GigaVUE-OS Security Hardening Guide

GigaVUE Cloud Suite

Product Version: 6.2

Document Version: 1.0

Last Updated: Wednesday, February 15, 2023

(See Change Notes for document updates.)

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Change Notes

When a document is updated, the document version number on the cover page will indicate a new version and will provide a link to this Change Notes table, which will describe the updates.

Product Version	Document Version	Date Updated	Change Notes
6.2.00	1.0	02/15/2022	The original release of this document with 6.2.00 GA

Contents

GV-OS-Security

Get started with GigaVUE Security Hardening

This guide provides the best practices on securing the GigaVUE operating system.

Topics:

- Introduction
- Physical Control
- Network Controls
- Best Practices for Security Hardening
- GigaVUE-OS Security Hardening

Introduction

This guide provides you information on the options that are available in the GigaVUE-OS to harden a device against attack by threat actors and other threat vectors, such as brute for attacks.

This document is intended for an audience who is familiar with the configuration of GigaVUE-OS Appliances.

Physical Control

Physical access to any device can result in equipment that has been tampered with, both in transit and also after it is deployed. Before deploying, you must ensure that the device must be stored in safe location and also verify that the device is not tampered with before installation.

Checking for tampering

When shipped from the factory, all GigaVUE appliances are provided in a sealed box. You must inspect the box before installation to ensure that it has not been opened.

Anti-tampering stickers

Tampering of the GigaVUE Appliance can be detected using Anti-Tampering Stickers which Gigamon provides for purchase. These ensure that any physical intrusion into the chassis of the device can be easily detected. Instructions for best placement of the Anti-Tampering stickers is provided. Incorrect placement of sticker might result in closing of ventilation holes which can adversely affect the air flow required for cooling the appliance.

Disabling the Serial Interface

GigaVUE Appliance must be installed in a physically secure environment. It is recommended to disable the serial interface. The login to GigaVUE-OS using serial port is secured by authentication methods (i.e. local / TACACS+ / RADIUS).

By default, the serial port session does not log out when a serial port is disconnected. You must configure the session time.

> **NOTE:** Access to the serial port is required to reset the device. If you lose the login credentials for the GigaVUE-OS appliance, you will not be able to factory-reset the device. It requires a RMA which will have associated costs.

To disable the Serial Interface, run the command `no serial enable`.

```
gigavue-appliance > enable
gigavue-appliance # configure terminal
gigavue-appliance (config) # no serial enable
Disable serial console will make serial connection unusable.
Only use this config command when you have available telnet/ssh connections.
Enter 'YES' to confirm this operation: YES
Serial Console disabled.
gigavue-appliance (config) #
```

You can enable the serial interface by running the command `serial enable`

```
gigavue-appliance (config) # serial enable
Serial Console enabled.
gigavue-appliance (config) #
```

Network Controls

Overview of IP Filter

The GigaVUE-OS Appliance allows the administrator to drop undesired connections from the network received on the management interface. It prevents unauthorized access to and from the interface. For example, you can restrict a syslog server that can communicate with the GigaVUE Appliance.

An IP filter is a chain of rules for the treatment of packets. It comprises of the following chains:

- FORWARD: It is used for forwarding the traffic from one interface to another. The forward chain is not used under normal operations. The default policy for this chain is DROP.
- INPUT: It is used for the traffic that is received by the interface and the destination of the traffic is the GigaVUE Appliance. The default policy for this chain is DROP.
- OUTPUT: It is used for the traffic being sent from the GigaVUE Appliance. This is used to restrict the remote systems that can be accessed by the GigaVUE appliance. For example, remote Syslog Servers or connecting to SCP/FTP/HTTP/HTTP Servers. The default policy for this chain is ACCEPT.

The Chain that is to be applied to the packet is determined by its source and destination. For example, a user connecting to the GigaVUE appliance using SSH will have the INPUT Chain and its rules applied to the session. A user logged into the GigaVUE appliance who is trying to connect from the GigaVUE appliance to a remote system will have the OUTPUT Chain and its rules applied to the session.

Each of the above Chains has a set of rules which are processed in order.

The INPUT Chain has a policy set to DROP. If there is no match in the rules for the packets, then the packets will be dropped.

There are six rules in this Chain. The function of each rule is:

1. Accepts all ICMP packets from any source to any destination.
2. Accepts all IGMP packets from any source to any destination.
3. Accepts all the packets where there is an established or related session. For example, accepting packets in both directions of a flow (SSH Client to GigaVUE Appliance / GigaVUE Appliance to SSH Client).
4. Allows all communications for the loopback (lo) interface.
5. Accepts all communications from the subnet 12.00.1.0/24 to any destination .
6. Accepts all communications to the subnet 12.00.1.0/24 from any destination.

Rules 5 and 6 allow connections from the subnet 12.00.1.0/24. This is being used internally within the GigaVUE Appliance to allow the Management Board to communicate with GigaSMART. The traffic to/from these IP's do not appear on the physical network and that these connections between the Management Board and GigaSMART are authenticated.

There is a Policy associated with each Chain, which can be set to ACCEPT or DROP the targets. If the Policy is set to DROP, and there are no matches for the incoming packets in the rules of the Chain, then the packet will be dropped. If the Policy is set to ACCEPT and if there are no matches for the incoming packets in the rules of the Chain, then the packet will be accepted.

For more information on IP Security Chain, refer the IP Filter Chains for Security topics in the GigaVUE-OS CLI Reference Guide.

Best Practices for Security Hardening

The following sections list best practices for security:

- Use of SNMPv1 and SNMPv2 are Not Recommended
- Use of Self-Signed Certificates are Not Recommended
- Use of FTP and TFTP are Not Recommended
- Use of Secure Cryptography Mode to Run Scans is Recommended
- Change the Password on admin Account
- Best Practices for Passwords

Use of SNMPv1 and SNMPv2 are Not Recommended

Using SNMPv1 and SNMPv2 are not recommended because they authenticate using unencrypted, plaintext community strings.

Using SNMPv3 is recommended for access to the SNMP agent, as well as to SNMP traps. SNMPv3 authenticates using encrypted community strings. For more information, refer to Use SNMP.

Use of Self-Signed Certificates are Not Recommended

Using self-signed TLS/SSL certificates are not recommended.

Certificates generated by a third party certification authority are recommended because they are issued by a Certification Authority (CA). Refer to SHA1-Based Signature in TLS/SSL Server X.509 Certificate for how to obtain a third party certificate.

Use of FTP and TFTP are Not Recommended

Using FTP or TFTP for file transfers is not recommended.

Using SFTP, SCP, or HTTPS is recommended for uploading or downloading files to or from GigaVUE Cloud Suite nodes.

Use of Enhanced Cryptography Mode to Run Scans is Recommended

Using secure cryptography mode to run scans is recommended.

Refer to Configure Enhanced Cryptography Mode for more information.

When a scan includes password brute force testing, it is recommended to disable locking users due to many attempts.

To disable lockout of accounts based on failed authentication attempts, select **Settings > Authentication > AAA**. Under Lockout, unselect **Enable Lockout**.

GigaVUE-OS Security Hardening

To harden the GigaVUE Cloud Suite operating system, GigaVUE-OS, against security threats, Gigamon fixes known vulnerabilities, keeps up-to-date any OS components that provide remote access (such as Apache, SSH, SSHD, and OpenSSL), and analyzes the system for attack vectors.

GigaVUE Cloud Suite nodes run the GigaVUE-OS, which is hardened against the following:

- SHA1-Based Signature in TLS/SSL Server X.509 Certificate
- ICMP Timestamp Response
- TCP Timestamp Response
- Non-Standard SNMP Community Name

SHA1-Based Signature in TLS/SSL Server X.509 Certificate

Certificates generated by a third party certification authority are more secure than self-signed certificates. High strength ciphers with key lengths equal to or greater than 112 bits are also more secure than ciphers with less than 112 bits.

GigaVUE-OS supports TLS/SSL server X.509 certificates, including SHA2-256 and SHA2-512-based certificates, as well as SHA1-based certificates.

However, SHA1 has known weaknesses that expose it to collision attacks, which may allow an attacker to generate additional X.509 certificates with the same signature as the original.

Therefore, when a third party certificate is requested, SHA2-256 or SHA2-512 should be requested as the signature algorithm, and not SHA1.

To obtain a third party certificate, on Linux or Linux app (such as Cygwin), generate a private key as follows:

- openssl req -new -key privkey.pem -out cert.csr

The file, cacert.pem will be sent to a third party certificate authority, which will generate a certificate.

The ciphers supported with TLS v1.0, 1.1, and 1.2 are listed in Table 1: Supported Ciphers with TLS v1.0 and v1.1 and Table 2: Supported Ciphers with TLS v1.2.

Table 1: Supported Ciphers with TLS v1.0 and v1.1

Modern Ciphers	Classical Ciphers
TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA (0xc014)	TLS_DHE_RSA_WITH_3DES_EDE_CBC_SHA (0x16)
TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA (0xc013)	TLS_ECDHE_RSA_WITH_3DES_EDE_CBC_SHA (0xc012)
TLS_DHE_RSA_WITH_AES_256_CBC_SHA (0x39)	TLS_ECDHE_ECDSA_WITH_3DES_EDE_CBC_SHA (0xc008)
TLS_DHE_RSA_WITH_AES_128_CBC_SHA (0x33)	
TLS_DHE_RSA_WITH_CAMELLIA_256_CBC_SHA (0x88)	
TLS_DHE_RSA_WITH_CAMELLIA_128_CBC_SHA (0x45)	
TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA (0xc00a)	

The ciphers supported with TLS v1.2 are listed in Table 2: Supported Ciphers with TLS v1.2.

Table 2: Supported Ciphers with TLS v1.2

Authenticated Encryption with Additional Data (AEAD) Ciphers	SHA-2 Ciphers
TLS_ECDHE_ECDSA_WITH_CHACHA20_POLY1305_SHA256 (0xcc14)	TLS_DHE_RSA_WITH_AES_256_CBC_SHA256 (0x6b)
TLS_ECDHE_RSA_WITH_CHACHA20_POLY1305_SHA256 (0xcc13)	TLS_DHE_RSA_WITH_AES_128_CBC_SHA256 (0x67)
TLS_DHE_RSA_WITH_CHACHA20_POLY1305_SHA256 (0xcc15)	TLS_ECDHE_RSA_WITH_AES_256_CBC_SHA384 (0xc028)
TLS_ECDHE_RSA_WITH_AES_256_GCM_SHA384 (0xc030)	TLS_ECDHE_RSA_WITH_AES_128_CBC_SHA256 (0xc027)
TLS_ECDHE_RSA_WITH_AES_128_GCM_SHA256 (0xc02f)	TLS_ECDHE_ECDSA_WITH_AES_256_CBC_SHA384 (0xc024)
TLS_DHE_RSA_WITH_AES_256_GCM_SHA384 (0x9f)	TLS_ECDHE_ECDSA_WITH_AES_128_CBC_SHA256 (0xc023)
TLS_DHE_RSA_WITH_AES_128_GCM_SHA256 (0x9e)	
TLS_ECDHE_ECDSA_WITH_AES_256_GCM_SHA384 (0xc02c)	
TLS_ECDHE_ECDSA_WITH_AES_128_GCM_SHA256 (0xc02b)	

ICMP Timestamp Response

The GigaVUE-OS does not respond to Internet Control Message Protocol (ICMP) timestamp requests.

The response to such a request is an ICMP timestamp response. The response can contain the date and time from a GigaVUE Cloud Suite node, which could be used to exploit weak time-based random number generators in other services on the node, therefore this is disabled.

In addition, ICMP echo broadcasts, including timestamp requests and responses, are disabled, since ICMP echo requests may be used for Denial of Service (DoS) attacks, such as packet flooding.

TCP Timestamp Response

The GigaVUE-OS does not respond to Transmission Control Protocol (TCP) timestamp requests.

The response to such a request is a TCP timestamp response. The response can be used to approximate the uptime of the GigaVUE Cloud Suite node, which can then be used in is DoS attacks.

In addition, some operating systems can be fingerprinted based on the behavior of their TCP timestamps, therefore this is disabled.

Non-Standard SNMP Community Name

Gigamon does not recommend using the default SNMP community string, public. It recommends using a non-standard SNMP community name, gigamon.

For steps to protect against SNMP vulnerabilities, refer to Use SNMP chapter.

Security Options

This chapter describes how to set options relating to security – who can log into the node, how they are authenticated, and what rights they have once logged in.

The chapter includes the following topics:

About Security and Access

The GigaVUE HC Series nodes provide an interlocking set of options that let you create a comprehensive security strategy for the node. These options are summarized in the following table:

Security Tools	Description
Roles/Groups	**Roles** specify which users have access to a given port. The following built-in roles are provided: • **Admin** – This role provides access to all command modes, including Standard, Enable, and Configure. Admin users also have access to all commands and all ports. They are also members of all groups. • **Default –** This role also provides access to all command modes. Users with the Default Role has no access to unassigned ports. New users are created with the Default role automatically. However, you can remove it if you do not want to allow a user access to unassigned ports • **Monitor** – This built-in role provides view-only access to ports and configurations Administrators create additional custom **roles** and assign them to users together with the Default role. For example, if you create a role named **Security_Team** and assign it to tool port 5/1/x2, users assigned the **Security_Team** role will be able to access tool port 5/1/x2. Conversely, users without a role that gives them some access to tool port 5/1/x2 will not even be able to see it in the CLI. Users can have multiple assigned roles, allowing administrators to fine-tune access to the Visibility Platform.
Permissions	Administrators assign **Permissions** to specify what users can do with a port to which they have access. You can assign the following permission levels: • **Level 1**: Can view the port but cannot make any changes to port settings or maps. When applied to a network port, can view maps attached to the network port. This level is used for users who only need to monitor the activities of the port. • **Level 2**: Can use the port for maps, create tool-mirror to/from port, and change egress port filters. Can configure port-lock, lock-share, and all traffic objects except port-pair. Also includes all Level 1 permissions. • **Level 3**: Can configure port parameters (such as administrative status of the port, speed, duplex, and autonegotiation), as well as create port pairs. Also includes all Level 2 and Level 1 permissions. • **Level 4**: Can change the port type. Also includes all Level 3, 2, and 1 permissions. Permissions are hierarchical so that higher levels include all lower-level permissions (for example, a Level 3 user also has Level 2 permissions and can configure all traffic distribution, set locks, and share locks). Administrators can configure permissions differently on a port-by-port basis for a given role. This can be useful in situations where you want to give a group full authority to reconfigure maps and port parameters for a set of tool ports but only map creation permissions for a network port shared with other groups.
Port Locking/Sharing	Port locking lets a user with Level 2+ access to a port prevent other users from changing any settings for a locked port. This is useful in situations where a user needs undisturbed access to a port for short-term troubleshooting. When a port is locked, all users with Level 2+ access to the port will temporarily only have Level 1 access (read-only). Normal configured permissions are restored when the lock is released. Users can also share a locked port with any other specified user. Sharing a locked port provides the account with whom the port is shared the same port permissions as the account sharing the port.

Security Tools	Description
	So, for example, if UserX has Level 2 permissions on port 12/5/x3, he can share a lock on 12/5/x3 with any other user account, providing them with Level 2 permissions regardless of their normal privileges on the port.
Authentication	The GigaVUE Cloud Suite HC Series node can authenticate users against a **local** user database or against the database stored on an external authentication server (LDAP, RADIUS, or TACACS+). Admin users can specify the authentication methods used for logging in using **AAA Authentication.** NOTE: The serial **console** port always retains **local** authentication as a fallback option to prevent unintended lockouts.

Management Port Security

Management port security lets you restrict the exchange of packets through the management port by creating an access control list to restrict user and SNMP access.

Use the CLI to access and configure the Management port and Console port. For instructions, refer to the *GigaVUE-OS CLI Reference Guide*.

NOTE: Exercise caution when using the following configuration example described in the *GigaVUE-OS CLI Reference Guide* so as not to interfere with communications through the backplane or within a cluster.

Authentication and Authorization (AAA)

Use the AAA page for authentication, authorization, and accounting settings for the GigaVUE HC Series node. In general, configuring authentication consists of specifying the login methods accepted, the order in which they are tried, the local user account to map to external logins, whether to accept roles specified by the AAA server, and the configuration of the external authentication server itself.

To open the AAA page, select **Settings > Authentication > AAA**.

Supported Clients

The following versions of serial, SSH clients are supported:

Table 3: Tested SSH Clients

OS	Client	Version
Windows 7, Windows 10	PuTTY	0.64
Windows 7, Windows 10	Tera Term	4.87
Windows 7, Windows 10	Cygwin	1.1.6
Linux Ubuntu L4.5	Tera Term	4.87

OS	Client	Version
Linux Ubuntu L4.4	LXTerminal	0.2.0
OSX 10.12 (16A323)	Term2	3.010
OSX 10.12 (16A323)	vSSH	1.11.1

Default Ports

The following default ports are normally open on GigaVUE Cloud Suite nodes:

Table 4: Open Default Ports

Port Number	Protocol	Description	Service/Server
22	TCP	SSH	OpenSSH_8.8p1
80	TCP	HTTP	Apache httpd
161	UDP	SNMP	SNMP
443	TCP	HTTPS	Apache httpd
9090	TCP	APIs	Gigamon

Other default ports are normally closed on GigaVUE Cloud Suite nodes, unless configured:

Table 5: Default Ports, Normally Closed

Port Number	Description
20	FTP
49	TACACS+
123	NTP
162	SNMP host
389	LDAP
514	syslog
1080	Web proxy
1812	RADIUS
2055	NetFlow Collector

The following table contains examples of other valid ports, depending on vendor:

Table 6: Other Valid Ports

Port Number	Description
53	DNS
25/465/587	SMTP

Port Number	Description
319/120	PTP
256	Route Access Protocol (RAP)
512	Binary Interchange File Format (BIFF)

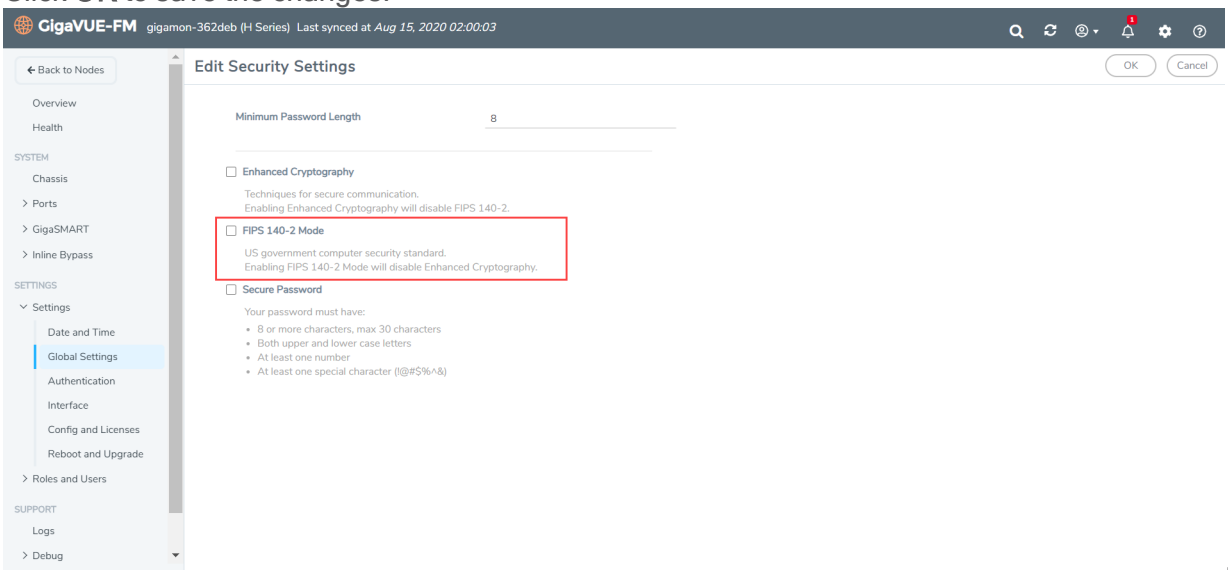
FIPS 140-2 Compliance

GigaVUE-OS is compliant with the Federal Information Processing Standard (FIPS), a US government standard for security requirements of cryptographic modules. The Gigamon Linux-based cryptographic module (the FIPS module) provides cryptographic functions for GigaVUE Cloud Suite nodes and offers a high level of security for the Ethernet management interface. The FIPS module is compliant with FIPS 140-2 Level 1 and was validated by the National Institute of Standards and Technology (NIST). The certificate number is 2128.

Also, OpenSSL is integrated with the FIPS module and is updated to version 1.0.2zf.

To enable FIPS:

1. Select **Settings > Global Settings > Security**.
2. Click **Edit**.
3. On the **Edit Security Settings** page, select **FIPS 140-2 Mode**.
4. Click **OK** to save the changes.



Once FIPS is enabled, the device will reload and the device configuration will be reset. All traffic, keys and certification configurations will be cleared.

For communications with the GigaVUE Cloud Suite node, SSL or SSH clients are requested to use high strength ciphers during the session set up negotiation. A high strength cipher is one that uses a key that is equal to or greater than 128 bits.

Weak ciphers will be rejected by the GigaVUE Cloud Suite node. For example, if a client attempts to connect to the GigaVUE Cloud Suite Ethernet management port using blowfish, the following error message will be displayed: *No matching cipher found*.

UC APL Compliance

GigaVUE Cloud Suite HC Series products are compliant with Unified Capabilities Approved Products List (UC APL). The products include the GigaVUE-HC2, as well as the GigaVUE Cloud Suite-TA10 and GigaVUE Cloud Suite-TA40.

UC APL certification ensures that the GigaVUE Cloud Suite HC Series products comply with Internet Engineering Task Force (IETF) and Defense Information Systems Agency (DISA) standards on Internet Protocol (IP) devices. The UC APL certification verifies that the GigaVUE Cloud Suite H Series products comply with and are configured to be consistent with the DISA Field Security Office (FSO) Security Technical Implementation Guides (STIG).

Certified equipment is listed on the US Department of Defense (DoD) UC APL list.

UC APL requires the GigaVUE Cloud Suite HC Series products run the most current version of the Apache branch to ensure the most secure version is used. The component versions of Apache on GigaVUE Cloud Suite HC Series products are as follows:

- httpd 2.4.54
- apr 1.6.3
- apr-util 1.6.1
- pcre 7.8

For more information on configuring UC APL certification, see UC APL Compliance

Common Criteria

The Common Criteria for Information Technology Security Evaluation, or Common Criteria, is an international standard (ISO/IEC 15408) for computer security certification.

Common Criteria is a framework in which computer system users can specify their security functional requirements and security assurance requirements (SFRs and SARs, respectively) through the use of Protection Profiles (PPs), vendors can then implement and/or make claims about the security attributes of their products, and testing laboratories can evaluate the products to determine if those claims are met.

Common Criteria provides assurance that the process of specification, implementation, and evaluation of a computer security product has been conducted in a rigorous and standard and repeatable manner, at a level that is commensurate with the target environment for use.

Common Criteria is used as the basis for a Government driven certification scheme. Typically, evaluations are conducted for the use of Federal Government agencies and critical infrastructure.

Gigamon is actively keeping our products certified. Visit the NIAP CCEVS website to see the current GigaVUE-OS and models that are currently certified or check which version of the GigaVUE-OS is currently in-evaluation.

Configure Common Criteria

To certify a GigaVUE Cloud Suite node with Common Criteria, you must perform the following:

- Enable enhanced cryptography mode. Refer to Configure Enhanced Cryptography Mode.
- Enable secure passwords mode and configure a password length of 15. Refer to Configure Secure Passwords Mode.
- Configure syslog to send audit data securely. Refer to Encrypt Syslog Audit Data.

Manage Roles and Users—GigaVUE-OS

This chapter provides basic information about role-based access and the procedures for manage roles and users in GigaVUE-OS and assigning access permissions. The following topics are covered:

- About Role-Based Access
- Configure Role-Based Access and Setting Permissions in H-VUE

About Role-Based Access

GigaVUE HC Series nodes use role-based access to manage access to the Gigamon Visibility Platform. Through GigaVUE-FM, you can create roles and assign users to those roles, allowing you to partition separate sets of tool ports for different groups of users while different sets of network ports are shared. This makes it possible to provides different groups of users with different analysis needs to have full access to the packets they need for their tools.

Notes:

- To take advantage of GigaVUE-FM, Gigamon highly recommends that you have the same user name and password (with roles) registered with the physical node(s). In doing so, GigaVUE-FM provides the ability to manage and monitor physical devices with all of its features.
- If a user has full access (super admin or admin) on GigaVUE-FM but limited access on the node, they will be able to view the traffic and all the ports from the Dashboard page, Audit logs and Reports but will not be able to configure the node itself.

- If the user with the same name is created on GigaVUE-FM and the node but the passwords are different, the user will be able to view all the ports on the node from GigaVUE-FM but will not be able to configure the node from GigaVUE-FM. In order to have full access, it is required that both the username and passwords be identical on the node as well as GigaVUE-FM. To avoid such situations it is recommended to use centralized authorization servers such as LDAP, RADIUS or TACACS+.

Role-Based Access and Setting Permissions in GigaVUE Cloud Suite Nodes

To know more about RBAC in GigaVUE-FM see the following topics:

- Add Users
- Create Roles

Additional Sources of Information

This appendix provides additional sources of information. Refer to the following sections for details:

- Documentation
- Documentation Feedback
- Contact Technical Support
- Contact Sales
- The VÜE Community

Documentation

This table lists all the guides provided for GigaVUE Cloud Suite software and hardware. The first row provides an All-Documents Zip file that contains all the guides in the set for the release.

NOTE: In the online documentation, view What's New to access quick links to topics for each of the new features in this Release; view Documentation Downloads to download all PDFs.

Table 1: Documentation Set for Gigamon Products

GigaVUE Cloud Suite 6.2 Hardware and Software Guides
DID YOU KNOW? If you keep all PDFs for a release in common folder, you can easily search across the doc set by opening one of the files in Acrobat and choosing **Edit > Advanced Search** from the menu. This opens an interface that allows you to select a directory and search across all PDFs in a folder.
Hardware how to unpack, assemble, rack-mount, connect, and initially configure ports the respective GigaVUE Cloud Suite devices; reference information and specifications for the respective GigaVUE Cloud Suite devices
GigaVUE-HC1 Hardware Installation Guide
GigaVUE-HC2 Hardware Installation Guide
GigaVUE-HC3 Hardware Installation Guide
GigaVUE-HC1-Plus Hardware Installation Guide
GigaVUE-TA25E Hardware Installation Guide
GigaVUE-TA200E Hardware Installation Guide
GigaVUE-TA25 Hardware Installation Guide
GigaVUE-TA200 Hardware Installation Guide
GigaVUE-TA400 Hardware Installation Guide
GigaVUE-TA10 Hardware Installation Guide
GigaVUE-TA40 Hardware Installation Guide

GigaVUE Cloud Suite 6.2 Hardware and Software Guides
GigaVUE-TA100 Hardware Installation Guide
GigaVUE-TA100-CXP Hardware Installation Guide
GigaVUE-OS Installation Guide for DELL S4112F-ON
G-TAP A Series 2 Installation Guide
GigaVUE M Series Hardware Installation Guide
GigaVUE-FM Hardware Appliance Guide for GFM-HW1-FM010 and and GFM-HW1-FM001-HW
Software Installation and Upgrade Guides
GigaVUE-FM Installation, Migration, and Upgrade Guide
GigaVUE-OS Upgrade Guide
GigaVUE V Series Migration Guide
Fabric Management and Administration Guides
GigaVUE Administration Guide covers both GigaVUE-OS and GigaVUE-FM
GigaVUE Fabric Management Guide how to install, deploy, and operate GigaVUE-FM; how to configure GigaSMART operations; covers both GigaVUE-FM and GigaVUE-OS features
Cloud Guides how to configure the GigaVUE Cloud Suite components and set up traffic monitoring sessions for the cloud platforms
*GigaVUE V Series Applications Guide
GigaVUE V Series Quick Start Guide
GigaVUE Cloud Suite for AWS-GigaVUE V Series 2 Guide
GigaVUE Cloud Suite for Azure-GigaVUE V Series 2 Guide
GigaVUE Cloud Suite for OpenStack-GigaVUE V Series 2 Guide
*GigaVUE Cloud Suite for Nutanix Guide—GigaVUE V Series 2 Guide
GigaVUE Cloud Suite for VMware—GigaVUE V Series Guide
*GigaVUE Cloud Suite for Third Party Orchestration
GigaVUE Cloud Suite for AnyCloud Guide
Universal Container Tap Guide
Gigamon Containerized Broker Guide

GigaVUE Cloud Suite 6.2 Hardware and Software Guides
GigaVUE Cloud Suite for AWS-GigaVUE V Series 1 Guide
GigaVUE Cloud Suite for Azure-GigaVUE V Series 1 Guide
GigaVUE Cloud Suite for OpenStack-GigaVUE V Series 1 Guide
GigaVUE Cloud Suite for Nutanix Guide—GigaVUE-VM Guide
GigaVUE Cloud Suite for VMware—GigaVUE-VM Guide
Reference Guides
GigaVUE-OS CLI Reference Guide library of GigaVUE-OS CLI (Command Line Interface) commands used to configure and operate GigaVUE HC Series and TA Series devices
GigaVUE-OS Cabling Quick Reference Guide guidelines for the different types of cables used to connect Gigamon devices
GigaVUE-OS Compatibility and Interoperability Matrix compatibility information and interoperability requirements for Gigamon devices
GigaVUE-FM REST API Reference in GigaVUE-FM User's Guide samples uses of the GigaVUE-FM Application Program Interfaces (APIs)
Release Notes
GigaVUE-OS, GigaVUE-FM, GigaVUE-VM, G-TAP A Series, and GigaVUE Cloud Suite Release Notes new features, resolved issues, and known issues in this release ; important notes regarding installing and upgrading to this release **NOTE:** Release Notes are not included in the online documentation. **NOTE:** Registered Customers can log in to My Gigamon to download the Software and Release Notes from the Software & Docs page on to My Gigamon. Refer to How to Download Software and Release Notes from My Gigamon.
In-Product Help
GigaVUE-FM Online Help how to install, deploy, and operate GigaVUE-FM.

How to Download Software and Release Notes from My Gigamon

Registered Customers can download software and corresponding Release Notes documents from the **Software & Release Notes** page on to My Gigamon. Use the My Gigamon Software & Docs page to download:

- Gigamon Software installation and upgrade images,
- Release Notes for Gigamon Software, or

- Older versions of PDFs (pre-v5.7).

To download release-specific software, release notes, or older PDFs:

1. Log in to My Gigamon
2. Click on the **Software & Release Notes** link.
3. Use the **Product** and **Release** filters to find documentation for the current release. For example, select Product: "GigaVUE-FM" and Release: "5.6," enter "pdf" in the search box, and then click **GO** to view all PDF documentation for GigaVUE-FM 5.6.xx.

NOTE: My Gigamon is available to registered customers only. Newer documentation PDFs, with the exception of release notes, are all available through the publicly available online documentation.

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We are continuously improving our documentation to make it more accessible while maintaining accuracy and ease of use. Your feedback helps us to improve. To provide feedback and report issues in our documentation, send an email to: documentationfeedback@gigamon.com

Please provide the following information in the email to help us identify and resolve the issue. Copy and paste this form into your email, complete it as able, and send. We will respond as soon as possible.

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For information about Technical Support: Go to **Settings** > **Support** > **Contact Support** in GigaVUE-FM.

You can also refer to https://www.gigamon.com/support-and-services/contact-support for Technical Support hours and contact information.

Email Technical Support at support@gigamon.com.

Contact Sales

Use the following information to Gigamon channel partner or Gigamon sales representatives.

Telephone: +1.408.831.4025

Sales: inside.sales@gigamon.com

Partners: www.gigamon.com/partners.html

Premium Support

Email Gigamon at inside.sales@gigamon.com for information on purchasing 24x7 Premium Support. Premium Support entitles you to round-the-clock phone support with a dedicated Support Engineer every day of the week.

The VÜE Community

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Glossary

D

decrypt list

need to decrypt (formerly blacklist)

decryptlist

need to decrypt - CLI Command (formerly blacklist)

drop list

selective forwarding - drop (formerly blacklist)

F

forward list

selective forwarding - forward (formerly whitelist)

L

leader

leader in clustering node relationship (formerly master)

M

member node

follower in clustering node relationship (formerly slave or non-master)

N

no-decrypt list

no need to decrypt (formerly whitelist)

nodecryptlist

no need to decrypt- CLI Command (formerly whitelist)

P

primary source

root timing; transmits sync info to clocks in its network segment (formerly grandmaster)

R

receiver

follower in a bidirectional clock relationship (formerly slave)

S

source

leader in a bidirectional clock relationship (formerly master)