed the problem that the sensing subject of MAC/IP Clone information detected by the agent is displayed as the sensor.                                                    | 5.0.46                |
| #24290 | Fixed an issue where a warning message was displayed in the sysinspect script used when checking NAC.                                                                       | 4.0.120 5.0.17        |
| #24300 | Fixed the problem that the Run after authentication option did not work when using the file path macro in the Windows Agent Authentication Window plug-in.                  | 5.0.0                 |
| #24303 | Fixed an issue with the IP/MAC node group CSV header if it is entered in uppercase.                                                                                         | 5.0.43                |
| #24314 | Fixed an issue where with the display of IP information when inquiring the target node access authentication page (CWP) in the node details.                                | 5.0.40                |
| #24327 | Fixed an issue where an error page was displayed when adding a dashboard widget audit log filter.                                                                           | 4.0.13 5.0.46         |
| #24329 | Fixed an issue where tags were displayed on the Windows Agent notification message and notice screen.                                                                       | 5.0.42(LTS)<br>5.0.46 |
| #24338 | Fixed the problem that the debug log was repeatedly generated when controlling the auto-run option in the Windows Agent Security Settings plug-in.                          | 4.0.109 5.0.6         |
| #24360 | Fixed the problem that the location of the node is included in the policy server even after the agent sensor is installed on a node that does not have a management sensor. | 5.0.40                |
| #24406 | Fixed an issue where automatic approval did not work when applying for a new IP through REST API.                                                                           | 5.0.8                 |
| #24407 | Fixed an issue where the same IP was batch approved when there was not enough allocated IP when batch approval of new IP applications.                                      | 4.1.4 5.0.46          |
| #24410 | Fixed an issue where an error screen was displayed when using the user authentication component in the IP management message priority setting and the CWP design template.  | 4.0.143 5.0.40        |
| #24418 | Fixed the problem where the agent authentication window shutdown prohibition could be terminated by an external program.                                                    | 4.1.0 5.0.0           |
| #24424 | Fixed an issue where the return button on the node detail screen would intermittently display a different screen.                                                           | 5.0.31                |
| #24430 | Fixed an issue where the CWP Standard template was applied to IP Management Block nodes when using IP Management message preference.                                        | 5.0.14                |
| #24496 | Fixed an issue where the hostname of the node collected by the agent was changed by the sensor.                                                                             | 4.0.25 5.0.46         |
| #24301 | Fixed an issue where LOGs were not sent when backing up with SFTP.                                                                                                          | 5.0.45                |
| #24563 | Fixed an issue where some plugins with a cycle would work even if the action condition was unsatisfactory.                                                                  | 5.0.0                 |
| #24577 | Fixed an issue where some plug-ins with cycles worked even when macOS action conditions were unsatisfactory.                                                                | 5.0.0                 |
| #24631 | Fixed the problem that there is no assigned IP even though there is an unassigned IP when bulk approval of new IP applications.                                             | 5.0.46                |
| #24660 | Fixed an issue where a node's platform information was changed from Microsoft Windows to Unknown Platform.                                                                  | 5.0.42(LTS)<br>5.0.45 |



## SECURITY ADVISORIES

### 24.1 GZ-SA-2023-001: Genian NAC - Multiple Vulnerabilities

#### 24.1.1 Date

- Aug 15, 2023

#### 24.1.2 Serverity

- High

#### 24.1.3 Summary

The following vulnerabilities were identified related to the Genian Update server(s):

- Missing Encryption of Sensitive Data vulnerability(CVE-2023-40251)
- Improper Control of Generation of Code (Code Injection) vulnerability(CVE-2023-40252)
- Improper Authentication vulnerability(CVE-2023-40253)
- Download of Code Without Integrity Check vulnerability(CVE-2023-40254)

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**Note:** Server side actions were taken to mitigate threats, however, customers running the version(s) mentioned below are advised

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to update to the fixed version(s) as soon as possible. Not updating may leave customers vulnerable as well as prevent customer policy servers from obtaining the latest updates from the Genian Update server infrastructure.

#### 24.1.4 Affected Products

- Genian NAC 5.0.42 LTS (Revision 117460 or lower)
- Genian NAC 5.0.54 or lower
- Genian ZTNA 6.0.15 or lower

### 24.1.5 Affected Components

- Policy Server
- Network Sensor
- Agent

### 24.1.6 Resolution

The vulnerabilities contained in this advisory can be addressed by upgrading to version listed below:

- Genian NAC 5.0.42 LTS (Revision 117461 or higher)
- Genian NAC 5.0.55 or higher
- Genian ZTNA 6.0.16 or higher

### 24.1.7 Workaround

- None

## **SERVICE LEVEL AGREEMENT**

This document outlines the service levels for Genians Next-Gen ZTNA solution, which includes the Genian ZTNA Software with the valid maintenance, Cloud-managed ZTNA Subscription and Genian ZTNA Appliances with the valid extended coverage.

### **25.1 Software Upgrade & Patch**

Genians will provide software upgrade and patches to customers who purchase valid maintenance service or subscribe to the cloud services.

- At least 2 updates per year are provided to improve the function. (Including Major version upgrades)
- At least 4 updates per year are provided to fix errors.

### **25.2 Technical Support Services**

#### **25.2.1 Standard Online Support Service**

The service will be provided by Genians via Email, Slack, and Online forum at Genians.com. The following services are included in the subscription fee.

- **Public Channel**
  - Answers (Online forum) on genians.com
  - Slack Channel (#qna)
- **Private Channel**
  - Email
  - Dedicated Slack Channel
  - Remote control (if needed)
- **Support hours**
  - 24x5 (Monday~Friday)
- **Initial Response Time**
  - Level 1 (Critical Business Impact): Within 4 Hours
  - Level 2 (Significant Business Impact): Within 8 Hours
  - Level 3 (Minimal Business Impact): Within the next business day

## 25.2.2 Advanced Support Services

Advanced or additional services like on-site visit, 24x7 can be provided by Genians certified partners. Learn more <https://www.genians.com/with-partners/>

## 25.3 Service Availability (Cloud-managed only)

### 25.3.1 Service Uptime

Genians will guarantee to manage Genians Cloud-based Services (Policy Server, Device Platform Intelligence) 99.9% uptime during the subscription period. If Genians fails the service uptime, Service Credit (See the table below) will be applied to the following subscription month/year (or any subsequent month/year)

| Service Availability Level | Service Credit                                                                    |
|----------------------------|-----------------------------------------------------------------------------------|
| 99.8% - 99.0%              | 10% of total subscription fees applicable to month/year in which failure occurred |
| 98.9% - 98.0%              | 20% of total subscription fees applicable to month/year in which failure occurred |
| 98.9% - 98.0%              | 30% of total subscription fees applicable to month/year in which failure occurred |
| Below 96.0%                | 50% of total subscription fees applicable to month/year in which failure occurred |

Customer must inform any issues related to the service uptime immediately to Genians online support team via Slack or Email. Customer must inform Genians online support team within thirty (30) days from the time Customer becomes eligible to receive a Service Credit. Failure to comply with these service credit request terms will forfeit Customer's right to receive a Service Credit.

### 25.3.2 Software Upgrade & Maintenance

Genians will inform customers via Slack or Email in advance for the purpose of the following reasons:

- Upgrading the software on a regular or irregular basis
- Maintaining the system for the purpose of improving functionality and providing stable service.

## 25.4 Genians Appliance

Customer can use either their own hardware or Genian ZTNA Appliances. The following services are provided only to the customer who purchases Genian ZTNA Appliances.

### 25.4.1 Warranty

Genians provides 90 days warranty. Once the failed appliance is received by Genians, the repaired device will be shipped within two days.

### 25.4.2 Extended Coverage

- Basic Care (BC)
  - Once the failed appliance is received by Genians, the repaired device will be shipped within two days.
- Instant Replacement (IR)
  - Basic Care Included
  - Genians will ship replacement appliances in advance once the appliance fault is confirmed by Genians.
  - If the customer purchases an IR program for four consecutive years from the time of appliance purchase, Genians provides new appliance.