



GigaVUE Cloud Suite for Azure - Deployment Guide

GigaVUE Cloud Suite

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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
6.8.00	1.1	10/11/2024	This update includes bug fixes and minor cosmetic changes for improved usability and document consistency.
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GigaVUE Cloud Suite Deployment Guide – Azure

This guide describes how to install, configure and deploy the GigaVUE Cloud solution on the Microsoft® Azure cloud. Use this document for instructions on configuring the GigaVUE Cloud components and setting up the traffic monitoring sessions for the Azure Cloud.

Refer to the following sections for details:

- [Overview of GigaVUE Cloud Suite for Azure](#)
- [Introduction to the Supported Features on GigaVUE Cloud Suite for Azure](#)
- [Licensing GigaVUE Cloud Suite for Azure](#)
- [Points to Note for GigaVUE Cloud Suite for Azure](#)
- [Get Started with GigaVUE Cloud Suite for Azure](#)
- [Deployment Options for GigaVUE Cloud Suite for Azure](#)
- [Deploy GigaVUE Cloud Suite for Azure](#)
- [Configure Secure Tunnel \(Azure\)](#)
- [Create Prefiltering Policy Template](#)
- [Create Precryption Template for UCT-V](#)
- [Configure Monitoring Session](#)
- [Configure Precryption in UCT-V](#)
- [Check for Required IAM Permissions in Azure](#)
- [Migrate Application Intelligence Session to Monitoring Session](#)
- [Monitor Cloud Health](#)
- [Administer GigaVUE Cloud Suite for Azure](#)

Overview of GigaVUE Cloud Suite for Azure

GigaVUE Cloud Suite™ for Azure extends complete visibility to workloads running in Azure and provides your security and observability tools with actionable network-level intelligence. GigaVUE Cloud Suite for Azure resides in the VNets and aggregates flows from all compute sites, including from native traffic mirroring nodes. Gigamon provides advanced traffic processing to generate metadata of traffic flows beyond traditional logging. This helps detect vulnerabilities or undesired activities and ensures effective and comprehensive cloud security with continuous monitoring.

All the elements of GigaVUE Cloud Suite for Azure reside entirely in the cloud; they acquire traffic from every compute site through UCT-V (agent-like instances provisioned on each Virtual Machine). Gigamon auto-scales to adapt dynamically to changes in your virtual machine.

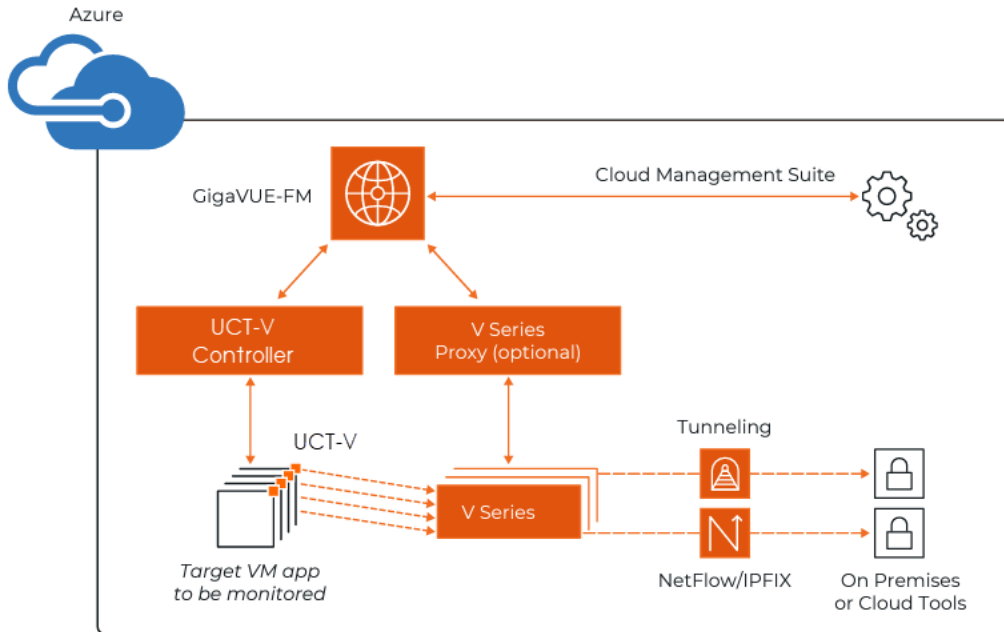
GigaVUE Cloud Suite for Azure provides the following benefits:

Improves tool capacity: Virtual security and monitoring tasks are offloaded from tools to improve effectiveness, reduce scaling and minimize costs.

Fully automates the infrastructure: Automatically identifies new and relocated workloads, instantiates and scales visibility nodes, and configures new traffic policies as needed.

Simplifies operation: Centralizes orchestration and management with a single-pane-of-glass visualization portal across any hybrid network.

Helps accelerate cloud migrations: Unifies on-premise and hybrid cloud environments with a common deep observability pipeline, centralized control, and complete.



GigaVUE-FM

GigaVUE-FM fabric manager provides unified access, centralized administration, and high-level visibility for all GigaVUE traffic visibility nodes in the enterprise or data center, allowing a global perspective which is not possible from individual nodes.

In addition to centralized management and monitoring GigaVUE-FM helps you with configuration of the physical and virtual traffic policies for the visibility fabric thereby allowing administrators to map and direct network traffic to the tools and analytics infrastructure.

You have the flexibility of installing GigaVUE-FM across various supported platforms. Additionally, you can effectively manage deployments in any of the cloud platform as long as there exists IP connectivity for seamless operation.

For more information on installing GigaVUE-FM on Azure, see [Install GigaVUE-FM on Azure](#).

UCT-V

UCT-V (earlier known as G-vTAP Agent) is an agent that is installed in the VM instance. UCT-V mirrors the selected traffic from the instances (virtual machines) to the GigaVUE V Series Node. The UCT-V is offered as a Debian (.deb), Redhat Package Manager (.rpm)

package, ZIP and MSI .

Next generation UCT-V is a lightweight solution that acquires traffic from Virtual Machines and in-turn improves the performance of the UCT-V mirroring capability. The solution has a prefiltering capability at the tap level that reduces the traffic flow from the agent to GigaVUE V Series Node and in-turn reduces the load on the GigaVUE V Series Node. Next generation UCT-V gets activated on Windows and also on Linux systems with a Kernel version above 4.18.

Prefiltering helps you reduce the costs significantly. It allows you to filter the traffic at UCT-Vs before sending it to the GigaVUE V Series Node. For prefiltering the traffic, GigaVUE-FM allows you to create a prefiltering policy template and the template can be applied to a monitoring session.

For more information on installing the UCT-V see, [Install UCT-V](#).

UCT-V Controller

UCT-V Controller (earlier known as G-vTAP Controller) manages multiple UCT-Vs and orchestrates the flow of mirrored traffic to GigaVUE V Series Nodes. GigaVUE-FM uses one or more UCT-V Controllers to communicate with the UCT-Vs. A UCT-V Controller can only manage UCT-Vs that has the same version. For example, the UCT-V Controller 6.8.00 can only manage UCT-Vs 6.8.00. If you have the previous version of UCT-V still deployed in the Virtual Network, you must configure both UCT-V Controller 6.8.00 and the previous version. While configuring the UCT-V Controllers, you can also specify the tunnel type to be used for carrying the mirrored traffic from the UCT-Vs to the GigaVUE V Series Nodes.

NOTE: A single UCT-V Controller can manage up to 1000 UCT-Vs.

GigaVUE V Series Node

GigaVUE® V Series Node is a visibility node that aggregates mirrored traffic. It applies filters, manipulates the packets using GigaSMART applications, and distributes the optimized traffic to cloud-based tools or backhaul to on premise device or tools. GigaVUE Cloud Suite for AWS uses the TLS-PCAPNG, ERSPAN, L2GRE, UDPGRE and, VXLAN tunnels to deliver traffic to tool endpoints.

For more information on installing and configuring a GigaVUE V Series Node, refer to [Configure GigaVUE Fabric Components in GigaVUE-FM](#).

GigaVUE V Series Proxy

GigaVUE V Series Proxy manages multiple GigaVUE V Series nodes and orchestrates the flow of traffic from GigaVUE V Series nodes to the GigaVUE-FM. GigaVUE-FM uses one or more GigaVUE V Series Proxies to communicate with the GigaVUE V Series nodes.

For more information on installing and configuring a GigaVUE V Series Proxy, refer to [Configure GigaVUE Fabric Components in GigaVUE-FM](#)

Monitoring Domain

Monitoring domain helps you establish connection in between GigaVUE-FM and AWS platform. Once the connection is established, you can use GigaVUE-FM to launch the GigaVUE V Series Nodes, GigaVUE V Series Proxy and UCT-V Controller.

For more information on creating a Monitoring Domain, see [Create Monitoring Domain](#).

Monitoring Session

Monitoring sessions are the rules created in GigaVUE-FM to collect inventory data from all target instances in your cloud environment. You can design your monitoring session to include or exclude the instances you want to monitor. You can also choose to monitor egress, ingress, or all traffic.

When a new target instance is added to your cloud environment, GigaVUE-FM automatically detects and adds the instance to your monitoring session. Similarly, when an instance is removed, it updates the monitoring sessions.

For more information on creating a monitoring session, see [Configure Monitoring Session](#).

Introduction to the Supported Features on GigaVUE Cloud Suite for Azure

GigaVUE Cloud Suite for Azure supports the following features:

- [Precryption™](#)
- [Secure Tunnels](#)

- [Prefiltering](#)
- [Monitor Cloud Health](#)
- [Analytics for Virtual Resources](#)
- [Customer Orchestrated Source - Use Case](#)

Precription™

License: Requires **SecureVUE Plus** license.

Gigamon Precription™ technology¹ redefines security for virtual, cloud, and containerized applications, delivering plain text visibility of encrypted communications to the full security stack, without the traditional cost and complexity of decryption.

This section explains about:

- [How Gigamon Precription Technology Works](#)
- [Why Gigamon Precription](#)
- [Key Features](#)
- [Key Benefits](#)
- [Precription Technology on Single Node](#)
- [Precription Technology on Multi-Node](#)
- [Supported Platforms](#)
- [Prerequisites](#)

How Gigamon Precription Technology Works

Precription technology leverages native Linux functionality to tap, or copy, communications between the application and the encryption library, such as OpenSSL.

¹Disclaimer: The Precription feature allows users to acquire traffic after it has been decrypted. This traffic can be acquired from both virtual machine (VM) and container-based solutions, and is then sent to the V Series product for further processing. The Precription feature provides an option to use encrypted tunnels for communication between the acquisition (via UCT-C or UCT-V) of unencrypted traffic and the traffic processing (at the V Series) which will better safeguard the traffic while in transit. However, if a user does not use the option for encrypted tunnels for communication, decrypted traffic will remain unencrypted while in transit between the point of acquisition and processing.

Please note that this information is subject to change, and we encourage you to stay updated on any modifications or improvements made to this feature.

By using this feature, you acknowledge and accept the current limitations and potential risks associated with the transmission of decrypted traffic.



In this way, Precryption captures network traffic in plaintext, either before it has been encrypted, or after it has been decrypted. Precryption functionality doesn't interfere with the actual encryption of the message nor its transmission across the network. There's no proxy, no retransmissions, no break-and-inspect. Instead, this plaintext copy is forwarded to the Gigamon Deep Observability Pipeline for further optimization, transformation, replication, and delivery to tools.

Precryption technology is built on GigaVUE® Universal Cloud Tap (UCT) and works across hybrid and multi-cloud environments, including on-prem and virtual platforms. As a bonus, UCT with Precryption technology runs independent of the application, and doesn't have to be baked into the application development life cycle.

Why Gigamon Precryption

GigaVUE Universal Cloud Tap with Precryption technology is a lightweight, friction-free solution that eliminates blind spots present in modern hybrid cloud infrastructure, providing East-West visibility into virtual, cloud, and container platforms. It delivers unobscured visibility into all encryption types including TLS 1.3, without managing and maintaining decryption keys. IT organizations can now manage compliance, keep private communications private, architect the necessary foundation for Zero Trust, and boost security tool effectiveness by a factor of 5x or more.

Key Features

The following are the key features of this technology:

- Plain text visibility into communications with modern encryption (TLS 1.3, mTLS, and TLS 1.2 with Perfect Forward Secrecy).
- Plain text visibility into communications with legacy encryption (TLS 1.2 and earlier).
- Non intrusive traffic access without agents running inside container workloads.
- Elimination of expensive resource consumption associated with traditional traffic decryption.
- Elimination of key management required by traditional traffic decryption.
- Zero performance impact based on cipher type, strength, or version.
- Support across hybrid and multi-cloud environments, including on-prem, virtual, and container platforms.

- Keep private communications private across the network with plaintext threat activity delivered to security tools.
- Integration with Gigamon Deep Observability Pipeline for the full suite of optimization, transformation, and brokering capabilities.

Key Benefits

The following are the key benefits of this technology:

- Eliminate blind spots for encrypted East-West (lateral) and North-South communications, including traffic that may not cross firewalls.
- Monitor application communications with an independent approach that enhances development team velocity.
- Extend security tools' visibility to all communications, regardless of encryption type.
- Achieve maximum traffic tapping efficiency across virtual environments.
- Leverage a 5–7x performance boost for security tools by consuming unencrypted data.
- Support a Zero Trust architecture founded on deep observability.
- Maintain privacy and compliance adherence associated with decrypted traffic management.

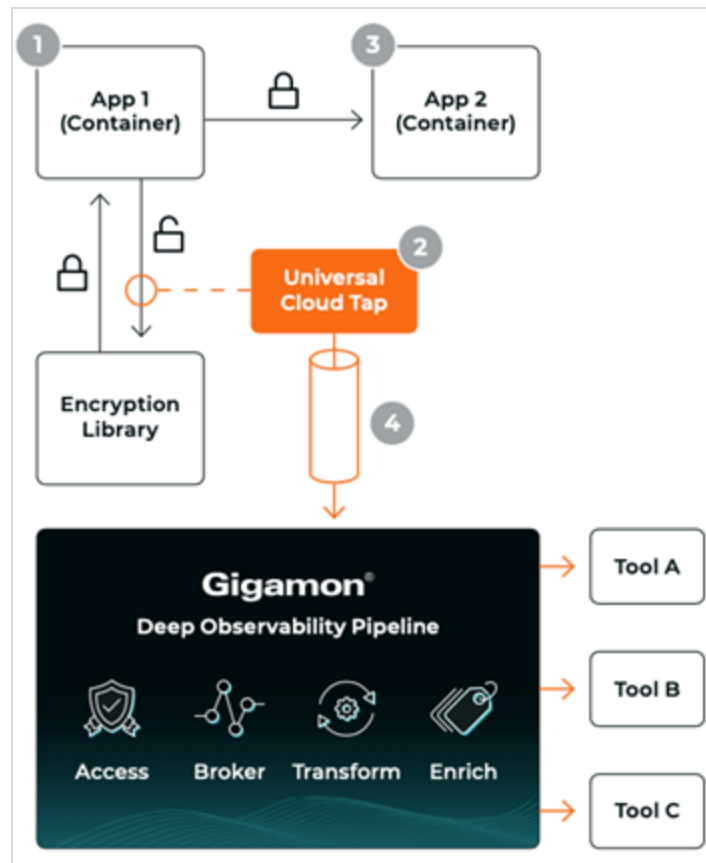
How Gigamon Precryption Technology Works

This section explains about how Precryption technology works on single node and multiple node in the following sections:

- [Precryption Technology on Single Node](#)
- [Precryption Technology on Multi-Node](#)

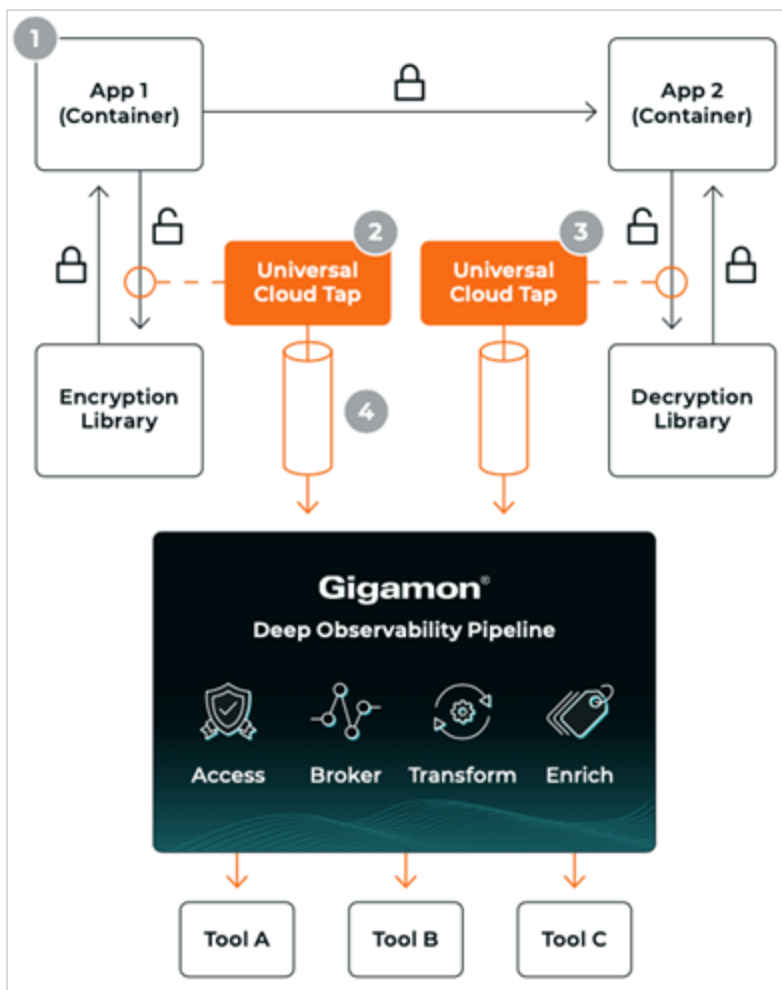
Precryption Technology on Single Node

1. When any application needs to encrypt a message, it uses an encryption library, such as OpenSSL, to perform the actual encryption.
2. GigaVUE Universal Cloud Tap (UCT), enabled with Precryption technology, gets a copy of this message before it's encrypted on the network.
3. The encrypted message is sent to the receiving application, with unmodified encryption. No proxy, no re- encryption, no retransmissions.
4. GigaVUE UCT creates packet headers as needed, encapsulates in a tunnel, and forwards to GigaVUE V Series in the deep observability pipeline. Gigamon further optimizes, transforms, and delivers data to tools, without need for further decryption



Pre-encryption Technology on Multi-Node

1. When any application needs to encrypt a message, it uses an encryption library, such as OpenSSL, to perform the actual encryption.
2. GigaVUE Universal Cloud Tap (UCT), enabled with Pre-encryption, gets a copy of this message before it's encrypted on the network.
3. Optionally, GigaVUE UCT enabled with Pre-encryption can also acquire a copy of the message from the server end, after the decryption.
4. GigaVUE UCT creates packet headers as needed, encapsulates in a tunnel, and forwards to V Series in the deep observability pipeline where it is further enriched, transformed, and delivered to tools, without further decryption.



Supported Platforms

VM environments: Precryption™ is supported on the following VM platforms where UCT-V is supported:

Platform Type	Platform
Public Cloud	<ul style="list-style-type: none"> Azure Azure GCP (via Third Party Orchestration)
Private Cloud	<ul style="list-style-type: none"> OpenStack VMware ESXi (via Third Party Orchestration only) VMware NSX-T (via Third Party Orchestration only)

Container environments: Precryption™ is supported on the following container platforms where UCT-C is supported:

Platform Type	Platform
Public Cloud	<ul style="list-style-type: none"> EKS AKS
Private Cloud	<ul style="list-style-type: none"> OpenShift Native Kubernetes (VMware)

Prerequisites

Deployment Prerequisites

- OpenSSL version 1.0.2, version 1.1.0, version 1.1.1, and version 3.x
- For UCT-C, worker pods should always have libssl installed to ensure that UCT-C Tap can tap the precrypted packets from the worker pods whenever libssl calls are made from the worker pods.
- For GigaVUE-FM, to capture the statistics, you must add the port 5671 in the security group
- Port 9900 should be enabled in security group settings on the UCT-V controller to receive the statistics information from UCT-V
- For UCT-C, you must add the port 42042 and port 5671 in the security group

License Prerequisite

- Precryption™ requires SecureVUE Plus license.

Supported Kernel Version

Precryption is supported for Kernel Version 5.4 and above for all Linux and Ubuntu Operating Systems. For the Kernel versions below 5.4, refer to the following table:

Kernel Version	Operating System
4.18.0-193.el8.x86_64	RHEL release 8.2 (Ootpa)
4.18.0-240.el8.x86_64	RHEL release 8.3 (Ootpa)
4.18.0-305.76.1.el8_4.x86_64	RHEL release 8.4 (Ootpa)
4.18.0-348.12.2.el8_5.x86_64	RHEL release 8.5 (Ootpa)
4.18.0-372.9.1.el8.x86_64	RHEL release 8.6 (Ootpa)
4.18.0-423.el8.x86_64	RHEL release 8.7 Beta (Ootpa)
4.18.0-477.15.1.el8_8.x86_64	RHEL release 8.8 (Ootpa)
5.3.0-1024-kvm	ubuntu19.10
4.18.0-305.3.1	Rocky Linux 8.4
4.18.0-348	Rocky Linux 8.5
4.18.0-372.9.1	Rocky Linux 8.6

Kernel Version	Operating System
4.18.0-425.10.1	Rocky Linux 8.7
4.18.0-477.10.1	Rocky Linux 8.8
4.18.0-80.el8.x86_64	centos 8.2
4.18.0-240.1.1.el8_3.x86_64	centos 8.3
4.18.0-305.3.1.el8_4.x86_64	centos 8.4
4.18.0-408.el8.x86_64	centos 8.5

Note

- See the [Configure Precryption in UCT-V](#) section for details on how to enable Precryption™ in VM environments.
- See how [Secure Tunnels](#) feature can enable secure delivery of precrypted data.

Secure Tunnels

Secure Tunnel securely transfers the cloud captured packets on UCT-V and UCT-C to a GigaVUE V Series Node or Tool (only in case of UCT-C). The data from UCT-V and UCT-C are encapsulated in PCAPng format, and the encrypted data is sent over a TLS connection to a GigaVUE V Series Node.

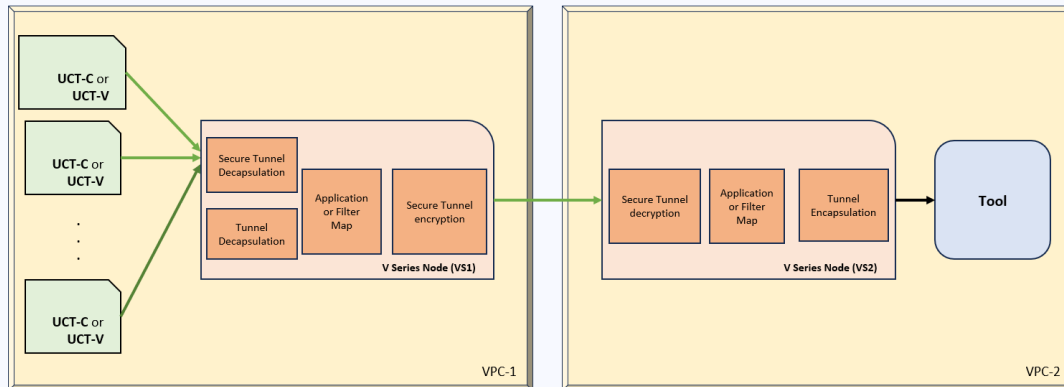
Secure Tunnel can also transfer the cloud captured packets from a GigaVUE V Series Node to another GigaVUE V Series Node.

In case of GigaVUE V Series Node to GigaVUE V Series node, the traffic from the GigaVUE V Series Node 1 is encapsulated using PCAPng format and transported to GigaVUE V Series Node 2 where the traffic is decapped. The secure tunnels between V Series Node to V Series Node have multiple uses cases.

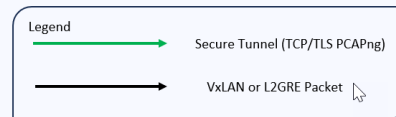
The GigaVUE V Series Node decapsulates and processes the packet per the configuration. The decapsulated packet can be sent to the application such as De-duplication, Application Intelligence, Load balancer and to the tool. The Load Balancer on this node can send the packets to multiple V Series Nodes, in this case the packets can be encapsulated again and sent over a secure tunnel.

Secure Tunnel Use Case

Tool in remote Virtual Private Cloud (VPC) – Single V Series Node



- VS1 to VS2 : Single TCP/TLS tunnel connection
- VS2 to Tool : Could be multiple tools / tunnels



3

Supported Platforms

Secure tunnel is supported on:

- OpenStack
- Azure
- AWS
- VMware NSX-T (only for Third Party Orchestration)
- VMware ESXi (only for Third Party Orchestration)
- Nutanix (only for Third Party Orchestration)
- Google Cloud Platform (only for Third Party Orchestration)

For information about how to configure secure tunnels, refer to the section [Configure Secure Tunnel \(Azure\)](#).

Prefiltering

Prefiltering allows you to filter the traffic at UCT-Vs before sending it to the GigaVUE V Series Nodes. For prefiltering the traffic, GigaVUE-FM allows you to create a prefiltering policy template and the policy template can be applied to a monitoring session.

You can define a policy template with rules and filter values. A policy template once created can be applied to multiple monitoring sessions. However a monitoring session can use only one template.

Each monitoring session can have a maximum of 16 rules.

You can also edit a specific policy template with required rules and filter values for a particular monitoring session while editing a monitoring session. However, the customized changes are not saved in the template.

Some of the points that must be remembered for prefiltering in Next Generation UCT-Vs are:

- Prefiltering is supported only in Next Generation UCT-Vs. It is not supported for classic mirroring mechanism.
- Prefiltering is supported for both Linux and Windows UCT-Vs .
- For single monitoring session only one prefiltering policy is applicable. All the agents in that monitoring sessions are configured with respective prefiltering policy .
- For multiple monitoring session using the same agent to acquire the traffic, if a monitoring session uses a prefilter and the other monitoring session does not use a prefilter, then the prefiltering policy cannot be applied. The policy is set to PassAll and prefiltering is not performed.
- When multiple monitoring sessions utilize a single agent to capture traffic, and one session uses a prefilter while the other does not, then the prefiltering policy is not applied. In this scenario, the policy defaults to PassAll, resulting in the omission of any prefiltering.

For more information on configuring a prefilter, refer to [Create Prefiltering Policy Template](#)

Monitor Cloud Health

GigaVUE-FM allows you to monitor the traffic and configuration health status of the monitoring session and its individual components. This section provides detailed information on how to view the traffic and configuration health status of the monitoring session and its individual components. For more information, see [Monitor Cloud Health](#).

Analytics for Virtual Resources

Analytics in GigaVUE-FM is a standalone service that provides data visualization capabilities. Using Analytics¹ you can create visual elements such as charts that are embedded as visualizations. The visualizations are grouped together in dashboards. You can also create search objects using Analytics. Dashboards, Visualizations and Search Objects are called Analytics objects. Refer to Analytics topic in *GigaVUE Fabric Management Guide* for more detailed information on Analytics.

Rules and Notes:


¹Analytics uses the OpenSearch front-end application to visualize and analyze the data in the OpenSearch database of GigaVUE-FM.

- You cannot edit or delete these default dashboards. However, you can clone the dashboards and visualizations. Refer to the Clone Dashboard section in GigaVUE-FM Installation and Upgrade Guide for more details.
- Use the Time Filter option to select the required time interval for which you need to view the visualization.

Virtual Inventory Statistics and Cloud Applications Dashboard

Analytics dashboards allow users to monitor the physical and virtual environment and detect anomalous behavior and plan accordingly. Refer to the [Analytics](#) section in *GigaVUE Fabric Management Guide* for details on how to create a new dashboard, clone a dashboard, create a new visualization, and other information about the Discover page and Reports page.

To access the dashboards:

1. Go to  -> **Analytics -> Dashboards.**
2. Click on the required dashboard to view the visualizations.

The following table lists the various virtual dashboards:

Dashboard	Displays	Visualizations	Displays
Inventory Status (Virtual)	Statistical details of the virtual inventory based on the platform and the health status. You can view the following metric details at the top of the dashboard: <ul style="list-style-type: none"> • Number of Monitoring Sessions • Number of V Series Nodes • Number of Connections • Number of GCB Nodes You can filter the visualizations based on the following control filters: <ul style="list-style-type: none"> • Platform • Health Status 	<i>V Series Node Status by Platform</i>	Number of healthy and unhealthy V Series Nodes for each of the supported cloud platforms.
		<i>Monitoring Session Status by Platform</i>	Number of healthy and unhealthy monitoring sessions for each of the supported cloud platforms
		<i>Connection Status by Platform</i>	Number of healthy and unhealthy connections for each of the supported cloud platforms
		<i>GCB Node Status by Platform</i>	Number of healthy and unhealthy GCB nodes for each of the supported cloud platforms
V Series Node Statistics	Displays the Statistics of the V Series node such as the CPU usage, trend of the receiving and transmitting	<i>V Series Node Maximum CPU Usage Trend</i>	Line chart that displays maximum CPU usage trend of the V Series node

Dashboard	Displays	Visualizations	Displays
	<p>packets of the V Series node.</p> <p>You can filter the visualizations based on the following control filters:</p> <ul style="list-style-type: none"> • Platform • Connection • V Series Node 		<p>in 5 minutes interval, for the past one hour.</p> <div data-bbox="1166 363 1456 705" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: The maximum CPU Usage trend refers to the CPU usage for service cores only. Small form factor V Series nodes do not have service cores, therefore the CPU usage is reported as 0.</p> </div>
		<p><i>V Series Node with Most CPU Usage For Past 5 minutes</i></p>	<p>Line chart that displays Maximum CPU usage of the V Series node for the past 5 minutes.</p> <div data-bbox="1166 932 1456 1079" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: You cannot use the time based filter options to filter and visualize the data.</p> </div>
		<p><i>V Series Node Rx Trend</i></p>	<p>Receiving trend of the V Series node in 5 minutes interval, for the past one hour.</p>
		<p><i>V Series Network Interfaces with Most Rx for Past 5 mins</i></p>	<p>Total packets received by each of the V Series network interface for the past 5 minutes.</p> <div data-bbox="1166 1499 1456 1646" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: You cannot use the time based filter options to filter and visualize the data.</p> </div>
		<p><i>V Series Node Tunnel Rx Packets/Errors</i></p>	<p>Displays the reception of packet at the Tunnel RX. This is the input to V Series Node, Grouping by tunnel identifier</p>

Dashboard	Displays	Visualizations	Displays
			comprising {monDomain, conn, VSN, tunnelName}, before aggregation.
		<i>V Series Node Tunnel Tx Packets/Errors</i>	TX is for output tunnels from VSN. V Series Node Tunnel Tx Packets/Errors
Dedup	<p>Displays visualizations related to Dedup application.</p> <p>You can filter the visualizations based on the following control filters:</p> <ul style="list-style-type: none"> Platform Connection V Series Node 	<i>Dedup Packets Detected/Dedup Packets Overload</i>	Statistics of the total de-duplicated packets received (ipV4Dup, ipV6Dup and nonIPDup) against the de-duplication application overload.
		<i>Dedup Packets Detected/Dedup Packets Overload Percentage</i>	Percentage of the de-duplicated packets received against the de-duplication application overload.
		<i>Total Traffic In/Out Dedup</i>	Total incoming traffic against total outgoing traffic
Tunnel (Virtual)	<p>Displays visualizations related to the tunneled traffic in both bytes as well as the number of packets.</p> <p>You can select the following control filters, based on which the visualizations will get updated:</p> <ul style="list-style-type: none"> Monitoring session: Select the required monitoring session. The cloud platform, monitoring domain and connection within the monitoring domain that is used by the V Series node are shown in square brackets, comma-separated, after the name, to distinguish the whole path to it. 	<i>Tunnel Bytes</i>	<p>Displays received tunnel traffic vs transmitted tunnel traffic, in bytes.</p> <ul style="list-style-type: none"> For input tunnel, transmitted traffic is displayed as zero. For output tunnel, received traffic is displayed as zero.

Dashboard	Displays	Visualizations	Displays
	<ul style="list-style-type: none"> • V Series node: Management IP of the V Series node. Choose the required V Series node from the drop-down. • Tunnel: Select any of the tunnels shown in the Tunnel drop-down. The direction for each tunnel is shown with the prefix in or out. <p>The following statistics are displayed for the tunnel:</p> <ul style="list-style-type: none"> • Received Bytes • Transmitted Bytes • Received Packets • Transmitted Packets • Received Errored Packets • Received Dropped Packets • Transmitted Errored Packets • Transmitted Dropped Packets 	<p><i>Tunnel Packets</i></p>	<p>Displays packet-level statistics for input and output tunnels that are part of a monitoring session.</p>
<p>App (Virtual)</p>	<p>Displays Byte and packet level statistics for the applications for the chosen monitoring session on the selected V Series node.</p> <p>You can select the following control filters, based on which the visualizations will get updated:</p> <ul style="list-style-type: none"> • Monitoring session • V Series node • Application: Select the required application. By default, the visualizations displayed includes all the applications. <p>By default, the following statistics are displayed:</p> <ul style="list-style-type: none"> • Received Bytes • Transmitted Bytes • Received Packets 	<p><i>App Bytes</i></p>	<p>Displays received traffic vs transmitted traffic, in Bytes.</p>

Dashboard	Displays	Visualizations	Displays
	<ul style="list-style-type: none"> • Transmitted Packets • Errored Packets • Dropped Packets 	<i>App Packets</i>	Displays received traffic vs transmitted traffic, as the number of packets.
End Point (Virtual)	<p>Displays Byte and packet level statistics for the un-tunneled traffic deployed on the V Series nodes.</p> <p>The following statistics that are shown for Endpoint (Virtual):</p> <ul style="list-style-type: none"> • Received Bytes • Transmitted Bytes • Received Packets • Transmitted Packets • Received Errored Packets • Received Dropped Packets • Transmitted Errored Packets • Transmitted Dropped Packets <p>The endpoint drop-down shows <V Series Node Management IP address : Network Interface> for each endpoint.</p> <p>You can select the following control filters, based on which the visualizations will get updated:</p> <ul style="list-style-type: none"> • Monitoring session • V Series node • Endpoint: Management IP of the V Series node followed by the Network Interface (NIC) 	<i>Endpoint Bytes</i>	Displays received traffic vs transmitted traffic, in Bytes.
		<i>Endpoint Packets</i>	Displays received traffic vs transmitted traffic, as the number of packets.

NOTE: The Tunnel (Virtual), App (Virtual) and Endpoint (Virtual) dashboards do not show data from the previous releases if the *Monitoring Session [Platform : Domain : Connection]* dashboard filter is applied. This is because, this filter relies on the new attributes in the OpenSearch database, which are available only from software version 5.14.00 and beyond.

Customer Orchestrated Source - Use Case

Customer Orchestrated Source is a traffic acquisition method that allows to tunnel traffic directly to the GigaVUE V Series Nodes. In cases where UCT-V or VPC Mirroring cannot be configured due to firewall or other restrictions, you can use this method and tunnel the traffic to GigaVUE V Series Node, where the traffic is processed.

When using Customer Orchestrated Source, you can directly configure tunnels or raw endpoints in the monitoring session, where you can use other applications like Slicing, Masking, Application Metadata, Application Filtering, etc., to process the tunneled traffic. Refer to [Create Ingress and Egress Tunnels \(Azure\)](#) and [Create Raw Endpoint \(Azure\)](#) for more detailed information on how to configure Tunnels and Raw End Points in the Monitoring Session.

You can configure an Ingress tunnel in the Monitoring Session with the GigaVUE V Series Node IP address as the destination IP address, then the traffic is directly tunneled to that GigaVUE V Series Node.

Licensing GigaVUE Cloud Suite for Azure

You can license the GigaVUE Cloud Suite using the following method:

- [Volume Based License \(VBL\)](#)

For purchasing licenses with the Volume-Based License (VBL) option, contact our Sales. Refer to [Contact Sales](#). For instructions on how to generate and apply license refer to the GigaVUE Licensing Guide.

Volume Based License (VBL)

All the GigaVUE V Series Nodes connected to GigaVUE-FM periodically report statistics on the amount of traffic that flows through the V Series Nodes. The statistics provide information on the actual data volume that flows through the V Series Nodes. All licensed applications, when running on the node, generate usage statistics.

Licensing for GigaVUE Cloud Suite is volume-based. In the Volume-Based Licensing (VBL) scheme, a license entitles specific applications on your V Series Nodes to use a specified amount of total data volume over the term of the license. The distribution of the license to individual nodes becomes irrelevant for GigaVUE accounting purpose.

FM tracks the total amount of data processed by the various licensed applications and provides visibility on the actual amount of data, each licensed application is using on each node, and tracks the overuse, if any.

Volume-based licenses are available as monthly subscription licenses with a service period of one month. Service period is the period of time for which the total usage or overage is tracked. There is a grace period for each license that is encoded in the license file. The license effectively provides data allowance for this additional time after the official end time of the license.

For purchasing licenses with the Volume-Based License (VBL) option, contact our Sales. Refer to [Contact Sales](#).

Base Bundles

In volume-based licensing scheme, licenses are offered as bundles. The following three base bundle types are available:

- CoreVUE
- NetVUE
- SecureVUEPlus

The bundles are available as SKUs¹. The number in the SKU indicates the total volume allowance of the SKU for that base bundle. For example, VBL-250T-BN-CORE has a daily volume allowance of 250 terabytes for CoreVUE bundle.

Bundle Replacement Policy

Refer to the following notes:

- You can always upgrade to a higher bundle but you cannot move to a lower version.
- You cannot have two different base bundles at the same time however, you can have multiple base bundles of the same type.
- Once upgraded to a higher bundle, the existing lower bundles will be automatically deactivated.

Add-on Packages

GigaVUE-FM allows you to add additional packages called add-on packages to the base bundles. These add-on packages allow you to add additional applications to your base bundles. Add-on packages have their own start/end date and volume specifications.

Rules for add-on packages:

¹Stock Keeping Unit. Refer to the [What is a License SKU?](#) section in the FAQs for Licenses chapter.

- Add-on packages can only to be added when there is an active base bundle available in GigaVUE-FM.
- The base bundle limits the total volume usage of the add-on package.
- If your add-on package has volume allowance less than the base bundle, then your add-on package can only handle volume allocated for add-on package.
- When the life term of an add-on package extends beyond the base bundle, then when the base bundle expires, the volume allowance of the add-on package will be reduced to zero until a new base bundle is added.

For more information about SKUs refer to the respective Data Sheets as follows:

GigaVUE Data Sheets
GigaVUE Cloud Suite for VMware Data Sheet
GigaVUE Cloud Suite for AWS Data Sheet
GigaVUE Cloud Suite for Azure Data Sheet
GigaVUE Cloud Suite for OpenStack
GigaVUE Cloud Suite for Nutanix
GigaVUE Cloud Suite for Kubernetes

How GigaVUE-FM Tracks Volume-Based License Usage

GigaVUE-FM tracks the license usage for each V Series node as follows:

- When you create and deploy a monitoring session, GigaVUE-FM allows you to use only those applications that are licensed at that point (applicable only for ACTIVE licenses, licenses in grace period are not included).
- When a license goes into grace period, you will be notified with an audit log.
- When a license expires (and has not been renewed yet), the monitoring sessions using the corresponding license will not be undeployed.


For releases prior to 6.4:

- The monitoring sessions using the corresponding license will be undeployed (but not deleted from the database).
- When a license is later renewed or newly imported, any undeployed monitoring sessions are redeployed.

NOTE: When the license expires, GigaVUE-FM displays a notification on the screen.

Manage Volume-based Licenses

To manage active Volume-based License:

1. On the left navigation pane, click .
2. Go to **System > Licenses**. From the top navigation bar, select the **VBL Active** from the **FM/Cloud** drop-down.

This page lists the following information about the active Volume-based Licenses:

Field	Description
SKUs	Unique identifier associated with the license
Bundles	Bundle to which the license belongs to
Volume	Total daily allowance volume
Starts	License start date
Ends	License end date
Type	Type of license (Commercial, Trial, Lab and other license types).
Activation ID	Activation ID
Entitlement ID	Entitlement ID

NOTE: The License Type and Activation ID are displayed by default in the VBL Active page. To display the Entitlement ID field, click on the column setting configuration option to enable the Entitlement ID field.

The expired licenses are displayed in the **VBL Inactive** page, which can be found under the **FM/Cloud** drop-down in the top navigation bar. This page lists the following information about the inactive Volume-based Licenses:

Field	Description
SKUs	Unique identifier associated with the license.
Bundles	Bundle to which the license belongs to.
Ends	License end date
Grace Period	Number of days the license is in grace period
Deactivation Date	Date the license got deactivated.
Revocation Code	License revocation code.
Status	License status.

NOTE: The License Type, Activation ID and Entitlement ID fields are not displayed by default in the VBL Inactive page. To display these fields, click on the column setting configuration option and enable these fields.

Use the following buttons to manage your VBL.


Button	Description
Activate Licenses	Use this button to activate a Volume-based License. For more information, refer to the topic Activate Volume-based Licenses of the GigaVUE Licensing Guide.
Email Volume Usage	Use this button to send the volume usage details to the email recipients.
Filter	Use this button to narrow down the list of active Volume-based Licenses that are displayed on the VBL active page.
Export	Use this button to export the details in the VBL active page to a CSV or XLSX file.
Deactivate	Use this button to deactivate the licenses. You can only deactivate licenses that are in grace period or that have expired.

For more detailed information on dashboards and reports generation for Volume-based Licensing refer to the following table:

For details about:	Reference section	Guide
How to generate Volume-based License reports	Generate VBL Usage Reports	GigaVUE Administration Guide
Volume-based Licensed report details	Volume Based License Usage Report	GigaVUE Administration Guide
Fabric health analytics dashboards for Volume-based Licenses usage	Dashboards for Volume Based Licenses Usage	GigaVUE-FM User Guide

Activate Volume-based Licenses

To activate Volume-based licenses:

1. On the left navigation pane, click .
2. Go to **System > Licenses**. From the top navigation bar, select the **VBL Active** from the **FM/Cloud** drop-down.

3. Click **Activate Licenses**. The **Activate License** page appears. Perform the following steps:
 - a. Download the fabric inventory file that contains information about GigaVUE-FM. Click **Next**. Refer to the [What is a Fabric Inventory File?](#) section for more details.
 - b. Navigate to the Licensing Portal. Upload the Fabric Inventory file in the portal. Once the fabric inventory file is uploaded, select the required license and click **Activate**. A license key is provided. Record the license key or keys.
 - c. Return to GigaVUE-FM and add the additional licenses.

Default Trial Licenses

After you install GigaVUE-FM, a default free 1TB of CoreVUE trial volume-based license (VBL) is provided one-time for 30 days (from the date of installation).

SKU	Feature	Type	Description	Start Date	End Date	Activation ID	Seats / Volume	Status
VBL-1T-BN-CORE-TRIAL	erspan	Trial	1T-AdvancedTu...	May 13, 2021	Jun 12, 2021	4e8cb5a4-7eb4...	1024 GB daily	Expired
VBL-1T-BN-CORE-TRIAL	geneve.slicing.m...	Trial	1T-BaseApps	May 13, 2021	Jun 12, 2021	4e8cb5a4-7eb4...	1024 GB daily	Expired
VBL-1T-BN-CORE-TRIAL	header-stripping...	Trial	1T-HeaderStripp...	May 13, 2021	Jun 12, 2021	4e8cb5a4-7eb4...	1024 GB daily	Expired
SMT-HC0-GEN1-DD1-SW-TM	dedup	Internal	HC2-GEN1-Ded...	May 14, 2021	May 14, 2022	a5d70642-95eb...	5 of 8 available	Grace Period
SMT-HC0-GEN1-APF-SW-TM	apf	Internal	HC2-GEN1-APF...	May 21, 2021	Never	ce782018-1b0f...	6 of 8 available	Active
SMT-HC0-GEN1-ASF-SW-TM	asf	Internal	HC2-GEN1-ASF...	May 21, 2021	Never	24618ae4-ddb6...	1 of 2 available	Active
SMT-HC0-GEN1-HS1-SW-TM	header-stripping...	Internal	HC2-GEN1-HS1...	May 21, 2021	Never	8d035388-013...	7 of 8 available	Active
SMT-HC0-GEN1-NF1-SW-TM	netflow	Internal	HC2-GEN1-Net...	May 21, 2021	Never	11d3f4dd-90c6...	7 of 8 available	Active
SMT-HC0-GEN1-SSL-SW-TM	ssl-decrypt	Internal	HC2-GEN1-SSL...	May 21, 2021	Never	307e2c0-aea5...	0 of 3 available	Active
SMT-HC3-GEN2-5GC-SW-TM	5G-Correlation n...	Commercial	HC3-GEN2-5GC...	Apr 22, 2021	Apr 22, 2022	760ceb6a-c919...	1 of 4 available	Expired
SMT-HC3-GEN2-GTPMAX-SW-TM	apfflowrule-gtp ...	Internal	HC3-GEN2-GTP...	Apr 22, 2021	Apr 22, 2022	7228d9a9-30ac...	4 of 4 available	Expired

This license includes the following applications:


- ERSPAN
- Geneve
- Slicing
- Masking
- Trailer
- Tunneling
- Load Balancing
- Enhanced Load Balancing
- Flowmap
- Header-stripping
- Add header

NOTE: There is no grace period for the trial license. If you do not have any other Volume-based licenses installed, then after 30 days, on expiry of the trial license, any deployed monitoring sessions will be undeployed from the existing GigaVUE V Series Nodes.

To deactivate the trial VBL refer to [Delete Default Trial Licenses](#) section for details.

Delete Default Trial Licenses

GigaVUE-FM allows you to deactivate the default trial licenses from this page. To deactivate the license:

1. On the left navigation pane, click .
2. Go to **System > Licenses > Floating**. Click **Activated**.
3. Click **Deactivate > Default Trial VBL**.

The VBL trial licenses is deactivated and is no longer listed in the Activated page. However, you can view these deactivated licenses from the Deactivated page.

Points to Note for GigaVUE Cloud Suite for Azure

IMPORTANT: If you are using a Cloud Solution Provider (CSP) in Azure, we require your CSP tenant ID and company name to be included in our Azure publishing portal. Please contact Gigamon Sales.

- When tool is deployed outside Azure, ensure there is connectivity between GigaVUE V Series Node tool interface and the tool. You can create connectivity by configuring a Network Address Translation (NAT) gateway.
- When GigaVUE-FM and GigaVUE V Series Nodes are deployed in different cloud platforms, then the GigaVUE-FM public IP address must be added to the **Data Notification Interface** as the Target Address in the Event Notifications page. Refer to [Configuration Settings](#) section for configuration details.

Get Started with GigaVUE Cloud Suite for Azure

This chapter describes how to plan and start the GigaVUE Cloud Suite for Azure deployment on the Microsoft® Azure cloud.

Refer to the following sections for details:

- [License Information](#)
- [Before You Begin](#)
- [Install GigaVUE-FM on Azure](#)
- [Permissions and Privileges \(Azure\)](#)

Before You Begin

You must create an account and configure a VNet as per your requirements. This section describes the requirements for launching the GigaVUE-FM VM.

- [Prerequisites for GigaVUE Cloud Suite for Azure](#)
- [VPN Connectivity](#)
- [Obtain GigaVUE-FM Image](#)
- [Enable Subscription for GigaVUE Cloud Suite for Azure](#)

Prerequisites for GigaVUE Cloud Suite for Azure

To enable the flow of traffic between the components and the monitoring tools, you must create the following requirements:

- [Resource Group](#)
- [Virtual Network](#)
- [Subnets for VNet](#)
- [Network Interfaces \(NICs\) for VMs](#)
- [Network Security Groups](#)
- [Virtual Network Peering](#)
- [Access control \(IAM\)](#)
- [Default Login Credentials](#)
- [GigaVUE-FM Version Compatibility](#)
- [Recommended Instance Types](#)

Resource Group

The resource group is a container that holds all the resources for a solution.

To create a resource group in Azure, refer to [Create a resource group](#) topic in the Azure Documentation.

Virtual Network

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks.

You can only configure the GigaVUE fabric components in a Centralized VNet only. In case of a shared VNet, you must select a VNet as your Centralized VNet for GigaVUE fabric configuration.

To create a virtual network in Azure, refer to [Create a virtual network](#) topic in the Azure Documentation.

Subnets for VNet

The following table lists the two recommended subnets that your VNet must have to configure the GigaVUE Cloud Suite Cloud components in Azure.

You can add subnets when creating a VNet or add subnets on an existing VNet. Refer to [Add a subnet](#) topic in the Azure Documentation for detailed information.

Subnet	Description
Management Subnet	Subnet that the GigaVUE-FM uses to communicate with the GigaVUE V Series Nodes and Proxy.
Data Subnet	<p>A data subnet can accept incoming mirrored traffic from agents to the GigaVUE V Series Nodes or be used to egress traffic to a tool from the GigaVUE V Series Nodes. There can be multiple data subnets.</p> <ul style="list-style-type: none"> ▪ Ingress is VXLAN from agents ▪ Egress is either VXLAN tunnel to tools or to GigaVUE HC Series tunnel port, or raw packets through a NAT when using NetFlow. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>NOTE: If you are using a single subnet, then the Management subnet will also be used as a Data Subnet.</p> </div>
Tool Subnet	A tool subnet can accept egress traffic to a tool from the GigaVUE V Series Nodes. There can be only one tool subnet.

Subnet	Description
	<ul style="list-style-type: none"> Egress is either VXLAN tunnel to tools or to GigaVUE HC Series tunnel port, or raw packets through a NAT when using NetFlow.

Network Interfaces (NICs) for VMs

When using UCT-V as the traffic acquisition method, for the UCT-Vs to mirror the traffic from the VMs, you must configure one or more Network Interfaces (NICs) on the VMs.

- **Single NIC**—If there is only one interface configured on the VM with the UCT-V, the UCT-V sends the mirrored traffic out using the same interface.
- **Multiple NICs**—If there are two or more interfaces configured on the VM with the UCT-V, the UCT-V monitors any number of interfaces but has an option to send the mirrored traffic out using any one of the interfaces or using a separate, non-monitored interface.

Network Security Groups

A network security group defines the virtual firewall rules for your VM to control inbound and outbound traffic. When you launch GigaVUE-FM, GigaVUE V Series Proxy, GigaVUE V Series Nodes, and UCT-V Controllers in your VNet, you add rules that control the inbound traffic to VMs, and a separate set of rules that control the outbound traffic.

To create a network security group and add in Azure, refer to [Create a network security group](#) topic in the Azure Documentation.

It is recommended to create a separate security group for each component using the rules and port numbers.

In your Azure portal, select a network security group from the list. In the Settings section select the Inbound and Outbound security rules to the following rules.

Following are the Network Firewall Requirements.

The following table lists the Network Firewall / Security Group requirements for GigaVUE Cloud Suite.

NOTE: When using dual stack network, the below mentioned ports must be opened for both IPv4 and IPv6.

GigaVUE-FM				
Direction	Protocol	Port	Source CIDR	Purpose
Inbound	TCP	443	Administrator	Allows GigaVUE-FM to accept

			Subnet	Management connection using REST API. Allows users to access GigaVUE-FM UI securely through HTTPS connection.
Inbound	TCP	22	Administrator Subnet	Allows CLI access to user-initiated management and diagnostics.
Inbound (This is the port used for Third Party Orchestration)	TCP	443	UCT-V Controller IP	Allows GigaVUE-FM to receive registration requests from UCT-V Controller using REST API.
Inbound (This is the port used for Third Party Orchestration)	TCP	443	GigaVUE V Series Node IP	Allows GigaVUE-FM to receive registration requests from GigaVUE V Series Node using REST API when GigaVUE V Series Proxy is not used.
Inbound (This is the port used for Third Party Orchestration)	TCP	443	GigaVUE V Series Proxy IP	Allows GigaVUE-FM to receive registration requests from GigaVUE V Series Proxy using REST API.
Inbound	TCP	443	UCT-C Controller IP	Allows GigaVUE-FM to receive registration requests from UCT-C Controller using REST API.
Inbound	TCP	5671	GigaVUE V Series Node IP	Allows GigaVUE-FM to receive traffic health updates from GigaVUE V Series Nodes.
Inbound	TCP	5671	UCT-V Controller IP	Allows GigaVUE-FM to receive statistics from UCT-V Controllers.
Inbound	TCP	5671	UCT-C Controller IP	Allows GigaVUE-FM to receive statistics from UCT-C Controllers.
Inbound	UDP	2056	GigaVUE V Series Node IP	Allows GigaVUE-FM to receive Application Intelligence and Application Visualization reports from GigaVUE V Series Node.
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound	TCP	9900	GigaVUE-FM IP	Allows GigaVUE-FM to communicate control and management plane traffic with UCT-V Controller.

Outbound (optional)	TCP	8890	GigaVUE V Series Proxy IP	Allows GigaVUE-FM to communicate control and management plane traffic to GigaVUE V Series Proxy.
Outbound	TCP	8889	GigaVUE V Series Node IP	Allows GigaVUE-FM to communicate control and management plane traffic to GigaVUE V Series Node.
Outbound	TCP	8443 (default)	UCT-C Controller IP	Allows GigaVUE-FM to communicate control and management plane traffic to UCT-C Controller.
Outbound	TCP	443	Any IP Address	Allows GigaVUE-FM to reach the Public Cloud Platform APIs.
UCT-V Controller				
Direction	Protocol	Port	Source CIDR	Purpose
Inbound	TCP	9900	GigaVUE-FM IP	Allows UCT-V Controller to communicate control and management plane traffic with GigaVUE-FM
Inbound	TCP	9900	UCT-V or Subnet IP	Allows UCT-V Controller to receive traffic health updates from UCT-V.
Inbound (This is the port used for Third Party Orchestration)	TCP	8891	UCT-V or Subnet IP	Allows UCT-V Controller to receive the registration requests from UCT-V.
Inbound	TCP	22	Administrator Subnet	Allows CLI access for user-initiated management and diagnostics, specifically when using third party orchestration.
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound (This is the port used for Third Party Orchestration)	TCP	443	GigaVUE-FM IP	Allows UCT-V Controller to send the registration requests to GigaVUE-FM using REST API.
Outbound	TCP	9901	UCT-V Controller IP	Allows UCT-V Controller to communicate control and management plane traffic with UCT-Vs.
Outbound	TCP	5671	GigaVUE-FM IP	Allows UCT-V Controller to send traffic health updates to GigaVUE-FM.

UCT-V				
Direction	Protocol	Port	Source CIDR	Purpose
Inbound	TCP	9901	UCT-V Controller IP	Allows UCT-V to receive control and management plane traffic from UCT-V Controller
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound (This is the port used for Third Party Orchestration)	TCP	8891	UCT-V Controller IP	Allows UCT-V to communicate with UCT-V Controller for registration and Heartbeat
Outbound	UDP (VXLAN)	VXLAN (default 4789)	GigaVUE V Series Node IP	Allows UCT-V to tunnel VXLAN traffic to GigaVUE V Series Nodes
Outbound	IP Protocol (L2GRE)	L2GRE (IP 47)	GigaVUE V Series Node IP	Allows UCT-V to tunnel L2GRE traffic to GigaVUE V Series Nodes
Outbound (Optional - This port is used only for Secure Tunnels)	TCP	11443	GigaVUE V Series Node IP	Allows UCT-V to securely transfer the traffic to the GigaVUE V Series Node
Outbound	TCP	9900	UCT-V Controller IP	Allows UCT-V to send traffic health updates to UCT-V Controller.
GigaVUE V Series Node				
Direction	Protocol	Port	Source CIDR	Purpose
Inbound	TCP	8889	GigaVUE-FM IP	Allows GigaVUE V Series Node to communicate control and management plane traffic with GigaVUE-FM
Inbound	TCP	8889	GigaVUE V Series Proxy IP	Allows GigaVUE V Series Node to communicate control and management plane traffic with GigaVUE V Series Proxy.
Inbound	UDP (VXLAN)	VXLAN (default 4789)	UCT-V Subnet IP	Allows GigaVUE V Series Nodes to receive VXLAN tunnel traffic to UCT-V
Inbound	IP Protocol (L2GRE)	L2GRE	UCT-V Subnet IP	Allows GigaVUE V Series Nodes to receive L2GRE tunnel traffic to UCT-V
Inbound	UDPGRE	4754	Ingress Tunnel	Allows GigaVUE V Series

				Node to receive tunnel traffic from UDPGRE Tunnel
Inbound	TCP	22	Administrator Subnet	Allows CLI access for user-initiated management and diagnostics, specifically when using third party orchestration.
Inbound (Optional - This port is used only for Secure Tunnels)	TCP	11443	UCT-V subnet	Allows to securely transfer the traffic to GigaVUE V Series Nodes.
Inbound (Optional - This port is used only for configuring AWS Gateway Load Balancer)	UDP (GENEVE)	6081	Ingress Tunnel	Allows GigaVUE V Series Node to receive tunnel traffic from AWS Gateway Load Balancer.
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound	TCP	5671	GigaVUE-FM IP	Allows GigaVUE V Series Node to send traffic health updates to GigaVUE-FM.
Outbound	UDP (VXLAN)	VXLAN (default 4789)	Tool IP	Allows GigaVUE V Series Node to tunnel output to the tool.
Outbound	IP Protocol (L2GRE)	L2GRE (IP 47)	Tool IP	Allows GigaVUE V Series Node to tunnel output to the tool.
Outbound	UDP	2056	GigaVUE-FM IP	Allows GigaVUE V Series Node to send Application Intelligence and Application Visualization reports to GigaVUE-FM.
Outbound	UDP	2055	Tool IP	Allows GigaVUE V Series Node to send NetFlow Generation traffic to an external tool.
Outbound	UDP	514	Tool IP	Allows GigaVUE V Series Node to send Application Metadata Intelligence log messages to external tools.
Bidirectional (optional)	ICMP	<ul style="list-style-type: none"> echo request echo reply 	Tool IP	Allows GigaVUE V Series Node to send health check tunnel destination traffic.
Outbound (This is the port used for Third Party)	TCP	8891	GigaVUE V Series Proxy IP	Allows GigaVUE V Series Node to send registration requests and heartbeat

Orchestration)				messages to GigaVUE V Series Proxy when GigaVUE V Series Proxy is used.
Outbound (This is the port used for Third Party Orchestration)	TCP	443	GigaVUE-FM IP	Allows GigaVUE V Series Node to send registration requests and heartbeat messages to GigaVUE-FM when GigaVUE V Series Proxy is not used.
Outbound (Optional - This port is used only for Secure Tunnels)	TCP	11443	Tool IP	Allows to securely transfer the traffic to an external tool.
GigaVUE V Series Proxy (optional)				
Direction	Protocol	Port	Source CIDR	Purpose
Inbound	TCP	8890	GigaVUE-FM IP	Allows GigaVUE-FM to communicate control and management plane traffic with GigaVUE V Series Proxy.
Inbound (This is the port used for Third Party Orchestration)	TCP	8891	GigaVUE V Series Node IP	Allows GigaVUE V Series Proxy to receive registration requests and heartbeat messages from GigaVUE V Series Node.
Inbound	TCP	22	Administrator Subnet	Allows CLI access for user-initiated management and diagnostics, specifically when using third party orchestration.
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound	TCP	443	GigaVUE-FM IP	Allows GigaVUE V Series Proxy to communicate the registration requests to GigaVUE-FM
Outbound	TCP	8889	GigaVUE V Series Node IP	Allows GigaVUE V Series Proxy to communicate control and management plane traffic with GigaVUE V Series Node
Universal Cloud Tap - Container deployed inside Kubernetes worker node				
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound	TCP	42042	Any IP address	Allows UCT-C to send statistical information to UCT-

				C Controller.
Outbound	UDP	VXLAN (default 4789)	Any IP address	Allows UCT-C to tunnel traffic to the GigaVUE V Series Node or other destination.
UCT-C Controller deployed inside Kubernetes worker node				
Direction	Protocol	Port	Source CIDR	Purpose
Inbound	TCP	8443 (configurable)	GigaVUE-FM IP	Allows GigaVUE-FM to communicate with UCT-C Controller.
Direction	Protocol	Port	Destination CIDR	Purpose
Outbound	TCP	5671	Any IP address	Allows UCT-C Controller to send statistics to GigaVUE-FM.
Outbound	TCP	443	GigaVUE-FM IP	Allows UCT-C Controller to communicate with GigaVUE-FM.

Virtual Network Peering

Virtual network peering enables you to seamlessly connect two or more Virtual Networks in Azure. Virtual Network Peering is only applicable when multiple Virtual Networks are used in a design. Refer to [Virtual Network Peering](#) topic in Azure documentation for more details.

Access control (IAM)

You must have full resource access to the control the GigaVUE Cloud Suite cloud components. Refer to [Check access for a user](#) topic in the Azure documentation for more details.

Default Login Credentials

You can login to the GigaVUE V Series Node, GigaVUE V Series Proxy, and UCT-V Controller by using the default credentials.

Product	Login credentials
GigaVUE V Series Node	You can login to the GigaVUE V Series Node by using ssh. The default username and password is not configured.
GigaVUE V Series proxy	You can login to the GigaVUE V Series Node by using ssh. The default username and password is not configured.
UCT-V Controller	You can login to the GigaVUE V Series Node by using ssh. The default username and password is not configured.

GigaVUE-FM Version Compatibility

GigaVUE-FM version 6.8.00 supports the latest version (6.8.00) of GigaVUE V Series Node, GigaVUE V Series Proxy, UCT-V Controller, and UCT-V, as well as (n-2) versions. For better compatibility, it is always recommended to use the latest version of fabric components with GigaVUE-FM.

Recommended Instance Types

NOTE: Additional instance types are also supported. Refer to Support, Sales, or Professional Services for deployment optimization.

Product	Instance Type	vCPU	RAM
GigaVUE V Series Node	Standard_D4s_v4	4 vCPU	16 GB
	Standard_D8S_V4	8 vCPU	32 GB
GigaVUE V Series Proxy	Standard_B1s	1 vCPU	1 GB
UCT-V Controller	Standard_B1s	1 vCPU	1 GB

VPN Connectivity

GigaVUE-FM requires Internet access to integrate with the public API endpoints to integrate with the GigaVUE Cloud Suite Cloud platform. If there is no Internet access, refer to [Configure Proxy Server](#).

Obtain GigaVUE-FM Image

The image for the GigaVUE Cloud Suite Cloud is available in both the Azure Public Cloud and in the Azure Government portal.

GigaVUE Cloud Suite Cloud Suite in Azure Public Cloud

GigaVUE Cloud Suite Cloud is available in the Azure Marketplace with the Volume Based License options.

GigaVUE Cloud Suite Cloud Suite in Azure Government

Azure Government is an isolated Azure region that contains specific regulatory and compliance requirements of the US government agencies.

To monitor the VMs that contain all categories of Controlled Unclassified Information (CUI) data and sensitive government data in the Azure Government (US) Region, the Azure Government solution provides the same robust features in Azure Government as in the Azure public cloud.

Install and Upgrade GigaVUE-FM

You can install and upgrade the GigaVUE-FM fabric manager on cloud platforms or on-premises.

You have the flexibility of installing GigaVUE-FM across various supported platforms. Additionally, you can effectively manage deployments in any of the cloud platform as long as there exists IP connectivity for seamless operation.

Cloud

- Azure - To install GigaVUE-FM inside your Azure environment, you can launch the GigaVUE-FM instance in your VNet.
 - Installation: Refer to [Install GigaVUE-FM on Azure](#).
 - Upgrade: Refer to Upgrade GigaVUE-FM in Azure topic in GigaVUE-FM Installation and Upgrade Guide.
- GigaVUE-FM can also be installed in any of the cloud platform. Refer to GigaVUE-FM Installation and Upgrade Guide for more detailed information on how to install GigaVUE-FM in public, private or hybrid cloud platforms.
 - Upgrade: Refer to Upgrade GigaVUE-FM topic in GigaVUE-FM Installation and Upgrade Guide.

On-premise

To install and upgrade GigaVUE-FM in your enterprise data center, refer to GigaVUE-FM Installation and Upgrade Guide available in the [Gigamon Documentation Library](#).

- Installation: Refer to GigaVUE-FM Installation and Upgrade Guide.
- Upgrade: Refer to Upgrade GigaVUE-FM topic in GigaVUE-FM Installation and Upgrade Guide.

Enable Subscription for GigaVUE Cloud Suite for Azure

For GigaVUE-FM to be able to launch the fabric images, you must accept the terms of the end user license agreements (EULAs) and enable programmatic access. This can be done in the Azure portal or through Azure Portal Cloud Shell. Refer to the following topics for more detailed information:

- [Enable Subscription using CLI](#)
- [Enable Subscription using Azure Portal](#)

NOTE: For accepting EULA, you need to have Owner role on the Subscription.

Enable Subscription using CLI

1. BYOL FM: The following example shows how to accept EULA for BYOL FM using Azure Portal Cloud Shell

```
az vm image terms accept --urn gigamon-inc:gigamon-gigavue-cloud-suite:gfm-azure:<GigaVUE-FM version>
{
  "accepted": true,
  "id": "<Enter Subscription ID>",
  "licenseTextLink": "<Provide License text file link>",
  "marketplaceTermsLink": "<Provide Market Place Terms text file link>",
  "name": "gfm-azure",
  "plan": "gfm-azure",
  "privacyPolicyLink": "https://www.gigamon.com/privacy-policy.html",
  "product": "gigamon-gigavue-cloud-suite",
  "publisher": "gigamon-inc",
  "retrieveDatetime": "2023-05-02T20:09:36.1347592Z",
  "signature":
  "SZL3CYR5MMU5QC5FEBIDHLMOYE7DD4CBSMLOVRMCKAAUD5CKL64RIWPALULYWCFWCENMFF77RCXM4CM2B24WV3P
  GEFWW7UL4VMI3BVI",
  "systemData": {
    "createdAt": "2023-05-02T20:09:38.101210+00:00",
    "createdBy": "6447eb55-9d09-481b-89bc-52e96bb52823",
    "createdByType": "ManagedIdentity",
    "lastModifiedAt": "2023-05-02T20:09:38.101210+00:00",
    "lastModifiedBy": "6447eb55-9d09-481b-89bc-52e96bb52823",
    "lastModifiedByType": "ManagedIdentity"
  },
  "type": "Microsoft.MarketplaceOrdering/offertypes"
}
```

2. Fabric Images (need to accept on all 3): The following examples show how to accept EULA for different fabric components using Azure Portal Cloud Shell

For UCT-V Controller

```
az vm image terms accept --urn gigamon-inc:gigamon-gigavue-cloud-suite:uctv-cntlr:<UCT-V
Controller version>
{
  "accepted": true,
  .....
  "type": "Microsoft.MarketplaceOrdering/offertypes"
}
```

For GigaVUE V Series Node

```
az vm image terms accept --urn gigamon-inc:gigamon-gigavue-cloud-suite:vseries-
node:<GigaVUE V Series Node Version>
{
  "accepted": true,
  .....
  "type": "Microsoft.MarketplaceOrdering/offertypes"
}
```

For GigaVUE V Series Proxy

```
az vm image terms accept --urn gigamon-inc:gigamon-gigavue-cloud-suite:vseries-
node:<GigaVUE V Series Node Version>
{
  "accepted": true,
  .....
  "type": "Microsoft.MarketplaceOrdering/offertypes"
}
```

Enable Subscription using Azure Portal

Enable the subscription for GigaVUE-FM and its fabric components like GigaVUE V Series Node, UCT-V Controller, and GigaVUE V Series Proxy. The following steps provide detailed information on how to accept the terms using Azure Portal.

1. Go to Market Place, search Gigamon.
2. Select **Gigamon GigaVUE Cloud Suite for Azure** from the search results. Select the required image from the **Plan** drop-down menu.
3. Click the "**Want to deploy programmatically? Get started**" link.
4. Review the terms of service and the subscription name and then click **Enable**.

Install GigaVUE-FM on Azure

The GigaVUE-FM can be launched from the Azure VM dashboard or Azure Marketplace.

Install GigaVUE-FM Using Azure VM Dashboard

Go to **Azure VM Dashboard > Virtual Machines**, click **Create** to create an Azure Virtual Machine. Refer to [Create a Linux virtual machine in the Azure](#) topics in Azure Documentation for more information. Enter the details as mentioned in [Table 1: GigaVUE-FM Installation Steps](#).

Install GigaVUE-FM Using Azure Market Place

Go to Azure Market Place, search for Gigamon. The latest version of Gigamon GigaVUE Cloud Suite for Azure appears. Open the latest version of GigaVUE-FM. Review and accept the terms for Gigamon GigaVUE Cloud Suite for Azure. Refer to [Enable Subscription for GigaVUE Cloud Suite for Azure](#) for more detailed information on how to enable the subscription and accept the terms of use. Refer to [Create a Linux virtual machine in the Azure](#) topics in Azure Documentation for more information. Enter the details as mentioned in [Table 1: GigaVUE-FM Installation Steps](#).

The following table describes the important fields.

Table 1: GigaVUE-FM Installation Steps

Field	Description
Basics	
Subscription	Select your subscription.
Resource Group	Select an existing resource group or create a new resource group. For more information, refer to Create a resource group topic in the Azure Documentation.
Virtual machine name	Enter a name for the VM.
Region	Select a region for Azure VM.
Image	Select the latest GigaVUE-FM images. NOTE: You cannot select multiple images for a VM. Refer to Configure GigaVUE Fabric Components in Azure for more details on configuring GigaVUE V Series Node, GigaVUE V Series Proxy, and UCT-V Controller in Azure.
Size	The recommended instance types are as follows: <ul style="list-style-type: none"> GigaVUE-FM - Standard_D4s_v3 UCT-V Controller - Standard_B1ms

Field	Description
	<ul style="list-style-type: none"> V Series Node - Standard_D4s_v4 V Series Proxy - Standard_B1ms
Authentication Type	<p>We support only SSH public key authentication type</p> <ul style="list-style-type: none"> SSH public key <ul style="list-style-type: none"> Enter the administrator username for the VM. Enter the SSH public key pair name. Password <ul style="list-style-type: none"> Enter the administrator username for the VM. Enter the administrator password.
Disks	
Disk Size	The required disk size for GigaVUE-FM is 2 x 40GB .
Networking	
Virtual Network	<p>Select an existing VNet or create a new VNet. For more information, refer to Create a virtual network topic in the Azure Documentation.</p> <p>On selecting an existing VNet, the Subnet and the Public IP values are auto-populated.</p>
Configure network security group	<p>Select an existing network security group or create a new network security group. For more information, refer to Network Security Groups. Configure the Network Security Group to allow GigaVUE-FM to communicate with the rest of the components.</p>

NOTE: Verify the summary before proceeding to create. It will take several minutes for the VM to initialize. After the initialization is completed, you can verify the VM through the Web interface.

After the deployment, navigate to the VM overview page, copy the **Public IP address**, and paste it in a new web browser tab.

If GigaVUE-FM is deployed in Azure, use **admin123A!!** as the password for the **admin** user to login to GigaVUE-FM. You must change the default password after logging in to GigaVUE-FM.

Permissions and Privileges (Azure)

When you first connect GigaVUE-FM to Azure, you need the appropriate authentication for Azure to verify your identity and check if you have permission to access the resources that you are requesting. This is used for GigaVUE-FM to integrate with Azure APIs and to automate the fabric deployment and management.

Prerequisite

Have pre-defined custom roles or create new custom roles, that can be attached to the resource group or subscription level. Refer to [Custom Roles](#) topic for more detailed information on how to create custom roles.

Custom Roles

The 'built-in' roles provided by Microsoft are open to all resources. You can create a custom role if required. For more information, refer to [Azure custom roles](#) topic in the Azure Documentation.

You can use the following command to create custom roles in CLI:

```
az role definition create --role-definition <Custom Role>.json
```

The following examples provides the minimum permissions that are required for GigaVUE-FM to deploy the fabric components and/or inventory the UCT-V. The permissions can be applied at the resource group level or subscription level:

Example 1: Create Custom Role for GigaVUE-FM to deploy visibility fabric components and inventory UCT-V

```
{
  "name": "GigaVue-FM-Service-Role"
  "roleName": "CustomRoleFabricDeploymentAndInventory",
  "description": "The minimum requirements for FM to deploy Fabric Components and inventory UCT-V",
  "assignableScopes": [
    "/subscriptions/<SubscriptionID>/resourceGroups/<resourceGroup name>"
  ],
  "permissions": [
    {
      "actions": [
        "Microsoft.Compute/virtualMachines/read",
        "Microsoft.Compute/virtualMachines/write",
        "Microsoft.Compute/virtualMachines/delete",
        "Microsoft.Compute/virtualMachines/start/action",
        "Microsoft.Compute/virtualMachines/powerOff/action",
        "Microsoft.Compute/virtualMachines/restart/action",
        "Microsoft.Compute/virtualMachines/instanceView/read",
        "Microsoft.Compute/locations/vmSizes/read",
        "Microsoft.Compute/images/read",
        "Microsoft.Compute/disks/read",
        "Microsoft.Compute/disks/write",
        "Microsoft.Compute/disks/delete",
        "Microsoft.Network/networkInterfaces/read",
        "Microsoft.Network/networkInterfaces/write",
        "Microsoft.Network/virtualNetworks/subnets/join/action",
        "Microsoft.Network/virtualNetworks/subnets/read",
        "Microsoft.Network/networkInterfaces/join/action",
        "Microsoft.Network/networkInterfaces/delete",

```

```

    "Microsoft.Network/publicIPAddresses/read",
    "Microsoft.Network/publicIPAddresses/write",
    "Microsoft.Network/publicIPAddresses/delete",
    "Microsoft.Network/publicIPAddresses/join/action",
    "Microsoft.Network/virtualNetworks/read",
    "Microsoft.Network/virtualNetworks/virtualMachines/read",
    "Microsoft.Network/networkSecurityGroups/read",
    "Microsoft.Network/networkSecurityGroups/join/action",
    "Microsoft.Network/publicIPAddresses/read",
    "Microsoft.Network/publicIPAddresses/write",
    "Microsoft.Network/publicIPAddresses/delete",
    "Microsoft.Network/publicIPAddresses/join/action",
    "Microsoft.Resources/subscriptions/locations/read",
    "Microsoft.Resources/subscriptions/resourceGroups/read",
    "Microsoft.Resources/subscriptions/resourcegroups/resources/read"
  ],
  "notActions": [],
  "dataActions": [],
  "notDataActions": []
}
]
}

```

Example 2: Create Custom Role for GigaVUE-FM to only inventory UCT-V

```

{
  "name": "GigaVue-FM-Service-Role"
  "roleName": "CustomRoleInventoryUCT-V ",
  "description": "Minimum requirements for FM to inventory UCT-V",
    "/subscriptions/<Subscription ID>/resourceGroups/<resourceGroup name>"
  ],
  "permissions": [
    {
      "actions": [
        "Microsoft.Compute/virtualMachines/read",
        "Microsoft.Compute/virtualMachines/instanceView/read",
        "Microsoft.Compute/images/read",
        "Microsoft.Compute/disks/read",
        "Microsoft.Network/networkInterfaces/read",
        "Microsoft.Network/virtualNetworks/subnets/read",
        "Microsoft.Network/publicIPAddresses/read",
        "Microsoft.Network/virtualNetworks/read",
        "Microsoft.Network/virtualNetworks/virtualMachines/read",
        "Microsoft.Network/networkSecurityGroups/read",
        "Microsoft.Network/publicIPAddresses/read",
        "Microsoft.Resources/subscriptions/locations/read",
        "Microsoft.Resources/subscriptions/resourceGroups/read",
        "Microsoft.Resources/subscriptions/resourcegroups/resources/read"
      ],
      "notActions": [],
      "dataActions": [],
      "notDataActions": []
    }
  ]
}

```

You can use the following snippet in the above JSON file to assign your custom role at either resource group level or subscription level

For Resource group level:

```
"assignableScopes": [  
  "/subscriptions/<Subscription ID>/resourceGroups/<resourceGroup name>"  
],
```

For Subscription level:

```
"assignableScopes": [  
  "/subscriptions/<Subscription ID>/"  
],
```

To add a role assignment, refer to [Steps to assign an Azure role](#).

GigaVUE-FM supports two types of authentications with Azure. Refer to the following sections for more detailed information on how to enable each type of authentication for GigaVUE-FM and how to assign the above created custom roles for GigaVUE-FM:

- [Managed Identity \(recommended\)](#)
- [Application ID with client secret](#)

Managed Identity (recommended)

Managed Identity (MSI) is a feature of Azure Active Directory. When you enable MSI on an Azure service, Azure automatically creates an identity for the service VM in the Azure AD tenant used by your Azure subscription.

Managed Identity (MSI) is only available when GigaVUE-FM is launched inside Azure. If GigaVUE-FM is launched in one VNet and the GigaVUE V Series Nodes are deployed in a different VNet, then Virtual Network Peering must be configured. Refer to the [Virtual Network Peering](#) for more details on how to configure Virtual Network Peering.

NOTE: When using Managed Identity (MSI), the IAM policy modified in Azure Portal takes a long duration to reflect in GigaVUE-FM. Refer to the [Limitation of using managed identities for authorization](#) section in Azure Documentation for more detailed information.

There are 2 steps to have MSI work:

1. Enable MSI on the VM running in GigaVUE-FM. It can be done in using Azure portal or CLI.
 - a. Azure Portal: Refer to [Configure managed identities using the Azure portal](#) in the Azure documentation for detailed instructions
 - b. Azure CLI:
 - For resource group level: **az vm identity assign -g <Resource group where GigaVUE-FM is deployed> -n <GigaVUE-FM name> -scope <resource group id>**
 - For subscription level: **az vm identity assign -g <Resource group where GigaVUE-FM is deployed> -n <GigaVUE-FM name> -scope <subscription id>**

For more information, refer to [Configure managed identities for Azure resources using Azure CLI](#) topic in the Azure Documentation.
2. Assign permissions to this VM on all the resources where you need GigaVUE-FM to manage.

After enabling MSI, you can assign custom roles to GigaVUE-FM at a resource group level or subscription level:

Assign a Custom Role using CLI


1. Assign a custom role at resource group level where you will deploy the fabric:

```
az vm identity assign -g <Resource group where GigaVUE-FM is deployed>
  -role <Custom Role> -n <GigaVUE-FM name> --scope <resource group id>
```
2. Assign a custom role at the subscription level to view the complete account details:

```
az vm identity assign -g <Resource group where GigaVUE-FM is deployed>
  -role <Custom Role> -n <GigaVUE-FM name> --scope <subscription id>
```

If you want to update the Role, you can edit the JSON file, and then update the Role in Azure using the following CLI command:

```
az role definition update --role-definition <Custom Role>.json
```

You can run these commands in the Azure Portal in a cloud shell (icon in the upper right of the portal as seen here): .

Assign a Custom Role using Azure Portal

You can assign roles to GigaVUE-FM using Azure Portal for Resource Group Level or Subscription Level. Refer to [Assign Azure roles](#) topic in Azure Documentation for detailed information.

Application ID with client secret

GigaVUE-FM supports application id with client secret authentication. When using GigaVUE-FM to connect to Azure, it uses a service principal. A service principal is an account for a non-human such as an application to connect to Azure. When GigaVUE-FM is launched outside Azure, Application ID with client secret is preferred.

To create a service principal in Azure, refer to the following topics in the Azure Documentation:

- [Create an Azure service principal with the Azure CLI](#)
- [Create an Azure service principal with Azure PowerShell](#)
- [Create an Azure service principal with Azure Portal](#)



GigaVUE-FM must be able to access the URLs listed in the [Allow the Azure portal URLs on your firewall or proxy server](#) in order to connect to Azure.

Following are the required endpoints for Azure GovCloud:

- authentication_endpoint = https://login.microsoftonline.us/
- azure_endpoint = https://management.usgovcloudapi.net/

After creating service principal in Azure, you can add custom roles. Refer to [Assign a Custom Role using CLI](#) or [Assign a Custom Role using Azure Portal](#) for detailed information on how to assign roles.

The key fields required for GigaVUE-FM to connect to Azure are Subscription ID, Tenant ID, Application ID, and Application Secret.

- When creating the service principal using the Azure CLI, the output of that command will display the "appId" and "password" fields. These two are the Application ID and Application Secret fields that are required for GigaVUE-FM to connect to Azure. Copy them.
- Now, using the Azure CLI again, do an 'account show' command and copy the Subscription ID and the Tenant ID of your subscription.

The Subscription ID, Tenant ID, Application ID, and Application Secret will be used when creating credentials in GigaVUE-FM. Refer to [Create Azure Credentials](#) for step-by-step instructions.

DISCLAIMER: These are general guidelines for enabling a deployment in Azure. Since the Azure interface is subject to change and is outside Gigamon's purview, please see Azure documentation for instructions on using Azure.

Deployment Options for GigaVUE Cloud Suite for Azure

This section provides a detailed information on the multiple ways in which GigaVUE Cloud Suite for Azure can be configured to provide visibility for physical and virtual traffic. There are three different ways in which GigaVUE Cloud Suite for Azure can be configured

based on the traffic acquisition method and the method in which you want to deploy fabric components. Refer to the [Before You Begin](#) section for prerequisites that are required to be configured. For more detailed information and the work flow refer the following topics:

- [Deploy GigaVUE Fabric Components using Azure](#)
- [Deploy GigaVUE Fabric Components using GigaVUE-FM](#)
 - [Traffic Acquisition Method as UCT-V](#)
 - [Traffic Acquisition Method as Customer Orchestrated Source](#)

Deploy GigaVUE Fabric Components using Azure

GigaVUE-FM allows you to use Azure as an orchestrator to deploy GigaVUE fabric components and then use GigaVUE-FM to configure the advanced features supported by these nodes. Refer the following table for the step-by-step instructions.

Step No	Task	Refer the following topics
1	Obtain GigaVUE-FM Image	Obtain GigaVUE-FM Image
2	Install GigaVUE-FM on Azure	Install GigaVUE-FM on Azure
3	Check and provide permissions and privileges	Permissions and Privileges (Azure)
4	Install UCT-V Agents NOTE: When using Azure as your orchestration system you can only use G-TAP Agents.	For Linux: Linux UCT-V Installation For Windows: Windows UCT-V Installation
5	Create Azure Credentials to monitor workloads across multiple Azure subscriptions	Create Azure Credentials
6	Create a Monitoring Domain NOTE: Ensure that the Use FM to Launch Fabric toggle button is disabled.	Create Monitoring Domain
7	Configure GigaVUE Fabric Components NOTE: Select UCT-V as the Traffic Acquisition Method.	Disable GigaVUE-FM Orchestration in Monitoring Domain
8	Create Monitoring session	Configure Monitoring Session
9	Add Applications to the Monitoring Session	Add Applications to Monitoring Session (Azure)
10	Deploy Monitoring Session	Deploy Monitoring Session
11	View Monitoring Session Statistics	View Monitoring Session Statistics

Deploy GigaVUE Fabric Components using GigaVUE-FM

You can deploy GigaVUE fabric components using GigaVUE-FM using one of the following two traffic acquisition methods:

Traffic Acquisition Method as UCT-V

Follow instruction in the below table, if you wish to use UCT-V as your traffic acquisition method. When using UCT-V the traffic from the Virtual Machines are acquired using the UCT-V and it is sent to the GigaVUE V Series Nodes.

Step No	Task	Refer the following topics
1	Obtain GigaVUE-FM Image	Obtain GigaVUE-FM Image
2	Install GigaVUE-FM on Azure	Install GigaVUE-FM on Azure
3	Check and provide permissions and privileges	Permissions and Privileges (Azure)
4	Install UCT-V Agents	For Linux: Linux UCT-V Installation For Windows: Windows UCT-V Installation
5	Create Azure Credentials to monitor workloads across multiple Azure subscriptions	Create Azure Credentials
6	Create a Monitoring Domain NOTE: Ensure that the Use FM to Launch Fabric toggle button is enabled.	Create Monitoring Domain
7	Configure GigaVUE Fabric Components NOTE: Select UCT-V as the Traffic Acquisition Method.	Disable GigaVUE-FM Orchestration in Monitoring Domain
8	Create Monitoring session	Configure Monitoring Session
9	Add Applications to the Monitoring Session	Add Applications to Monitoring Session (Azure)
10	Deploy Monitoring Session	Deploy Monitoring Session
11	View Monitoring Session Statistics	View Monitoring Session Statistics

Traffic Acquisition Method as Customer Orchestrated Source

Follow instruction in the below table if you wish to use Customer Orchestrated Source as your traffic acquisition method. In this case you can use tunnels as a source where the traffic is directly tunneled to V Series nodes without deploying UCT-V or UCT-V controllers.

Step No	Task	Refer the following topics
1	Obtain GigaVUE-FM Image	Obtain GigaVUE-FM Image
2	Install GigaVUE-FM on Azure	Install GigaVUE-FM on Azure
3	Check and provide permissions and privileges	Permissions and Privileges (Azure)
2	Create a Monitoring Domain NOTE: Ensure that the Use FM to Launch Fabric toggle button is enabled.	Create Monitoring Domain
3	Configure GigaVUE Fabric Components NOTE: Select Customer Orchestrated Source as the Traffic Acquisition Method.	Disable GigaVUE-FM Orchestration in Monitoring Domain
4	Create Monitoring session	Configure Monitoring Session
5	Create Ingress and Egress Tunnel Endpoints	Create Ingress and Egress Tunnels (Azure)
6	Add Applications to the Monitoring Session	Add Applications to Monitoring Session (Azure)
7	Deploy Monitoring Session	Deploy Monitoring Session
8	View Monitoring Session Statistics	View Monitoring Session Statistics

Deploy GigaVUE Cloud Suite for Azure

This chapter describes how to connect, launch, and deploy the fabric components of GigaVUE Cloud Suite for Azure.

Refer to the following topics for details:

- [Create Azure Credentials](#)
- [Install UCT-V](#)
- [Install Custom Certificate](#)
- [Adding Certificate Authority](#)
- [Create Monitoring Domain](#)
- [Configure GigaVUE Fabric Components in GigaVUE-FM](#)
- [Configure Role-Based Access for Third Party Orchestration](#)
- [Disable GigaVUE-FM Orchestration in Monitoring Domain](#)
- [Upgrade GigaVUE Fabric Components in GigaVUE-FM for Azure](#)

Refer [Deploying GigaVUE Cloud Suite for Azure using V Series with Hybrid architecture](#) for more detailed information.

Create Azure Credentials

You can monitor workloads across multiple Azure subscriptions within one monitoring domain. All the deployed GigaVUE fabric components are shared among many Azure subscriptions to reduce the cost since each Azure subscription used to have a set of GigaVUE fabric components.

- After launching GigaVUE-FM in Azure, the **Managed Identity** authentication credential is automatically added to the Azure Credential page as the default credential.
- You can only add the **Application ID with Client Secret** authentication credentials to the Azure Credential page.

To create Azure credentials:

1. Go to **Inventory > VIRTUAL > Azure**, and then click **Settings > Credential**. The Azure Credential page appears.
2. In the Azure Credential page, click **Add**. The **Configure Credential** wizard appears.

The screenshot shows the 'Configure Credential' wizard with the following fields and values:

- Name*: Credential Name
- Authentication Type: Application ID with Client Secret
- Tenant ID*: Tenant ID
- Application ID*: Application ID
- Application Secret*: Application Secret
- Azure Environment: Azure (selected from a dropdown menu that also shows AZURE_US_GOVERNMENT)

3. Enter or select the appropriate information for the Azure credential as described in the following table.

Field	Description
Name	An alias used to identify the Azure credential.
Authentication Type	<p>Application ID with Client Secret: Connection with Azure with a service principal. Enter the values for the following fields.</p> <ul style="list-style-type: none"> o Tenant ID—a unique identifier of the Azure Active Directory instance. o Application ID—a unique identifier of an application in Azure platform. o Application Secret—a password or key to request tokens. <p>Refer to Application ID with client secret for more detailed information on how to create service principal and assign custom roles.</p>
Azure Environment	Select an Azure environment where your workloads are located. For example, Azure_US_Government.

4. Click **Save**. You can view the list of available credentials in the Azure Credential page.

Install UCT-V

UCT-V is the primary Gigamon monitoring module that is installed in your Virtual Machines (VMs). UCT-V mirrors the selected traffic from a source interface to a destination mirror interface. The mirrored traffic is encapsulated using GRE or VXLAN tunneling and then sent to the GigaVUE Cloud Suite® V Series Node.

NOTE: The UCT-V installation is applicable only when the UCT-V is your traffic acquisition method.

A UCT-V can consist of multiple source interface and a single destination interface. The network packets collected from the source interface are sent to the destination interface. From the destination interface, the packets traverse through the L2GRE, VXLAN tunnel interface, or Secure Tunnels to the GigaVUE V Series Node.

A source interface can be configured with one or more Network Interfaces. While configuring a source interface, you can specify the direction of the traffic to be monitored in the instance. The direction of the traffic can be egress or ingress or both.

NOTE: For environments with both Windows and Linux or just windows UCT-V, VXLAN tunnels in the UCT-V Controller specification is required.

Refer to the following sections for more information:

- [Supported Operating Systems for UCT-V](#)
- [Modes of Installing UCT-V](#)
- [Linux UCT-V Installation](#)
- [Windows UCT-V Installation](#)
- [Create Images with the Agent Installed](#)

Supported Operating Systems for UCT-V

Supported Operating System for UCT-V¹ is 6.5.00, 6.6.00, 6.7.00, 6.8.00

The below table lists the validated and the supported versions of the Operating Systems for UCT-V.

Operating System	Supported Versions
Ubuntu/Debian	Versions 16.04 through 22.04
CentOS	Versions 7.5 through 8.2
RHEL	Versions 7.5 through 9.4
Windows Server	Versions 2012 through 2022
Rocky OS	Versions 8.4 through 8.8

GigaVUE-FM version 6.8 supports UCT-V version 6.8 as well as (n-2) versions. It is always recommended to use the latest version of UCT-V with GigaVUE-FM, for better compatibility.

Modes of Installing UCT-V

You can install UCT-V in your virtual machine in two ways. Refer to the following points for more detailed information and step-by-step instructions on how to configure UCT-V:

- Third Party Orchestration:** The third-party orchestration feature allows you to deploy UCT-V using your own orchestration system. UCT-V register themselves with GigaVUE-FM using the information provided by the user. UCT-V can be registered with GigaVUE-FM using Third Party Orchestration in two ways:
 - Generic Mode - [Deploy Fabric Components using Generic Mode](#) section in GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration
 - Integrated Mode - [Deploy Fabric Components using Integrated Mode](#) section in GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration

Refer to [Modes of Deployments](#) section in GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration for more detailed information on generic and integrated mode.

- GigaVUE-FM Orchestration:** Refer to *Install UCT-V* section in the respective cloud guides for more detailed information.

Linux UCT-V Installation

You can install UCT-V on various Linux distributions using Debian or RPM packages.

Refer to the following sections for the Linux UCT-V installation:

¹From Software version 6.4.00, G-vTAP is renamed to UCT-V.

- [Single Network Interface Configuration](#)
- [Multiple Network Interface Configuration](#)
- [Loopback Network Interface Configuration](#)
- [Linux Network Firewall Requirements](#)
- [Install UCT-Vs](#)

Single Network Interface Configuration

A single network interface card (NIC) acts both as the source and the destination interface. A UCT-V with a single network interface configuration lets you monitor the ingress or egress traffic from the network interface. The monitored traffic is sent out using the same network interface.

For example, assume that there is only one interface eth0 in the monitoring instance. In the UCT-V configuration, you can configure eth0 as the source and the destination interface and specify both egress and ingress traffic to be selected for monitoring purposes. The egress and ingress traffic from eth0 is mirrored and sent out using the same interface.

Using a single network interface card as the source and the destination interface can sometimes cause increased latency in sending the traffic out from the instance.

Example of the UCT-V configuration file for a single NIC configuration:

Grant permission to monitor ingress and egress traffic at iface

```
# eth0 mirror-src-ingress mirror-src-egress mirror-dst
```

Multiple Network Interface Configuration

A UCT-V lets you configure two network interface cards (NICs). One network interface card can be configured as the source interface and another network interface card can be configured as the destination interface.

For example, assume that there are eth0 and eth1 in the monitoring instance. In the UCT-V configuration, eth0 can be configured as the source interface and egress traffic can be selected for monitoring purpose. The eth1 interface can be configured as the destination interface. So, the mirrored traffic from eth0 is sent to eth1. From eth1, the traffic is sent to the GigaVUE V Series Node.

Example of the UCT-V configuration file for a dual NIC configuration:

Grant permission to monitor ingress and egress traffic at iface

```
# 'eth0' to monitor and 'eth1' to transmit the mirrored packets.  
# eth0 mirror-src-ingress mirror-src-egress  
# eth1 mirror-dst
```

Loopback Network Interface Configuration

UCT-V supports the ability to tap and mirror the loopback interface. You can tap the loopback interfaces on the workload, which carries application level traffic inside the Virtual Machine itself. The loopback interface is always configured as a bi-directional traffic, regardless of the configurations provided in the configuration file.

Linux Network Firewall Requirements

If Network Firewall requirements or security groups are configured in your environment, then you must open the following ports for the virtual machine. Refer to [Network Firewall Requirement for GigaVUE Cloud Suite](#) to know more details on the firewall requirements or security groups required for your environment.

Direction	Port	Protocol	CIDR	Purpose
Inbound	9901	TCP	UCT-V Controller IP	Allows UCT-V to receive control and management plane traffic from UCT-V Controller

You can use the following commands to add the Network Firewall rule.

```
sudo firewall-cmd --add-port=9901/tcp
sudo firewall-cmd --runtime-to-permanent
```

Install UCT-Vs

You must have sudo/root access to edit the UCT-V configuration file.

For dual or multiple network interface configurations, you may need to modify the network configuration files to ensure that the extra NIC/Network Interface will initialize at boot time.

Prerequisites

Before installing UCT-V.**deb** or **.rpm** packages on your Linux VMs, ensure you have the following packages:

- Python3
- Python3-pip
- Python modules
 - netifaces
 - urllib3
 - requests
- iproute-tc for RHEL and CentOS VMs

NOTE: When using Amazon Linux version 2, ensure iproute-tc package is installed first.

You can install the UCT-Vs either from Debian or RPM packages.

Refer to the following topics for details:

- [Install UCT-V from Ubuntu/Debian Package](#)
- [Install UCT-V from RPM, Red Hat Enterprise Linux, and CentOS](#)

Install UCT-V from Ubuntu/Debian Package



NOTE: When using Kernel version less than 5.4 on Ubuntu 16.04 with Python version 3.5 installed, follow the instructions given below before installing UCT-V.

```
sudo apt-get update
sudo apt install python3-netifaces
curl https://bootstrap.pypa.io/pip/3.5/get-pip.py -o get-pip.py
/usr/bin/python3.5 get-pip.py
sudo /usr/bin/python3.5 -m pip uninstall requests
sudo /usr/bin/python3.5 -m pip install requests==2.22.
```

To install from a Debian package:

1. Download the UCT-V6.8.00 Debian (.deb) package from the [Gigamon Customer Portal](#). For assistance contact [Contact Technical Support](#).
2. Copy this package to your instance. Install the package with root privileges, for example:

```
$ ls gigamon-gigavue_uctv_6.8.00_amd64.deb
$ sudo dpkg -i gigamon-gigavue_uctv_6.8.00_amd64.deb
```


- Once the UCT-V package is installed, modify the file `/etc/uctv/uctv.conf` to configure and register the source and destination interfaces. The following examples registers eth0 as the mirror source for both ingress and egress traffic and eth1 as the destination for this traffic:

NOTE: When you have an active, successful monitoring session deployed, any changes to the UCT-V config file made after the initial setup require an UCT-V restart and an inventory refresh or sync from GigaVUE-FM to pick up the new changes and re-initiate the traffic mirroring. GigaVUE-FM does a periodic sync on its own every 15 minutes.

Example 1—Configuration example to monitor ingress and egress traffic at interface eth0 and use the same interface to send out the mirrored packets

```
# eth0 mirror-src-ingress mirror-src-egress mirror-dst
```

Example 2—Configuration example to monitor ingress and egress traffic at interface eth0 and use the interface eth1 to send out the mirrored packets

```
# eth0 mirror-src-ingress mirror-src-egress
# eth1 mirror-dst
```

Example 3—Configuration example to monitor ingress and egress traffic at interface eth0 and eth 1; use the interface eth1 to send out the mirrored packets

```
# eth0 mirror-src-ingress mirror-src-egress
# eth1 mirror-src-ingress mirror-src-egress mirror-dst
```

Example 4—Configuration example to monitor ingress traffic at iface 'eth0' and egress traffic at iface 'eth1' and use iface 'eth2' to transmit the mirrored packets.

```
# eth0 mirror-src-ingress
# eth1 mirror-src-egress
# eth2 mirror-dst
```

Example 5—Configuration example to monitor traffic at iface 'lo' which will be always registered as bidirectional traffic regardless of the config and use iface 'eth0' to transmit the mirrored packets.

```
# lo mirror-src-ingress mirror-src-egress
# eth0 mirror-dst
```

NOTE: Ensure that the configuration for a single interface is provided on a single line.

- Save the file.
- Restart the UCT-V service.

```
$ sudo service uctv restart
```

The UCT-V status will be displayed as running. Check the status using the following command:

```
$ sudo service uctv status
```

Install UCT-V from RPM, Red Hat Enterprise Linux, and CentOS

Use the following commands to install the required packages:

```
sudo yum install iproute-tc -y
sudo yum install python3 -y
sudo yum install python3-pip -y
sudo pip3 install urllib3
sudo pip3 install requests
sudo pip3 install netifaces
```

To install from an RPM (.rpm) package on a Redhat, CentOS, or other RPM-based system:

1. Download the UCT-V6.8.00 RPM (.rpm) package from the [Gigamon Customer Portal](#). For assistance contact [Contact Technical Support](#).
2. Copy this package to your instance. Install the package with root privileges, for example:

```
$ ls gigamon-gigavue_uctv_6.8.00_x86_64.rpm
$ sudo rpm -i gigamon-gigavue_uctv_6.8.00_x86_64.rpm
```

3. Modify the `/etc/uctv/uctv.conf` file to configure and register the source and destination interfaces. The following example registers the eth0 as the mirror source for both ingress and egress traffic and registers eth1 as the destination for this traffic as follows:

NOTE: When you have an active, successful monitoring session deployed, any changes to the UCT-V config file made after the initial setup require an UCT-V restart and an inventory refresh or sync from GigaVUE-FM to pick up the new changes and re-initiate the traffic mirroring. GigaVUE-FM does a periodic sync on its own every 15 minutes.

Example 1—Configuration example to monitor ingress and egress traffic at interface eth0 and use the same interface to send out the mirrored packets

```
# eth0 mirror-src-ingress mirror-src-egress mirror-dst
```

Example 2—Configuration example to monitor ingress and egress traffic at interface eth0 and use the interface eth1 to send out the mirrored packets

```
# eth0 mirror-src-ingress mirror-src-egress
# eth1 mirror-dst
```

Example 3—Configuration example to monitor ingress and egress traffic at interface eth0 and eth 1; use the interface eth1 to send out the mirrored packets

```
# eth0 mirror-src-ingress mirror-src-egress
# eth1 mirror-src-ingress mirror-src-egress mirror-dst
```

Example 4—Configuration example to monitor ingress traffic at iface 'eth0' and egress traffic at iface 'eth1' and use iface 'eth2' to transmit the mirrored packets.

```
# eth0 mirror-src-ingress
# eth1 mirror-src-egress
# eth2 mirror-dst
```

Example 5—Configuration example to monitor traffic at iface 'lo' which will be always registered as bidirectional traffic regardless of the config and use iface 'eth0' to transmit the mirrored packets.

```
# lo mirror-src-ingress mirror-src-egress
# eth0 mirror-dst
```

NOTE: Ensure that the configuration for a single interface is provided on a single line.

4. Save the file.
5. Restart the UCT-V service.

```
$ sudo service uctv restart
```

The UCT-V status will be displayed as running. Check the status with the following command:

```
$ sudo service uctv status
```

Windows UCT-V Installation

Windows UCT-V allows you to select the network interfaces by subnet/CIDR and modify the corresponding monitoring permissions in the configuration file. This gives you more granular control over what traffic is monitored and mirrored.

Points to Note:

- VXLAN is the only supported tunnel type for Windows UCT-V.
- Loopback Interface is not supported for Windows UCT-V.

Windows Network Firewall Requirements

If Network Firewall requirements or Security Groups are configured in your environment, then you must open the following ports for the virtual machine. Refer to [Network Firewall Requirement for GigaVUE Cloud Suite](#) to know more details on the firewall requirements or security groups required for your environment.

The following ports for Network Firewall rules can be added from Firewall Settings.

Direction	Port	Protocol	CIDR	Purpose
Inbound	9901	TCP	UCT-V Controller IP	Allows UCT-V to receive control and management plane traffic from UCT-V Controller
Outbound	8891	TCP	UCT-V Subnet IP	Allows UCT-V to communicate with UCT-V Controller for registration and heartbeat
Outbound	4789	UDP	UCT-V Subnet IP	Allows UCT-v to tunnel VXLAN traffic to GigaVUE V Series Nodes
Outbound	4789	UDP	UCT-V Subnet IP	Allows UCT-v to tunnel L2GRE traffic to GigaVUE V Series Nodes

Windows UCT-V Installation Using MSI Package

To install the Windows UCT-V using the MSI file:

1. Download the Windows UCT-V **6.8.00** MSI package from the [Gigamon Customer Portal](#). For assistance contact [Contact Technical Support](#).
2. Install the downloaded MSI package as **Administrator** and the UCT-V service starts automatically.

- Once the UCT-V package is installed, modify the file **C:\ProgramData\Uctv\uctv.conf** to configure and register the source and destination interfaces.

NOTE: When you have an active, successful monitoring session deployed, any changes to the UCT-V config file made after the initial setup require an UCT-V restart and an inventory refresh or sync from GigaVUE-FM to pick up the new changes and re-initiate the traffic mirroring. GigaVUE-FM does a periodic sync on its own every 15 minutes.



Following are the rules to modify the UCT-V configuration file:

- Interface is selected by matching its CIDR address with config entries.
- For the VMs with single interface (*.conf file modification is optional*):
 - if neither mirror-src permissions is granted to the interface, both mirror-src-ingress and mirror-src-egress are granted to it.
 - mirror-dst is always granted implicitly to the interface.
- For the VMs with multiple interfaces:
 - mirror-dst needs to be granted explicitly in the config file. Only the first matched interface is selected for mirror-dst, all other matched interfaces are ignored.
 - if none interfaces is granted any mirror-src permission, all interfaces will be granted mirror-src-ingress and mirror-src-egress.

Example 1—Configuration example to monitor ingress and egress traffic at interface 192.168.1.0/24 and use the same interface to send out the mirrored packets.

For IPv4:

```
# 192.168.1.0/24 mirror-src-ingress mirror-src-egress mirror-dst
```

For IPv6:

```
2001:db8:abcd:ef01::/64 mirror-src-ingress mirror-src-egress
2001:db8:abcd:ef01::/64 mirror-src-egress
2001:db8:abcd:ef01::/64 mirror-dst
```

Example 2—Configuration example to monitor ingress and egress traffic at interface 192.168.1.0/24 and use the interface 192.168.2.0/24 to send out the mirrored packets.

For IPv4:

```
192.168.1.0/24 mirror-src-ingress mirror-src-egress
192.168.2.0/24 mirror-dst
```

For IPv6:

```
2001:db8:abcd:ef01::/64 mirror-src-ingress mirror-src-egress
2001:db8:abcd:ef02::/64 mirror-src-egress
2001:db8:abcd:ef01::2/64 mirror-dst
```

4. Save the file.
5. Restart the Windows UCT-V using one of the following actions:
 - Run 'sc stop uctv' and 'sc start uctv' from the command prompt.
 - Restart the UCT-V from the Windows Task Manager.

You can check the status of the UCT-V in the Service tab of the Windows Task Manager.

Windows UCT-V Installation Using ZIP Package

To install the Windows UCT-V using the ZIP package:

1. Download the Windows UCT-V **6.8.00** ZIP package from the [Gigamon Customer Portal](#). For assistance contact [Contact Technical Support](#).
2. Extract the contents of the .zip file into a convenient location.
3. Run 'install.bat' as an **Administrator** and the UCT-V service starts automatically.

4. Once the UCT-V package is installed, modify the file **C:\ProgramData\Uctv\uctv.conf** to configure and register the source and destination interfaces.

NOTE: When you have an active, successful monitoring session deployed, any changes to the UCT-V config file made after the initial setup require an UCT-V restart and an inventory refresh or sync from GigaVUE-FM to pick up the new changes and re-initiate the traffic mirroring. GigaVUE-FM does a periodic sync on its own every 15 minutes.



Following are the rules to modify the UCT-V configuration file:

- Interface is selected by matching its CIDR address with config entries.
- For the VMs with single interface (*.conf file modification is optional*):
 - if neither mirror-src permissions is granted to the interface, both mirror-src-ingress and mirror-src-egress are granted to it.
 - mirror-dst is always granted implicitly to the interface.
- For the VMs with multiple interfaces:
 - mirror-dst needs to be granted explicitly in the config file. Only the first matched interface is selected for mirror-dst, all other matched interfaces are ignored.
 - if none interfaces is granted any mirror-src permission, all interfaces will be granted mirror-src-ingress and mirror-src-egress.

Example 1—Configuration example to monitor ingress and egress traffic at interface 192.168.1.0/24 and use the same interface to send out the mirrored packets.

For IPv4

```
# 192.168.1.0/24 mirror-src-ingress mirror-src-egress mirror-dst
```

For IPv6

```
2001:db8:abcd:ef01::/64 mirror-src-ingress mirror-src-egress
2001:db8:abcd:ef02::/64 mirror-src-egress
2001:db8:abcd:ef01::2/64 mirror-dst
```

Example 2—Configuration example to monitor ingress and egress traffic at interface 192.168.1.0/24 and use the interface 192.168.2.0/24 to send out the mirrored packets.

For IPv4

```
192.168.1.0/24 mirror-src-ingress mirror-src-egress
192.168.2.0/24 mirror-dst
```

For IPv6

```
2001:db8:abcd:ef01::/64 mirror-src-ingress mirror-src-egress
2001:db8:abcd:ef02::/64 mirror-src-egress
```



```
2001:db8:abcd:ef01::2/64 mirror-dst
```

Example 3— Configuration example to tap and mirror the loopback interface (lo) traffic.

```
lo mirror-src-ingress mirror-src-egress  
ens3 mirror-dst
```

5. Save the file.
6. Restart the Windows UCT-V using one of the following actions:
 - Run 'sc stop uctv' and 'sc start uctv' from the command prompt.
 - Restart the UCT-V from the Windows Task Manager.

You can check the status of the UCT-V in the Service tab of the Windows Task Manager.

NOTE: You must edit the Windows Firewall settings to grant access to the uctv process. To do this, access the Windows Firewall settings and find “uctvd” in the list of apps and features. Select it to grant access. Be sure to select both Private and Public check boxes. If “uctvd” does not appear in the list, click **Add another app...** Browse your program files for the uctv application (uctvd.exe) and then click **Add.** (**Disclaimer:** These are general guidelines for changing Windows Firewall settings. See Microsoft Windows help for official instructions on Windows functionality.)

Create Images with the Agent Installed

If you want to avoid downloading and installing the UCT-Vs every time there is a new VM to be monitored, you can save the UCT-V running on a VM as a private image. When a new VM is launched that contains the UCT-V, GigaVUE-FM automatically detects the new VM and updates the number of monitoring VMs in the monitoring session.

To save the UCT-V as an image, refer to [Capture VM to managed image](#) topic in the Microsoft Azure Documentation.

Uninstall UCT-V

This section describes how to uninstall UCT-V for Windows UCT-V and Linux UCT-V

Uninstall Linux UCT-V

The following steps provide instructions on how to uninstall Linux UCT-V

Stop the UCT-V service using the following commands:

For Ubuntu/Debian Package:

```
sudo service uctv stop
```

For RPM package or Red Hat Enterprise Linux and CentOS with Selinux Enabled:

```
sudo systemctl stop uctv
```

Uninstall the UCT-V using the following:

For Ubuntu/Debian Package:

```
sudo dpkg -r uctv
```

For RPM package:

```
sudo rpm -e uctv
```

For Red Hat Enterprise Linux and CentOS with Selinux Enabled:

```
sudo rpm -e uctv
```

Uninstall Windows UCT-V

To uninstall Windows UCT-V:

1. On your windows, go to **Task Manager > Services**. Search for **uctv**.
2. Right click **uctv** and select **Stop**.
3. Go to **Control Panel** search for uctv and uninstall.

Upgrade UCT-V

To upgrade UCT-V, delete the existing UCT-V and installing the new version of UCT-V.

NOTE: Before deleting the UCT-V, take a back up copy of **/etc/uctv/uctv.conf** configuration file. Follow this step to avoid reconfiguring the source and destination interfaces.

1. Uninstall the existing UCT-V. Refer to [Uninstall UCT-V](#) for more detailed information on how to uninstall UCT-V.
2. Install the latest version or the new UCT-V. Refer to the following topics for more detailed information on how to install a new UCT-V:
 - [Linux UCT-V Installation](#)
 - [Windows UCT-V Installation](#)
3. Restart the UCT-V service.
 - Linux platform:

```
$ sudo service uctv restart
```
 - Windows platform: Restart from the Task Manager.

Install Custom Certificate

GigaVUE V Series Node, GigaVUE V Series Proxy, and UCT-V Controllers have default self-signed certificates installed. The communication between GigaVUE-FM and the fabric components happens in a secure way using these default self-signed certificates, however you can also add custom certificates like SSL/TLS certificate to avoid the trust issues that occurs when the GigaVUE V Series Nodes, GigaVUE V Series Proxy, or UCT-V Controllers run through the security scanners.

You can upload the custom certificate in two ways:

- [Upload Custom Certificates using GigaVUE-FM](#)
- [Upload Custom Certificate using Third Party Orchestration](#)

Upload Custom Certificates using GigaVUE-FM

To upload the custom certificate using GigaVUE-FM follow the steps given below:

1. Go to **Inventory > Security > Custom SSL Certificate**. The **Custom Certificate Configuration** page appears.
2. On the Custom Certificate Configuration page, click **Add**. The **New Custom Certificate** page appears.
3. Enter or select the appropriate information as shown in the following table.

Field	Action
Certificate Name	Enter the custom certificate name.
Certificate	Click on the Upload Button to upload the certificate.
Private Key	Click on the Upload Button to upload the private key associated with the certificate.

4. Click **Save**.

You must also add root or the leaf CA certificate in the Trust Store. For more detailed information on how to add root CA Certificate, refer to Trust Store topic in *GigaVUE Administration Guide*.

The certificates uploaded here can be linked to the respective GigaVUE V Series Node, GigaVUE V Series Proxy, and UCT-V Controller in the Fabric Launch Configuration Page. Refer to *Configure GigaVUE Fabric Components in GigaVUE-FM* topic in the respective cloud guides for more detailed information.

NOTE: The minimum value for the authentication key encryption length provided during the key generation is 2048.

Upload Custom Certificate using Third Party Orchestration

You can also upload custom certificates to GigaVUE V Series Nodes, GigaVUE V Series Proxy, and UCT-V Controller using your own cloud platform at the time of deploying the fabric components. Refer to the following topics on more detailed information on how to upload custom certificates using third party orchestration in the respective platforms:

For integrated mode:

- [Configure GigaVUE Fabric Components in AWS](#)
- [Configure GigaVUE Fabric Components in Azure](#)
- [Configure GigaVUE Fabric Components in OpenStack](#)

For generic mode:

- [Configure GigaVUE Fabric Components in AWS](#)
- [Configure GigaVUE Fabric Components in Azure](#)
- [Configure GigaVUE Fabric Components in GCP](#)
- [Configure GigaVUE Fabric Components in Nutanix](#)
- [Configure GigaVUE Fabric Components in OpenStack](#)
- [Configure GigaVUE V Series Nodes using VMware ESXi](#)

Adding Certificate Authority

This section describes how to add Certificate Authority in GigaVUE-FM.

CA List

The Certificate Authority (CA) List page allows you to add the root CA for the devices.

To upload the CA using GigaVUE-FM follow the steps given below:

1. Go to **Inventory > Resources > Security > CA List**.
2. Click **Add**, to add a new Custom Authority. The **Add Certificate Authority** page appears.
3. Enter or select the following information.

Field	Action
Alias	Alias name of the CA.
File Upload	Choose the certificate from the desired location.

4. Click **Save**.

Create Monitoring Domain

You must establish a connection between GigaVUE-FM and your Azure environment before you can perform the configuration steps. Creating a monitoring domain in GigaVUE-FM allows you to establish a connection between your Azure environment and GigaVUE-FM. After establishing a connection, you will be able to use GigaVUE-FM to specify a launch configuration for the UCT-V Controllers, GigaVUE V Series Proxy, and GigaVUE V Series Nodes in the specified VNet and Resource Groups. GigaVUE-FM connects to Azure using either an Application ID with the client secret or the MSI method of authentication. After the connection establishment, GigaVUE-FM launches the UCT-V Controller, GigaVUE V Series Proxy, and GigaVUE V Series 2 Node.

To create an Azure monitoring domain in GigaVUE-FM:

1. Go to **Inventory > VIRTUAL > Azure**, and then click **Monitoring Domain**. The **Monitoring Domain** page appears.
2. In the Monitoring Domain page, click New. The **Azure Monitoring Domain Configuration** wizard appears.

Monitoring Domain Configuration

Monitoring Domain*

Traffic Acquisition Method*

Traffic Acquisition Tunnel MTU*

Use FM to Launch Fabric Yes

Connections ⓘ

Name*

Credential*

Subscription ID*

Region*

Resource Groups* Discovered Regex ⓘ

● ●

3. Enter or select the appropriate information for the monitoring domain as described in the following table.

Field	Description
Monitoring Domain	An alias used to identify the monitoring domain.
Traffic Acquisition Method	<p>Select a Tapping method. The available options are:</p> <ul style="list-style-type: none"> ▪ UCT-V: If you select UCT-V as the tapping method, the traffic is acquired from the UCT-Vs installed on your standard VMs in the Resource Group or in the Scale Sets. Then the acquired traffic is forwarded to the GigaVUE V Series nodes. You must configure the UCT-V Controller to monitor the UCT-Vs. ▪ Customer Orchestrated Source: If you use select Customer Orchestrated Source as the tapping method, you can select the tunnel as a source where the traffic is directly tunneled to GigaVUE V Series nodes without deploying UCT-Vs or UCT-V Controllers. <p>NOTE: Select the Traffic Acquisition Method as Customer Orchestrated Source if you wish to use Observability Gateway (AMX) application.</p>
Traffic Acquisition Tunnel MTU	<p>The Maximum Transmission Unit (MTU) is the maximum size of each packet that the tunnel endpoint can carry from the UCT-V to the GigaVUE V Series node. The default value is 1450.</p> <p>When using IPv4 tunnels, the maximum MTU value is 1450. The UCT-V tunnel MTU should be 50 bytes less than the UCT-V destination interface MTU size.</p> <p>When using IPv6 tunnels, the maximum MTU value is 1430. The UCT-V tunnel MTU should be 70 bytes less than the UCT-V destination interface MTU size.</p>
Use FM to Launch Fabric	Select Yes to Configure GigaVUE Fabric Components in GigaVUE-FM or select No to Configure GigaVUE Fabric Components in Azure .
Enable IPv6 Preference (This appears only when Use FM to Launch Fabric is disabled and Traffic Acquisition Method is UCT-V)	Enable this option to create IPv6 tunnels between UCT-V and the GigaVUE V Series Nodes.
Connections	

Field	Description
<p>Connections</p> <div style="border: 1px solid #ccc; padding: 10px;"> <p>Name* <input type="text" value="Enter a connection name"/></p> <p>Credential* <input type="text" value="Credential Name..."/></p> <p>Subscription ID* <input type="text" value="Subscription ID..."/></p> <p>Region* <input type="text" value="Region Name..."/></p> <p>Resource Groups* <input checked="" type="checkbox"/> Discovered <input type="checkbox"/> Regex ⓘ <input type="text" value="Resource Groups..."/></p> </div> <div style="border: 1px solid #ccc; padding: 10px; margin-top: 10px;"> <ul style="list-style-type: none"> • A Monitoring Domain can have multiple connections, however only one connection can have Managed Service Identity as the Credential. • The connections in a monitoring domain can be a combination of multiple Application ID with Client Secret (Service Principal) accounts, or one Managed Service Identity and multiple Application ID with Client Secret (Service Principal) accounts. • Each connection can have only one Subscription ID. </div>	
Name	An alias used to identify the connection.
Credential	Select an Azure credential. For detailed information on how to create credentials, refer to Create Azure Credentials .
Subscription ID	A unique alphanumeric string that identifies your Azure subscription.
Region	Azure region for the monitoring domain. For example, West India.
Resource Groups	Select the Resource Groups of the corresponding VMs to monitor. NOTE: This field is only available if you select UCT-V as the Traffic Acquisition Method .

4. Click **Save** and the **Azure Fabric Launch Configuration** wizard appears.

NOTE: You can only view and delete the existing configuration for GigaVUE V Series Node 1. You cannot perform any other actions on the existing configuration for GigaVUE V Series Node 1 as the features are deprecated from GigaVUE-FM


Manage Monitoring Domain

You can view the details of the monitoring domain that are created in the list view. The list view details can be viewed based on:

- [Monitoring Domain](#)
- [Connections Domain](#)

- [Connections Domain](#)
- [UCT-Vs](#)

You can also filter the monitoring domain based on a specified criterion. In the monitoring domain page there are two filter options as follows:

- Right filter - Click the Filter button on the right to filter the monitoring domain based on a specific criterion.
- Left filter - Click the  to filter the monitoring domain based on the domain and connections. You can click + to create a new monitoring domain. This filter once applied also works even when the tabs are swapped.


To edit or delete a specific monitoring domain, select the monitoring domain, click the ellipses "...".

When you click a monitoring domain, you can view details of it in a split view of the window. In the split view window, you can view the details such as Configuration, Launch Configuration and V Series configuration.

Monitoring Domain

The list view shows the following information in the monitoring domain page:

- Monitoring Domain
- Connections
- Tunnel MTU
- Acquisition Method
- Centralized connection
- Management Network

NOTE: Click the  to select the columns that should appear in the list view.

Use the following buttons to manage your Monitoring Domain:

Button	Description
New	Use to create new connection
Actions	<p>You can select a monitoring domain and then perform the following options:</p> <ul style="list-style-type: none"> • Edit Monitoring Domain- Select a monitoring domain and then click Edit Monitoring domain to update the configuration. • Delete Domain - You can select a monitoring domain or multiple monitoring domains to delete them. • Edit Fabric-You can select one fabric or multiple fabrics of the same monitoring domain to edit a fabric. You cannot choose different fabrics of multiple monitoring domains at the same time and edit their fabrics

Button	Description
	<ul style="list-style-type: none"> • Deploy Fabric - -You can select a monitoring domain to deploy a fabric, you cannot choose multiple monitoring domains at the same time to deploy fabrics. This option is only enabled when there is No FABRIC (launch configuration) for that specific monitoring domain and GigaVUE-FM orchestration is enabled.. You must create a fabric in the monitoring domain, if the option is disabled • Upgrade Fabric-You can select a monitoring domain or multiple monitoring domains to upgrade the fabric. You can upgrade the V Series nodes using this option. • Delete Fabric- You can delete all the fabrics associated with the monitoring domain of the selected Fabric. • Edit SSL Configuration - You can use this option to add Certificate Authority and the SSL Keys.
Filter	<p>Filters the monitoring domain based on the list view options that are configured:</p> <ul style="list-style-type: none"> • Tunnel MTU • Acquisition Method • Centralised Connection • Management Subnet <p>You can view the filters applied on the top of the monitoring domain page as a button. You can remove the filters by closing the button.</p>

Connections Domain

To view the connection related details for a monitoring domain, click the **Connections** tab.

The list view shows the following details:

- Connections
- Monitoring Domain
- Status
- Fabric Nodes
- User Name
- Region

Fabric

To view the fabric related details for a monitoring domain, click the **Fabric** tab.

The list view shows the following details:

- Connections
- Monitoring Domain
- Fabric Nodes
- Type

- Management IP
- Version
- Status - Click to view the upgrade status for a monitoring domain.
- Security groups

UCT-Vs

To view all the UCT-Vs associated with the available monitoring domains click the **UCT-Vs** tab.

The list view shows the following details:

- Monitoring Domain
- IP address
- Registration time
- Last heartbeat time
- Agent mode
- Status

Refer to [Configure Azure Settings](#) , for more detailed information on **Settings**

Configure GigaVUE Fabric Components in GigaVUE-FM

After configuring the Monitoring Domain, you will be navigated to the Azure Fabric Launch Configuration page.

In the same **Azure Fabric Launch Configuration** page, you can configure all the GigaVUE fabric components.

Enter or select the required information as described in the following table.

Fields	Description
Connections	A connection that you created in the monitoring domain page. Refer to Create Monitoring Domain for more information.
Centralized Virtual Network	Alias of the centralized VNet in which the UCT-V Controllers, V Series Proxies, and the GigaVUE V Series nodes are launched.
Authentication Type	Select SSH Public Key as the Authentication Type to connect with the Centralized VNet.
SSH Public Key	The SSH public key for the GigaVUE fabric components.

Fields	Description
Resource Group	The Resource Groups created in Azure for communication between the controllers, nodes, and GigaVUE-FM.
Security Groups	The security group created for the GigaVUE fabric components.
Enable Custom Certificates	<p>Enable this option to validate the custom certificate during SSL Communication. GigaVUE-FM validates the Custom certificate with the trust store. If the certificate is not available in Trust Store, communication does not happen, and an handshake error occurs.</p> <div data-bbox="423 531 1453 621" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: If the certificate expires after the successful deployment of the fabric components, then the fabric components moves to failed state.</p> </div>
Certificate	Select the custom certificate from the drop-down menu. You can also upload the custom certificate for GigaVUE V Series Nodes, GigaVUE V Series Proxy, and UCT-V Controllers. For more detailed information, refer to Install Custom Certificate .
Prefer IPv6	<p>Enables IPv6 to deploy all the Fabric Controllers, and the tunnel between hypervisor to GigaVUE V Series Nodes using IPv6 address. If the IPv6 address is unavailable, it uses an IPv4 address.</p> <div data-bbox="423 869 1453 1020" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: This option can be enabled only when deploying a new GigaVUE V Series Node. If you wish to enable this option after deploying the GigaVUE V Series Node, then you must delete the existing GigaVUE V Series Node and deploy it again with this option enabled.</p> </div>
Click Yes to configure V Series Proxy for the monitoring domain. Refer to Configure GigaVUE V Series Proxy	

Azure Fabric Launch Configuration

Check Permissions Save C

Connections	Select a Connection						
Centralized Virtual Network	Select a Virtual Network						
Authentication Type	sshPublicKey						
SSH Public Key	Enter your SSH Public Key						
Resource Group	Select resource group...						
Security Groups	Select management subnet security group...						
Enable Custom Certificates	<input type="radio"/> Disabled						
Prefer IPv6	<input type="radio"/> No						
Configure a V Series Proxy	<input type="radio"/> No						
UCT-V Controller ①	<div> <p>Controller Version(s) Add</p> <table border="1"> <tr> <td>Image</td> <td>Select image...</td> </tr> <tr> <td>Size</td> <td>Select instance...</td> </tr> <tr> <td>Number of Instances</td> <td>1</td> </tr> </table> <p>Management Subnet</p> <p>IP Address Type <input checked="" type="radio"/> Private <input type="radio"/> Public</p> <p>Subnet Select management subnet...</p> <p>Agent CA Select</p> <p>Additional Subnets Add Subnet</p> <p>Tags Add</p> </div>	Image	Select image...	Size	Select instance...	Number of Instances	1
Image	Select image...						
Size	Select instance...						
Number of Instances	1						
V Series Node	<div> <p>SSL Key Select</p> <p>Image Select image...</p> <p>Size Select flavor...</p> <p>Disk Size (GB) 30</p> <p>IP Address Type <input checked="" type="radio"/> Private <input type="radio"/> Public</p> <p>Management Subnet Subnet Select management network...</p> <p>Data Subnets Add Subnet</p> <p>Tags Add</p> <p>Min Number of Instances 1</p> <p>Max Number of Instances 1</p> </div>						



To deploy GigaVUE fabric components (GigaVUE V Series Nodes, UCT-V Controller, and GigaVUE V Series Proxies) in GigaVUE-FM, you must accept the terms of the GigaVUE fabric components from the Azure marketplace using the Azure CLI or PowerShell. Refer to [Enable Subscription for GigaVUE Cloud Suite for Azure](#) for more detailed information.

Refer to the following topics for details:

- [Configure UCT-V Controllers](#)
- [Configure GigaVUE V Series Proxy](#)
- [Configure GigaVUE V Series Node](#)

Configure UCT-V Controller

A UCT-V Controller manages multiple UCT-Vs and orchestrates the flow of mirrored traffic to GigaVUE V Series nodes.

NOTE: A single UCT-V Controller can manage up to 1000 UCT-Vs. The recommended minimum instance type is Standard_B1s for UCT-V Controller.

A UCT-V Controller can only manage UCT-Vs that has the same version.

To configure the UCT-V Controllers:

NOTE: You cannot configure UCT-V Controller for Customer Orchestrated Source as the traffic acquisition method.

In the **Azure Fabric Launch Configuration** page, Enter or select the appropriate values for the UCT-V Controller as described in the following table.

Controller Version(s)	<input type="button" value="Add"/>						
	<div style="border: 1px solid #ccc; padding: 5px;"><div style="display: flex; justify-content: flex-end; align-items: center;">✕</div><table><tr><td>Image</td><td><input type="text" value="184"/> ▾</td></tr><tr><td>Size</td><td><input type="text" value="Standard_B1..."/> ▾</td></tr><tr><td>Number of Instances</td><td><input type="text" value="1"/></td></tr></table></div>	Image	<input type="text" value="184"/> ▾	Size	<input type="text" value="Standard_B1..."/> ▾	Number of Instances	<input type="text" value="1"/>
Image	<input type="text" value="184"/> ▾						
Size	<input type="text" value="Standard_B1..."/> ▾						
Number of Instances	<input type="text" value="1"/>						
Management Subnet	<table><tr><td>IP Address Type</td><td><input checked="" type="radio"/> Private <input type="radio"/> Public</td></tr><tr><td>Subnet</td><td><input type="text" value="mgmt"/> ▾</td></tr></table>	IP Address Type	<input checked="" type="radio"/> Private <input type="radio"/> Public	Subnet	<input type="text" value="mgmt"/> ▾		
IP Address Type	<input checked="" type="radio"/> Private <input type="radio"/> Public						
Subnet	<input type="text" value="mgmt"/> ▾						
Additional Subnets	<input type="button" value="Add Subnet"/>						
Tags	<input type="button" value="Add"/>						

Fields	Description
Controller Version(s)	<p>The UCT-V Controller version you configure must always be the same as the UCT-Vs' version number deployed in the VM machines.</p> <p>If there are multiple versions of UCT-Vs deployed in the VM machines, then you must configure multiple versions of UCT-V Controllers that matches the version numbers of the UCT-Vs.</p> <div data-bbox="423 426 1453 512" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: If there is a version mismatch between UCT-V Controllers and UCT-Vs, GigaVUE-FM cannot detect the agents in the instances.</p> </div> <p>To add UCT-V Controllers:</p> <ol style="list-style-type: none"> a. Under Controller Versions, click Add. b. From the Image drop-down list, select a UCT-V Controller image that matches with the version number of UCT-Vs installed in the instances. c. From the Size drop-down list, select a size for the UCT-V Controller. The default size is Standard_B1s. d. In Number of Instances, specify the number of UCT-V Controllers to launch. The minimum number you can specify is 1.
Management Subnet	<p>IP Address Type: Select one of the following IP address types:</p> <ul style="list-style-type: none"> ▪ Select Private if you want to assign an IP address that is not reachable over Internet. You can use private IP address for communication between the UCT-V Controller instances and GigaVUE-FM instances in the same network. ▪ Select Public if you want the IP address to be assigned from Azure's pool of public IP address. The public IP address gets changed every time the instance is stopped and restarted. On selecting Public IP address type, you must select all the required Public IPs. <p>Subnet: Select a Subnet for UCT-V Controller. The subnet that is used for communication between the UCT-V Controllers and the UCT-Vs, as well as to communicate with GigaVUE-FM.</p> <p>Every fabriccomponent (both controllers and the nodes) need a way to talk to each other and GigaVUE-FM. So, they should share at least one management plane/subnet.</p> <div data-bbox="423 1325 1453 1411" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: Some instance types are supported in Azure platform. Refer to Microsoft Azure documentation to learn on supported instance types.</p> </div>
Agent Tunnel Type	<p>The type of tunnel used for sending the traffic from UCT-Vs to GigaVUE V Series Nodes.</p>

Fields	Description
Agent Tunnel CA	The Certificate Authority (CA) that should be used in the UCT-V Controller for connecting the tunnel.
Additional Subnet(s)	(Optional) If there are UCT-Vs on subnets that are not IP routable from the management subnet, additional subnets must be specified so that the UCT-V Controller can communicate with all the UCT-Vs. Click Add to specify additional data subnets, if needed. Also, make sure that you specify a list of security groups for each additional subnet.
Tag(s)	(Optional) The key name and value that helps to identify the UCT-V Controller instances in your Azure environment. For example, you might have UCT-V Controllers deployed in many regions. To distinguish these UCT-V Controllers based on the regions, you can provide a name that is easy to identify such as us-west-2-uctv-controllers. To add a tag: <ul style="list-style-type: none"> a. Click Add. b. In the Key field, enter the key. For example, enter Name. c. In the Value field, enter the key value. For example, us-west-2-uctv-controllers.

Configure GigaVUE V Series Proxy

GigaVUE V Series Proxy can manage multiple GigaVUE V Series Nodes and orchestrates the flow of traffic from GigaVUE V Series nodes to the monitoring tools. GigaVUE-FM uses one or more GigaVUE V Series Proxies to communicate with the GigaVUE V Series nodes.

NOTE: A single GigaVUE V Series Proxy can manage up to 100 GigaVUE V Series nodes. The recommended minimum instance type is Standard_B1s for V Series Proxy.

To configure the GigaVUE V Series Proxy:

1. In the **Azure Fabric Launch Configuration** page, Select **Yes to Configure a V Series Proxy** and the GigaVUE V Series Proxy fields appears.
2. Enter or select the appropriate values for the V Series Proxy. Refer to the [UCT-V Controller field descriptions](#) for detailed information.

Configure GigaVUE V Series Node

GigaVUE V Series node is a visibility node that aggregates mirrored traffic from multiple UCT-Vs. It applies filters, manipulates the packets using GigaSMART applications, and distributes the optimized traffic to cloud-based tools or backhaul to GigaVUE Cloud Suite for Azure using the standard VXLAN tunnels.

To launch a GigaVUE V Series node:

In the **Azure Fabric Launch Configuration** page, enter or select the appropriate values for the GigaVUE V Series Node.

V Series Node

Image	gigavue-azure-series-node-1.10-310871 v
Size	Standard_D4s_v4 v
Disk Size (GB)	>= 30
IP Address Type	<input checked="" type="radio"/> Private <input type="radio"/> Public
Management Subnet	Subnet mgmt v
Data Subnets	<div style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> Add Subnet </div> <div style="border: 1px solid #ccc; padding: 5px;"> <p>Tool Subnet <input checked="" type="checkbox"/> Tool Subnet ⓘ</p> <p>Subnet 1 dataout v</p> <p>Security Groups [1] x v</p> </div>
Tags	Add

Fields	Description
Image	From the Image drop-down list, select a GigaVUE V Series Node image.
Size	From the Size down-down list, select a size for the GigaVUE V Series Node. The default size for GigaVUE V Series Node configuration is Standard_D4s_v4 .
Disk Size (GB)	<p>The size of the storage disk. The default disk size is 30GB.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>NOTE: When using Application Metadata Exporter, the minimum recommended Disk Size is 80GB.</p> </div>
IP Address Type	<p>Select one of the following IP address types:</p> <ul style="list-style-type: none"> ▪ Select Private if you want to assign an IP address that is not reachable over Internet. You can use private IP address for communication between the GigaVUE V Series Node instances and GigaVUE-FM instances in the same network. ▪ Select Public if you want the IP address to be assigned from Azure’s pool of public IP address. On selecting Public IP address type, you must select the number of Public IPs defined in the Maximum Instance.
Management Subnet	<p>Subnet: Select a management subnet for GigaVUE V Series. The subnet that is used for communication between the UCT-Vs and the GigaVUE V Series Nodes, as well as to communicate with GigaVUE-FM.</p> <p>Every fabric component (both controllers and the nodes) need a way to talk to each</p>

Fields	Description
	other and GigaVUE-FM. So, they should share at least one management plane/subnet.
Data Subnet(s)	<p>The subnet that receives the mirrored VXLAN tunnel traffic from the UCT-Vs. Select a Subnet and the respective Security Groups. Click Add to add additional data subnets.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>NOTE: Using the Tool Subnet checkbox you can indicate the subnets to be used by the GigaVUE V Series Node to egress the aggregated/manipulated traffic to the tools.</p> </div>
Tag(s)	<p>(Optional) The key name and value that helps to identify the GigaVUE V Series Node instances in your Azure environment. For example, you might have GigaVUE V Series Nodes deployed in many regions. To distinguish these GigaVUE V Series Nodes based on the regions, you can provide a name that is easy to identify. To add a tag:</p> <ol style="list-style-type: none"> a. Click Add. b. In the Key field, enter the key. For example, enter Name. c. In the Value field, enter the key value.
Min Instances	<p>The minimum number of GigaVUE V Series Nodes to be launched in the Azure connection.</p> <p>The minimum number of instances that can be entered is 1.</p> <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>NOTE: Nodes will be launched when a monitoring session is deployed if GigaVUE-FM discovers some targets to monitor. The minimum amount will be launched at that time. The GigaVUE-FM will delete the nodes if they are idle for over 15 minutes.</p> </div>
Max Instances	<p>The maximum number of GigaVUE V Series Nodes that can be launched in the Azure connection. When the number of instances per V Series node exceeds the max instances specified in this field, increase the number in the Max Instances to Launch. When additional V Series nodes are launched, GigaVUE-FM re-balances the instances assigned to the nodes. This can result in a brief interruption of traffic.</p>

Click **Save** to complete the Azure Fabric Launch Configuration.

A monitoring domain is created, and you can view the monitoring domain and fabric component details by clicking on a monitoring domain name in the **Monitoring Domain** page.

Configure Role-Based Access for Third Party Orchestration

Before deploying the fabric components using a third party orchestrator, we must create users, roles and the respective user groups in GigaVUE-FM. The Username and the Password provided in the User Management page will be used in the registration data

that can be used to deploy the fabric components in your orchestrator.

Refer to following topics for more detailed information on how to add users, create roles and user groups:

- [Users](#)
- [Role](#)
- [User Groups](#)

Role


A user role defines permission for users to perform any task or operation in GigaVUE-FM or on the managed device. You can associate a role with user.

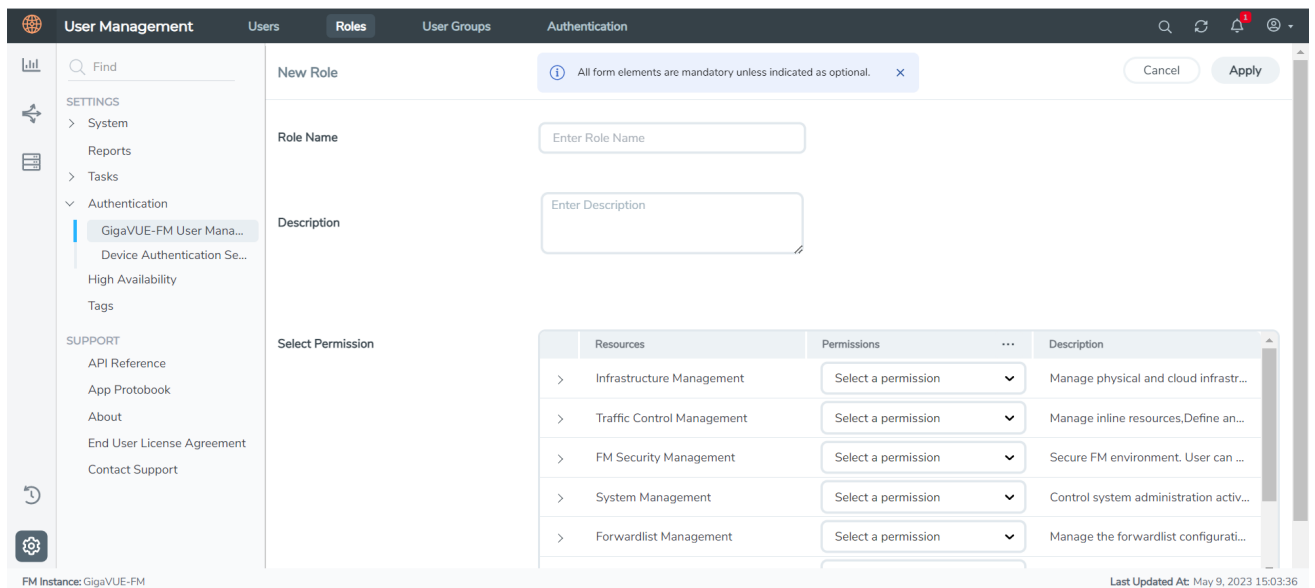
Create Roles for Third Party Orchestration

This section describes the steps for creating roles and assigning user(s) to those roles for Third Party Orchestration.

NOTE: If you are a user with read-only access you will be restricted from performing any configurations on the screen. The menus and action buttons in the UI pages will be disabled appropriately.

To create a role

1. On the left navigation pane, click  and select **Authentication > GigaVUE-FM User Management > Roles**.
2. Click **New Role**.



3. In the New Role page, select or enter the following details:

- **Role Name:** Name of the role.
- **Description:** Description of the role.
- **Select Permission:** Under the **Select Permissions** tab select **Third Party Orchestration** and provide write permissions.


4. Click **Apply** to save the configuration.

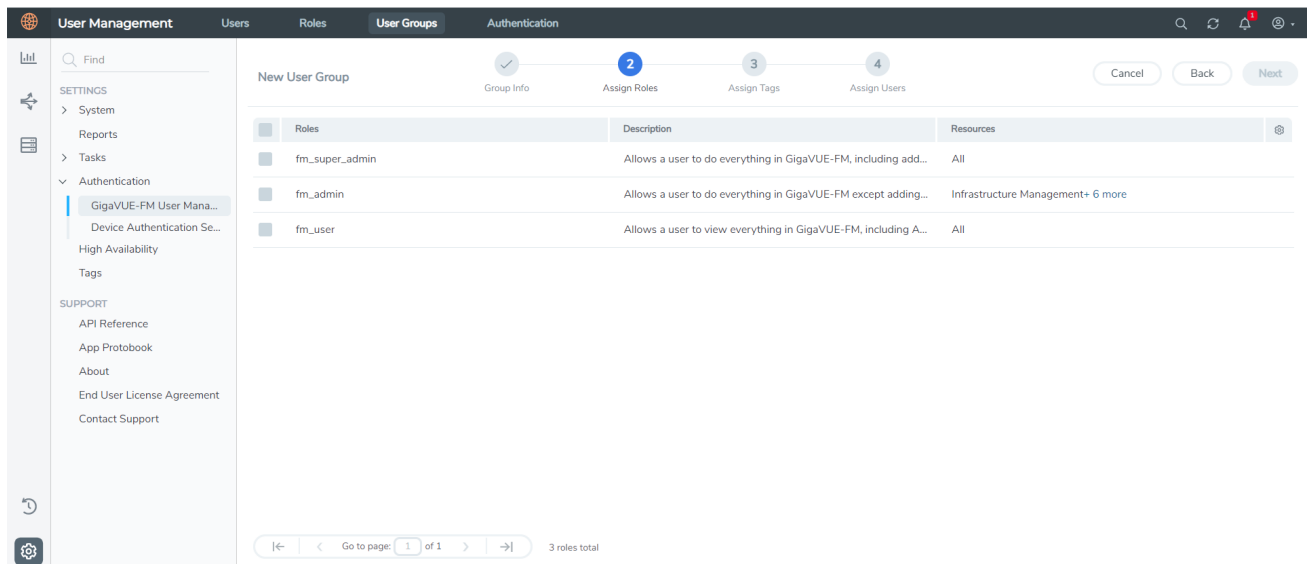
User Groups

A user group consists of a set of roles and set of tags associated with users in that group. When a user is created they can be associated with one or more groups.

Create User Groups in GigaVUE-FM for Third Party Orchestration

Create a new User Group as mentioned in the steps below:

1. On the left navigation pane, click , and then select **Authentication > GigaVUE-FM User Management > User Groups**.
2. Click **New Group**. In the Wizard that appears, perform the following steps. Click **Next** to progress forward and click **Back** to navigate backward and change the details.



3. In the **Group Info** tab, enter the following details:

- **Group Name**
- **Description**

4. In the **Assign Roles** tab, select the role created in [Role](#) section.

5. In the **Assign Tags** tab, select the required tag key and tag value.

- In the **Assign Users** tab, select the required users. Click **Apply** to save the configuration. Click **Skip and Apply** to skip this step and proceed without adding users.

The new user group is added to the summary list view.

Click on the ellipses to perform the following operations:

- o **Modify Users:** Edit the details of the users.
- o **Edit:** Edit an existing group.

Users

You can also configure user's role and user groups to control the access privileges of the user in GigaVUE-FM.

Add Users

This section provides the steps for adding users. You can add users only if you are a user with **fm_super_admin role** or a user with either read/write access to the GigaVUE-FM security Management category.

To add users perform the following steps:

- On the left navigation pane, click  and select **Authentication > GigaVUE-FM User Management > Users**. The **User** page is displayed.

Username	Name	Email	Roles	Tags	Resources	Member of Groups
admin	System Administrator		fm_super_admin	All : All	All	Super Admin Group
fm_user			fm_user	All : All	All	User Group

Figure 1 FM Users Page

- Click **New User**. In the Add User wizard that appears perform the following steps.

Add User x

(i) All form elements are required unless indicated as optional. x

Name

Username

Password

Confirm password

Email

User Group
 ?

(i) Your new password must contain:

- ✓ At least 8 characters and up to a maximum of 64 characters in length
- ✓ At least one numerical character
- ✓ At least one uppercase character
- ✓ At least one lowercase character
- ✓ At least one special character from -!@#%&*()+

Cancel Ok

Figure 2 *Create User*

- a. In the Add User pop-up box, enter the following details:
 - o **Name:** Actual name of the user
 - o **Username:** User name configured in GigaVUE-FM
 - o **Email:** Email ID of the user
 - o **Password/Confirm Password:** Password for the user.
 - o **User Group:** Select the User Group created in the [User Groups](#) section.

NOTE: GigaVUE-FM will prompt for your password.

- b. Click **Ok** to save the configuration.

The new user is added to the summary list view.

The username and password created in this section will be used in the registration data, used for deploying the fabric components.

Configure GigaVUE Fabric Components in Azure

This section provides step-by-step information on how to register GigaVUE fabric components using Azure Portal or a configuration file.

Overview of Third-Party Orchestration

You can use your own Azure Orchestrator to deploy the GigaVUE fabric components instead of using GigaVUE-FM to deploy your fabric components.

The third-party orchestration feature allows you to deploy GigaVUE fabric components using your own Azure orchestration system. These fabric components register themselves with GigaVUE-FM using the information provided by the user. Once the nodes are registered with GigaVUE-FM, you can configure monitoring sessions and related services in GigaVUE-FM.

You can either manually deploy the fabric components using a configuration file, or you can use the Azure portal to launch the instances and deploy the fabric components using Custom data. Using the Custom data provided by you, the fabric components register themselves with the GigaVUE-FM. Based on the group name and the subgroup name details provided in the Custom data, GigaVUE-FM groups these fabric components under their respective monitoring domain and connection name. The health status of the registered nodes is determined by the heartbeat messages sent from the respective nodes.

You can also upload custom certificates to GigaVUE V Series Nodes, GigaVUE V Series Proxy, and UCT-V Controller using your own cloud platform when deploying the fabric components. Refer to [Install Custom Certificate](#) for more detailed information.

Prerequisites

GigaVUE V Series Node must have a minimum of two Networks Interfaces (NIC) attached to it, a management NIC and a data NIC with Accelerated Networking enabled.

When creating a virtual machine for GigaVUE V Series Node using CLI, Management NIC and Data NIC can be attached at the time of the virtual machine creation. However, if you are using Azure GUI to create the virtual machine for GigaVUE V Series Node, then the data NIC can only be attached after creating the virtual machine. Refer to the following topics for more detailed information on how to create GigaVUE V Series Node with Management and Data NIC using CLI or Azure GUI:

- [Create GigaVUE V Series Node with Management and Data NIC Attached using CLI](#)
- [Create GigaVUE V Series Node with Management and Data NIC Attached using Azure GUI](#)



NOTE:

- Accelerated Networking must be enabled in the Data NIC only when deploying GigaVUE V Series Nodes using Third Party Orchestration.



- Accelerated Networking is not required for Management NIC.

Create GigaVUE V Series Node with Management and Data NIC Attached using CLI

Create management NIC:

```
az network nic create -g <resource group> --vnet-name <VNet Name> --subnet <Subnet name> -n <Mangement NIC Name>
```

Create data NIC with Accelerated Networking enabled:

```
az network nic create -g <resource group> --vnet-name <VNet> --subnet <Subnet> -n <Data NIC> --accelerated-networking true
```

Create GigaVUE V Series Node virtual machine using the above NICs:

```
az vm create --resource-group <Resource group> --size <Standard_D4s_v4/Standard_D8S_V4> --name <GigaVUE V Series Node> --admin-username gigamon -
-generate-ssh-keys --image gigamon-inc:gigamon-gigavue-cloud-suite:vseries-
node:6.8.00 --plan-name vseries-node --plan-product gigamon-gigavue-cloud-
suite --plan-publisher gigamon-inc --nics <Management NIC and Data NIC>
```

NOTE: You can use the following command to get all the images published by Gigamon.

```
az vm image list --all --publisher gigamon-inc
```

Create GigaVUE V Series Node with Management and Data NIC Attached using Azure GUI

Enable Management NIC when creating the GigaVUE V Series Node virtual machine. Refer to [Create virtual machine](#) topic in Azure Documentation for more detailed information on how to create a virtual machine. Follow the steps given below to attach the data NIC:

1. Select the GigaVUE V Series Node virtual machine from the Resources Page.
2. Stop the Virtual Machine using the **Stop** button.
3. Navigate to **Setting > Networking** from the left navigation pane. The **Networking** page appears.
4. In the **Networking** page, click **Attach network interface**. Select an existing network interface for Data NIC and click **OK**.
5. To enable accelerated networking, refer to [Manage Accelerated Networking through the portal](#).
6. Start the Virtual Machine.

Keep in mind the following when deploying the fabric components using third party orchestration in integrated mode:

- Create Roles and Users in GigaVUE-FM. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information on how to create users and assign roles to the users.
- When configuring UCT-V Controller, select **UCT-V** as the Traffic Acquisition Method.
- When you select Customer Orchestrated Source as your Traffic Acquisition Method, UCT-V and UCT-V Controller registration are not applicable.
- When you deploy the fabric components using third party orchestration, you cannot delete the monitoring domain without unregistering the GigaVUE V Series Nodes or UCT-V Controllers.
- Deployment of UCT-V Controller, GigaVUE V Series Node, and GigaVUE V Series Proxy through a third-party orchestrator is supported only on Linux platform.
- Deployment of UCT-V through a third-party orchestrator is supported on Linux and Windows platforms. Refer to [Linux UCT-V Installation](#) and [Windows UCT-V Installation](#) for detailed information.
- When creating virtual machine for deploying the fabric components in Azure, **SSH public key** must only be used as the **Authentication type** in Azure.

Keep in mind the following when upgrading the GigaVUE-FM to 6.1.00 or higher version (when using third party orchestration to deploy fabric components):

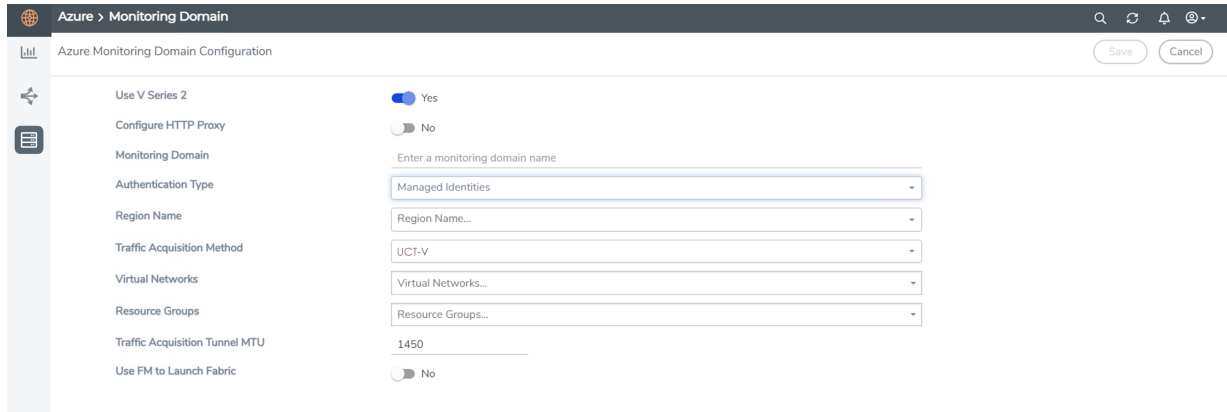
When upgrading GigaVUE-FM to any version higher than 6.0.00 and if the GigaVUE V Series Nodes version deployed in that GigaVUE-FM is lower than or equal to 6.0.00, then for the seamless flow of traffic, GigaVUE-FM automatically creates **Users** and **Roles** in GigaVUE-FM with the required permission. The username would be **orchestration**, and the password would be **orchestration123A!** for the user created in GigaVUE-FM. Ensure there is no existing user in GigaVUE-FM, with the username **orchestration**.

Once the upgrade is complete, it is recommended that the password be changed on the Users page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for detailed steps on how to change password in the user page.

Disable GigaVUE-FM Orchestration in Monitoring Domain

To register fabric components under Azure monitoring domain:

1. Create a monitoring domain in GigaVUE-FM. Refer to [Create a Monitoring Domain](#) for detailed instructions.
2. In the **Monitoring Domain Configuration** page, select **No** for the **Use FM to Launch Fabric** field as you are going to configure the fabric components in Azure Orchestrator.



3. After creating your monitoring domain, you can deploy your fabric components through Azure Portal.

In your Azure Portal, you can configure the following GigaVUE fabric components:

- [Configure UCT-V Controller in Azure](#)
- [Configure UCT-V in Azure](#)
- [Configure GigaVUE V Series Node and GigaVUE V Series Proxy in Azure](#)

Refer [Deploying GigaVUE Cloud Suite for Azure using Customer Orchestration](#) for more detailed information.

Configure UCT-V Controller in Azure

You can configure more than one UCT-V Controller in a monitoring domain.

To register UCT-V Controller in Azure Portal, use any one of the following methods.

- [Register UCT-V Controller during Virtual Machine Launch](#)
- [Register UCT-V Controller after Virtual Machine Launch](#)

Register UCT-V Controller during Virtual Machine Launch

In your Azure portal, to launch the UCT-V Controller init virtual machine and register UCT-V Controller using custom data, follow the steps given below:

- In the Virtual machines page of the Azure Portal, select **Create** then **Virtual machine**. Then **Create a Virtual Machine** Page appears. For detailed information, refer to [Create virtual machine](#) topic in Azure Documentation. On the **Advanced** tab, enter the Custom Data as text in the following format and deploy the virtual machine. Enter the monitoring domain name and the connection name of the monitoring domain created earlier as the groupName and the subGroupName in the Custom Data. The UCT-V Controller uses this custom data to generate config file (**/etc/gigamon-cloud.conf**) used to register with GigaVUE-FM. You can also install custom certificates to GigaVUE V Series Node or Proxy, refer to the below table for details:

Field	User Data
User data without custom certificate	<pre>#cloud-config write_files: - path: /etc/gigamon-cloud.conf owner: root:root permissions: '0644' content: Registration: groupName: <Monitoring Domain Name> subGroupName: <Connection Name> user: <Username> password: <Password> remoteIP: <IP address of the GigaVUE-FM> sourceIP: <IP address of UCT-V Controller> (Optional Field) remotePort: 443</pre>
User data with custom certificate	<pre>#cloud-config write_files: - path: /etc/cntrl-cert.conf owner: root:root permissions: "0644" content: -----BEGIN CERTIFICATE----- <certificate content> -----END CERTIFICATE----- - path: /etc/cntrl-key.conf owner: root:root permissions: "400" content: -----BEGIN PRIVATE KEY----- <private key content> -----END PRIVATE KEY----- - path: /etc/gigamon-cloud.conf owner: root:root permissions: '0644' content: Registration: groupName: <Monitoring Domain Name></pre>

Field	User Data
	<pre> subGroupName: <Connection Name> user: <Username> password: <Password> remoteIP: <IP address of the GigaVUE-FM> sourceIP: <IP address of UCT-V Controller> (Optional Field) remotePort: 443 </pre> <p>NOTE: The minimum value for the authentication key encryption length provided during the key generation is 2048.</p>

NOTE: User and Password must be configured in the **User Management** page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information. Enter the Username and Password created in the **Add Users** Section.

The UCT-V Controller deployed in your Azure portal appears on the Monitoring Domain page of GigaVUE-FM.

<input type="checkbox"/> Monitoring Domain	Connection	Fabric	Management IP	Fabric Version	Status
<input type="checkbox"/> MD1					
	pubhraj-vpc				✔ Connected
		G-vTapController	34.219.250.141	1.7-304	✔ Ok
		Gigamon-VSeriesProxy-1	34.211.211.49	2.1.0	✔ Ok
		Gigamon-VSeriesNode-1	172.30.34.188	2.2.0	✔ Ok

Register UCT-V Controller after Virtual Machine Launch

To register UCT-V Controller after launching a Virtual Machine using a configuration file, follow the steps given below:

1. Log in to the UCT-V Controller.
2. Create a local configuration file (**/etc/gigamon-cloud.conf**) and enter the following custom data.

```
Registration:
  groupName: <Monitoring Domain Name>
  subGroupName: <Connection Name>
  user: <Username>
  password: <Password>
  remoteIP: <IP address of the GigaVUE-FM>
  sourceIP: <IP address of UCT-V Controller> (Optional Field)
  remotePort: 443
```

NOTE: User and Password must be configured in the **User Management** page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information. Enter the UserName and Password created in the **Add Users** Section.

3. Restart the UCT-V Controller service.
`$ sudo service uctv-cntlr restart`

Assign Static IP address for UCT-V Controller

By default, the UCT-V Controller gets assigned an IP address using DHCP. If you wish to assign a static IP address, follow the steps below:

1. Navigate to **/etc/netplan/** directory.
2. Create a new **.yaml** file. (Other than the default 50-cloud-init.yaml file)
3. Update the file as shown in the following sample:

```
network:
  version: 2
  renderer: networkd
  ethernets:
    ens3:
      addresses:
        - <IP address>
      gateway: <IP address>
    ens4:
      addresses:
        - <IP address>
      gateway: <IP address>
    ens5:
      addresses:
        - <IP address>
      gateway: <IP address>
```

4. Save the file.
5. Restart the UCT-V Controller service.
`$ sudo service uctv-cntlr restart`

The deployed UCT-V Controller registers with the GigaVUE-FM. After successful registration, the UCT-V Controller sends heartbeat messages to GigaVUE-FM every 30 seconds. If one heartbeat is missing, the fabric component status appears as 'Unhealthy'. If more than five heartbeats fail to reach GigaVUE-FM, GigaVUE-FM tries to reach the UCT-V Controller and if that fails as well then GigaVUE-FM unregisters the UCT-V Controller and it will be removed from GigaVUE-FM.

Configure UCT-V in Azure

UCT-V should be registered via the registered UCT-V Controller and communicates through PORT 8891.

NOTE: Deployment of UCT-Vs through third-party orchestrator is supported on both Linux and Windows platforms. Refer to [Linux Agent Installation](#) and [Windows Agent Installation](#) for detailed information.

To register UCT-V in Azure Portal, use any one of the following methods.

- [Register UCT-V during Virtual Machine Launch](#)
- [Register UCT-V after Virtual Machine Launch](#)

Register UCT-V during Virtual Machine Launch

NOTE: Registering UCT-V during Virtual Machine Launch is not applicable for Windows Agents. You can register your Windows Agents after launching the Virtual machine, using a configuration file.

In your Azure portal, to launch the UCT-V init virtual machine and register the UCT-V using custom data, follow the steps given below:

1. In the Virtual machines page of the Azure Portal, select **Create** then **Virtual machine**. Then **Create a Virtual Machine** Page appears. For detailed information, refer to [Create virtual machine](#) topic in Azure Documentation.

2. On the **Advanced** tab, enter the Custom Data as text in the following format and deploy the virtual machine. The UCT-V uses this custom data to generate config file (**/etc/gigamon-cloud.conf**) used to register with GigaVUE-FM.

```
#cloud-config
write_files:
- path: /etc/gigamon-cloud.conf
  owner: root:root
  permissions: '0644'
  content: |
    Registration:
      groupName: <Monitoring Domain Name>
      subGroupName: <Connection Name>
      user: <Username>
      password: <Password>
      remoteIP: <IP address of the UCT-V Controller 1, <IP address of the UCT-V
Controller 2>
      sourceIP: <IP address of UCT-V> (Optional Field)
      remotePort: 8891
```



- User and Password must be configured in the **User Management** page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information. Enter the Username and Password created in the **Add Users** Section.
- If you are using multiple interface in UCT-V and UCT-V Controller is not connected to the primary interface, then add the following to the above registration data:
localInterface:<Interface to which UCT-V Controller is connected>

Register UCT-V after Virtual Machine Launch

NOTE: You can configure more than one UCT-V Controller for a UCT-V, so that if one UCT-V Controller goes down, the UCT-V registration will happen through another Controller that is active.

To register UCT-V after launching a Virtual Machine using a configuration file, follow the steps given below:

1. Install the UCT-V in the Linux or Windows platform. For detailed instructions, refer to [Linux UCT-V Installation](#) and [Windows UCT-V Installation](#).
2. Log in to the UCT-V. Refer to [Default Login Credentials](#) for UCT-V Controller default login credentials.

3. Create a local configuration file and enter the following custom data.



- **/etc/gigamon-cloud.conf** is the local configuration file in Linux platform.
- **C:\ProgramData\uctv\gigamon-cloud.conf** is the local configuration file in Windows platform.

Registration:

```
groupName: <Monitoring Domain Name>
subGroupName: <Connection Name>
user: <Username>
password: <Password>
remoteIP: <IP address of the UCT-V Controller 1>,
          <IP address of the UCT-V Controller 2>
sourceIP: <IP address of UCT-V> (Optional Field)
remotePort: 8891
```



- User and Password must be configured in the **User Management** page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information. Enter the UserName and Password created in the **Add Users** Section.
- If you are using multiple interface in UCT-V and UCT-V Controller is not connected to the primary interface, then add the following to the above registration data:
localInterface:<Interface to which UCT-V Controller is connected>

4. Restart the UCT-V service.

- Linux platform:
\$ sudo service uctv restart
- Windows platform: Restart from the Task Manager.

The deployed UCT-V registers with the GigaVUE-FM through the UCT-V Controller. After successful registration, the UCT-V sends heartbeat messages to GigaVUE-FM every 30 seconds. If one heartbeat is missing, UCT-V status appears as 'Unhealthy'. If more than five heartbeats fail to reach GigaVUE-FM, GigaVUE-FM tries to reach the UCT-V and if that fails as well then GigaVUE-FM unregisters the UCT-V and it will be removed from GigaVUE-FM.

Configure GigaVUE V Series Node and GigaVUE V Series Proxy in Azure



- It is not mandatory to register GigaVUE V Series Nodes via GigaVUE V Series however, if there is a large number of nodes connected to GigaVUE-FM or if the user does not wish to reveal the IP addresses of the nodes, then you can register your nodes using GigaVUE V Series Proxy. In this case, GigaVUE-FM communicates with GigaVUE V Series Proxy to manage the GigaVUE V Series Nodes.
- When deploying GigaVUE V Series Node using GigaVUE V Series Proxy, deploy the GigaVUE V Series Proxy first and provide the IP address of the proxy as the Remote IP of the GigaVUE V Series Node.

To register GigaVUE V Series Node and GigaVUE V Series Proxy in Azure Portal, use any one of the following methods.

- [Register GigaVUE V Series Node and GigaVUE V Series Proxy during Virtual Machine Launch](#)
- [Register GigaVUE V Series Node and GigaVUE V Series Proxy after Virtual Machine Launch](#)

Register GigaVUE V Series Node and GigaVUE V Series Proxy during Virtual Machine Launch

To register GigaVUE V Series Node and GigaVUE V Series Proxy using the custom data in Azure Portal, follow the steps given below:

1. In the Virtual machines page of the Azure Portal, select **Create** then **Virtual machine**. Then **Create a Virtual Machine** Page appears. For detailed information, refer to [Create virtual machine](#) topic in Azure Documentation.

2. On the **Advanced** tab, enter the Custom Data as text in the following format and deploy the virtual machine. Enter the monitoring domain name and the connection name of the monitoring domain created earlier as the groupName and the subGroupName in the Custom Data. The GigaVUE V Series Node and GigaVUE V Series Proxy uses this custom data to generate config file (**/etc/gigamon-cloud.conf**) used to register with GigaVUE-FM. You can also install custom certificates to GigaVUE V Series Node or Proxy, refer to the below table for details:

Field	User Data
User data without custom certificate	<pre>#cloud-config write_files: - path: /etc/gigamon-cloud.conf owner: root:root permissions: '0644' content: Registration: groupName: <Monitoring Domain Name> subGroupName: <Connection Name> user: <Username> password: <Password> remoteIP: <IP address of the GigaVUE-FM> or <IP address of the Proxy> remotePort: 443</pre>
User data with custom certificate	<pre>#cloud-config write_files: - path: /etc/cntrlr-cert.conf owner: root:root permissions: "0644" content: -----BEGIN CERTIFICATE----- <certificate content> -----END CERTIFICATE----- - path: /etc/cntrlr-key.conf owner: root:root permissions: "400" content: -----BEGIN PRIVATE KEY----- <private key content> -----END PRIVATE KEY----- - path: /etc/gigamon-cloud.conf owner: root:root permissions: '0644' content: Registration: groupName: <Monitoring Domain Name> subGroupName: <Connection Name> user: <Username> password: <Password> remoteIP: <IP address of the GigaVUE-FM> or <IP address of the Proxy></pre>

Field	User Data
	<div data-bbox="415 241 1453 346" style="border: 1px solid #ccc; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center;">remotePort: 443</p> </div> <div data-bbox="415 359 1453 443" style="border: 1px solid #ccc; padding: 5px;"> <p>NOTE: The minimum value for the authentication key encryption length provided during the key generation is 2048.</p> </div>



- You can register your GigaVUE V Series Node directly with GigaVUE-FM or you can use GigaVUE V Series Proxy to register your GigaVUE V Series Node with GigaVUE-FM. If you wish to register GigaVUE V Series Node directly, enter the `remotePort` value as 443 and the `remoteIP` as <IP address of the GigaVUE-FM> or if you wish to deploy GigaVUE V Series Node using GigaVUE V Series Proxy then, enter the `remotePort` value as 8891 and `remoteIP` as <IP address of the Proxy>.
- User and Password must be configured in the **User Management** page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information. Enter the UserName and Password created in the **Add Users** Section.

Register GigaVUE V Series Node and GigaVUE V Series Proxy after Virtual Machine Launch

To register GigaVUE V Series Proxy after launching the virtual machine using a configuration file, follow the steps given below:

1. Log in to the GigaVUE V Series Node or Proxy. Refer to [Default Login Credentials](#) for UCT-V Controller default login credentials.
2. Create a local configuration file (**/etc/gigamon-cloud.conf**) and enter the following custom data.

```
Registration:
  groupName: <Monitoring Domain Name>
  subGroupName: <Connection Name>
  user: <Username>
  password: <Password>
  remoteIP: <IP address of the GigaVUE-FM> or <IP address of the Proxy>
  remotePort: 443
```



- You can register your GigaVUE V Series Node directly with GigaVUE-FM or you can use V Series proxy to register your GigaVUE V Series with GigaVUE-FM. If you wish to register GigaVUE V Series Node directly, enter the `remotePort` value as 443 and the `remoteIP` as <IP address of the GigaVUE-FM> or if you wish to deploy GigaVUE V Series Node using GigaVUE V Series Proxy then, enter the `remotePort` value as 8891 and `remoteIP` as <IP address of the Proxy>.
- User and Password must be configured in the **User Management** page. Refer to [Configure Role-Based Access for Third Party Orchestration](#) for more detailed information. Enter the Username and Password created in the **Add Users** Section.

3. Restart the GigaVUE V Series Proxy service.
 - GigaVUE V Series Node:
`$ sudo service vseries-node restart`
 - GigaVUE V Series Proxy:
`$ sudo service vps restart`

The deployed GigaVUE V Series Node or Proxy registers with the GigaVUE-FM. After successful registration, the GigaVUE V Series Node or Proxy sends heartbeat messages to GigaVUE-FM every 30 seconds. If one heartbeat is missing, the fabric component status appears as 'Unhealthy'. If more than five heartbeats fail to reach GigaVUE-FM, GigaVUE-FM tries to reach the GigaVUE V Series Node or Proxy and if that fails as well then GigaVUE-FM unregisters the GigaVUE V Series Node or Proxy and it will be removed from GigaVUE-FM.

If you are using Azure GUI to create the virtual machine for GigaVUE V Series Node then data NIC must be attached to GigaVUE V Series Node after creating the virtual machine. Refer to [Create GigaVUE V Series Node with Management and Data NIC Attached using Azure GUI](#) for more detailed information.

Upgrade GigaVUE Fabric Components in GigaVUE-FM for Azure

This chapter describes how to upgrade GigaVUE V Series Proxy and GigaVUE V Series Node. For more detailed information about UCT-V Controller, GigaVUE V Series Proxy and Node Version refer [GigaVUE-FM Version Compatibility Matrix](#).

Refer to the following topic for more information:

- [Prerequisite](#)
- [Upgrade UCT-V Controller](#)
- [Upgrade GigaVUE V Series Node and GigaVUE V Series Proxy](#)

Prerequisite

Before you upgrade the GigaVUE V Series Proxy and GigaVUE V Series Node, you must upgrade GigaVUE-FM to software version 5.13.01 or above.

Upgrade UCT-V Controller

NOTE: UCT-V Controllers cannot be upgraded. Only a new version that is compatible with the UCT-V's version can be added or removed in the **Azure Fabric Launch Configuration** page.

To change the UCT-V Controller version follow the steps given below:

To change UCT-V Controller version between different major versions

NOTE: You can only add UCT-V Controllers which has different major versions. For example, you can only add UCT-V Controller version 1.8-x if your existing version is 1.7-x.

- In the **Azure Fabric Launch Configuration** page, under **Controller Versions**, click **Add**.
- From the **Image** drop-down list, select a UCT-V Controller image that matches with the version number of UCT-Vs installed in the instances.
- From the **Size** drop-down list, select a size for the UCT-V Controller. The default size is Standard_B1s.

- d. In **Number of Instances**, specify the number of UCT-V Controllers to launch. The minimum number you can specify is 1.

You cannot change the IP Address Type and the Additional Subnets details, provided at the time of UCT-V Controller configuration.

After installing the new version of UCT-V Controller, follow the steps given below:

1. Install UCT-V with the version same as the UCT-V Controller.
2. Delete the UCT-V Controller with older version.

To change UCT-V Controller version with in the same major version:

NOTE: This is only applicable, if you wish to change your UCT-V Controller version from one minor version to another with in the same major version. For example, from 1.8-2 to 1.8-3.

- a. From the **Image** drop-down list, select a UCT-V Controller image with in the same major version.
- b. Specify the **Number of Instances**. The minimum number you can specify is 1.
- c. Select the **Subnet** from the drop-down.



- You cannot modify the rest of the fields.
- After installing the new version of UCT-V Controller, install the UCT-V with the same version.

Upgrade GigaVUE V Series Node and GigaVUE V Series Proxy

GigaVUE-FM lets you upgrade GigaVUE V Series Proxy and GigaVUE V Series Node at a time.

There are multiple ways to upgrade the GigaVUE V Series Proxy and Node. You can:

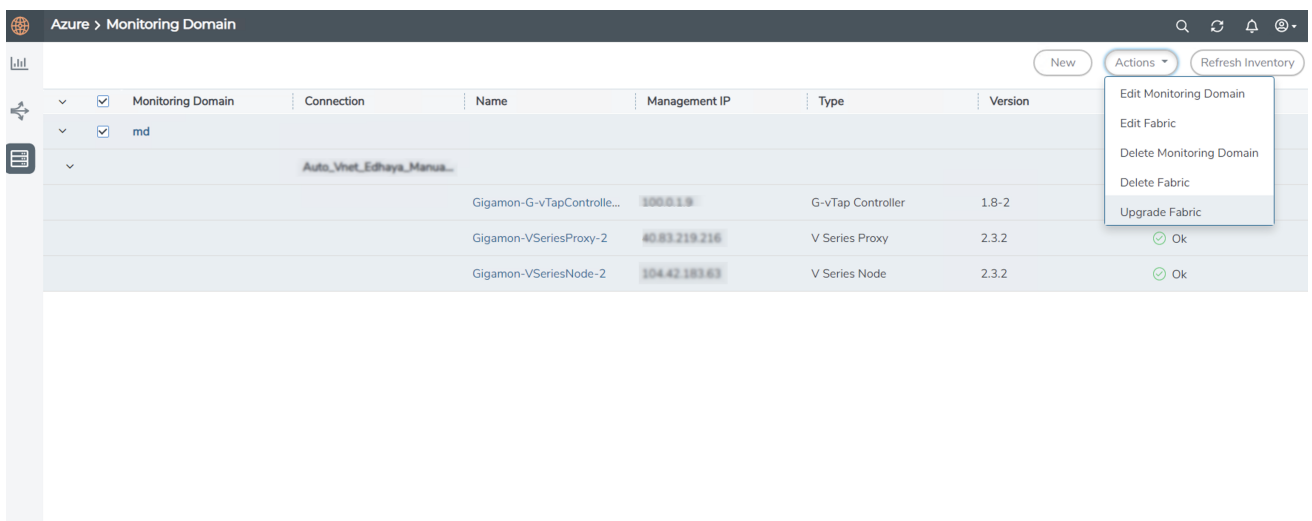
- Launch and replace the complete set of nodes and proxys at a time.
For example, if you have 1 GigaVUE V Series Proxy and 10 GigaVUE V Series Nodes in your VNet, you can upgrade all of them at once. First, the new version of GigaVUE V Series controller is launched. Next, the new version of GigaVUE V Series nodes are launched. Then, the old version of V Series controller and nodes are deleted from the VNet.

NOTES:

- When the new version of node and proxy is launched, the old version still exists in the VNet until they are deleted. Make sure the instance type determined during the configuration can accommodate the total number of new and old instances present in the VNet. If the instance type cannot support so many instances, you can choose to upgrade in multiple batches.
- If there is an error while upgrading the complete set of proxys and nodes present in the VNet, the new version of the fabric is immediately deleted and the old version of the fabric is retained as before.
- If you have deployed your nodes using Public IP address while creating the monitoring domain, then select the same number of Public IP addresses defined in your Max Instances when upgrading your nodes. Refer to [Create Monitoring Domain](#) for more detailed information.
- Launch and replace the nodes and proxy in multiple batches.
For example, if there are 18 GigaVUE V Series Nodes to be upgraded, you can specify how many you want to upgrade per batch.

To upgrade the GigaVUE V Series Proxy and GigaVUE V Series Node:

1. Go to **Inventory > VIRTUAL > Azure**, and then click **Monitoring Domain**. The **Monitoring Domain** page appears.
2. On the Monitoring Domain page, select the connection name check box and click **Actions**



3. Select **Upgrade Fabric** from the drop-down list. The Fabric Nodes Upgrade page is displayed.

Fabric Nodes Upgrade

V Series Proxy

Upgrade	<input checked="" type="checkbox"/>
Current Version	2.3.0
Image	gigamon-gigavue-vseries-proxy-2.3.2-284364
Change Size	<input type="checkbox"/>
Batch Size	1

V Series Node

Upgrade	<input checked="" type="checkbox"/>
Current Version	2.3.0
Image	gigamon-gigavue-vseries-node-2.3.2-284421
Change Size	<input type="checkbox"/>
Batch Size	1
Public IPs	104.42.58.54 - 104.42.183.83 x

4. To upgrade the GigaVUE V Series Node/Proxy, select the **Upgrade** checkbox.
5. From the **Image** drop-down list, select the latest version of the GigaVUE V SeriesProxy/Nodes.
6. Select the **Change Size** checkbox to change the flavor of the node/proxy, only if required.
7. To upgrade the GigaVUE V Series Node/Proxy, specify the batch size in the **Batch Size** box.

For example, if there are 7 GigaVUE V Series Nodes, you can specify 7 as the batch size and upgrade all of them at once. Alternatively, you can specify 3 as the batch size, and launch and replace 3 V Series nodes in each batch. In the last batch, the remaining 1 V Series node is launched.

8. From the Public IPs drop-down list, select the IP addresses equal to the Max Instances defined when creating a monitoring domain.

NOTE: This is only applicable for nodes deployed using Public IP, when creating a monitoring domain.

9. Click **Upgrade**.

The upgrade process takes a while depending on the number of GigaVUE V Series Proxys and Nodes upgrading in your Azure environment. First, the new version of the GigaVUE V Series Proxy is launched. Next, the new version of GigaVUE V Series Nodes is launched. Then, the older version of both is deleted from the project. The monitoring session is deployed automatically.

To view the detailed upgrade status click **Upgrade in progress** or **Upgrade successful**, the **V Series Node Upgrade Status** dialog box appears.

Fabric Nodes Upgrade Status

Monitoring Domain: md

Start Time 2021-10-11 20:58:56

End Time 2021-10-11 21:04:03

Status Fabric upgrade completed successfully

	Proxies	Nodes
Total	1	1
Upgraded	1	1
Upgrading	0	0
Remaining	0	0
Failures	0	0

Clear Close

- Click **Clear** to delete the monitoring domain upgrade status history of successfully upgraded nodes.

Configure Secure Tunnel (Azure)

You can configure secure tunnels for:

- [Precrypted Traffic](#)
- [Mirrored Traffic](#)

Precrypted Traffic

You can send the precrypted traffic through a secure tunnel. When secure tunnels for Precryption is enabled, packets are framed and sent to the TLS socket. The packets are sent in PCAPng format.

When you enable the secure tunnel option for regular and precrypted packets, two TLS secure tunnel sessions are created.

It is recommended always to enable secure tunnels for precrypted traffic to securely transfer the sensitive information.

Mirrored Traffic

You can enable the Secure Tunnel for mirrored traffic. By default, Secure Tunnel is disabled.

Refer to the following sections for Secure Tunnel Configuration:

- [Configure Secure Tunnel from UCT-V to GigaVUE V Series Node in UCT-V](#)
- [Configure Secure Tunnel between GigaVUE V Series Nodes](#)

Prerequisites

- Port 11443 should be enabled in security group settings. Refer to [Network Security Groups](#) for more detailed information on Network Firewall / Security Group.
- While creating Secure Tunnel, you must provide the following details:
 - SSH key pair
 - CA certificate

Notes

- Protocol versions IPv4 and IPv6 are supported.
- If you wish to use IPv6 tunnels, your GigaVUE-FM and the fabric components version must be 6.6.00 or above.

- For UCT-V with a version lower than 6.6.00, if the secure tunnel is enabled in the monitoring session, secure mirror traffic will be transmitted over IPv4, regardless of IPv6 preference.

Configure Secure Tunnel from UCT-V to GigaVUE V Series Node

To configure a secure tunnel in UCT-V, you must configure one end of the tunnel to the UCT-V and the other end to GigaVUE V Series Node. You must configure the CA certificates in UCT-V and the private keys and SSL certificates in GigaVUE V Series Node. Refer to the following steps for configuration:

S. No	Task	Refer to						
1.	Upload a Custom Authority Certificate (CA)	<p>You must upload a Custom Certificate to UCT-V Controller to establish a connection with the GigaVUE V Series Node.</p> <p>To upload the CA using GigaVUE-FM, follow the steps given below:</p> <ol style="list-style-type: none"> Go to Inventory > Resources > Security > CA List. Click New to add a new Custom Authority. The Add Custom Authority page appears. Enter or select the following information. <table border="1" data-bbox="721 1098 1458 1297"> <thead> <tr> <th>Field</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>Alias</td> <td>Alias name of the CA.</td> </tr> <tr> <td>File Upload</td> <td>Choose the certificate from the desired location.</td> </tr> </tbody> </table> Click Save. <p>For more information, refer to the section Adding Certificate Authority</p>	Field	Action	Alias	Alias name of the CA.	File Upload	Choose the certificate from the desired location.
Field	Action							
Alias	Alias name of the CA.							
File Upload	Choose the certificate from the desired location.							
2.	Upload an SSL Key	<p>You must add an SSL key to the GigaVUE V Series Node. To add an SSL Key, follow the steps in the section SSL Decrypt.</p>						
3.	Enable the secure tunnel	<p>You should enable the secure tunnel feature to establish a connection between the UCT-V and GigaVUE V Series Node. To enable the secure tunnel, follow these steps:</p> <ol style="list-style-type: none"> In the Edit Monitoring Session page, click Options. The Apply template page appears. Enable the Secure Tunnel button. You can enable secure tunnel for both mirrored and precrypted traffic. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>NOTE: When GigaVUE V Series Node is upgraded or deployed to 6.5, all the existing monitoring sessions will be redeployed, and</p> </div>						

S. No	Task	Refer to
		individual TLS TEPs are created for each UCT-V.
4.	Select the SSL Key while creating a monitoring domain and configuring the fabric components in GigaVUE-FM.	<p>You must select the added SSL Key in the GigaVUE V Series Node while creating a monitoring domain configuring the fabric components in GigaVUE-FM. To select the SSL key, follow the steps in the section Configure GigaVUE Fabric Components in GigaVUE-FM</p> <p>If the existing monitoring domain does not have a SSL key, you can add it by following the given steps:</p> <ol style="list-style-type: none"> 1. Select the monitoring domain for which you want to add the SSL key. 2. Click the Actions drop down list and select Edit SSL Configuration. An Edit SSL Configuration window appears. 3. Select the CA in the UCT-V Agent Tunnel CA drop down list. 4. Select the SSL key in the V Series Node SSL key drop down list. 5. Click Save.
5.	Select the CA certificate while creating the monitoring domain configuring the fabric components in GigaVUE-FM.	You should select the added Certificate Authority (CA) in UCT-V Controller. To select the CA certificate, follow the steps in the section Configure GigaVUE Fabric Components in GigaVUE-FM

Configure Secure Tunnel between GigaVUE V Series Nodes

You can create secure tunnel:

- Between two GigaVUE V Series Nodes.
- From one GigaVUE V Series Node to multiple GigaVUE V Series Nodes.

You must have the following details before you start configuring secure tunnels between two GigaVUE V Series Nodes:

- IP address of the tunnel destination endpoint (Second GigaVUE V Series Node).
- SSH key pair (pem file).

To configure secure tunnel between two GigaVUE V Series Nodes, refer to the following steps:

S · N o	Task	Refer to						
1.	Upload a Certificate Authority (CA) Certificate	<p>You must upload a Custom Certificate to UCT-V Controller to establish a connection between the GigaVUE V Series Node.</p> <p>To upload the CA using GigaVUE-FM follow the steps given below:</p> <ol style="list-style-type: none"> Go to Inventory > Resources > Security > CA List. Click Add, to add a new Certificate Authority. The Add Certificate Authority page appears. Enter or select the following information. <table border="1" data-bbox="418 653 1458 821"> <thead> <tr> <th>Field</th> <th>Action</th> </tr> </thead> <tbody> <tr> <td>Alias</td> <td>Alias name of the CA.</td> </tr> <tr> <td>File Upload</td> <td>Choose the certificate from the desired location.</td> </tr> </tbody> </table> Click Save. Click Deploy All. <p>For more information, refer to the section Adding Certificate Authority</p>	Field	Action	Alias	Alias name of the CA.	File Upload	Choose the certificate from the desired location.
Field	Action							
Alias	Alias name of the CA.							
File Upload	Choose the certificate from the desired location.							
2.	Upload an SSL Key	<p>You must add an SSL key to GigaVUE V Series Node. To add SSL Key, follow the steps in the section Upload SSL Keys.</p>						
3	Create a secure tunnel between UCT-V and the first GigaVUE V Series Node	<p>You should enable the secure tunnel feature to establish a connection between the UCT-V and the first GigaVUE V Series Node. To enable the secure tunnel feature follow these steps:</p> <ol style="list-style-type: none"> In the Edit Monitoring Session page, click Options. The Apply template page appears. Enable the Secure Tunnel button. You can enable secure tunnel for both mirrored and precrypted traffic. 						
4.	Select the added SSL Key while creating a	<p>Select the added SSL Key while creating a Monitoring Domain and configuring the fabric components in GigaVUE-FM in the first GigaVUE V Series Node .</p> <p>You must select the added SSL Key for the first GigaVUE V Series Node.</p> <p>To select the SSL key, follow the steps in the section Configure GigaVUE Fabric Components in GigaVUE-FM</p>						

S · N O	Task	Refer to						
	Monitoring Domain.							
5.	Select the added CA certificate while creating the Monitoring Domain	You should select the added Certificate Authority (CA) in UCT-V Controller. To select the CA certificate, follow the steps in the section Configure GigaVUE Fabric Components in GigaVUE-FM						
6	Create an Egress tunnel from the first GigaVUE V Series Node with tunnel type as TLS-PCAPNG in the Monitoring Session	<p>You must create a tunnel for traffic to flow out from the first GigaVUE V Series Node with tunnel type as TLS-PCAPNG in the Monitoring Session. Refer to Create Ingress and Egress Tunnels (Azure) for more detailed information on how to create tunnels.</p> <p>To create the egress tunnel, follow these steps:</p> <ol style="list-style-type: none"> 1. After creating a new monitoring session, or click Actions > Edit on an existing monitoring session, the GigaVUE-FM canvas appears. 2. In the canvas, select New > New Tunnel, drag and drop a new tunnel template to the workspace. The Add Tunnel Spec quick view appears. 3. On the New Tunnel quick view, enter or select the required information as described in the following table: <table border="1" data-bbox="337 1268 1459 1436"> <thead> <tr> <th data-bbox="337 1268 527 1346">Field</th> <th data-bbox="527 1268 1459 1346">Action</th> </tr> </thead> <tbody> <tr> <td data-bbox="337 1346 527 1388">Alias</td> <td data-bbox="527 1346 1459 1388">The name of the tunnel endpoint.</td> </tr> <tr> <td data-bbox="337 1388 527 1436">Description</td> <td data-bbox="527 1388 1459 1436">The description of the tunnel endpoint.</td> </tr> </tbody> </table>	Field	Action	Alias	The name of the tunnel endpoint.	Description	The description of the tunnel endpoint.
Field	Action							
Alias	The name of the tunnel endpoint.							
Description	The description of the tunnel endpoint.							

S · N O	Task	Refer to	
		Field	Action
		Type	Select TLS-PCAPNG for creating egress secure tunnel
		Traffic Direction	<p>Choose Out (Encapsulation) for creating an egress tunnel from the V Series node to the destination. Select or enter the following values:</p> <ul style="list-style-type: none"> o MTU- The default value is 1500 for Azure. <div style="border: 1px solid #ccc; padding: 5px; margin: 5px 0;"> <p>NOTE: Increasing the MTU value will impact the performance and may even result in packet loss. By default, Azure VNet will attempt to fragment jumbo frames even if sending and receiving VMs are configured with a higher MTU.</p> </div> <ul style="list-style-type: none"> o Time to Live - Enter the value of the time interval till which the session needs to be available. The value ranges from 1 to 255. The default value is 64. o DSCP - Enter the Differentiated Services Code Point (DSCP) value. o Flow Label - Enter the Flow Label value. o Source L4 Port- Enter the Souce L4 Port value o Destination L4 Port - Enter the Destination L4 Port value. o Flow Label o Cipher- Only SHA 256 is supported. o TLS Version - Select TLS Version1.3. o Selective Acknowledgments - Choose Enable to turn on the TCP selective acknowledgments. o SYN Retries - Enter the value for number of times the SYN has to be tried. The value ranges from 1 to 6. o Delay Acknowledgments - Choose Enable to turn on delayed acknowledgments.
		Remote Tunnel IP	Enter the interface IP address of the second GigaVUE V Series Node. (Destination IP).
		4. Click Save .	
7.	Select the added SSL Key while creating a Monitoring Domain and	You must select the added SSL Key in second GigaVUE V Series Node. To select the SSL key, follow the steps in the section Configure GigaVUE Fabric Components in GigaVUE-FM	

S · N o	Task	Refer to														
	configuring the fabric components in GigaVUE-FM in second GigaVUE V Series Node															
8	Create an ingress tunnel for the second GigaVUE V Series Node with tunnel type as TLS-PCAPNG in the Monitoring Session	<p>You must create a ingress tunnel for traffic to flow in from GigaVUE V Series Node with tunnel type as TLS-PCAPNG while creating the monitoring session. Refer to Create a Monitoring Session (Azure) to know about monitoring session.</p> <p>To create the ingress tunnel, follow these steps:</p> <ol style="list-style-type: none"> 1. After creating a new monitoring session, or click Actions > Edit on an existing monitoring session, the GigaVUE-FM canvas appears. 2. In the canvas, select New > New Tunnel, drag and drop a new tunnel template to the workspace. The Add Tunnel Spec quick view appears. 3. On the New Tunnel quick view, enter or select the required information as described in the following table: <table border="1" data-bbox="337 1266 1453 1862"> <thead> <tr> <th data-bbox="342 1272 537 1339">Field</th> <th data-bbox="537 1272 1448 1339">Action</th> </tr> </thead> <tbody> <tr> <td data-bbox="342 1339 537 1383">Alias</td> <td data-bbox="537 1339 1448 1383">The name of the tunnel endpoint.</td> </tr> <tr> <td data-bbox="342 1383 537 1428">Description</td> <td data-bbox="537 1383 1448 1428">The description of the tunnel endpoint.</td> </tr> <tr> <td data-bbox="342 1428 537 1633">Type</td> <td data-bbox="537 1428 1448 1633"> Select TLS-PCAPNG for creating egress secure tunnel. <div data-bbox="548 1478 1442 1629" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> NOTE: If you are enabling Secure tunnel in Monitoring Session with traffic acquisition method as UCT-V, you must not create TLS-PCAPNG Tunnel with direction IN, Destination L4 port 11443, and GigaVUE V Series Node version 6.5 and above. </div> </td> </tr> <tr> <td data-bbox="342 1633 537 1745">Traffic Direction</td> <td data-bbox="537 1633 1448 1745">Choose In (Decapsulation) for creating an ingress tunnel that receives traffic from V Series node 1. Select or enter the values as described in Step 6.</td> </tr> <tr> <td data-bbox="342 1745 537 1789">IP Version</td> <td data-bbox="537 1745 1448 1789">The version of the Internet Protocol. IPv4 and IPv6 are supported.</td> </tr> <tr> <td data-bbox="342 1789 537 1862">Remote Tunnel IP</td> <td data-bbox="537 1789 1448 1862">Enter the interface IP address of the first GigaVUE Cloud Suite V Series Node (Destination IP).</td> </tr> </tbody> </table>	Field	Action	Alias	The name of the tunnel endpoint.	Description	The description of the tunnel endpoint.	Type	Select TLS-PCAPNG for creating egress secure tunnel. <div data-bbox="548 1478 1442 1629" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> NOTE: If you are enabling Secure tunnel in Monitoring Session with traffic acquisition method as UCT-V, you must not create TLS-PCAPNG Tunnel with direction IN, Destination L4 port 11443, and GigaVUE V Series Node version 6.5 and above. </div>	Traffic Direction	Choose In (Decapsulation) for creating an ingress tunnel that receives traffic from V Series node 1. Select or enter the values as described in Step 6.	IP Version	The version of the Internet Protocol. IPv4 and IPv6 are supported.	Remote Tunnel IP	Enter the interface IP address of the first GigaVUE Cloud Suite V Series Node (Destination IP).
Field	Action															
Alias	The name of the tunnel endpoint.															
Description	The description of the tunnel endpoint.															
Type	Select TLS-PCAPNG for creating egress secure tunnel. <div data-bbox="548 1478 1442 1629" style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> NOTE: If you are enabling Secure tunnel in Monitoring Session with traffic acquisition method as UCT-V, you must not create TLS-PCAPNG Tunnel with direction IN, Destination L4 port 11443, and GigaVUE V Series Node version 6.5 and above. </div>															
Traffic Direction	Choose In (Decapsulation) for creating an ingress tunnel that receives traffic from V Series node 1. Select or enter the values as described in Step 6.															
IP Version	The version of the Internet Protocol. IPv4 and IPv6 are supported.															
Remote Tunnel IP	Enter the interface IP address of the first GigaVUE Cloud Suite V Series Node (Destination IP).															

S · N O	Task	Refer to
		4. Click Save .

Viewing Status of Secure Tunnel

GigavUE-FM allows you to view the status of secure tunnel connection in UCT-V. You can verify whether the tunnel is connected to the tool or V Series node through the status.

To verify the status of secure tunnel, go to **UCT-C > Monitoring Domain**. In the monitoring domain page, **Tunnel status** column shows the status of the tunnel. The green color represents that the tunnel is connected and the red represents that the tunnel is not connected.

For configuring secure tunnel, refer to **Configure Secure Tunnel** section.

Create Prefiltering Policy Template

GigaVUE-FM allows you to create a prefiltering policy template with a single rule or multiple rules. You can configure a rule with a single filter or multiple filters. Each monitoring session can have a maximum of 16 rules.

To create a prefiltering policy template, do the following steps:

1. Go to **Resources > Prefiltering**, and then click **UCT-V**.
2. Click **New**.
3. Enter the name of the template in the **Template Name** field.
4. Enter the name of a rule in the **Rule Name** field.
5. Click any one of the following options:
 - Pass — Passes the traffic.
 - Drop — Drops the traffic.

NOTE: In the absence of a prefilter rule, traffic is implicitly allowed. However, once rules are defined, they include an implicit drop rule. Should the traffic not conform to any of the specified rules, it will be dropped.

6. Click any one of the following options as per the requirement:

- Bi-Directional — Allows the traffic in both directions of the flow. A single Bi-direction rule should consist of 1 Ingress and 1 Egress rule.
- Ingress — Filters the traffic that flows in.
- Egress — Filters the traffic that flows out.

NOTE: When using loopback interface in Linux UCT-V, you can configure only Bi-directional.

7. Select the value of the priority based on which the rules must be prioritized for filtering. Select the value as 1 to pass or drop a rule in top priority. Similarly, you can select the value as 2, 3, 4 to 8, where 8 can be used for setting a rule with the least priority. Drop rules are added based on the priority and, then pass rules are added.

8. Select the **Filter Type** from the following options:

- L3
- L4

9. Select the **Filter Name** from the following options:

- ip4Src
- ip4Dst
- ip6Src
- ip6Dst
- Proto - It is common for both ipv4 and ipv6.

10. Select the **Filter Relation** from any one of the following options:

- Not Equal to
- Equal to

11. Enter the value for the given filter.

12. Click **Save**.

NOTE: Click + to add more rules or filters. Click - to remove a rule or a filter.

To enable prefiltering, refer to [Monitoring Session Options \(Azure\)](#).

Create Precryption Template for UCT-V

GigaVUE-FM allows you to filter packets during Precryption in the Data Acquisition at the UCT-V level. This filtering is based on L3/L4 5 tuple information (5-tuple filtering) and the applications running on the workload virtual machines.

Rules and Notes:

- If you wish to use Selective Precryption, your GigaVUE-FM and the fabric components version must be 6.8.00 or above.
- When a single UCT-V is associated with two different Monitoring Sessions with contrasting pass and drop rules, then instead of prioritizing a single rule, GigaVUE-FM will pass all the traffic.
- Once the templates are associated with a Monitoring Session, any changes made in the template will not be reflected in the Monitoring Session.

Refer to the section the following sections for more detailed information:

- [Create Precryption Template for Filtering based on Applications](#)
- [Create Precryption Template for Filtering based on L3-L4 details](#)

Create Precryption Template for Filtering based on Applications

The application filter allows you to select the applications for which the Precryption should be applied in the Monitoring Session Options page.

1. Go to **Traffic > Resources > Precryption**. The **Precryption Policies** page appears.
2. Click the **APPLICATION** tab.
3. Click **Add**. The New Precryption Template page appears.
4. Select **csv** as the **Type**, if you wish to add applications using a .csv file.
 - a. You can download the sample .csv file and edit it.
 - b. Save your .csv file.
 - c. Click **Choose File** and upload the file.
5. Select **Manual** as the **Type**, if you wish to add the applications manually. Enter the **Application Name** and click + icon to add more applications.
6. Click **Save**.

The added applications are displayed in the **APPLICATION** tab.

You can delete a selected application or you can delete all the application using the **Actions** button.

Create Precryption Template for Filtering based on L3-L4 details

1. Go to **Traffic > Resources > Precryption**. The **Precryption Policies** page appears.
2. Click the **L3-L4** tab.
3. Enter or select the following details as mentioned in the below table:

Fields	Description
Template	Enter a name for the template.
Rule Name	Enter a name for the rule.
Action	<p>Choose any one of the following options:</p> <ul style="list-style-type: none"> • Pass — Passes the traffic. • Drop — Drops the traffic. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>NOTE: In the absence of a Precryption rule, traffic is implicitly allowed. However, once rules are defined, they include an implicit pass all rule. Should the traffic not conform to any of the specified rules, it will be passed.</p> </div>
Direction	<p>Choose any one of the following options:</p> <ul style="list-style-type: none"> • Bi-Directional — Allows the traffic in both directions of the flow. A single Bi-direction rule should consist of 1 Ingress and 1 Egress rule. • Ingress — Filters the traffic that flows in. • Egress — Filters the traffic that flows out.
Priority	<p>Select the value of the priority based on which the rules must be prioritized for filtering. Select the value as 1 to pass or drop a rule in top priority. Similarly, you can select the value as 2, 3, 4 upto 8, where 8 can be used for setting a rule with the least priority. Drop rules are added based on the priority and, then pass rules are added.</p>
Filters	
Filter Type	<p>Select the Filter Type from the following options:</p> <ul style="list-style-type: none"> • L3 • L4 <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p>NOTE: L4 Filter Type can only be used with L3.</p> </div>
L3:	
Filter Name	Select the Filter Name from the following options:

Fields	Description
	<ul style="list-style-type: none"> IPv4 Source IPv4 Destination IPv6 Source IPv6 Destination Protocol - It is common for both IPv4 and IPv6.
Filter Relation	Select the Filter Relation from any one of the following options: <ul style="list-style-type: none"> Not Equal to Equal to
Value	Enter or Select the Value based on the selected Filter Name . <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <p>NOTE: When using Protocol as the Filter Name, select TCP from the drop-down menu.</p> </div>
L4:	
Filter Name	Select the Filter Name from the following options: <ul style="list-style-type: none"> Source Port Destination Port
Filter Relation	Select the Filter Relation from any one of the following options: <ul style="list-style-type: none"> Not Equal to Equal to
Value	Enter the source or destination port value.

4. Click **Save**.

NOTE: Click + to add more rules or filters. Click - to remove a rule or a filter.

The template is successfully created. To enable Precryption, refer to [Monitoring Session Options](#) section.

You can delete a selected template or you can delete all the templates using the **Actions** button.

You can also edit a selected template using **Actions > Edit**.

Configure Monitoring Session

This chapter describes how to setup ingress and egress tunnel, maps, applications in a monitoring session to receive and send traffic to the GigaVUE Cloud Suite V Series node. It also describes how to filter, manipulate, and send the traffic from the V Series node to

monitoring tools.

Refer to the following sections for details:

- [Create a Monitoring Session \(Azure\)](#)
- [Interface Mapping \(Azure\)](#)
- [Create Ingress and Egress Tunnels \(Azure\)](#)
- [Create Raw Endpoint](#)
- [Create a New Map \(Azure\)](#)
- [Add Applications to Monitoring Session \(Azure\)](#)
- [Deploy Monitoring Session](#)
- [View Monitoring Session Statistics](#)
- [View Health Status on the Monitoring Session Page](#)
- [Visualize the Network Topology](#)

Create a Monitoring Session (Azure)

You must create a monitoring domain before creating a monitoring session. Refer to [Create Monitoring Domain](#) for more detailed information on how to create a monitoring domain.

GigaVUE-FM automatically collects inventory data on all target instances available in your cloud environment. You can design your monitoring session to include or exclude the instances that you want to monitor. You can also choose to monitor egress, ingress, or all traffic.

When a new target instance is added to your cloud environment, GigaVUE-FM automatically detects and adds the instance to your monitoring session. Similarly, when an instance is removed, it updates the monitoring sessions.

For the connections without UCT-Vs, there are no targets that are automatically selected. You can use Customer Orchestrated Source in the monitoring session to accept a tunnel from anywhere.

You can create multiple monitoring sessions per monitoring domain.

To create a new monitoring session:

1. Go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Sessions** page appears.
2. Click **New** to open the **Create a New Monitoring Session** page.

Create A New Monitoring Session

Alias

Monitoring Domain

Connection

3. Enter the appropriate information for the monitoring session as described in the following table.

Field	Description
Alias	The name of the monitoring session.
Monitoring Domain	The name of the monitoring domain that you want to select.
Connection	The connection(s) that are to be included as part of the monitoring domain. You can select the required connections that need to be part of the monitoring domain.
Distribute traffic	Enabling the "Distribute Traffic" option identifies duplicate packets across different GigaVUE V Series Nodes when traffic from various targets is routed to these instances for monitoring.

4. Click **Create**. The **Edit Monitoring Session** Canvas page appears.

The Monitoring Session page **Actions** button also has the following options:

Button	Description
Edit	Opens the Edit page for the selected monitoring session. NOTE: In case of an error while editing a monitoring session, undeploy and deploy the monitoring session again.
Delete	Deletes the selected monitoring session.

Button	Description
Clone	Duplicates the selected monitoring session.
Deploy	Deploys the selected monitoring session.
Undeploy	Undeploys the selected monitoring session.
Apply Threshold	You can use this button to apply the threshold template created for monitoring cloud traffic health. Refer to Monitor Cloud Health for more detailed information on cloud traffic health, how to create threshold templates, and how to apply threshold templates.
Apply Policy	You can use this button to enable precryption, prefiltering, or Secure Tunnel. Refer to Monitoring Session Options (Azure) for more details.

Edit Monitoring Session (Azure)

In the edit monitoring session canvas page, you can add and configure applications, tunnel endpoints, raw endpoints, and maps.

Refer to the following topics for detailed information:

- [Create Ingress and Egress Tunnels \(Azure\)](#)
- [Add Applications to Monitoring Session \(Azure\)](#)
- [Create Raw Endpoint](#)
- [Create a New Map \(Azure\)](#)

The **Edit Monitoring Session** page has the following buttons:

Button	Description
Options	You can enable or disable Prefiltering, Precryption, Secure Tunnel, User Defined Applications, here. You can also create prefiltering and threshold template and apply it to the monitoring session. Refer to Monitoring Session Options (Azure) for more detailed information.
Show Targets	Use to refresh the subnets and monitored instances details that appear in the Instances dialog box.
Dashboard	The dashboard displays the statistics for all the applications, end points and the maps available in the monitoring session.
Ok / Cancel	<p>Ok: Use to save the configurations in the monitoring session when the monitoring session is in undeployed state.</p> <p>Cancel: After the monitoring session is</p>

Button	Description
	deployed, if you have made any changes and wish to remove them, use this option.
Interface mapping	Use to change the interfaces mapped to an individual GigaVUE V Series Node. Refer to Interface Mapping (Azure) topic for more details.
Deploy	Deploys the selected monitoring session. Refer to Deploy Monitoring Session topic for more details.

Monitoring Session Options (Azure)

Prefiltering, Precryption, Secure tunnel, and User-defined applications can be enabled for the Monitoring Session from the **Options** page.

To navigate to the **Options** page, follow the steps given below:

1. Go to **Traffic > Virtual > Orchestrated Flows >** Select your cloud platform.
2. Select a Monitoring Session from the list view, click **Actions > Edit**. The **Edit Monitoring Session** page appears.
3. In the Edit Monitoring Session page, click **Options**. The **Options** page appears.

You can perform the following actions in the Monitoring Session page:

- [Enable Prefiltering](#)
- [Enable Precryption](#)
- [Enable User Defined Applications](#)
- [Create Threshold](#)

Enable Prefiltering

To enable Prefiltering, follow the steps given below:

1. In the Monitoring Session **Options** page, click **Mirroring** tab.
2. Enable the **Mirroring** toggle button.
3. Enable the **Secure Tunnel** button if you wish to use Secure Tunnels. For more information about Secure Tunnel, refer to [Secure Tunnels](#).
4. You can select an existing Prefiltering template from the **Template** drop-down menu, or you can create a new template using **Add Rule** from the **Actions** menu and apply it. Refer to [Create Prefiltering Policy Template](#) for more details on how to create a new template.
5. Click **Save** to apply the template to the Monitoring Session.

You can save the newly created template by using the **Save as Template** button.

Enable Precryption

To enable Precryption, follow the steps given below:

1. In the Monitoring Session **Options** page, click **Precryption** tab.
2. Enable the **Precryption** toggle button. Refer to [Precryption™](#) topic for more details on Precryption.

3. You can apply Precryption to a few selective components based on the traffic:

NOTE: If you wish to use Selective Precryption, your GigaVUE-FM and the fabric components version must be 6.8.00 or above.

Applications:

- a. Click on the **APPLICATIONS** tab.
- b. **Pass All Applications** is enabled by default. If you wish to use selective Precryption, disable this option.
- c. Select any one of the following options for **Actions**:
 - i. Include: Select to include the traffic from the selected applications for Precryption.
 - ii. Exclude: Select to exclude the traffic from the selected applications for Precryption.
- d. You can select an existing Precryption template from the **Template** drop-down menu, or you can create a new template and apply it. Refer to [Create Precryption Template for Filtering based on Applications](#) for more detailed information on how to create a template
- e. Or you can directly enter the details as mentioned in the steps below:
 - i. Click **Add**. The **Add Application** widget opens.
 - ii. Select **csv** as the **Type**, if you wish to add the applications using a .csv file. Click **Choose File** and upload the file.
 - iii. Select **Manual** as the **Type**, if you wish to add the applications manually. Enter the **Application Name** and click + icon to add more applications.
- f. Click **Apply**.

L3-L4

- a. You can select an existing Precryption template from the **Template** drop-down menu, or you can create a new template and apply it. Refer to [Create Precryption Template for UCT-V](#) for more details on how to create a new template.
- b. Or you can also directly configure the rules in the Monitoring Session Options page. Refer to [Create Precryption Template for Filtering based on L3-L4 details](#) for more detailed information on how to configure the fields.

NOTE: When a single UCT-V is associate with two different Monitoring Sessions with contrasting pass and drop rule, then instead of prioritizing a single rule, GigaVUE-FM will pass all the traffic.

4. Enable the **Secure Tunnel** button if you wish to use Secure Tunnels. For more information about Secure Tunnel, refer to [Secure Tunnels](#).

Enable User Defined Applications

To enable user defined application, follow the steps given below:

1. In the Monitoring Session **Options** page, click **User-Defined Apps** tab.
2. Enable the **User-defined Applications** toggle button. Refer to [User Defined Application](#) section in the GigaVUE V Series Applications Guide for more detailed information about User Defined Applications and how to configure it.

Create Threshold

To create threshold, follow the steps given below:

1. In the Monitoring Session **Options** page, click **Threshold** tab.
2. Refer to [Traffic Health Monitoring](#) topic for more detailed information on how to create threshold templates and apply the templates to the monitoring session.

Interface Mapping (Azure)

You can change the interface of individual GigaVUE V Series Nodes deployed in a monitoring session. After deploying the monitoring session, if you wish to change the interfaces mapped to an individual GigaVUE V Series Node, you can use the **Interface Mapping** button to map the interface to the respective GigaVUE V Series Nodes. To perform interface mapping for an ingress tunnel:

1. Go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Sessions** page appears.
2. Select a Monitoring session from the list view and click **Actions > Edit**. The Edit Monitoring session page appears.
3. In the Edit Monitoring session canvas page, click on the **Interface Mapping** button.
4. The **Select nodes to deploy the Monitoring Session dialog box** appears. Select the GigaVUE V Series Nodes for which you wish to map the interface.
5. After selecting the GigaVUE V Series Node, select the interfaces for each of the REPs and the TEPs deployed in the monitoring session from the drop-down menu for the selected individual GigaVUE V Series Nodes. Then, click **Deploy**.

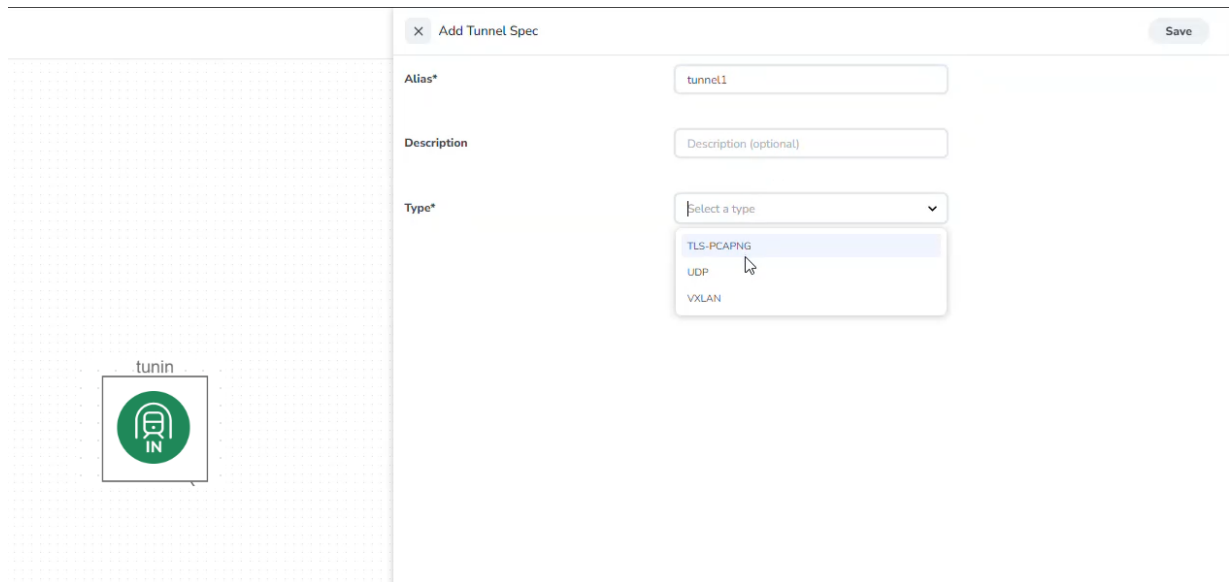
Create Ingress and Egress Tunnels (Azure)

Traffic from the GigaVUE V Series Node is distributed to tunnel endpoints in a monitoring session. A tunnel endpoint can be created using a standard VXLAN, TLS-PCAPNG, and UDP tunnel.

NOTE: GigaVUE-FM allows you to configure Ingress Tunnels in the Monitoring Session, when the **Traffic Acquisition Method** is UCT-V.

To create a new tunnel endpoint:

1. After creating a new monitoring session, or click **Actions > Edit** on an existing monitoring session, the GigaVUE-FM canvas appears.
2. In the canvas, select **New > New Tunnel**, drag and drop a new tunnel template to the workspace. The **Add Tunnel Spec** quick view appears.



3. On the New Tunnel quick view, enter or select the required information as described in the following table.

Field	Description	
Alias	The name of the tunnel endpoint. NOTE: Do not enter spaces in the alias name.	
Description	The description of the tunnel endpoint.	
Type	VXLAN, TLS-PCAPNG, and UDP are the only supported tunnel types for Azure.	
VXLAN:		
Traffic Direction		
The direction of the traffic flowing through the GigaVUE V Series Node.		
NOTE: In the scenario where secure tunnels needs to be established between GigaVUE V Series and a GigaVUE HC Series , you can utilize the Configure Physical Tunnel option provided at the GigaVUE V Series Secure Tunnel page. This allows you to conveniently configure secure tunnels at your physical device . Refer to Secure Tunnels section.		
In	Choose In (Decapsulation) for creating an Ingress tunnel, traffic from the source to the GigaVUE V Series Node.	
	IP Version	The version of the Internet Protocol. Select IPv4 or IPv6.
	Remote Tunnel IP	For Ingress tunnel, Remote Tunnel IP is the IP address of the tunnel source.
	VXLAN Network Identifier	Unique value which is used to identify the VXLAN. The value ranges from 1 to 16777215.
	Source L4 Port	Port from which the connection will be established to the target. For Example, if A is the source and B is the destination, this port value belongs to A.
	Destination L4 Port	Port to which the connection will be established from the source. For Example, if A is the source and B is the destination, this port value belongs to B.
Out	Choose Out (Encapsulation) for creating an Egress tunnel from the V Series node to the destination endpoint.	
	Remote Tunnel IP	For Egress tunnel, Remote Tunnel IP is the IP address of the tunnel destination endpoint.
	MTU	The Maximum Transmission Unit (MTU) is the maximum size of each packet that the tunnel endpoint can carry. The default value is 1500.
	Time to Live	Enter the value of the time interval for which the

Field	Description	
		session needs to be available. The value ranges from 1 to 255. The default value is 64.
	DSCP	Differentiated Services Code Point (DSCP) are the values, which network devices use to identify traffic to be handled with higher or lower priority. The values ranges from 0 to 63 with 0 being the highest priority and 63 as the lowest priority.
	Flow Label	Unique value which is used to identify packets that belong to the same flow. A flow is a sequence of packets that need to be treated as a single entity that may require special handling. Accepted value is between 0 and 1048575
	VXLAN Network Identifier	Unique value which is used to identify the VXLAN. The value ranges from 1 to 16777215.
	Source L4 Port	Port from which the connection will be established to the target. For Example, if A is the source and B is the destination, this port value belongs to A.
	Destination L4 Port	Port to which the connection will be established from the source. For Example, if A is the source and B is the destination, this port value belongs to B.
TLS-PCAPNG:		
Traffic Direction		
The direction of the traffic flowing through the GigaVUE V Series Node.		
<p>NOTE: In the scenario where secure tunnels needs to be established between GigaVUE V Series and a GigaVUE HC Series , you can utilize the Configure Physical Tunnel option provided at the GigaVUE V Series Secure Tunnel page. This allows you to conveniently configure secure tunnels at your physical device . Refer to Secure Tunnels section.</p>		
In	IP Version	The version of the Internet Protocol. only IPv4 is supported.
	Remote Tunnel IP	For Ingress tunnel, Remote Tunnel IP is the IP address of the tunnel source.
	MTU	The Maximum Transmission Unit (MTU) is the maximum size of each packet that the tunnel endpoint can carry. The default value is 1500.
	Source L4 Port	Port from which the connection will be established to the target. For Example, if A is the source and B is the destination, this port value belongs to A.
	Destination L4 Port	Port to which the connection will be established from the source. For Example, if A is the source and B is the

Field	Description	
		destination, this port value belongs to B.
	Key Alias	Select the Key Alias from the drop-down.
	Cipher	Only SHA 256 is supported.
	TLS Version	Only TLS Version1.3.
	Selective Acknowledgments	Enable to receive the acknowledgments.
	Sync Retries	Enter the value for number of times the sync has to be tried. The value ranges from 1 to 6.
	Delay Acknowledgments	Enable to receive the acknowledgments when there is a delay.
Out	IP Version	The version of the Internet Protocol. only IPv4 is supported.
	Remote Tunnel IP	For Ingress tunnel, Remote Tunnel IP is the IP address of the tunnel source.
	MTU	The Maximum Transmission Unit (MTU) is the maximum size of each packet that the tunnel endpoint can carry. The default value is 1500.
	Time to Live	Enter the value of the time interval for which the session needs to be available. The value ranges from 1 to 255. The default value is 64.
	DSCP	Differentiated Services Code Point (DSCP) are the values, which network devices use to identify traffic to be handled with higher or lower priority. The values ranges from 0 to 63 with 0 being the highest priority and 63 as the lowest priority.
	Flow Label	Unique value which is used to identify packets that belong to the same flow. A flow is a sequence of packets that need to be treated as a single entity that may require special handling. Accepted value is between 0 and 1048575
	Source L4 Port	Port from which the connection will be established to the target. For Example, if A is the source and B is the destination, this port value belongs to A.
	Destination L4 Port	Port to which the connection will be established from the source. For Example, if A is the source and B is the destination, this port value belongs to B.
	Cipher	Only SHA 256 is supported.
	TLS Version	Only TLS Version1.3.

Field	Description	
	Selective Acknowledgments	Enable to receive the acknowledgments.
	Sync Retries	Enter the value for number of times the sync has to be tried. The value ranges from 1 to 6.
	Delay Acknowledgments	Enable to receive the acknowledgments when there is a delay.
UDP:		
Out	L4 Destination IP Address	Enter the IP address of the tool port or when using Application Metadata Exporter (AMX), enter the IP address of the AMX application. Refer to Application Metadata Exporter for more detailed information on what AMX application is and how to configure it.
	Source L4 Port	Port from which the connection will be established to the target. For Example, if A is the source and B is the destination, this port value belongs to A.
	Destination L4 Port	Port to which the connection will be established from the source. For Example, if A is the source and B is the destination, this port value belongs to B.

4. Click **Save**.

To delete a tunnel, select the required tunnel and click **Delete**.

To apply threshold template to Tunnel End Points, select the required tunnel end point on the canvas and click **Details**. The quick view appears, click on the Threshold tab. For more details on how to create or apply threshold template, refer to [Monitor Cloud Health](#).

Tunnel End Points configured can also be used to send or receive traffic from GigaVUE HC Series and GigaVUE TA Series. Provide the IP address of the GigaVUE HC Series and GigaVUE TA Series as the Source or the Destination IP address as required when configuring Tunnel End Points.

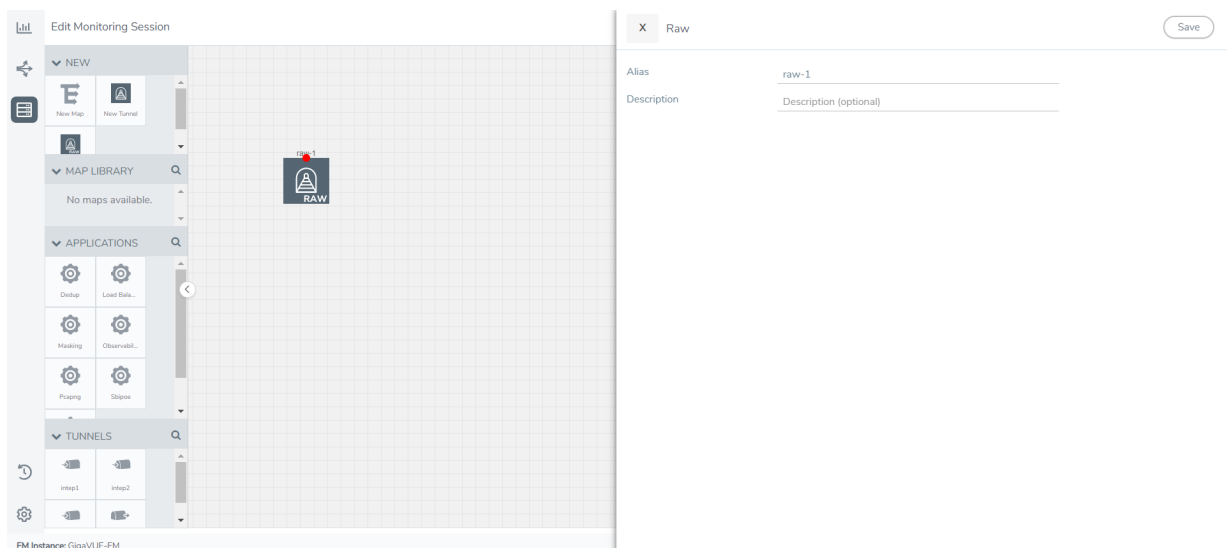
After configuring the tunnels and deploying the monitoring session, you can view the names of egress tunnels configured for a monitoring session, on the Monitoring Session details page. The Egress Tunnel column displays the name of the egress tunnel configured for a particular monitoring session. When multiple egress tunnels are configured for a monitoring session, then the Egress Tunnel column displays the number of egress tunnels configured in that monitoring session. Hover over the number of egress tunnels to display the names of the egress tunnels used in that particular monitoring session.

Create Raw Endpoint (Azure)

Raw End Point (REP) is used to pass traffic from an interface. REP is used to ingress data from a physical interface attached to GigaVUE V Series Nodes. You can optionally use this end point to send traffic to the applications deployed in the monitoring session.

To add Raw Endpoint to the monitoring session:

1. Drag and drop **New RAW** from **NEW** to the graphical workspace.
2. Click the **New RAW** icon and select **Details**. The **RAW** quick view page appears.
3. Enter the alias and description. In the **Alias** field, enter a name for the Raw End Point and click **Save**.



4. To deploy the monitoring session after adding the Raw Endpoint click the **Deploy** button on the edit monitoring session page.
5. The **Select nodes to deploy the Monitoring Session** dialog box appears. Select the V Series Nodes for which you wish to deploy the monitoring session.
6. After selecting the V Series Node, select the interfaces for each of the REPs and the TEPs deployed in the monitoring session from the drop-down menu for the selected individual V Series Nodes. Then, click **Deploy**.

Create a New Map (Azure)


You must have the flow map license to deploy a map in the monitoring session.

For new users, the free trial bundle will expire after 30 days, and the GigaVUE-FM prompts you to buy a new license. For licensing information, refer to *GigaVUE Licensing Guide*.

A map is used to filter the traffic flowing through the GigaVUE V Series Nodes. It is a collection of one or more rules (R). The traffic passing through a map can match one or more rules defined in the map.

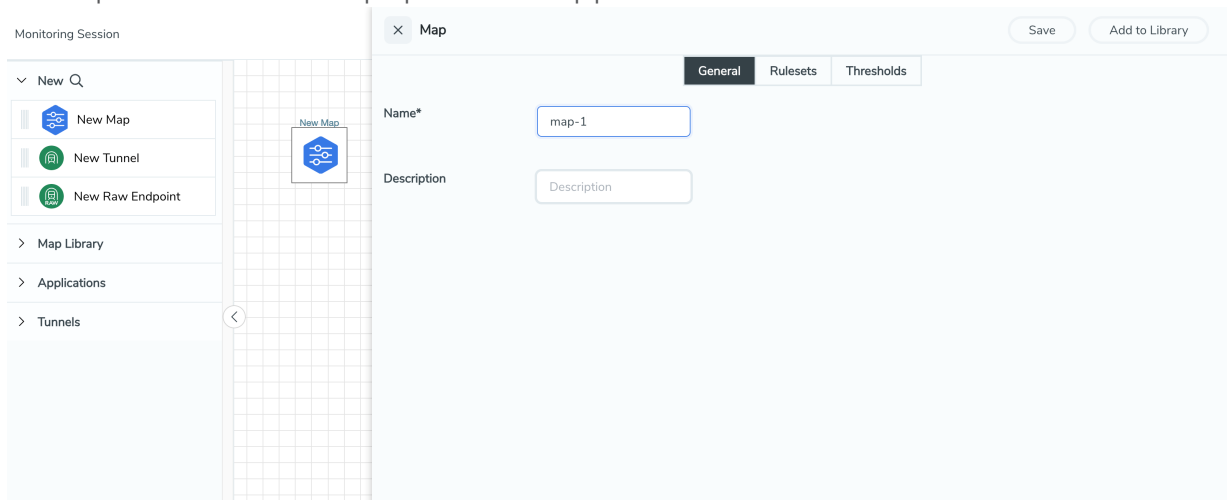
Keep in mind the following when creating a map:

Parameter	Description
Rules	A rule (R) contains specific filtering criteria that the packets must match. The filtering criteria lets you determine the targets and the (egress or ingress) direction of tapping the network traffic.
Priority	Priority determines the order in which the rules are executed. The priority value can range from 1 to 5, with 1 being the highest and 5 is the lowest priority.
Pass	The traffic from the virtual machine will be passed to the destination.
Drop	The traffic from the virtual machine is dropped when passing through the map.
Traffic Filter Maps	A set of maps that are used to match traffic and perform various actions on the matched traffic.
Inclusion Map	An inclusion map determines the instances to be included for monitoring. This map is used only for target selection.

<p>Exclusion Map</p>	<p>An exclusion map determines the instances to be excluded from monitoring. This map is used only for target selection.</p>
<p>Automatic Target Selection (ATS)</p>	<p>A built-in feature that automatically selects the cloud instances based on the rules defined in the traffic filter maps, inclusion maps, and exclusion maps in the monitoring session.</p> <p>The below formula describes how ATS works:</p> <p>Selected Targets = Traffic Filter Maps \cap Inclusion Maps - Exclusion Maps</p> <p>Below are the filter rule types that work in ATS:</p> <ul style="list-style-type: none"> • mac Source • mac Destination • ipv4 Source • ipv4 Destination • ipv6 Source • ipv6 Destination • VM Name Destination • VM Name Source • VM Tag Destination - Not applicable to Nutanix. • VM Tag Source - Not applicable to Nutanix. • VM Category Source - Applicable only to Nutanix • VM Category Destination - Applicable only to Nutanix. • Host Name -Applicable only to Nutanix and VMware. <p>The traffic direction is as follow:</p> <ul style="list-style-type: none"> • For any rule type as Source - the traffic direction is egress. • For Destination rule type - the traffic direction is ingress. • For Hostname - As it doesn't have Source or Destination rule type, the traffic direction is Ingress and Egress. <div style="border: 1px solid #ccc; padding: 5px; margin-top: 10px;"> <p> Notes</p> <ul style="list-style-type: none"> ▪ For OpenStack environment, Subnet Name Source and Subnet Name Destination are the exclusion filters available as part of Exclusion Maps with Traffic Acquisition method as OVS Mirroring in the Monitoring Domain. ▪ If no ATS rule filters listed above are used, all VMs and vNICs are selected as targets. When any ATS rule results in a null set, no target is selected and V Series Node does not receive traffic from any VM or vNIC. </div>
<p>Group</p>	<p>A group is a collection of maps that are pre-defined and saved in the map library for reuse.</p>

To create a new map:


1. After creating a new monitoring session, or click **Actions > Edit** on an existing monitoring session, the GigaVUE-FM canvas appears.
2. In the canvas, select **New > New Map**, drag and drop a new map template to the workspace. The New Map quick view appears.



3. On the New Map quick view, click on **General** tab and enter the required information as described in the following table:

Field	Description
Name	Name of the new map
Description	Description of the map

- Pass and Drop rule selection with Automatic Target Selection (ATS) differ with the Map type as follows:
- Traffic Map—Only Pass rules for ATS
 - Inclusion Map—Only Pass rules for ATS
 - Exclusion Map—Only Drop rules for ATS

4. Click on **Rule Sets** tab. Through the map, packets can be dropped or passed based on the highest to lowest rule priority. You can add 5 rule sets on a map. Use the + and - buttons to add or remove a rule set in the map. Each rule set can have only 25 rules per map and each rule can have a maximum of 4 conditions. To add ATS rules for an Inclusion/Exclusion map, you must select at least one rule condition. Refer to [Example- Create a New Map using Inclusion and Exclusion Maps](#) for more detailed information on how to configure Inclusion and Exclusion maps using ATS.
 - a. **To create a new rule set:**
 - i. Click **Actions > New Rule Set**.
 - ii. Enter a **Priority** value from 1 to 5 for the rule with 1 being the highest and 5 is the lowest priority.
 - iii. Enter the Application Endpoint in the Application EndPoint ID field.
 - iv. Select a required condition from the drop-down list.
 - v. Select the rule to **Pass** or **Drop** through the map.
 - b. **To create a new rule:**
 - i. Click **Actions > New Rule**.
 - ii. Select a required condition from the drop-down list. Click  and select **Add Condition** to add more conditions.
 - iii. Select the rule to **Pass** or **Drop** through the map.
5. Click **Save**.

NOTE: If a packet is fragmented then all the fragments will be destined to the same application end point. You can find the stats of mapped fragmented traffic in GigaVUE-FM. Refer to "Map Statistics" section in *GigaVUE Fabric Management Guide* for detailed information.



To edit a map, select the map and click **Details**, or click **Delete** to delete the map.

To apply threshold template to maps, select the required map on the canvas and click **Details**. The quick view appears, click on the Threshold tab. For more details on how to create or apply threshold templates, refer to [Monitor Cloud Health](#).

Rules and Notes:

- Directional rules do not work on single NIC VMs that are running a Windows UCT-V.
- Loopback captures bidirectional traffic from both ingress and egress. To prevent duplicate tapping, only egress tapping is permitted.
- If you are running GigaVUE Cloud Suite on OpenStack, you can add a subnet to the exclusion map. To do this, create an exclusion map and select the Subnet name in the ruleset.

You can also perform the following action in the Monitoring session canvas.

- Click a map and select **Details** to edit the map
- Click a map and select **Delete** to delete the map.
- Click the **Show Targets** button to refresh the subnets and monitored instances details that appear in the **Instances** dialog box.
- Click  to expand the **Targets** dialog box. To view details about a GigaVUE V Series Node, click the arrow next to the VM.
- In the Instances window, click  to filter the list of instances.

Example- Create a New Map using Inclusion and Exclusion Maps

Consider a monitoring session with 5 cloud instances. Namely target-1-1, target-1-2, target-1-3, target-2-1, target-2-2.

1. Drag and drop a new map template to the workspace. The New map quick view appears.
2. In the **General** tab, enter the name as Map 1 and enter the description. In the **Rule sets** tab, enter the priority and Application Endpoint ID.
3. Select the condition as VM Name and enter the **target**. This includes the instances target-1-1, target-1-2, target-1-3, target-2-1, and target-2-2.
4. Click on the Expand icon at the bottom of the Monitoring session canvas. The Inclusion Maps and Exclusion Maps section appears.
5. Drag and drop a new map template to the Inclusion Maps region. The New Map quick view appears. Enter the Name and Description of the map.
 - a. In the **General** tab, enter the name as Inclusionmap1 and enter the description. In the **Rule Sets**, enter the priority and Application Endpoint ID.
 - b. Select the condition as VM Name and enter the VM Name as **target-1**. Then the instance with VM name **target-1-1**, **target-1-2**, and **target-1-3** will be included.
6. Drag and drop a new map template to the Exclusion Maps region. The New Map quick view appears. Enter the details as mentioned in the above section.
 - a. In the **General** tab, enter the name as Exclusionmap1 and enter the description. In the **Rule Sets** tab, enter the priority and Application Endpoint ID.
 - b. Select the condition as VM Name and enter the VM Name as **target-1-3**. Then the instance **target-1-3** will be excluded.

Based on this configuration, the Automatic Target Selection will select the instances target-1-1 and target-1-2 as target.

Map Library

To reuse a map,

1. In the Monitoring Session page, Click **Actions > Edit**. The Edit Monitoring Session page opens.
2. Click the map you wish to save as a template. Click **Details**. The Application quick view appears.
3. Click **Add to Library**. Save the map using one of the following ways:
4. Select an existing group from the **Select Group** list or create a **New Group** with a name.
5. Enter a description in the **Description** field, and click **Save**.

The Map is saved to the **Map Library** in the Edit Monitoring Session Canvas page. This map can be used from any of the monitoring session. To reuse the map, drag and drop the saved map from the Map Library.

Add Applications to Monitoring Session (Azure)

GigaVUE Cloud Suite with GigaVUE V Series Node supports the following GigaSMART applications in the GigaVUE-FM canvas:

- Application Visualization
- Application Filtering Intelligence
- Application Metadata Intelligence
- Slicing
- Masking
- De-duplication
- Load Balancing
- PCAPng Application
- Header Stripping
- Application Metadata Exporter
- SSL Decrypt

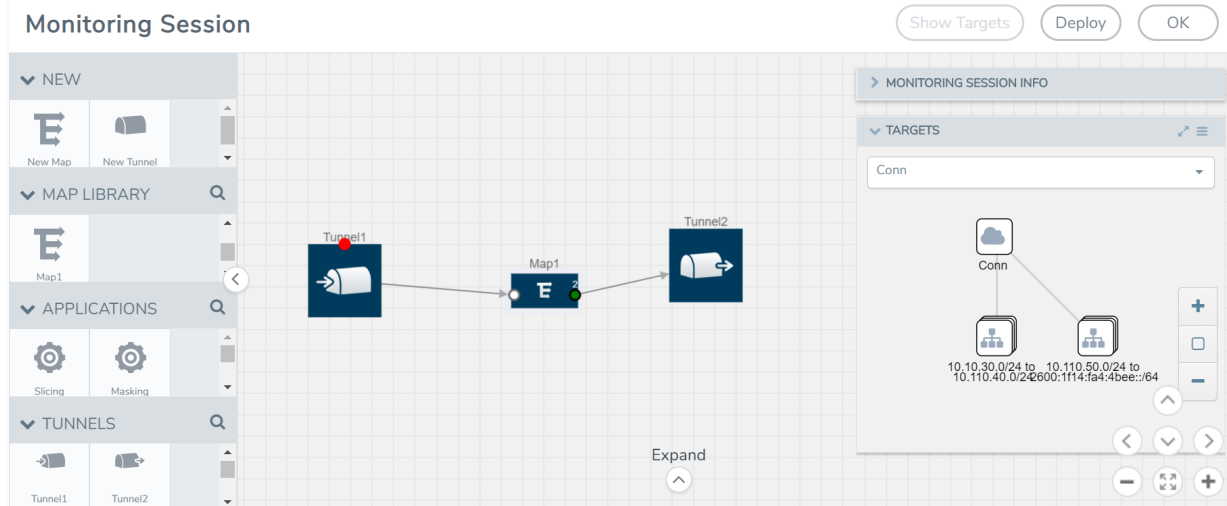
For more detailed information on how to configure these application, refer to *GigaVUE V Series Applications Guide*

Deploy Monitoring Session

To deploy the monitoring session:

1. Drag and drop the following items to the canvas as required:
 - Ingress tunnel (as a source) from the **NEW** section
 - Maps from the **MAP LIBRARY** section
 - Inclusion and Exclusion maps from the Map Library to their respective section at the bottom of the workspace.
 - GigaSMART apps from the **APPLICATIONS** section
 - Egress tunnels from the **TUNNELS** section
2. After placing the required items in the canvas, hover your mouse on the map, click the red dot, and drag the arrow over to another item (map, application, or tunnel).

NOTE: You can drag multiple arrows from a single map and connect them to different maps.



3. (Not applicable for Tunnel traffic acquisition method) Click **Show Targets** to view details about the subnets and monitored instances. The instances and the subnets that are being monitored are highlighted in orange.
4. Click **Deploy** to deploy the monitoring session. The status is displayed as **Success** in the Monitoring Sessions page. The session is successfully deployed on all the V Series nodes. Click on the status link in the Status column on the Monitoring Session page to view the Monitoring Session Deployment Report. When you click on the Status link, the Deployment Report is displayed. If the monitoring session is not deployed properly, then one of the following errors is displayed in the Status column.
 - Partial Success—The session is not deployed on one or more instances due to GigaVUE V Series Node failure.
 - Failure—The session is not deployed on any of the V Series nodes.
 The **Monitoring Session Deployment Report** displays the errors that appeared during deployment.

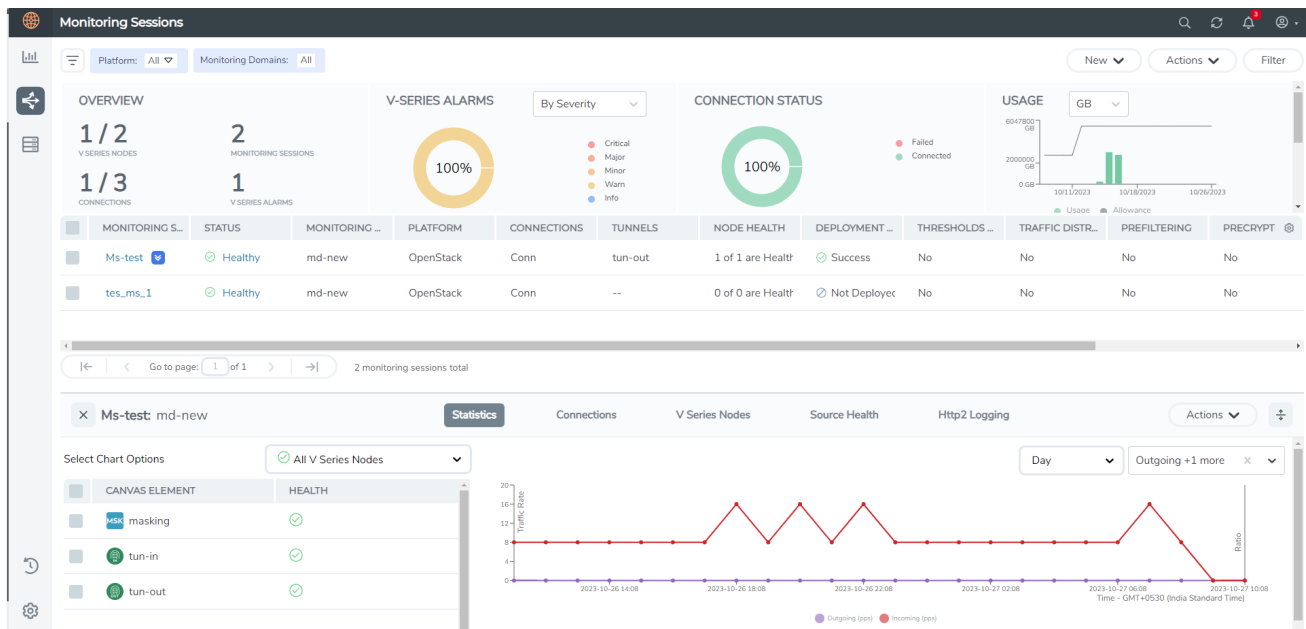
The Monitoring Session page also has the following options under the **Actions** button:

Button	Description
Undeploy	Undeploys the selected monitoring session.
Clone	Duplicates the selected monitoring session.
Edit	Opens the Edit page for the selected monitoring session. NOTE: In case of an error while editing a monitoring session, undeploy and deploy the monitoring session again..
Delete	Deletes the selected monitoring session.

View Monitoring Session Statistics

The Monitoring Session Statistics page lets you analyze the incoming and outgoing traffic on an hourly, daily, weekly, and monthly basis.

On the Monitoring Sessions page, click the name of the monitoring session, and then click **View**. A split window appears displaying the **Statistics, Connections, V Series Nodes, Source Health** and **Http2 Logging** of the monitoring session as shown:



To know more about the statistics of the session, click **Statistics**.

You can view the statistics by applying different filters as per the requirements of analysing the data. GigaVUE-FM allows you to perform the following actions on the Monitoring Session Statistics page:

- You can view the **Statistics** in full screen. To view in full screen, click the **Actions** drop-down list at the right corner of the window, and select **Full Screen. Statistics** appear in full screen.
- You can view the incoming and outgoing traffic on an hourly, daily, weekly, and monthly basis. You can select the options from the drop-down list box.
 - For the hourly statistics, the data points are plotted every five minutes.
 - For the daily statistics, the data points are plotted every one hour.
 - For the weekly statistics, the data points are plotted every six hours.
 - For the monthly statistics, the data points are plotted every day.
 - The data points in graph are plotted every five minutes, one hour, six hours, or a day based on the option selected in the drop-down menu.

NOTE: The latest data point displayed in the graph for any particular time will be less than five minutes, one hour, six hours, or day from the time at which the statistics are checked based on the option selected from the drop-down menu. For example, if you are viewing the hourly statistics at 11.30, the latest data point in the graph would be 11.25.

- The statistical data between two data points is displayed at the first data point. For example, the data between 11.30 and 12.30 is displayed at the data point 11.30 when viewing the daily statistics.
- You can filter the traffic and view the statistics based on factors such as **Incoming, Outgoing, Ratio (Out/In), Incoming Packets, Outgoing Packets, Ratio (Out/In) Packets**. You can select the options from the drop-down list box.
- You can also view the statistics of the monitoring session deployed in the individual V Series Nodes. To view the statistics of the individual GigaVUE V Series Node, select the name of the **V Series Node** from the drop-down list for which you want to view the statistics from the GigaVUE V Series Node drop-down menu on the top left corner of the Monitoring Session Statistics page.
- You can view the statistics of the elements involved in the monitoring session. To view the statistics, click on the **Select Chart Options** page and select the elements associated with the session.
- Directly on the graph, you can click on **Incoming(Mbps), Outgoing (Mbps), or Ratio (Out/In) (Mbps)** to view the statistics individually.

View Health Status on the Monitoring Session Page (AWS)

You can view the health status of the monitoring session and the components deployed, in the monitoring session page. Refer to [Monitor Cloud Health](#) for more detailed information on how to configure cloud health and view health status.

To view the health status on the Monitoring Session page:

1. Go to **Traffic > Virtual > Orchestrated Flows > Select your cloud platform**.
2. The Monitoring Session page appears. The list view in the Monitoring Domain page displays the details of the Monitoring Session.

The following columns in the monitoring session page are used to convey the health status:

Status

This column displays the health status (both traffic and configuration) of the entire monitoring session. The status is marked healthy only if both the traffic and configuration health status is healthy, even if either of them is unhealthy, then the health status is moved to unhealthy.

Node Health

This column displays the configuration and traffic health status of the monitoring session deployed in V Series Nodes. This column provides information on the number of GigaVUE V Series Nodes that have healthy traffic flow and monitoring session successfully deployed to the total number of V Series Nodes that have monitoring session deployed.

NOTE: Node Health only displays the health status, so if the V Series Node is down it will not be reflected in the monitoring session page.

Targets Source Health

1. On the Monitoring Session page, click the name of the monitoring session and click **View**.
2. Select the **Connections** tab.

This column displays the configuration health status of the monitoring session deployed in targets. This column provides information on the number of monitoring sessions successfully deployed on a particular target to the total number of monitoring session deployed on that particular target.

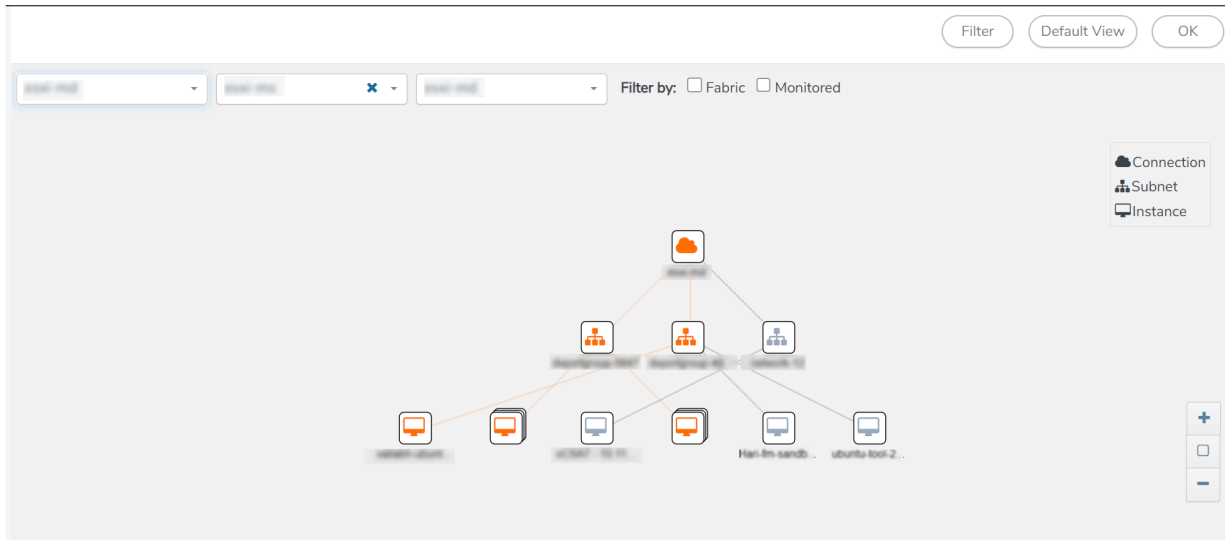
You can view the health status of the individual targets and also the error message associated with them, by clicking on the Target Source Health column.

Visualize the Network Topology

You can have multiple connections in GigaVUE-FM. Each connection can have multiple monitoring sessions configured within them. You can select the connection and the monitoring session to view the selected subnets and instances in the topology view.

To view the topology diagram in GigaVUE-FM:

1. On the Monitoring Session page, select **Topology** tab. The Topology page appears.
2. Select a monitoring domain from the **Select monitoring domain...** list.
3. Select a connection from the **Select monitoring session...**list.
4. Select a monitoring session from the **Select connection...** list. The topology view of the monitored subnets and instances in the selected session are displayed.



5. (Optional) Hover over or click the subnet or VM Group icons to view the subnets or instances present within the group.

In the topology page, you can also do the following:

- Use the **Filter** button to filter the instances based on the VM name, VM IP, Subnet ID, or Subnet IP, and view the topology based on the search results.
- Use the **Default View** button to view the topology diagram based on the source interfaces of the monitoring instances.
- Use the arrows at the right-bottom corner to move the topology page up, down, left, or right. Click the **Fit-to-Width** icon to fit the topology diagram according to the width of the page.
- Use **+** or **-** icons to zoom in and zoom out the topology view.

Configure Precryption in UCT-V

GigaVUE-FM allows you to enable or disable the Precryption feature for a monitoring session.

To enable or disable the Precryption feature in UCT-V, refer to Create monitoring session.

Rules and Notes

- To avoid packet fragmentation, you should change the option `preryption-path-mtu` in UCT-V configuration file (`/etc/uctv/uctv.conf`) within the range 1400-9000 based on the platform path MTU.
- Protocol version IPv4 and IPv6 are supported.
- If you wish to use IPv6 tunnels, your GigaVUE-FM and the fabric components version must be 6.6.00 or above.

To create a new monitoring session with Precryption, follow these steps:

1. In GigaVUE-FM, on the left navigation pane, select **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Sessions** page appears.
2. Click **New** to open the **Create a New Monitoring Session** page.
3. Enter the appropriate information for the monitoring session as described in the following table:

Field	Description
Alias	The name of the monitoring session.
Monitoring Domain	The name of the monitoring domain that you want to select.
Connection	The connection(s) that are to be included as part of the monitoring domain. You can select the required connections that need to be part of the monitoring domain.

4. Click **Next**. The **Edit Monitoring Session** page appears with the new canvas.
5. Click **Options** button. The Monitoring Session Options appears.
6. Click **Precryption** tab.
7. Enable **Precryption**.
8. Click **Save**. The **Edit Monitoring Session** page appears. You can proceed to create map, tunnels, and adding applications.

NOTE: It is recommended to enable the secure tunnel feature whenever the Precryption feature is enabled. Secure tunnel helps to securely transfer the cloud captured packets or precrypted data to a GigaVUE V Series Node. For more information, refer to Secure Tunnel .

Validate Precryption connection

To validate the Precryption connection, follow the steps:

- To confirm it is active, navigate to the **Monitoring Session** dashboard and check the Precryption option, which should show **yes**.

- Click **Status**, to view the rules configured.

Check for Required IAM Permissions in Azure

GigaVUE-FM allows you to validate whether the policy attached to the GigaVUE-FM using "Managed Identity" or "Application ID with client secret" has the required IAM permissions and notifies the users about the missing permissions. You can check permissions while creating a Monitoring Domain and deploying GigaVUE Fabric Components using GigaVUE-FM by clicking the **Check Permissions** button on the Create Monitoring Domain page and Azure Fabric Launch page. The GigaVUE-FM displays the minimum required IAM permissions.

IMPORTANT: "Microsoft.Authorization/roleAssignments/read" permission is required for validating the required permissions. Ensure to include "Microsoft.Authorization/roleAssignments/read" permission in your IAM policy.

The following are the prerequisites that are required to deploy GigaVUE Cloud Suite for Azure:

- IAM permissions - Check whether the minimum required permissions are granted for the instance where the GigaVUE-FM is deployed. Refer to [Permissions and Privileges \(Azure\)](#) for more detailed information on configuring the required permissions in Azure.
- Access to public cloud endpoints - Check for access to the Azure cloud endpoint APIs.
- Subscription to the GigaVUE Cloud Suite for Azure- Before deploying the solution, you must subscribe to the GigaVUE Cloud Suite components from the Azure marketplace. Refer to [Enable Subscription for GigaVUE Cloud Suite for Azure](#) for more detailed information on how to subscribe to Gigamon Products.
- Security Group - Checks whether the required ports are configured in the security group. For more information on the security groups, see [Network Security Groups](#)

After you press the **Check Permissions** button, GigaVUE-FM will verify the minimum required permissions. Any missing permissions will be highlighted with the respective message against the permission in a dialog box. You can use the displayed IAM Policy JSON as a reference and update the policy that is attached to the GigaVUE-FM.

NOTE: When using Managed Identity (MSI), the IAM policy modified in Azure Portal takes a long duration to reflect in GigaVUE-FM. Refer to the [Limitation of using managed identities for authorization](#) section in Azure Documentation for more detailed information.

The following table lists the different available status and their descriptions.

Access Status	Description
Allowed	This status is displayed if permission is configured correctly.
Denied	This status is displayed if permission is missing. For Example: If a permission is not configured in the IAM policy or if the permission access is explicitly denied in Azure, then the status is displayed as Denied.
Failed	This status is displayed if GigaVUE-FM fails to validate a permission. The reason and the probable cause are also displayed.
Not Executed	This status is displayed if a higher level of permission is denied or not configured, then GigaVUE-FM cannot validate a permission. For Example: If a subscription level permission is in denied or failed state then the resource level permission cannot be validated.
Undeterminable	The "Microsoft.Authorization/roleAssignments/read" permission is required to validate the required permissions. If this permission is not configured, the status of several other permissions cannot be determined.

Refer to the following section for more detailed information:

- [Check Permissions while Creating a Monitoring Domain](#)
- [Check Permissions while Configuring GigaVUE Fabric Components using GigaVUE-FM](#)
- [View Permission Status Reports](#)

Check Permissions while Creating a Monitoring Domain

To check the permissions while creating a monitoring domain, follow the steps given below:

1. Go to **Inventory > VIRTUAL > Azure**, and then click **Monitoring Domain**. The **Monitoring Domain** page appears.
2. Click **New**. The **Monitoring Domain Configuration** page appears.
3. Enter the details as mentioned in the [Create Monitoring Domain](#) section.
4. Click the **Check Permission** button. The **Check Permissions** widget opens.
5. Select the connection for which you wish to check the required permissions and then click **Next**.
6. Click the **Permission Status** tab to view the missing permissions.
7. The **PERMISSIONS** tab lists the permissions required to run GigaVUE Cloud Suite for Azure. Make sure to include all the permissions with Access Status as 'Denied' in the IAM policy.

8. The **IAM POLICY** tab lists the sample policy containing the required permissions for deploying the GigaVUE Cloud Suite for Azure. You must update the Azure IAM policy with the missing permissions that are highlighted in the JSON. To recheck the IAM policy, go to the **PERMISSIONS** tab and click the **Recheck** button.

Check Permissions

✓ Connection Selection
2 Permissions

Click on the permission status to view the missing permissions for the selected connection.

CONNECTION	PERMISSION STATUS	CREDENTIAL	REGION
C	Success	sriram-cred	West US

1 permissions total

PERMISSIONS
IAM POLICY

Below is the sample policy containing the required permissions for deploying the GigaVUE Cloud Suite.

Copy
Download

① You must update the AZURE IAM Policy with the missing permissions that are highlighted in the JSON. To recheck the IAM Policy, go to the Permissions tab and click the Recheck button.

```

{
  "properties": {
    "roleName": "GigaVUE-FM-Service-Role",
    "description": "The minimum required permissions for FM to deploy GigaVUE Cloud Suite",
    "assignableScopes": [
      "6447eb55-9d09-481b-89bc-52e96bb52823",
      "d719fcb1-0d1a-43a8-bf8e-7844e293ce1a"
    ],
    "permissions": [
      {
        "actions": [
          "Microsoft.Authorization/roleAssignments/read",
          "Microsoft.Compute/disks/delete",
          "Microsoft.Compute/images/read",
          "Microsoft.Compute/virtualMachines/delete",
          "Microsoft.Compute/virtualMachines/powerOff/action",
          "Microsoft.Compute/virtualMachines/read",
          "Microsoft.Compute/virtualMachines/restart/action",
          "Microsoft.Compute/virtualMachines/start/action",
          "Microsoft.Compute/virtualMachines/vmSizes/read",
          "Microsoft.Compute/virtualMachines/write",
          "Microsoft.Network/networkInterfaces/delete",
          "Microsoft.Network/networkInterfaces/join/action",
          "Microsoft.Network/networkInterfaces/read",
          "Microsoft.Network/networkInterfaces/write",
          "Microsoft.Network/networkSecurityGroups/join/action",
          "Microsoft.Network/networkSecurityGroups/read",
          "Microsoft.Network/publicIPAddresses/delete",
          "Microsoft.Network/publicIPAddresses/join/action",
          "Microsoft.Network/publicIPAddresses/read",
          "Microsoft.Network/publicIPAddresses/write",
          "Microsoft.Network/virtualNetworks/read",
          "Microsoft.Network/virtualNetworks/subnets/join/action",
          "Microsoft.Resources/subscriptions/read",
          "Microsoft.Resources/subscriptions/resourceGroups/read"
        ],
        "notActions": [],
        "dataActions": [],
        "notDataActions": []
      }
    ]
  }
}

```

Back
Close

You can use the **Copy** button to copy the permissions to the clipboard. Also, you can use the **Download** button to download the permission in JSON format.

NOTE: After updating the IAM Policy, it takes around 5 minutes for the changes to reflect on the Check Permissions screen.

Check Permissions while Configuring GigaVUE Fabric Components using GigaVUE-FM

To check for permissions from the Azure Fabric Launch page, follow the steps given below:

1. In the Azure Fabric Launch page, enter the details as mentioned in [Configure GigaVUE Fabric Components in GigaVUE-FM](#).
2. Click the **Check Permissions** button. The **Check Permissions** widget opens.
3. The permission status for Inventory, Security Group, and Fabric Launch are displayed in this widget.
4. Click the **INVENTORY** tab and click **Check Inventory Permissions**, to view the required inventory permissions. Inventory permissions with the access status "Denied" could be missing in the IAM Policy or have restricted boundary
5. Click the **SECURITY GROUPS** tab and click **Check Security Group Permissions**, to view the required ports that need to be opened for the security groups. The ports in the **Denied** State are not open in the security group. The ports with the status **Explicit denied** are blocked or restricted by the user. The ports with status **Partially configured** have incorrect IP address.
6. Click the **FABRIC LAUNCH** tab and click **Check Fabric Launch Permissions**, to view the permissions required for deploying the GigaVUE fabric components. The Virtual Machine permissions with the access status "Denied" could be missing in the IAM Policy.

NOTE: The permissions "Microsoft.Compute/virtualMachines/write" and "Microsoft.Network/networkInterfaces/join/action" are dependent and cannot be validated separately. So, if either of the permissions is denied or not configured, then both permissions will be displayed as "Denied".

7. The **IAM POLICY** tab lists the sample policy containing the required permissions for deploying the GigaVUE Cloud Suite for Azure. You must update the Azure IAM policy with the missing permissions that are highlighted in the JSON.

Check Permissions ✕

INVENTORY
SECURITY GROUPS
FABRIC LAUNCH 2
IAM POLICY 1

Below is the sample policy containing the required permissions for deploying the GigaVUE Cloud Suite.

Copy
Download

i You must update the AZURE IAM Policy with the missing permissions that are highlighted in the JSON. To recheck the IAM Policy, go to the Inventory tab or Fabric Launch tab and click the Recheck button.

```

{
  "properties": {
    "roleName": "GigaVUE-FM-Service-Role",
    "description": "The minimum required permissions for FM to deploy GigaVUE Cloud Suite",
    "assignableScopes": [
      "6447eb55-9d09-481b-89bc-52e96bb52823"
    ],
    "permissions": [
      {
        "actions": [
          "Microsoft.Authorization/roleAssignments/read", This permission is required for Check Permissions feature
          "Microsoft.Compute/disks/delete",
          "Microsoft.Compute/images/read",
          "Microsoft.Compute/virtualMachines/delete", This permission is missing in your policy
          "Microsoft.Compute/virtualMachines/powerOff/action",
          "Microsoft.Compute/virtualMachines/read",
          "Microsoft.Compute/virtualMachines/restart/action",
          "Microsoft.Compute/virtualMachines/start/action",
          "Microsoft.Compute/virtualMachines/vmSizes/read",
          "Microsoft.Compute/virtualMachines/write",
          "Microsoft.Network/networkInterfaces/delete",
          "Microsoft.Network/networkInterfaces/patch/action"
        ]
      }
    ]
  }
}

```

Close

NOTE: Populating the permissions status for Fabric launch takes a longer duration.

View Permission Status Reports

The permission status reports consist of previously run **Check permissions** reports. They are auto purged once every 30 days. You can change the purge interval from the **Advanced Settings** page. Refer to [Configure Azure Settings](#) for more detailed information.

You can view the Permission Status Report in the following two ways:

- In the Monitoring Domain page, click **Actions > View Permission Status Report**.
- In the Monitoring Domain page, you can navigate to **Settings** and then click **Permission Status Report**

On the **Permission Status Report** page, you can use the Filter button to filter the reports based on File Name, Type, and Date.

To view or delete individual reports, select the report and click **Actions** button.

Migrate Application Intelligence Session to Monitoring Session

Starting from Software version 6.5.00, Application Intelligence solution can be configured from Monitoring Session Page. After upgrading to 6.5.00, you cannot create a new Application Intelligence Session or edit an existing Application Intelligence Session for virtual environment from the **Application Intelligence** page. The following operations can only be performed using the existing Application Intelligence Session:

- View Details
- Delete
- Forced Delete

It is highly recommended to migrate the existing sessions to Monitoring Session for full functionality. GigaVUE-FM will migrate all your virtual Application Intelligence sessions and their connections seamlessly. All sessions will be rolled back to their original states if the migration fails.



Points to Note:

- You must be a user with write access for the **Traffic Control Management** Resource in GigaVUE-FM to perform this migration. Refer to [Create Roles](#) section for more detailed information on how to configure roles with write access for the Traffic Control Management resource.
- If any of the existing Application Intelligence Session is in PENDING or SUSPENDED, then the migration will not be triggered. Resolve the issue and start the migration process.
- If any of the existing Application Intelligence Session is in FAILED state due to incorrect configuration, then the migration will not be triggered. Resolve the issue and start the migration process.
- If an existing Monitoring Session has a same name as the Application Intelligence Session, then the migration will not be triggered. Change the existing Monitoring Session name to continue with the migration process.
- If any of the existing Application Intelligence Session has Application Filtering configured with Advanced Rules as Drop Rule and No Rule Match Pass All in the 5th rule set, you cannot continue with the migration. In the Monitoring Session either only Pass All or Advanced Rules as Drop is supported in the fifth Rule Set. Please delete this session and start the migration.



- When migrating the Application Intelligence Session, in rare scenarios, the migration process might fail after the pre-validation. In such cases, all the Application Intelligence Session roll back to the Application Intelligence page. Contact Technical Support for migrating the Application Intelligence Session in these scenarios.

To migrate your existing Application Intelligence Session to Monitoring Session Page, follow the steps given below:

1. On the left navigation pane, select **Traffic > Solutions > Application Intelligence**. You cannot create a new Application Intelligence Session from this page.
2. When you have an existing virtual Application Intelligence Session in the above page, the **Migrate Virtual Application Intelligence** dialog box appears.
3. Review the message and click **Migrate**.
4. The **Confirm Migration** dialog box appears. The list Application Intelligence Session that will be migrated appears here.
5. Review the message and click **Migrate**.
6. GigaVUE-FM checks for the requirements and then migrates the Application Intelligence Sessions to the Monitoring Session Page.
7. Click on the **Go to Monitoring Session Page** button to view the Application Intelligence Session that are migrated to the monitoring session page.

All the virtual Application Intelligence Sessions in the Application Intelligence page is migrated to the Monitoring Session Page.

Post Migration Notes for Application Intelligence

After migrating Application Intelligence session to Monitoring Session page, you must consider the following things:

1. If you wish to enable Secure tunnels after migrating the Application Intelligence Session, follow the steps given below.
 - a. Enable Secure Tunnels in the **Options** page. Refer to [Monitoring Session Options \(Azure\)](#) topic more detailed information on how to enable secure tunnel for a monitoring Session.
 - b. Go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Sessions** page appears. Select the Monitoring Session for which you enabled Secure Tunnels. Click **Actions > Undeploy**. The monitoring session is undeployed.
 - c. Select the Monitoring Session for which you enabled Secure Tunnels. Click **Actions > Edit**. The **Edit Monitoring Session** Canvas page appears.
 - d. Add the Application Intelligence applications.
 - e. Modify the Number of Flows as per the below table:

Cloud Platform	Instance Size	Maximum Number of Flows
VMware	Large (8 vCPU and 16 GB RAM)	200k
AWS	AMD - Large (c5n.2xlarge)	300k
	AMD - Medium (t3a.xlarge)	100k
	ARM - Large (c7gn.2xlarge)	100k
	ARM - Medium (m7g.xlarge)	200k
Azure	Large (Standard_D8s_V4)	500k
	Medium (Standard_D4s_v4)	100k
Nutanix	Large (8 vCPU and 16 GB RAM)	200k

NOTE: Medium Form Factor is supported for VMware ESXi only when secure tunnels option is disabled. The maximum Number of Flows for VMware ESXi when using a medium Form Factor is 50k.

- f. Click **Deploy**. Refer to [Application Intelligence](#) topic for more detailed information on how to deploy the Application Intelligence applications.
2. When GigaVUE-FM version is 6.5.00, and the GigaVUE V Series Node version is below 6.5.00, after migrating the Application Intelligence Session to the Monitoring Session and redeploying the monitoring session, a momentary loss in the statistical data of the Application Visualization application will be seen while redeploying the monitoring session.
3. After migrating the Application Intelligence Session to monitoring session, if you wish to make any configuration changes, then the GigaVUE V Series Node version must be greater than or equal to 6.3.00.

Monitor Cloud Health

GigaVUE-FM allows you to monitor the traffic and configuration health status of the monitoring session and its individual components. This section provides detailed information on how to view the traffic and configuration health status of the monitoring session and its individual components. Refer to the following topics for more detailed information on configuration health, traffic health and how to view the health status:

- [Configuration Health Monitoring](#)
- [Traffic Health Monitoring](#)
- [View Health Status](#)

Configuration Health Monitoring

The configuration health status provides us detailed information about the configuration and deployment status of the deployed monitoring session.

This feature is supported for the following fabric components and features on the respective cloud platforms:

For V Series Nodes:

- AWS
- Azure
- OpenStack
- VMware
- Nutanix

For UCT-Vs:

- AWS
- Azure
- OpenStack

For VPC Mirroring:

- AWS

For OVS Mirroring and VLAN Trunk Port:

- OpenStack

To view the configuration health status, refer to the [View Health Status](#) section.

Traffic Health Monitoring

GigaVUE-FM allows you to monitor the traffic health status of the entire monitoring session and also the individual V Series Nodes for which the monitoring session is configured. Traffic health monitoring focuses on identifying any discrepancies (packet drop or overflow etc) in the traffic flow. When any such discrepancies are identified, GigaVUE-FM propagates the health status to corresponding monitoring session. GigaVUE-FM monitors the traffic health status in near real-time. GigaVUE V Series Node monitors the traffic, when the traffic limit goes beyond the upper or lower threshold values that is configured, it notifies GigaVUE-FM, based on which traffic health is computed.

NOTE: When GigaVUE-FM and GigaVUE V Series Nodes are deployed in different cloud platforms, then the GigaVUE-FM public IP address must be added to the **Data Notification Interface** as the Target Address in the Event Notifications page. Refer to section in the *GigaVUE Administration Guide* for configuration details.

This feature is supported for GigaVUE V Series Nodes on the respective cloud platforms:

For V Series Nodes:

- AWS
- Azure
- OpenStack
- VMware
- Third Party Orchestration

The following section gives step-by-step instructions on creating, applying, and editing threshold templates across a monitoring session or an application, and viewing the traffic health status. Refer to the following section for more detailed information:

- [Supported Resources and Metrics](#)
- [Create Threshold Template](#)
- [Apply Threshold Template](#)
- [Edit Threshold Template](#)
- [Clear Thresholds](#)

Keep in mind the following points when configuring a threshold template:

- By default Threshold Template is not configured to any monitoring session. If you wish to monitor the traffic health status, then create and apply threshold template to the monitoring session.
- Editing or redeploying the monitoring session will reapply all the threshold policies associated with that monitoring session.

- Deleting or undeploying the monitoring session will clear all the threshold policies associated with that monitoring session.
- After applying threshold template to a particular application, you need not deploy the monitoring session again.

Supported Resources and Metrics

The following table lists the resources and the respective metrics supported for traffic health monitoring

Resource	Metrics	Threshold types	Trigger Condition
Tunnel End Point	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Tx Bytes 4. Rx Bytes 5. Tx Dropped 6. Rx Dropped 7. Tx Errors 8. Rx Errors 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
RawEnd Point	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Tx Bytes 4. Rx Bytes 5. Tx Dropped 6. Rx Dropped 7. Tx Errors 8. Rx Errors 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
Map	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
Slicing	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
Masking	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
Dedup	<ol style="list-style-type: none"> 1. Tx Packets 	<ol style="list-style-type: none"> 1. Difference 	<ol style="list-style-type: none"> 1. Over

	<ol style="list-style-type: none"> 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 2. Derivative 	<ol style="list-style-type: none"> 2. Under
HeaderStripping	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
TunnelEncapsulation	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
LoadBalancing	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
SSLDecryption	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
Application Metadata	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
AMI Exporter	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
Geneve	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under
5G-SBI	<ol style="list-style-type: none"> 1. Tx Packets 2. Rx Packets 3. Packets Dropped 	<ol style="list-style-type: none"> 1. Difference 2. Derivative 	<ol style="list-style-type: none"> 1. Over 2. Under

Create Threshold Template

To create threshold templates:

1. There are two ways to navigate to the Threshold Template page, they are:
 - a. Go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. Then, click on the **Threshold Template** tab in the top navigation bar.
 - b. Go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. Select a Monitoring Session and click **Actions > Edit**. In the Edit Monitoring Session page, click **Options > Threshold**.
2. The **Threshold Template** page appears. Click **Create** to open the **New Threshold Template** page.
3. Enter the appropriate information for the threshold template as described in the following table.

Field	Description
Threshold Template Name	The name of the threshold template.
Thresholds	
Monitored Objects	Select the resource for which you wish to apply the threshold template. Eg: TEP, REP, Maps, Applications like Slicing, Dedup etc
Time Interval	Frequency at which the traffic flow needs to be monitored.
Metric	Metrics that need to be monitored. For example: Tx Packets, Rx Packets.
Type	Difference: The difference between the stats counter at the start and end time of an interval, for a given metric. Derivative: Average value of the statistics counter in a time interval, for a given metric.
Condition	Over: Checks if the statistics counter value is greater than the 'Set Trigger Value'. Under: Checks if the statistics counter value is lower than the 'Set Trigger Value'.
Set Trigger Value	Value at which a traffic health event is raised, if the statistics counter goes below or above this value, based on the condition configured.
Clear Trigger Value	Value at which a traffic health event is cleared, if the statistics counter goes below or above this value, based on the condition configured.

4. Click **Save**. The newly created threshold template is saved, and it appears on the **Threshold Template** page.

Apply Threshold Template

You can apply your threshold template across the entire monitoring session and also to a particular application.

Apply Threshold Template to Monitoring Session

To apply the threshold template across a monitoring session, follow the steps given below:

1. In GigaVUE-FM, on the left navigation pane, select **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Session** page appears.
2. Select the monitoring session and click **Actions > Apply Thresholds**.
3. The **Apply Thresholds** page appears. To apply a threshold template across a Monitoring Session, select the template you wish to apply across the Monitoring Session from the Threshold Template drop-down menu.
4. Click **Done**.

Apply Threshold Template to Applications

To apply the threshold template to a particular application in the Monitoring Session follow the steps given below:

NOTE: Applying the threshold template across Monitoring Session will not overwrite the threshold value applied specifically for an application. When a threshold value is applied to a particular application, it overwrites the existing threshold value for that particular application.

1. On the **Monitoring Session** page. Click **Actions > Edit**. The Edit Monitoring Session page with the canvas page appears.
2. Click on the application for which you wish to apply or change a threshold template and click **Details**. The **Application** quick view opens.
3. Click on the **Thresholds** tab. Select the template you wish to apply from the Threshold Template drop-down menu or enter the threshold values manually.
4. Click **Save**.

NOTE: Threshold Template is not supported for pcapng and sbipoe applications. The Threshold configuration for these applications will not be applied.

Edit Threshold Template

To edit a particular threshold template follow the steps given below:

1. On the Threshold Template page, Click **Edit**. The **Edit Threshold Template** page appears.
2. The existing threshold templates will be listed here. Edit the templates you wish to modify.
3. Click **Save**.

NOTE: Editing a threshold template does not automatically apply the template to Monitoring Session. You must apply the edited template to Monitoring Session for the changes to take effect.

Clear Thresholds

You can clear the thresholds across the entire Monitoring Session and also to a particular application.

Clear Thresholds for Applications

To clear the thresholds of a particular application in the Monitoring Session follow the steps given below:

1. On the **Monitoring Session** page. Click **Actions > Edit**. The Edit Monitoring Session page with canvas page appears.
2. Click on the application for which you wish to clear the thresholds and click **Details**. The **Application** quick view opens.
3. Click on the **Thresholds** tab. Click **Clear All** and then Click **Save**.

Clear Thresholds across the Monitoring Session

To clear the applied thresholds across a Monitoring Session follow the steps given below:

1. In GigaVUE-FM, on the left navigation pane, select **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Sessions** page appears.
2. Select the Monitoring Session and click **Actions > Apply Thresholds**.
3. The **Apply Thresholds** page appears. Click **Clear**.

NOTE: Clearing thresholds at Monitoring Session level does not clear the thresholds that were applied specifically at the application level. To clear thresholds for a particular application refer to [Clear Thresholds for Applications](#)

View Health Status

You can view the health status of the monitoring session on the Monitoring Session details page. The health status of the monitoring session is healthy only if both the configuration health and traffic health are healthy.

View Health Status of an Application

To view the health status of an application across an entire monitoring session:

1. After creating a Monitoring Session, go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. Select a monitoring session, click **Actions > Edit**. The Edit Monitoring Session Page appears.
2. Click on the application for which you wish to see the health status and select **Details**. The quick view page appears.
3. Click on the **HEALTH STATUS** tab.

This displays the configuration health and traffic health of the application and also the thresholds applied to that particular application.

NOTE: The secure tunnel status is refreshed for every 5 minutes, and the GigaVUE-FM does not display UCT-V secure tunnel status that is older than 7 minutes. If the secure tunnel in the UCT-V is removed, it takes up to 7 minutes to reset the status on the GigaVUE-FM.

View Health Status for Individual GigaVUE V Series Nodes

You can also view the health status of the view the health status of an individual GigaVUE V Series Node. To view the configuration health status and traffic health status of the V Series Nodes:

1. On the Monitoring Session page, click the name of the monitoring session and click **View**.
2. Select the **Statistics** tab.
3. Select the GigaVUE V Series Node from the **All V Series Nodes** drop-down menu.

View Application Health Status for Individual V Series Nodes

To view the application configuration and traffic health status of the GigaVUE V Series Nodes:

1. On the Monitoring Session page, click the name of the monitoring session and click **View**.
2. Select the **Statistics** tab.
3. Select the GigaVUE V Series Node from the **All V Series Nodes** drop-down menu.
4. The list view displays the list of applications for the selected GigaVUE V Series Node and the health status of each application.

You can also view the cloud health Status in the Monitoring Session Page, refer to [View Health Status on the Monitoring Session Page](#) topic for more detailed information on how to view cloud health status in the Monitoring Session page.

Administer GigaVUE Cloud Suite for Azure

You can perform the following administrative tasks:

- [Set Up Email Notifications](#)
- [Configure Proxy Server](#)

- [Configure Azure Settings](#)
- [Role Based Access Control](#)
- [About Events](#)
- [About Audit Logs](#)

Set Up Email Notifications

Notifications are triggered by a range of events such as Azure license expiry, VM instance terminated, and so on. You can setup the email notification for a particular event or a number of events and the recipient or recipients to whom the email should be sent.

Gigamon strongly recommends you enable email notifications so there is immediate visibility of the events affecting node health. The following are the events for which you can setup the email notifications:

- Azure License Expire
- Fabric Node Down
- Fabric Node Reboot Failed
- Fabric Node Rebooted
- Fabric Node Replacement Launch Failed
- Fabric Node Replacement Launched
- Fabric Node Restart Failed
- Fabric Node Restarted
- Fabric Node Unreachable
- Fabric Node Up

Configure Email Notifications

To configure the automatic email notifications:

1. On left navigation pane, select **System > Event Notifications > Email Servers**. The **Email Servers** page appears.

- In the Email Servers page, click **Configure**. The **Configure Email Server** wizard appears. For field information, refer to "Email Servers" section in the *GigaVUE Administration Guide*.

Configure Email Server

Save

Cancel

Enable SMTP Authentication	<input type="checkbox"/>
Email Host	10.10.1.125
Username	Username
Password	Password
From Email	no-reply@gigavue-fm
Port	25

- Click **Save**.

Configure Proxy Server

Sometimes, the VNet in which the GigaVUE-FM is launched may not have access to the Internet. Without Internet access, GigaVUE-FM cannot connect to the Azure API endpoints. For GigaVUE-FM to connect to Azure, a proxy server must be configured.

To create a proxy server:

- Go to **Inventory > VIRTUAL > Azure**, and then click **Settings > Proxy Server Configuration**. The Proxy Server Configuration page appears.
- In the **Proxy Server Configuration** page, click **Add**. The **Configure Proxy Server** page appears.

Configure Proxy Server

Save

Cancel

Alias	Alias
Host	IP Address
Port	0 - 65535
Username	Username
Password	Password
<input type="checkbox"/> NTLM	

3. Select or enter the appropriate information as described in the following table.

Field	Description
Alias	The name of the proxy server.
Host	The host name or the IP address of the proxy server.
Port	The port number used by the proxy server for connecting to the Internet.
Username	(Optional) The username of the proxy server.
Password	The password of the proxy server.
NTLM	(Optional) The type of the proxy server used to connect to the VNet.
Domain	The domain name of the client accessing the proxy server.
Workstation	(Optional) The name of the workstation or the computer accessing the proxy server.





4. Click **Save**. The new proxy server configuration is added to the Proxy Server Configuration page. The proxy server is also listed in the Azure Connection page in GigaVUE-FM.

NOTE: If you change any of the fields in the Proxy Server Configuration page after the initial connection is established between the GigaVUE-FM and Azure, then you must also edit the connection and select the proxy server again and save (in the Azure Connection Page). Otherwise, GigaVUE-FM will not use the new configuration that was saved and may be disconnected from the Azure platform.

Configure Azure Settings

This section provides information on how to configure the maximum number of connections, refresh intervals for instance and non-instance inventory, and maximum batch size for monitoring session updates.

Go to **Inventory > VIRTUAL > Azure**, and then click **Settings > Advanced Settings** to edit the Azure settings.

 Azure Monitoring Domains Connections Fabric UCT-V Settings ▾		
	Advanced Settings	
	Refresh interval for VM target selection inventory (secs)	120
	Refresh interval for fabric deployment inventory (secs)	900
	Number of UCT-Vs per V Series Node	100
	Refresh interval for UCT-V inventory (secs)	900
	Traffic distribution tunnel range start	8000
	Traffic distribution tunnel range end	8512
	Traffic distribution tunnel MTU	1500
	Permission status purge interval in days	30
	Reboot threshold limit for UCT-V Controller down ^①	2

Refer to the following table for more information about the settings:

Settings	Description
Refresh interval for VM target selection inventory (secs)	Specifies the frequency for updating the state of Virtual Machines target selection in Azure.
Refresh interval for fabric deployment inventory (secs)	Specifies the frequency for updating the state of fabric deployment information such as subnets, security groups, images, and VNets.
Number of UCT-Vs per GigaVUE V Series Node	Specifies the maximum number of instances that can be assigned to the GigaVUE V Series node.
Refresh interval for UCT-V inventory (secs)	Specifies the frequency for discovering the UCT-Vs available in the VNet.
Traffic distribution tunnel range start	Specifies the start range value of the tunnel ID.
Traffic distribution tunnel range end	Specifies the closing range value of the tunnel ID.
Traffic distribution tunnel MTU	Specifies the MTU value for the traffic distribution tunnel.
Permissions status purge interval in days	Specifies the number of days at which the permissions report must be auto-purged.
Reboot threshold limit for UCT-V Controller down	Specifies the number of times GigaVUE-FM tries to reach UCT-V Controller, when the UCT-V Controller moves to down state. GigaVUE-FM retries every 60 seconds.

Role Based Access Control

The Role Based Access Control (RBAC) feature controls the access privileges of users and restricts users from either modifying or viewing unauthorized data. Access privileges in GigaVUE Cloud Suite works on the same principles of access privileges in GigaVUE-FM in which the access rights of a user depends on the following:

- **User role:** A user role defines permission for users to perform any task or operation
- **User group:** A user group consists of a set of roles and set of tags associated with that group. When a user is created they can be associated with one or more groups.

To access the resources and to perform a specific operation in GigaVUE Cloud Suite you must be a user with **fm_super_admin** role or a user with write access to the following resource category depending on the task you need to perform.

Resource Category	Cloud Configuration Task
<p>Physical Device Infrastructure Management: This includes the following cloud infrastructure resources:</p> <ul style="list-style-type: none"> • Cloud Connections • Cloud Proxy Server • Cloud Fabric Deployment • Cloud Configurations • Sys Dump • Syslog • Cloud licenses • Cloud Inventory 	<ul style="list-style-type: none"> • Configure GigaVUE Cloud Components • Create Monitoring Domain and Launch Visibility Fabric • Configure Proxy Server
<p>Traffic Control Management: This includes the following traffic control resources:</p> <ul style="list-style-type: none"> • Monitoring session • Threshold Template • Stats • Map library • Tunnel library • Tools library • Inclusion/exclusion Maps 	<ul style="list-style-type: none"> • Create, Clone, and Deploy Monitoring Session • Create and Apply Threshold Template • Add Applications to Monitoring Session • Create Maps • View Statistics • Create Tunnel End Points

NOTE: Cloud APIs are also RBAC enabled.

Refer to the *GigaVUE Administration Guide* for detailed information about Roles, Tags, User Groups.

About Events

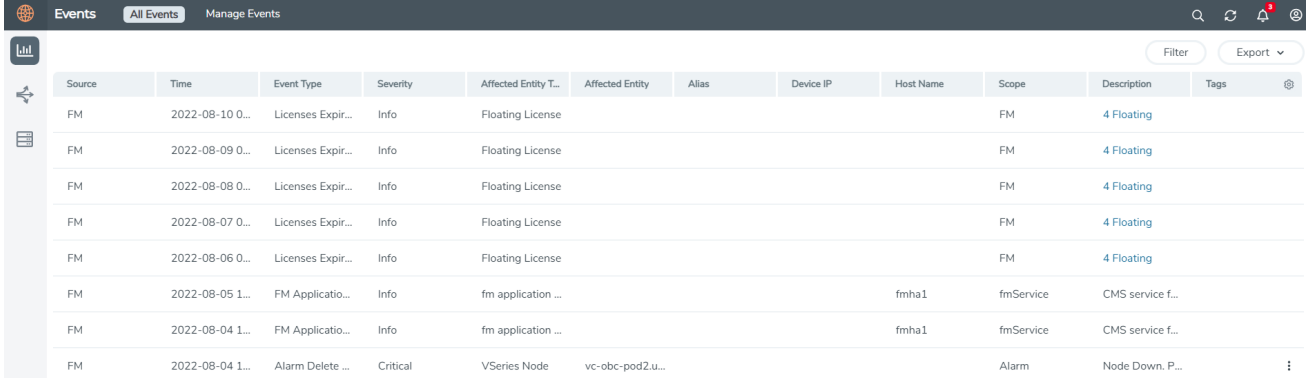
The Events page displays all the events occurring in the virtual fabric component, VM Domain, and VM manager. An event is an incident that occur at a specific point in time. Examples of events include:

- Cloud provider License Expiry
- UCT-V Inventory Update Completed
- Cloud provider Connection Status Changed

An Alarm is a response to one or more related events. If an event is considered of high severity, then GigaVUE-FM raises an alarm. An example of alarm could be your cloud provider license expiry.

The alarms and events broadly fall into the following categories: Critical, Major, Minor, or info.

Navigate to **Dashboard > SYSTEM > Events**. The Event page appears.



Source	Time	Event Type	Severity	Affected Entity T...	Affected Entity	Alias	Device IP	Host Name	Scope	Description	Tags
FM	2022-08-10 0...	Licenses Expir...	Info	Floating License					FM	4 Floating	
FM	2022-08-09 0...	Licenses Expir...	Info	Floating License					FM	4 Floating	
FM	2022-08-08 0...	Licenses Expir...	Info	Floating License					FM	4 Floating	
FM	2022-08-07 0...	Licenses Expir...	Info	Floating License					FM	4 Floating	
FM	2022-08-06 0...	Licenses Expir...	Info	Floating License					FM	4 Floating	
FM	2022-08-05 1...	FM Applicatio...	Info	fm application ...				fmha1	fmService	CMS service f...	
FM	2022-08-04 1...	FM Applicatio...	Info	fm application ...				fmha1	fmService	CMS service f...	
FM	2022-08-04 1...	Alarm Delete ...	Critical	VSeries Node	vc-obc-pod2.u...				Alarm	Node Down. P...	

The following table describes the parameters recording for each alarm or event. You can also use filters to narrow down the results.

Controls/ Parameters	Description
Source	The source from where the events are generated. The criteria can be as follows: <ul style="list-style-type: none"> ■ FM - indicates the event was flagged by the GigaVUE-FM fabric manager. ■ IP address - is the address of the GigaVUE HC Series node that detected the event. For a node to be able to send notifications to the GigaVUE-FM fabric manager, the SNMP_TRAP must be configured with the IP address of GigaVUE-FM specified as a host. Refer to the GigaVUE Administration Guide for instructions on adding a destination for SNMP traps. ■ VMM - indicates the event was flagged by the Virtual Machine Manager. ■ FM Health - indicates the event was flagged due to the health status change of GigaVUE-FM.
Time	The timestamp when the event occurred. IMPORTANT: Timestamps are shown in the time zone of the client browser's computer and not the time zone of the node reporting the event. The timestamp is based on the correctly configured clock on the GigaVUE-FM server and converted from UTC to the client computer's configured time zone.
Event Type	The type of event that generated the events. The type of events can be CPU utilization high, cluster updated, device discovery failed, fan tray changed, netflow generation statistics, and so on.
Severity	The severity is one of Critical, Major, Minor, or Info. Info is informational messages. For example, when power status change notification is displayed, then the message is displayed as Info.
Affected Entity Type	The resource type associated with the event. For example, when low disk space notification is generated, 'Chassis' is displayed as the affected entity type.
Affected Entity	The resource ID of the affected entity type. For example, when low disk space notification is generated, the IP address of the node with the low disk space is displayed as the affected entity.
Alias	Event Alias
Device IP	The IP address of the device.
Host Name	The host name of the device.
Scope	The category to which the events belong. Events can belong to the following category: Domain, Node, Card, Port, Stack, Cluster, Chassis, GigaVUE-FM, GigaVUE-VM, and so on. For example, if there is a notification generated for port utilization low threshold, the scope is displayed as Physical Node.

To filter the alarms and event:

1. Click **Filter**. The Filter quick view is displayed.
2. Select the filtering criteria, then click **Apply Filter**. The results are displayed in the Events page.

About Audit Logs

Audit logs track the changes and activities that occur in the virtual nodes due to user actions. The logs can be filtered to view specific information.

Navigate to **Dashboard > SYSTEM > Audit Logs**. The **All Audit Logs** page appears.

All Audit Logs Filter Manage

Filter : none

Time	User	Operation Type	Entity Type	Source	Device IP	Hostname	Status	Description	Tags
2020-1...	admin	login fmUser ad...	User	fm			SUCCESS		
2020-1...	admin	logout fmUser a...	User	fm			SUCCESS		
2020-1...	admin	login fmUser ad...	User	fm			SUCCESS		
2020-1...	admin	update map/itit	Map/itit				SUCCESS		

Go to page: 1 of 16 Total Records: 106

The Audit Logs have the following parameters:

Parameters	Description
Time	Provides the timestamp on the log entries.
User	Provides the logged user information.
Operation Type	Provides specific entries that are logged by the system such as: <ul style="list-style-type: none"> Log in and Log out based on users. Create/Delete/Edit tasks, GS operations, maps, virtual ports, and so on.
Source	Provides details on whether the user was in GigaVUE-FM or on the node when the event occurred.
Status	Success or Failure of the event.
Description	In the case of a failure, provides a brief update on the reason for the failure.

NOTE: Ensure that the GigaVUE-FM time is set correctly to ensure accuracy of the trending data that is captured.

Filtering the audit logs allows you to display specific type of logs. You can filter based on any of the following:

- **When:** display logs that occurred within a specified time range.
- **Who:** display logs related a specific user or users.

- **What:** display logs for one or more operations, such as Create, Read, Update, and so on.
- **Where:** display logs for GigaVUE-FM or devices.
- **Result:** display logs for success or failure.

To filter the audit logs, do the following:

1. Click **Filter**. The quick view for Audit Log Filters displays.
2. Specify any or all of the following:
 - **Start Date** and **End Date** to display logs within a specific time range.
 - **Who** limits the scope of what displays on the Audit Logs page to a specific user or users.
 - **What** narrows the logs to the types of operation that the log is related to. You can select multiple operations. Select **All Operations** to apply all operation types as part of the filter criteria.
 - **Where** narrows the logs to particular of system that the log is related to, either GigaVUE-FM or device. Select **All Systems** apply both GigaVUE-FM and device to the filter criteria.
 - **Result** narrows the logs related to failures or successes. Select All Results to apply both success and failure to the filter criteria.
3. Click **OK** to apply the selected filters to the Audit Logs page.

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 VUE 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 6.8 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, rackmount, 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-HC3 Hardware Installation Guide
	GigaVUE-HC1-Plus Hardware Installation Guide
	GigaVUE-HCT Hardware Installation Guide
	GigaVUE-TA25 Hardware Installation Guide
	GigaVUE-TA25E Hardware Installation Guide
	GigaVUE-TA100 Hardware Installation Guide

GigaVUE Cloud Suite 6.8 Hardware and Software Guides

GigaVUE-TA200 Hardware Installation Guide

GigaVUE-TA200E Hardware Installation Guide

GigaVUE-TA400 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 Appliances Guide

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 Deployment Guide - AWS

GigaVUE Cloud Suite Deployment Guide - Azure

GigaVUE Cloud Suite Deployment Guide - OpenStack

GigaVUE Cloud Suite Deployment Guide - Nutanix

GigaVUE Cloud Suite Deployment Guide - VMware (ESXi)

GigaVUE Cloud Suite Deployment Guide - VMware (NSX-T)

GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration

Universal Cloud TAP - Container Deployment Guide

GigaVUE Cloud Suite 6.8 Hardware and Software Guides

Gigamon Containerized Broker Deployment Guide

GigaVUE Cloud Suite Deployment Guide - AWS Secret Regions

GigaVUE Cloud Suite Deployment Guide - Azure Secret Regions

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 GigaVUE TA Series devices

GigaVUE-OS Security Hardening Guide

GigaVUE Firewall and Security Guide

GigaVUE Licensing Guide

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 and 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.

Documentation Feedback

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.

Documentation Feedback Form		
About You	Your Name	
	Your Role	
	Your Company	
For Online Topics	Online doc link	<i>(URL for where the issue is)</i>
	Topic Heading	<i>(if it's a long topic, please provide the heading of the section where the issue is)</i>

For PDF Topics	Document Title	<i>(shown on the cover page or in page header)</i>
	Product Version	<i>(shown on the cover page)</i>
	Document Version	<i>(shown on the cover page)</i>
	Chapter Heading	<i>(shown in footer)</i>
	PDF page #	<i>(shown in footer)</i>
How can we improve?	Describe the issue	<i>Describe the error or issue in the documentation. (If it helps, attach an image to show the issue.)</i>
	How can we improve the content? Be as specific as possible.	
	Any other comments?	

Contact Technical Support

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

The **VÜE Community** is a technical site where Gigamon users, partners, security and network professionals and Gigamon employees come together to share knowledge and expertise, ask questions, build their network and learn about best practices for Gigamon products.

Visit the VÜE Community site to:

- Find knowledge base articles and documentation
- Ask and answer questions and learn best practices from other members.
- Join special-interest groups to have focused collaboration around a technology, use-case, vertical market or beta release
- Take online learning lessons and tutorials to broaden your knowledge of Gigamon products.
- Open support tickets (Customers only)
- Download the latest product updates and documentation (Customers only)

The VÜE Community is a great way to get answers fast, learn from experts and collaborate directly with other members around your areas of interest.

Register today at community.gigamon.com

Questions? Contact our Community team at community@gigamon.com.

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)