Gigamon®

GigaVUE Cloud Suite for AWS - 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
6.9	1.0	12/06/2024	The original release of this document with 6.9.00 GA.

Contents

Overview of GigaVUE Cloud Suite for AWS

GigaVUE Cloud Suite for AWS delivers a cloud-based visibility and analytics solution that eliminates network blind spots as you move workloads to the cloud, significantly reducing security and non-compliance risks and helps remediate performance issues.

GigaVUE Cloud Suite for AWS helps you obtain a unified view of all data in motion anywhere on your hybrid, single or multi-cloud network. Easily acquire data from any source, automatically optimize it and send to any destination. It closes the cloud visibility gap, giving your security and monitoring tools visibility across cloud environments, from raw packets up to the application layer and with the added context of network data.

You can deploy the GigaVUE Cloud Suite for AWS by subscribing to it in the AWS marketplace or by installing the individual fabric components using the Amazon Machine Images (AMI).

Note: You must subscribe to each component individually.

Refer to the following sections for details:

- GigaVUE-FM
- UCT-V
- UCT-V Controller
- GigaVUE V Series Node
- GigaVUE V Series Proxy
- Traffic Acquisition
- Monitoring Domain
- Monitoring Session
- Third Party Orchestration

GigaVUE-FM

GigaVUE-FM 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 that is not possible from individual nodes.

In addition to centralized management and monitoring GigaVUE-FM helps you configure 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 platforms as long as there exists IP connectivity for seamless operation.

GigaVUE-FM can be installed on-premises, launched from an Amazon Machine Image (AMI) in AWS.

GigaVUE-FM manages the configuration of the following components in your Amazon Virtual Private Clouds (VPC):

- UCT-V Controller (only if you are using UCT-V as the traffic acquisition method)
- GigaVUE V Series® Node
- (Optional) GigaVUE V Series® Proxy

GigaVUE-FM orchestrates the overall GigaVUE Cloud Suite for AWS which allows you to:

- define the areas of your network within which workloads to monitor can be found.
- provide adequate credentials for GigaVUE-FM to access the designated areas in order to discover the workloads to monitor and other related objects such as Subnet, Security Groups, and KeyPairs.
- define and deploy a visibility policy to acquire traffic from the workloads to monitor using the traffic acquisition method of your choice and forward the acquired traffic to available GigaVUE V Series Nodes for processing and forwarding.
- configure GigaVUE V Series Node, which processes traffic acquired from workloads and forwards to tools using specific logic defined as part of the overall visibility policy.
- continuously monitor the designated areas of your network to discover dynamically spawned workloads and automatically apply the same visibility policy to the dynamically spawned workloads if the monitoring selection criteria are met.
- gain comprehensive visibility into their AWS environments, optimize traffic sent to tools, and maintain a consistent security posture across hybrid and multi-cloud deployments.

Refer to Install GigaVUE-FM on AWS for more detailed information on how to install GigaVUE-FM in AWS.

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 6.9.00 can only manage UCT-Vs 6.9.00. If you have the previous version UCT-V still deployed in the EC2 instances, you must configure both the previous version and 6.9.00. 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

Traffic Acquisition

You can acquire traffic from multiple virtual machines and container pod instances using UCT-V or AWS infrastructure sources such as VPC Mirroring. The acquired traffic is forwarded to the GigaVUE V Series Node to conduct core intelligence and additional GigaSMART processing.

You can acquire traffic using any of the following ways:

- UCT-V
- VPC Mirroring
- Customer Orchestrated source

Refer to Deployment Options for GigaVUE Cloud Suite for AWS section for more detailed information.

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 a 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.

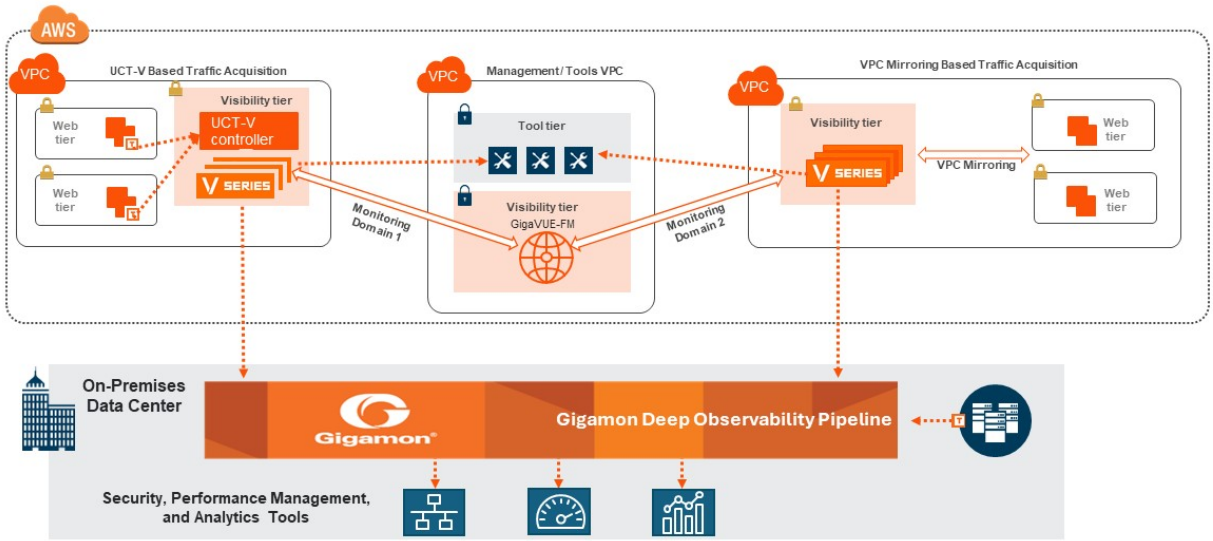
When a new target instance is added to your cloud environment, GigaVUE-FM automatically detects and adds the instance to your monitoring session. Similarly, when an instance is removed, it updates the monitoring sessions.

For more information on creating a monitoring session, see Configure Monitoring Session.

Third Party Orchestration

You can use your own orchestration system 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 choice of orchestration system such as terraform or scripts. These fabric components register themselves with GigaVUE-FM using the information the user provides. Once the nodes are registered with GigaVUE-FM, you can configure monitoring sessions and related services in GigaVUE-FM.

Architecture



The architecture diagram depicts various fabric components deployed in multiple VPC. Lightweight UCT-V are deployed across instances, serving as a conduit for traffic mirroring. This mirrored traffic is then transmitted to the GigaVUE V Series.

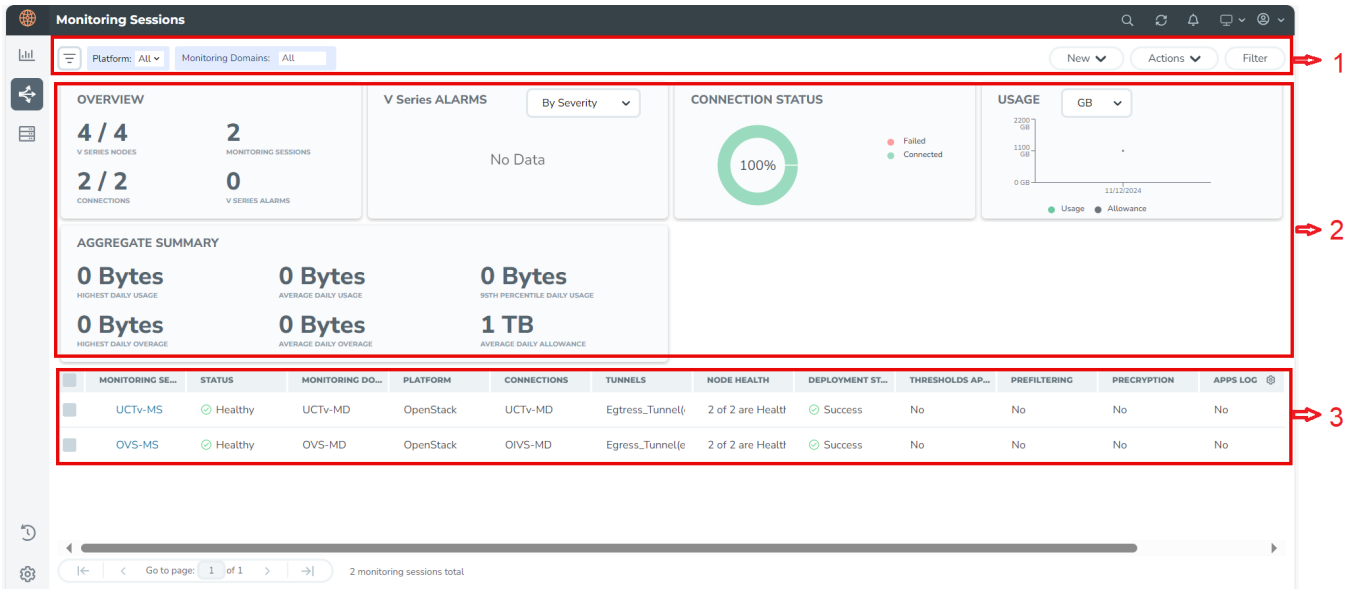
In addition to UCT-V based mirroring, you can mirror the traffic using VPC mirroring to further acquire traffic. The acquired traffic is subsequently processed by GigaVUE V Series Nodes. GigaVUE V Series Nodes perform functions like aggregation, selection, optimization, de-duplication, and distribution of traffic. You can perform operations such as Slicing, Sampling, and Masking for the selected traffic using GigaSMART®.

A Centralized orchestration is facilitated by GigaVUE-FM. GigaVUE-FM provides a single-pane-of-glass visualization, enabling administrators to oversee and manage the entire visibility infrastructure seamlessly. It helps in auto-discovery and end-to-end topology visualization, streamlining the deployment and maintenance of the visibility solution while offering comprehensive insights into network operations.

Cloud Overview Page (AWS)

The overview page is a central location to view and monitor all the Monitoring Sessions in a single place. You can use this overview page to spot issues which will help in troubleshooting, or perform basic actions like view, edit, clone, and delete. This page provides a quick overview of basic statistics, V Series Alarms, Connection Status and Volume Usage vs Allowance and a table to summarize the active monitoring sessions details. You can also edit the Monitoring Session from this page instead of navigating to the Monitoring Session page in each platform.

To view the overall cloud overview page, go to **Traffic > Virtual > Overview**.



For easy understanding of the Monitoring Sessions page, the above image is split into three major sections as described in the following table:

Number	Section	Description
1	Top Menu	Refer to Top Menu.
2	Charts	Refer to Viewing Charts.
3	Monitoring Session Details	In the Overview page, you can view the Monitoring Session details of all the cloud platforms. Refer to Viewing Monitoring Session Details section for more details.

Top Menu

The Top menu consists of the following options:

Options	Description
New	You can create a new Monitoring Session and new Monitoring Domain.
Actions	You can do the following actions using the **Action** button: **Edit** - Opens the edit page for the selected Monitoring Session. **Delete** - Deletes the selected Monitoring Session. **Clone** - Duplicates the selected Monitoring Session. **Deploy** - Deploys the selected Monitoring Session. **Undeploy** - Undeploys the selected Monitoring Session. **Apply Threshold** - Applies the threshold template created for monitoring cloud traffic health. Refer to *Monitor Cloud* section for details.
Filter	You can filter the Monitoring Session details based on a criterion or combination of criteria. For more information, refer to Filters.

Filters

You can apply the filters on the Monitoring Sessions page in the below two ways:

- Filter on the left corner
- Filter on the right corner

Filter on the left corner 

1. Select the required platform from the **Platform** drop- down list.
2. Click  and select the Monitoring Domain.

You can select one or multiple domains. You can also edit and create a new Monitoring Domain in the filter section.

Filter on the right corner 

You can filter Monitoring Session and Monitoring Domain details based on a criterion or by providing multiple criteria as follows:

- Monitoring Session
- Status
- Monitoring Domain
- Platform
- Connections
- Tunnel
- Deployment Status

Viewing Charts

You can view the following charts on the overview page:

- Overview
- V Series Alarms
- Connection Status
- Usage
- Aggregate Summary

Overview

The overview dashboard displays the number of GigaVUE V Series Nodes active in GigaVUE-FM, the number of Monitoring Sessions and connections configured, and the number of alarms triggered in V Series Nodes.

V Series Alarms

The V Series Alarms widget presents a pie chart that helps you to quickly view the V Series alarms generated. Each type of alarm triggered is assigned a color in the graph, which is specified by the legend. Hovering the mouse over an area in the chart displays the total number of V Series alarms triggered.

Connection Status

The connection status presents a pie chart that helps you to quickly view the connection status of connections configured in the Monitoring Domain. The success and failed connection status is differentiated by the color in the graph, which is specified by the legend. Hovering the mouse over an area in the chart displays the total number of connections.

Usage

The Usage widget displays the traffic that flows through the GigaVUE V Series Nodes. Each bar in the graph indicates the volume usage on a particular day. Hovering the mouse over a bar in the graph displays the volume allowance and volume usage on that day.

Aggregate Summary

The aggregate summary displays the highest daily volume usage, average daily volume usage, highest daily volume over usage, average daily volume over usage, 95th percentile daily volume usage and the average daily volume allowance.

Viewing Monitoring Session Details

You can view the following details in the overview table:

Details	Description
Monitoring Sessions	Name of the Monitoring Session. When you click the name of the session, you will be redirected to the platform specific Monitoring Session page.
Status	Health status of the Monitoring Session.
Monitoring Domain	Name of the Monitoring Domain to which the Monitoring Session is associated.
Platform	Cloud platform in which the session is created.
Connections	Connection details of the Monitoring Session.
Tunnels	Tunnel details related to the Monitoring Session.
Node Health	Health status of the GigaVUE V Series Node.
Deployment Status	Status of the deployment.
Threshold Applied	Specifies whether the threshold is applied or not.
Prefiltering	Specifies whether Prefiltering is configured or not.
Precryption	Specifies whether Precryption is configured or not.
APPS logging	Specifies whether APPS logging is configured or not.
Traffic Mirroring	Specifies whether Traffic Mirroring is configured or not.

NOTE: Click the settings icon to select the required options to appear in the table.

Introduction to the Supported Features for AWS

GigaVUE Cloud Suite for AWS supports the following features:

- Precryption™
- Secure Tunnels
- Prefiltering
- Load Balancer
- Analytics for Virtual Resources
- Cloud Health Monitoring

Precryption™

License: Requires **SecureVUE Plus** license.

Gigamon Precryption™ technology[1] 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:

- How Gigamon Precryption Technology Works
- Why Gigamon Precryption
- Key Features
- Key Benefits
- Precryption Technology on Single Node
- Precryption Technology on Multi-Node
- Supported Platforms
- Prerequisites

[1] **Disclaimer**: The Precryption 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 Precryption 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.

How Gigamon Precryption Technology Works

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

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 message's actual encryption or transmission across the network. There's no proxy, retransmissions, or break-and-inspect. Instead, this plaintext copy is forwarded to the Gigamon Deep Observability Pipeline for further optimization, transformation, replication, and tool delivery.

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 independently 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. It provides 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

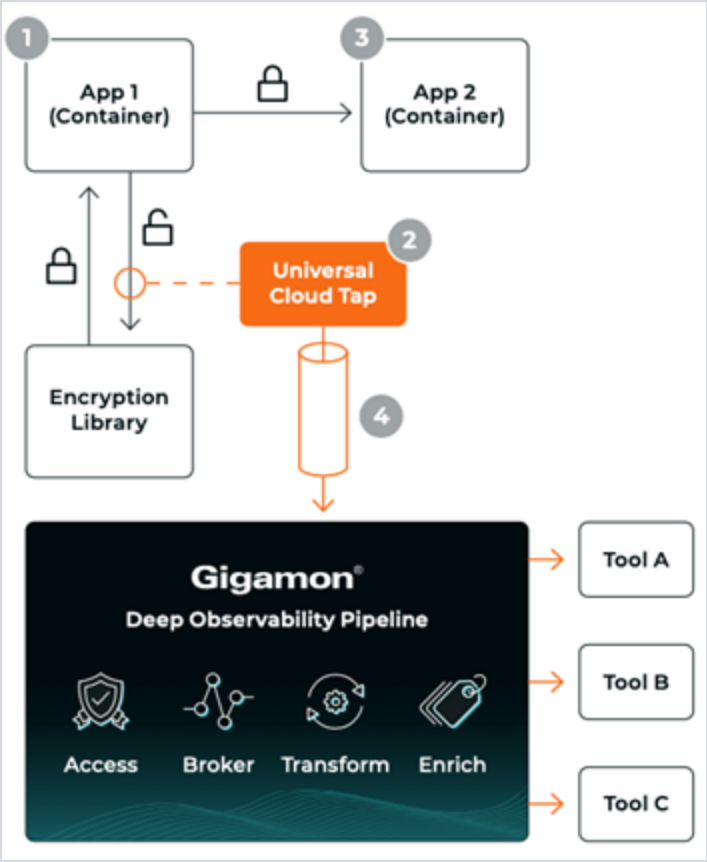
This section explains how Precryption technology works on single nodes and multiple nodes in the following sections:

- Precryption Technology on Single Node
- Precryption Technology on Multi-Node

Precryption Technology on Single Node

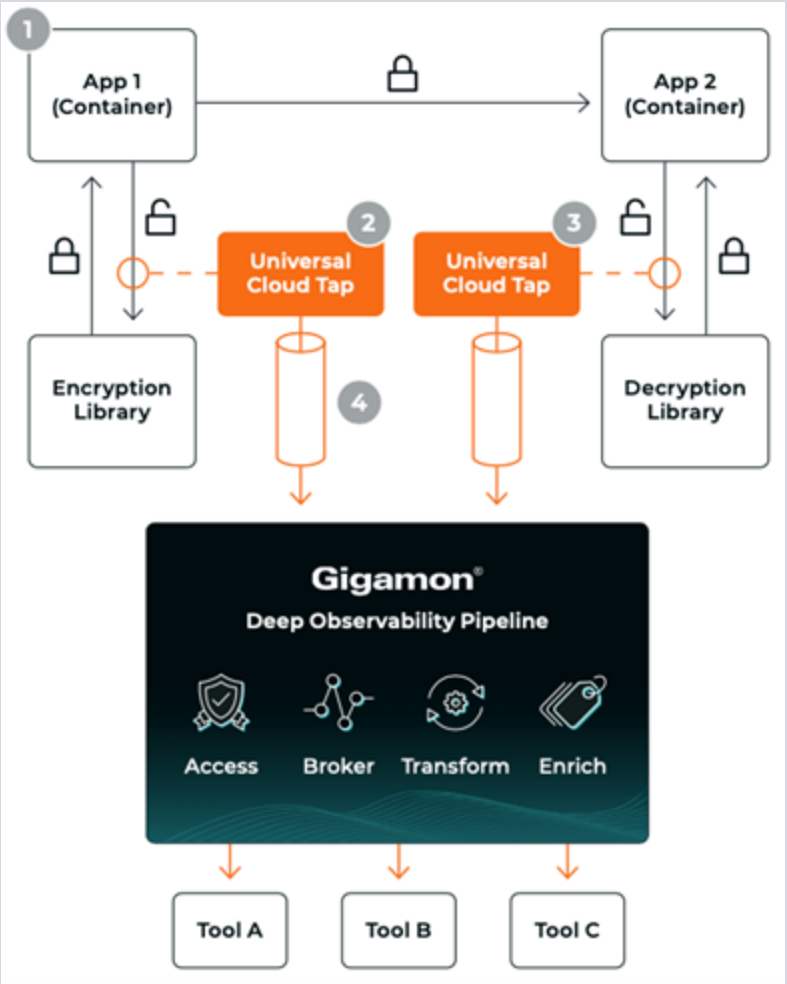
1. When any application needs to encrypt a message, it uses an encryption library, such as OpenSSL, to perform the actual encryption.
2. GigaVUE Universal Cloud Tap (UCT), enabled with Precryption technology, gets a copy of this message before it's encrypted on the network.
3. The encrypted message is sent to the receiving application with unmodified encryption—no proxy, no re-encryption, no retransmissions.

4. GigaVUE UCT creates packet headers as needed, encapsulates them in a tunnel, and forwards them to GigaVUE V Series in the deep observability pipeline. Gigamon optimizes, transforms, and delivers data to tools without further decryption.



Precryption 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 Precryption, gets a copy of this message before it's encrypted on the network.
3. Optionally, GigaVUE UCT enabled with Precryption can also acquire a copy of the message from the server end after the decryption.
4. GigaVUE UCT creates packet headers as needed, encapsulates them in a tunnel, and forwards them to V Series in the deep observability pipeline. There, they are 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	• AWS • Azure • GCP (via Third Party Orchestration)
Private Cloud	• 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	• EKS • AKS
Private Cloud	• 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, you must add port 5671 in the security group to capture the statistics.
- 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 port 42042 and port 5671 to the security group

License Prerequisite

- Precryption™ requires a 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 the Configure in UCT-C section in the Universal Cloud TAP - Container Deployment Guide for details on how to enable Precryption™ in container environments.
- See how Secure Tunnels feature can enable secure delivery of precrypted data.

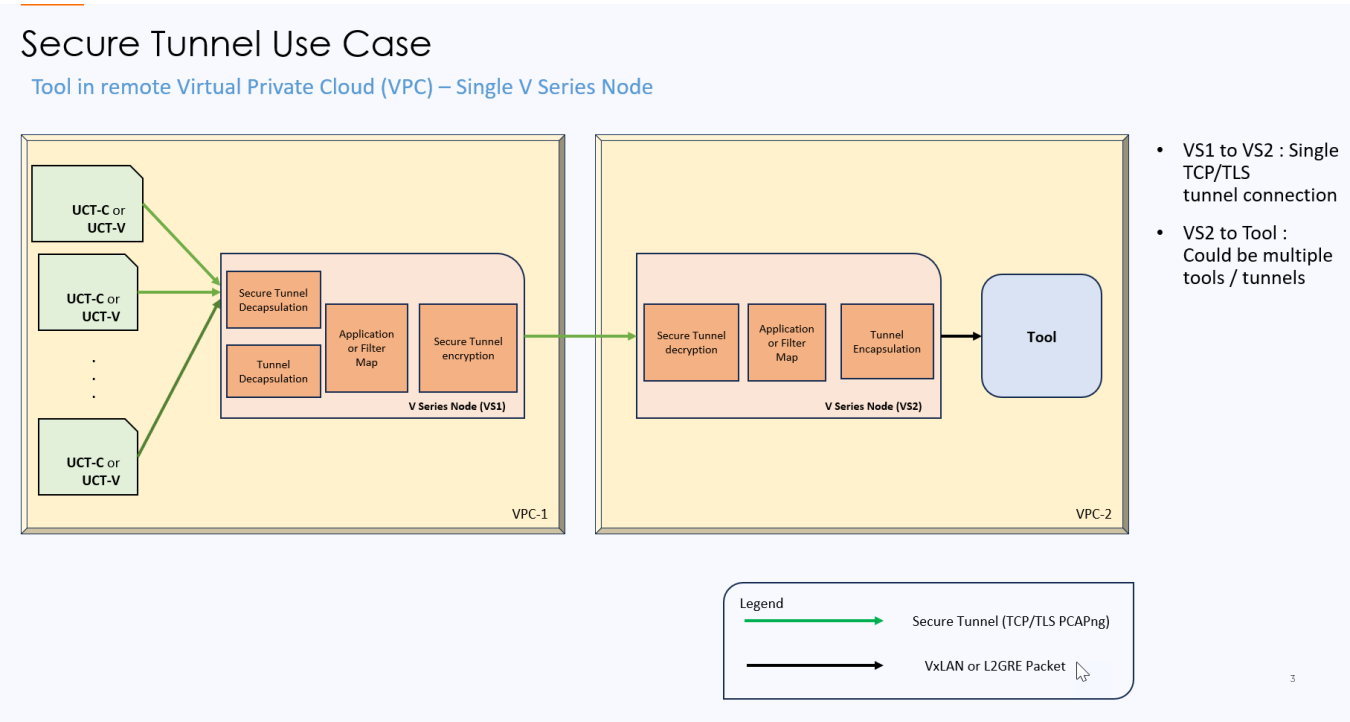
Secure Tunnels

Secure Tunnel securely transfers the cloud-captured packets on UCT-V and UCT-C to a GigaVUE V Series Node or Tool (only in the 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 captured packets from a GigaVUE V Series Node to another GigaVUE V Series Node.

In the 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 the V Series Node and the V Series Node have multiple use 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 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.



Supported Platforms

Secure Tunnels 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 (AWS).

Prefiltering

Prefiltering allows you to filter the traffic before sending it to the GigaVUE V Series Node. Depending on your deployment type, you can perform prefiltering in one of the following methods:

- Prefiltering
- AWS VPC Traffic Pre-filter

For more information on configuring a prefilter, refer to Create a Monitoring Session (AWS).

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 a Monitoring Session (AWS).

AWS VPC Traffic Pre-filter

When you create a monitoring session, GigaVUE-FM creates a traffic mirror filter with a "Pass All" rule and associates it with the traffic mirroring session. The Pass All filter forwards all the traffic without filtering.

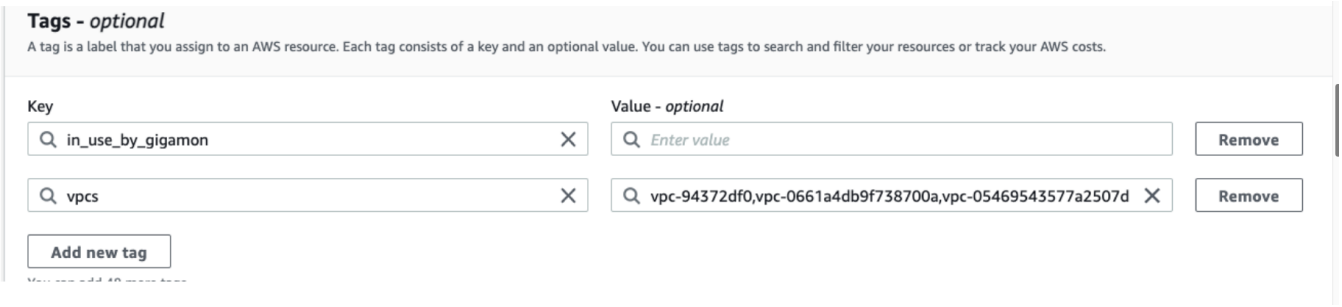
If you want to filter the traffic, then you can create a traffic mirror filter on AWS and add rules to determine the traffic that is mirrored. This traffic mirror filter acts as a pre-filter and pass only the filtered traffic to the GigaVUE V Series Nodes.

To apply the filter to the traffic mirror session that is created by the FM, you must add the tag "in_use_by_gigamon" to the traffic mirror filter. The GigaVUE-FM collects all the traffic mirror filters that has the tag "in_use_by_gigamon". It then applies these filters on the traffic mirror sessions to replace the default Pass All filter.

In addition to "in_use_by_gigamon" tag, you can add the tag "vpcs" to apply specific VPCs. The tag value is a list of vpc separated by comma ",".

You can apply filters at two levels. The two level filters can work together. The VPC level filter overrides the Account level filter for the VPC defined in VPC level filter.

1. Account level: You can define a filter (only one filter) which applies on every VPC in an account. The filter should be tagged with "in_use_by_gigamon" only. The "vpcs" tag should not be used.
2. VPC level: To filter the traffic at VPC level, in addition to the tag "in_use_by_gigamon" , add the tag "vpcs" .



NOTE: A filter can be defined for multiple VPCs. Two filters should not have intersection on VPC. If there is an intersection on VPC, then the GigaVUE-FM will pick a random filter and no error will be displayed.

For more information on creating a traffic mirror, refer to the AWS documentation.

Load Balancer

You can use a load balancer to uniformly distribute the traffic from AWS target VMs to GigaVUE V Series nodes. The load balancer distributes the traffic to the GigaVUE V Series Nodes and the GigaVUE-FM auto-scales the GigaVUE V Series Nodes based on the traffic.

The following load balancers are supported:

- Elastic Load Balancer
- Gateway Load Balancer

Analytics for Virtual Resources

Analytics in GigaVUE-FM is a standalone service that provides data visualization capabilities. Using Analytics[1] 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 section in *GigaVUE Fabric Management Guide* for more detailed information on Analytics.

Rules and Notes:

- 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 Guidefor 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:

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

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: • 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: • Platform • Health Status	*V Series Node Status by Platform*	Number of healthy and unhealthy V Series Nodes for each of the supported cloud platforms.
		Monitoring Session Status by Platform	Number of healthy and unhealthy monitoring sessions for each of the supported cloud platforms
		Connection Status by Platform	Number of healthy and unhealthy connections for each of the supported cloud platforms
		GCB Node Status by Platform	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 packets of the V Series node. You can filter the visualizations based on the following control filters: • Platform • Connection • V Series Node	*V Series Node Maximum CPU Usage Trend*	Line chart that displays maximum CPU usage trend of the V Series node in 5 minutes interval, for the past one hour. **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.
		V Series Node with Most CPU Usage For Past 5 minutes	Line chart that displays Maximum CPU usage of the V Series node for the past 5 minutes. **NOTE:** You cannot use the time based filter

Dashboard	Displays	*Visualizations*	Displays
			options to filter and visualize the data.
		V Series Node Rx Trend	Receiving trend of the V Series node in 5 minutes interval, for the past one hour.
		V Series Network Interfaces with Most Rx for Past 5 mins	Total packets received by each of the V Series network interface for the past 5 minutes. **NOTE:** You cannot use the time based filter options to filter and visualize the data.
		V Series Node Tunnel Rx Packets/Errors	Displays the reception of packet at the Tunnel RX. This is the input to V Series Node, Grouping by tunnel identifier comprising {monDomain, conn, VSN, tunnelName}, before aggregation.
		V Series Node Tunnel Tx Packets/Errors	TX is for output tunnels from VSN. V Series Node Tunnel Tx Packets/Errors
Dedup	Displays visualizations related to Dedup application. You can filter the visualizations based on the following control filters: • Platform • Connection • V Series Node	*Dedup Packets Detected/Dedup Packets Overload*	Statistics of the total de-duplicated packets received (ipV4Dup, ipV6Dup and nonIPDup) against the de-duplication application overload.
		Dedup Packets Detected/Dedup Packets Overload Percentage	Percentage of the de-duplicated packets received against the de-duplication application overload.
		Total Traffic In/Out Dedup	Total incoming traffic against total outgoing

Dashboard	Displays	*Visualizations*	Displays
			traffic
Tunnel (Virtual)	Displays visualizations related to the tunneled traffic in both bytes as well as the number of packets. You can select the following control filters, based on which the visualizations will get updated: • **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. • **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. The following statistics are displayed for the tunnel: • Received Bytes • Transmitted Bytes • Received Packets • Transmitted Packets • Received Errored Packets • Received Dropped Packets • Transmitted Errored Packets • Transmitted Dropped Packets	*Tunnel Bytes*	Displays received tunnel traffic vs transmitted tunnel traffic, in bytes. • For input tunnel, transmitted traffic is displayed as zero. • For output tunnel, received traffic is displayed as zero.
		Tunnel Packets	Displays packet-level statistics for input and output tunnels that are part of a monitoring session.
App (Virtual)	Displays Byte and packet level statistics for the applications for the chosen monitoring session on the selected V Series node.	*App Bytes*	Displays received traffic vs transmitted traffic, in Bytes.

Dashboard	Displays	*Visualizations*	Displays
	You can select the following control filters, based on which the visualizations will get updated: • **Monitoring session** • **V Series node** • **Application**: Select the required application. By default, the visualizations displayed includes all the applications. By default, the following statistics are displayed: • Received Bytes • Transmitted Bytes • Received Packets • Transmitted Packets • Errored Packets • Dropped Packets		
		App Packets	Displays received traffic vs transmitted traffic, as the number of packets.
End Point (Virtual)	Displays Byte and packet level statistics for the un-tunneled traffic deployed on the V Series nodes. The following statistics that are shown for Endpoint (Virtual): • Received Bytes • Transmitted Bytes • Received Packets • Transmitted Packets • Received Errored Packets • Received Dropped Packets • Transmitted Errored Packets • Transmitted Dropped Packets The endpoint drop-down shows *<V Series Node Management IP address : Network Interface>* for each endpoint.	*Endpoint Bytes*	Displays received traffic vs transmitted traffic, in Bytes.

Dashboard	Displays	*Visualizations*	Displays
	You can select the following control filters, based on which the visualizations will get updated: • **Monitoring session** • **V Series node** • **Endpoint:** Management IP of the V Series node followed by the Network Interface (NIC)		
		Endpoint Packets	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.

Cloud Health Monitoring

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 on how to configure cloud health monitoring, refer to the topic Monitor Cloud Health.

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 (AWS) and Create Raw Endpoint (AWS) 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 for GigaVUE Cloud Suite for AWS

You can license the GigaVUE Cloud Suite for AWS using one of the following methods:

- Purchase GigaVUE Cloud Suite using CPPO
- Volume Based License (VBL)

Upon installing GigaVUE-FM, you will receive a complimentary 30-day SecureVUE Plus trial Volume-Based License (VBL) with a 1TB capacity, valid from the installation date. Refer to Default Trial Licenses for more detailed information on the applications supported with this license.

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 Administration Guide* and the *GigaVUE Licensing Guide*.

Purchase GigaVUE Cloud Suite using CPPO

GigaVUE Cloud Suite is available as an Amazon Machine Image (AMI) product within the AWS Marketplace. GigaVUE Cloud Suite purchased through the AWS Marketplace with Channel Partner Private Offers (CPPO) comes with a Volume-Based License.

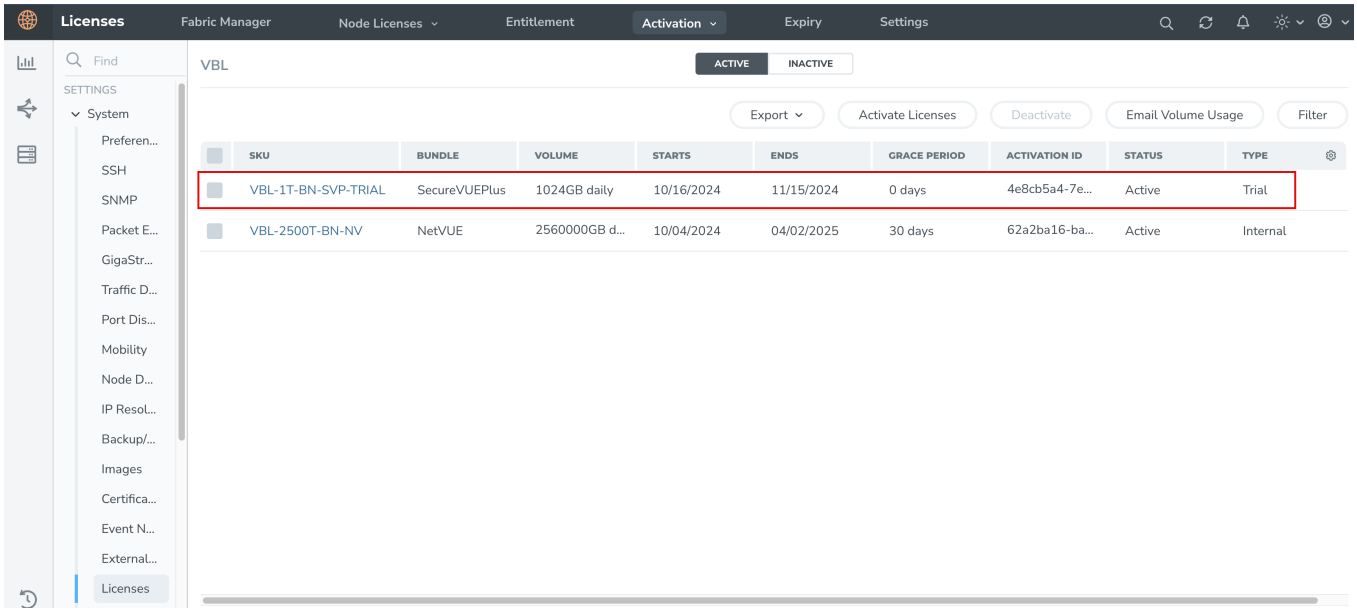
The list of SKUs[1]. available on the AWS Marketplace through the Channel Partner Private Offers (CPPO) are:

- VBL-250T-BN-SVP
- VBL-50T-BN-SVP
- VBL-2500T-BN-NV

Refer to Volume Based License (VBL) for more detailed information on VBL and the available add-on packages.

Default Trial Licenses

After you install GigaVUE-FM, you will receive a one-time, free 1TB SecureVUE Plus trial Volume-Based License (VBL) for 30 days, starting from the installation date.



This license includes the following applications:

[1]Stock Keeping Unit. Refer to the *What is a License SKU?* section in the FAQs for License.

- ERSPAN
- GENEVE
- Slicing
- Masking
- Trailer
- Tunneling
- Load Balancing
- Enhanced Load Balancing
- Flow map
- Header Stripping
- Header Addition
- De-duplication
- NetFlow
- Application Packet Filtering
- Application Filtering Intelligence
- Application Metadata Intelligence
- Application Metadata Exporter
- Inline SSL
- SSL Decrypt
- Precryption

NOTE: 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.

When you install a new Volume-Based License (VBL), the existing trial license will remain active alongside the new VBL. Once the trial license period expires, it will be automatically deactivated. After deactivation, the trial license will be moved to the **Inactive** tab in the **VBL** page.

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 Gigamon accounting purpose. GigaVUE-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.

For purchasing licenses with the Volume-Based License (VBL) option, contact our 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 SKUs[1]. 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:

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

- Add-on packages can only 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 a volume allowance less than the base bundle, then your add-on package can only handle the volume allocated for the 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 GigaVUE 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).
- When a license expires, you will be notified with an audit log. Refer to the *About Audit Logs* section in the respective GigaVUE Cloud Suite Deployment Guide.
- 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.

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** from the **Activation** drop-down.
3. Click **Activate Licenses**. The **Activate License** page appears.
4. Select **IP Address** or **Hostname** to include this information. If you exclude the IP Address or Hostname, you will have to identify the chassis or GigaSMART card by its ID when activating.
5. Download the fabric inventory file that contains information about GigaVUE-FM. Click **Next**. Refer to the What is a Fabric Inventory File section in *GigaVUE Licensing Guide* for more details.
6. Click **Gigamon License Portal** to 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.
7. Return to GigaVUE-FM and upload the file by clicking **Choose File** button.

Manage Volume-Based Licenses

This section provides information on how to manage active and inactive Volume-Based Licenses in GigaVUE-FM.

Manage active Volume-Based License

To manage active Volume-Based License (VBL):

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

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

Field	Description
SKU	Unique identifier associated with the license.
Bundle	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. Entitlement ID is the permission with which the acquired license can be activated online.
Reference ID	Reference ID.
Status	License status.

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

Manage Inactive Volume-Based License

To manage inactive Volume-Based License (VBL):

1. On the left navigation pane, click  .
2. Go to **System > Licenses**. From the top navigation bar, select the **VBL** from the **Activation** drop-down and click **Inactive**.

Field	Description
SKU	Unique identifier associated with the license.
Bundle	Bundle to which the license belongs to.
Ends	License end date.
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 Inactive tab of VBL 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 Manage 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 have expired.

For more detailed information on dashboards and report 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 License 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

Prerequisites for AWS

Refer to the following topics for details:

- Subscribe to GigaVUE Cloud Suite Components
- Recommended Instance Types for AWS
- AWS Security Credentials
- Amazon VPC
- Permissions
- GigaVUE-FM Version Compatibility
- Default Login Credentials

Subscribe to GigaVUE Cloud Suite Components

To deploy the GigaVUE Cloud Suite for AWS from the AWS Marketplace, you can subscribe to the following GigaVUE Cloud Suite components.

- GigaVUE V Series Node
- GigaVUE V Series Proxy
- GigaVUE V Series Controller
- GigaVUE-FM BYOL.

Note: You will not be charged for subscribing to the components.

To subscribe to the GigaVUE components, perform the following steps:

1. Login to your AWS account.
2. Go to https://aws.amazon.com/marketplace/.
3. In the **Search** field, type Gigamon and click Search.
4. Select the latest GigaVUE Cloud Suite version link from the list for Gigamon products.
5. Click **Continue to Subscribe**.

Recommended Instance Types for AWS

Product	Instance Type	vCPU	RAM
GigaVUE-FM	m5.xlarge	4 vCPU	16 GB
GigaVUE V Series Node	c5n.xlarge (AMD)	4 vCPU	10.5 GB
	c7gn.xlarge (ARM)	4 vCPU	8 GB
GigaVUE V Series Proxy	t2.medium (AMD)	2 vCPU	4 GB
	t4g.micro (ARM)	2vCPU	1 GB
UCT-V	t2.micro	1 vCPU	1 GB
UCT-V Controller	t2.medium	2 vCPU	4 GB

AWS Security Credentials

To establish the initial connection between GigaVUE-FM and AWS, you will require the security credentials for AWS. These credentials are necessary to verify your identity and determine whether you have authorization to access the resources you are requesting. AWS employs these security credentials to authenticate and authorize your requests.

You need one of the following security credentials:

- **Identity and Access Management (IAM) role**— If GigaVUE-FM is running within AWS, it is recommended to use an IAM role. By using an IAM role, you can securely make API requests from the instances. Create an IAM role and ensure that the permissions and policies listed in Permissions are associated to the role and also ensure that you are using Customer Managed Policies or Inline Policies.
- **Access Keys**—If GigaVUE-FM is configured in the enterprise data center, then you must use the access keys or basic credentials to connect to the VPC. Basic credentials allow full access to all the resources in your AWS account. An access key consists of an access key ID and a secret access key. For detailed instructions on creating access keys, refer to the AWS documentation on Managing Access Keys for Your AWS Account.

  NOTE: To obtain the IAM role or access keys, contact your AWS administrator.

Amazon VPC

You must have a Amazon Virtual Private Cloud (VPC) to launch GigaVUE components into your virtual network.

NOTE: To create a VPC, refer to Create a VPC topic in the AWS Documentation.

Your VPC must have the following elements to configure the GigaVUE Cloud Suite for AWS components:

Subnet for VPC

VPC must have a subnet to configure the GigaVUE Cloud Suite for AWS components. You can either have the components deployed in a single subnet or in multiple subnets.

- **Management Subnet** that the GigaVUE-FM uses to communicate with the GigaVUE V Series nodes and controllers and UCT-V Controllers.
- **Data Subnet** that can accept incoming mirrored traffic from agents or be used to egress traffic to a tool.

If a single subnet is used, then the Management subnet is also used as a Data Subnet

Security Group

When you launch GigaVUE-FM, GigaVUE V Series Proxies, GigaVUE V Series Nodes, and UCT-V Controllers, a security group can be utilized to define virtual firewall rules for your instance, which in turn regulates inbound and outbound traffic. You can add rules to manage inbound traffic to instances, and a distinct set of rules to control outbound traffic.

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

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 Subnet	Allows GigaVUE-FM to accept Management connection using REST API. Allows users to access GigaVUE-FM UI securely through an HTTPS connection.
Inbound	TCP	22	Administrator Subnet	Allows CLI access to user-initiated management and diagnostics.
Inbound (This is the port	TCP	443	UCT-V Controller IP	Allows GigaVUE-FM to receive registration requests from UCT-V Controller using REST API.

used for Third Party Orchestration)				
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	GigaVUE V Series	Allows UCT-V to tunnel VXLAN

		4789)	Node IP	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	• 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 Orchestration)	TCP	8891	GigaVUE V Series Proxy IP	Allows GigaVUE V Series Node to send registration requests and heartbeat 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	TCP	8891	GigaVUE V Series Node IP	Allows GigaVUE V Series Proxy to receive registration requests

used for Third Party Orchestration)				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.

Key Pair

A key pair consists of a public key and a private key. When you define the specifications for the UCT-V Controllers, GigaVUE V Series nodes, and GigaVUE V Series Proxy in your VPC, you must create a key pair and specify the name of this key pair.

To create a key pair, refer to Create a key pair using Amazon EC2 topic in the AWS Documentation.

Permissions

If you use an account-wide policy to encrypt all volumes with KMS keys, you must add the "kms:GenerateDataKeyWithoutPlaintext" permission to the IAM policy.

For more information on permissions, see the topic Check for Required IAM Permissions.

GigaVUE-FM Version Compatibility

GigaVUE-FM version 6.9.00 supports the latest version (6.9.00) 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.

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: Username: gigamon Password: Use the SSH key.
GigaVUE V Series Proxy	You can login to the GigaVUE V Series proxy by using ssh. The default username and password is: Username: gigamon Password: Use the SSH key.
UCT-V Controller	You can login to the GigaVUE V Series proxy by using ssh. The default username and password is: Username: ubuntu Password: Use the SSH key.

Points to Note for GigaVUE Cloud Suite for AWS

Keep in mind the following notes and rules when deploying GigaVUE Cloud Suite:

- It is recommended to deploy the GigaVUE-FM on the AWS to manage AWS workload.
- If the GigaVUE-FM is deployed outside of the AWS, then the GigaVUE-FM encrypts and stores the access key and the secret key in its database.
- Always attach an IAM role to the instance running GigaVUE-FM in AWS to connect it to your AWS account.
- If you are launching the GigaVUE-FM instance from the AWS Marketplace, you need to have only the IAM roles.
- Deployment of GigaVUE fabric components through a third-party orchestrator is supported on Linux and Windows platforms.
- Fragmentation in the network should be avoided from UCT-V to GigaVUE V Series Node and from GigaVUE V Series Node to tool by setting appropriate MTU for the interfaces. If the tool VM MTU is less than that of GigaVUE V Series Node, then GigaVUE V Series Node fragments the packets. This results in packet loss, that is, all fragments over 200 packet per second gets dropped by ENA (Elastic Network Adapter) of AWS.
- Fragmentation in the network should be avoided from UCT-V to GigaVUE V Series Node and from GigaVUE V Series Node to tool by setting appropriate MTU for the interfaces. If the tool VM MTU is less than that of GigaVUE V Series Node, then GigaVUE V Series Node fragments the packets. Fragment packets get reordered when they arrive at the V-series node.
- 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 in GigaVUE Administration Guide for configuration details.

Deployment Options for GigaVUE Cloud Suite for AWS

This section provides a detailed information on the multiple ways in which GigaVUE Cloud Suite for AWS–GigaVUE V Series 2 can be configured to provide visibility for physical and virtual traffic. There are three different ways in which GigaVUE Cloud Suite for AWS–GigaVUE V Series 2 can be configured based on the traffic acquisition method and the method in which you want to deploy fabric components. For information on the prerequisites and work flow refer the following topics:

Deploy GigaVUE Fabric Components using AWS

GigaVUE-FM allows you to use AWS 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	Install GigaVUE-FM on AWS	Install GigaVUE-FM on AWS
2	Install UCT-Vs	For Linux: Linux UCT-V Installation For Windows: Windows UCT-V Installation
3	Create the AWS Credentials	Create AWS Credentials
4	Create a Monitoring Domain **NOTE:** Ensure that the Use FM to Launch Fabric toggle button is disabled.	Create a Monitoring Domain
5	Configure GigaVUE Fabric Components **NOTE:** Select UCT-V as the Traffic Acquisition Method.	Configure GigaVUE Fabric Components in GigaVUE-FM
6	Create Monitoring session	Create a Monitoring Session (AWS)
7	Add Applications to the Monitoring Session	Add Applications to Monitoring Session (AWS)
8	Deploy Monitoring Session	Deploy Monitoring Session (AWS)
9	View Monitoring Session Statistics	View Monitoring Session Statistics (AWS)

Deploy GigaVUE Fabric Components using GigaVUE-FM

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

Traffic Acquisition Method as UCT-V

In traffic acquisition using UCT-V, the traffic from Virtual Machines is acquired using the UCT-Vs and forwarded to the V Series nodes. To acquire traffic using UCT-V, perform the following steps:

Step No	Task	Refer the following topics
1	Install GigaVUE-FM on AWS	Install GigaVUE-FM on AWS
2	Install UCT-Vs	For Linux: Linux UCT-V Installation For Windows: Windows UCT-V Installation
3	Create the AWS Credentials	Create AWS Credentials
4	Create a Monitoring Domain Ensure that the Use FM to Launch Fabric toggle button is enabled.	Create a Monitoring Domain
5	Configure GigaVUE Fabric Components **NOTE:** Select UCT-V as the Traffic Acquisition Method.	Configure GigaVUE Fabric Components in GigaVUE-FM
6	Create Monitoring session	Create a Monitoring Session (AWS)
7	Add Applications to the Monitoring Session	Add Applications to Monitoring Session (AWS)
8	Deploy Monitoring Session	Deploy Monitoring Session (AWS)
9	View Monitoring Session Statistics	View Monitoring Session Statistics (AWS)

Traffic Acquisition Method as VPC Mirroring

Perform the following steps to use VPC mirroring as your traffic acquisition method:

Step No	Task	Refer the following topics
1	Install GigaVUE-FM on AWS	Install GigaVUE-FM on AWS
2	Create a Monitoring Domain Ensure that the **Use FM to Launch Fabric** toggle button is enabled.	Create a Monitoring Domain
3	Configure GigaVUE Fabric Components **NOTE:** Select VPC Mirroring as the Traffic Acquisition Method. You can configure a prefilter and determine the VPC endpoint traffic that is mirrored. For more information on prefiltering, see Configure a Traffic Pre-filter.	Configure GigaVUE Fabric Components in GigaVUE-FM

Step No	Task	Refer the following topics
4	Create Monitoring session	Create a Monitoring Session (AWS)
5	Add Applications to the Monitoring Session	Add Applications to Monitoring Session (AWS)
6	Deploy Monitoring Session	Deploy Monitoring Session (AWS)
7	View Monitoring Session Statistics	View Monitoring Session Statistics (AWS)

Traffic Acquisition Method as Customer Orchestrated Source

You can use tunnels as a source where the traffic is directly tunneled to V Series nodes without deploying UCT-Vs or UCT-V Controllers. Perform the following steps to use Tunnel as your traffic acquisition method:

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

Deploy GigaVUE Cloud Suite for AWS

This chapter describes how to connect, launch, and deploy fabric components of GigaVUE Cloud Suite for AWS in your AWS environment.

If you already have GigaVUE-FM running outside of your AWS environment, you can connect that existing GigaVUE-FM to your AWS using the Basic Credentials (Access Keys).

Refer to the following sections for details:

- Permissions and Privileges (AWS)
- Install GigaVUE-FM on AWS
- Create a Monitoring Domain
- Configure GigaVUE Fabric Components in GigaVUE-FM
- Configure Role-Based Access for Third Party Orchestration
- Configure GigaVUE Fabric Components in AWS using Third Party Orchestration - Integrated Mode
- Install UCT-V

Permissions and Privileges (AWS)

GigaVUE-FM requires access to AWS EC2 APIs to deploy the solution. IAM allows you to control the actions that GigaVUE-FM can take on your EC2 resources.

To configure the components, you must first enable the permissions listed below and attach the policies to an IAM role. You must then, attach the IAM role to the GigaVUE-FM instance running in AWS. If the GigaVUE-FM is running outside the AWS, then you must use the access key id and secret access keys. Refer to IAM roles for Amazon EC2 in the AWS Documentation for more details.

The following topics lists the minimum permissions that are required for traffic acquisition:

- GigaVUE-FM Instance Multi Account Support Using Amazon STS
- Minimum Permissions Required for Acquiring Traffic using the UCT-V
- Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source
- Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source with GwLB
- Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source with NwLB
- Minimum Permissions Required for Acquiring Traffic using VPC Mirroring
- Minimum Permissions Required for Acquiring Traffic using VPC Mirroring with Network Load Balancer
- Minimum Permissions Required for Acquiring Traffic using VPC Mirroring and GwLB

GigaVUE-FM Instance Multi Account Support Using Amazon STS

This section provides instructions on how to set up your GigaVUE-FM instance to work with multiple accounts using Amazon Security Token Service (STS).

Prerequisites

You must complete the following prerequisites before configuring GigaVUE-FM for Amazon STS support.

- A policy must be included in other accounts as well.
  - These policies must allow GigaVUE-FM to assume the role in that account.

Procedure

For the purposes of these instructions, the AWS account that runs the GigaVUE-FM instance is called the source account, and any other AWS account that runs monitored instances is called a target account.

To configure GigaVUE-FM for Amazon STS support:

1. In each target account, create an IAM role with the source account number as a trusted entity and attach policies with permissions allowing GigaVUE-FM to perform its functions. Record the ARN of each role created.

   NOTE: This role must exist in all accounts to support the ability to create a single Monitoring Domain in GigaVUE-FM that includes multiple accounts.

2. In the source account, create a new IAM policy that allows GigaVUE-FM to retrieve IAM policies.

   IMPORTANT: The following example is provided as an example.

   a. Use the following permissions if you are using IAM instance role for authentication:

   ```
   "iam:ListAttachedRolePolicies",
   "iam:GetPolicy",
   "iam:GetPolicyVersion",
   "iam:ListRolePolicies",
   "iam:ListAccountAliases",
   ```

   If there are inline policies linked to the role, then you must include the following permission:

   ```
   "iam:GetRolePolicy"
   ```

   b. Use the following permissions for basic authentication:

   ```
   "iam:ListGroupsForUser"
   "iam:ListAttachedUserPolicies"
   "iam:ListAttachedGroupPolicies"
   "iam:GetPolicy",
   "iam:GetPolicyVersion",
   "iam:ListUserPolicies"
   "iam:ListGroupPolicies"
   "iam:ListAccountAliases",
   ```

   If there are inline policies attached to the user, then include the following permission:

   ```
   "iam:GetUserPolicy"
   ```

   If there are inline policies attached to the user group, then include the following permission:

   ```
   "iam:GetGroupPolicy"
   ```

3. In the source account, create a new IAM policy that allows the "sts:AssumeRole" action on all role ARNs created in Step 1.
   IMPORTANT: The following example is provided as an example.

```
{
   "Version": "2012-10-17",
   "Statement": {
     "Effect": "Allow",
     "Action": "sts:AssumeRole",
     "Resource": [
       "arn:aws:iam::123456789012:role/FM-Role-target-account"
       ]
     }
}
```

NOTE: In this example, 123456789012 is a target account and FM-Role-target-account is the role in the target account configured in step 1 with permissions required for GigaVUE-FM.

4. In the source account, attach the policies created in steps 2 and 3 to the IAM role that is attached to the GigaVUE-FM instance.

Minimum Permissions Required for Acquiring Traffic using the UCT-V

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

These are the minimum permissions that are required to acquire traffic using the UCT-V and authenticate using an IAM instance role.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateTags",
                "ec2:DeleteTags",
                "ec2:RunInstances",
                "ec2:TerminateInstances",
                "ec2:AssociateAddress",
                "ec2:DisassociateAddress",
                "ec2:DescribeImages",
                "ec2:DescribeInstances",
                "ec2:DescribeInstanceTypes",
                "ec2:DescribeVpcs",
                "ec2:DescribeSubnets",
                "ec2:DescribeKeyPairs",
                "ec2:DescribeSecurityGroups",
                "ec2:DescribeVolumes",
                "ec2:DescribeAddresses",
                "ec2:RebootInstances",
                "ec2:StartInstances",
                "ec2:StopInstances",
                "iam:GetPolicyVersion",
                "iam:GetPolicy",
                "iam:ListAttachedRolePolicies",
                "iam:ListAccountAliases",
                "iam:ListRolePolicies",
                "kms:ListAliases"
                "kms:GenerateDataKeyWithoutPlaintext"
            ],
            "Resource": "*"
        }
    ]
```

```
}
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

These are the minimum permissions that are required to acquire traffic using the customer orchestrated, use a GigaVUE V Series Proxy and authenticate using an IAM instance role.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateTags",
                "ec2:DeleteTags",
                "ec2:RunInstances",
                "ec2:TerminateInstances",
                "ec2:AssociateAddress",
                "ec2:DisassociateAddress",
                "ec2:DescribeImages",
                "ec2:DescribeInstances",
                "ec2:DescribeInstanceTypes",
                "ec2:DescribeVpcs",
                "ec2:DescribeSubnets",
                "ec2:DescribeKeyPairs",
                "ec2:DescribeSecurityGroups",
                "ec2:DescribeVolumes",
                "ec2:DescribeAddresses",
                "ec2:RebootInstances",
                "ec2:StartInstances",
                "ec2:StopInstances",
```

```
                    "ec2:AssociateAddress",
                    "ec2:DisassociateAddress",
                    "ec2:RebootInstances",
                    "ec2:StartInstances",
                    "ec2:StopInstances",
                    "ec2:RunInstances",
                    "ec2:TerminateInstances",
                    "iam:GetPolicyVersion",
                    "iam:GetPolicy",
                    "iam:ListAttachedRolePolicies",
                    "iam:ListRolePolicies",
                    "iam:ListAccountAliases",
                    "kms:ListAliases"
                    "kms:GenerateDataKeyWithoutPlaintext"
                ],
                "Resource": "*"
            }
        ]
    }
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source with GwLB

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

These are the minimum permissions that are required to acquire traffic using Customer Orchestrated Source with Gateway Load Balancer and authenticate using an IAM instance role.

```
{
  "Version":"2012-10-17",
  "Statement":[
    {
      "Sid":"VisualEditor0",
      "Effect":"Allow",
      "Action":[
```

```
            "autoscaling:DescribeAutoScalingGroups",
            "elasticloadbalancing:DescribeLoadBalancers",
            "elasticloadbalancing:DescribeTargetGroups",
            "elasticloadbalancing:RegisterTargets",
            "elasticloadbalancing:DeregisterTargets",
            "elasticloadbalancing:DescribeTargetHealth",
            "ec2:DescribeVpcs",
            "ec2:DescribeSubnets",
            "ec2:DescribeInstances",
            "ec2:DescribeInstanceTypes",
            "ec2:DescribeAddresses",
            "ec2:DescribeKeyPairs",
            "ec2:DescribeSecurityGroups",
            "ec2:CreateTags",
            "ec2:DeleteTags",
            "ec2:DescribeImages",
            "ec2:DescribeVolumes",
            "ec2:DescribeVpcEndpointServiceConfigurations",
            "ec2:DescribeVpcEndpoints",
            "iam:GetPolicyVersion",
            "iam:GetPolicy",
            "iam:ListAttachedRolePolicies",
            "iam:ListRolePolicies",
            "iam:ListAccountAliases",
            "ram:CreateResourceShare",
            "ram:DeleteResourceShare",
            "ram:AssociateResourceShare",
            "ram:GetResourceShareInvitations",
            "ram:AcceptResourceShareInvitation",
            "ram:DisassociateResourceShare",
            "kms:ListAliases"
            "kms:GenerateDataKeyWithoutPlaintext"
        ],
        "Resource":"*"
    }
]
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source with NwLB

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

These are the minimum permissions that are required to acquire traffic using Customer Orchestrated Source with Network Load Balancer and authenticate using an IAM instance role.

```
{
  "Version":"2012-10-17",
  "Statement":[
    {
      "Sid":"VisualEditor0",
      "Effect":"Allow",
      "Action":[
        "autoscaling:DescribeAutoScalingGroups",
        "elasticloadbalancing:DescribeLoadBalancers",
        "elasticloadbalancing:DescribeTargetGroups",
        "elasticloadbalancing:RegisterTargets",
        "elasticloadbalancing:DeregisterTargets",
        "elasticloadbalancing:DescribeTargetHealth",
        "ec2:DescribeVpcs",
        "ec2:DescribeSubnets",
        "ec2:DescribeInstances",
        "ec2:DescribeInstanceTypes",
        "ec2:DescribeAddresses",
        "ec2:DescribeKeyPairs",
        "ec2:DescribeSecurityGroups",
        "ec2:CreateTags",
        "ec2:DeleteTags",
        "ec2:DescribeImages",
        "ec2:DescribeVolumes",
        "iam:GetPolicyVersion",
        "iam:GetPolicy",
        "iam:ListAttachedRolePolicies",
        "iam:ListRolePolicies",
        "iam:ListAccountAliases",
        "ram:CreateResourceShare",
        "ram:DeleteResourceShare",
        "ram:AssociateResourceShare",
        "ram:GetResourceShareInvitations",
        "ram:AcceptResourceShareInvitation",
        "ram:DisassociateResourceShare",
        "kms:ListAliases"
        "kms:GenerateDataKeyWithoutPlaintext"
      ],
      "Resource":"*"
```

```
        }
    ]
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Minimum Permissions Required for Acquiring Traffic using VPC Mirroring

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

These are the minimum permissions that are required to acquire traffic using VPC mirroring and authenticate using an IAM instance role.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Allow",
            "Action": [
                "ec2:CreateTags",
                "ec2:DeleteTags",
                "ec2:AssociateAddress",
                "ec2:DisassociateAddress",
                "ec2:DescribeImages",
                "ec2:DescribeInstances",
                "ec2:DescribeInstanceTypes",
                "ec2:DescribeVpcs",
                "ec2:DescribeSubnets",
                "ec2:DescribeKeyPairs",
                "ec2:DescribeSecurityGroups",
                "ec2:DescribeVolumes",
                "ec2:DescribeAddresses",
                "ec2:RunInstances",
                "ec2:TerminateInstances",
                "ec2:RebootInstances",
                "ec2:StartInstances",
```

```
                    "ec2:StopInstances",
                    "ec2:DescribeTrafficMirrorFilters",
                    "ec2:DescribeTrafficMirrorSessions",
                    "ec2:DescribeTrafficMirrorTargets",
                    "ec2:CreateTrafficMirrorTarget",
                    "ec2:CreateTrafficMirrorSession",
                    "ec2:DeleteTrafficMirrorTarget",
                    "ec2:DeleteTrafficMirrorSession",
                    "iam:GetPolicyVersion",
                    "iam:GetPolicy",
                    "iam:ListAttachedRolePolicies",
                    "iam:ListRolePolicies",
                    "iam:ListAccountAliases",
                    "kms:ListAliases"
                ],
                "Resource": "*"
            }
        ]
    }
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Minimum Permissions Required for Acquiring Traffic using VPC Mirroring with Network Load Balancer

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

These are the minimum permissions that are required to acquire traffic using VPC mirroring with Network Load Balancer and authenticate using an IAM instance role.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Allow",
            "Action": [
                "autoscaling:DescribeAutoScalingGroups",
```

```
                "elasticloadbalancing:DescribeLoadBalancers",
                "elasticloadbalancing:DescribeTargetGroups",
                "elasticloadbalancing:RegisterTargets",
                "elasticloadbalancing:DeregisterTargets",
                "elasticloadbalancing:DescribeTargetHealth",
                "ec2:DescribeVpcs",
                "ec2:DescribeSubnets",
                "ec2:DescribeInstances",
                "ec2:DescribeInstanceTypes",
                "ec2:DescribeAddresses",
                "ec2:DescribeKeyPairs",
                "ec2:DescribeSecurityGroups",
                "ec2:CreateTags",
                "ec2:DeleteTags",
                "ec2:DescribeImages",
                "ec2:DescribeVolumes",
                "ec2:CreateTrafficMirrorFilterRule",
                "ec2:CreateTrafficMirrorTarget",
                "ec2:CreateTrafficMirrorSession",
                "ec2:CreateTrafficMirrorFilter",
                "ec2:DeleteTrafficMirrorTarget",
                "ec2:DeleteTrafficMirrorSession",
                "ec2:DeleteTrafficMirrorFilter",
                "ec2:DescribeTrafficMirrorSessions",
                "ec2:DescribeTrafficMirrorTargets",
                "ec2:DescribeTrafficMirrorFilters",
                "ram:CreateResourceShare",
                "ram:DeleteResourceShare",
                "ram:GetResourceShareInvitations",
                "ram:AcceptResourceShareInvitation",
                "ram:DisassociateResourceShare",
                "iam:GetPolicyVersion",
                "iam:GetPolicy",
                "iam:ListAttachedRolePolicies",
                "iam:ListRolePolicies",
                "iam:ListAccountAliases",
                "kms:GenerateDataKeyWithoutPlaintext"
                "kms:ListAliases"
            ],
            "Resource": "*"
        }
    ]
}
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Minimum Permissions Required for Acquiring Traffic using VPC Mirroring and GwLB

Prerequisites:

Before configuring the required permissions and previleges in AWS, you must install GigaVUE-FM. Refer to Install GigaVUE-FM on AWS for more detailed information on how install GigaVUE-FM in AWS.

This policy allows you to acquire traffic using VPC mirroring with Gateway Load Balancer and authenticate using an IAM instance role.

```
{
    "Version": "2012-10-17",
    "Statement": [
        {
            "Sid": "VisualEditor0",
            "Effect": "Allow",
            "Action": [
                "autoscaling:DescribeAutoScalingGroups",
                "elasticloadbalancing:DescribeLoadBalancers",
                "elasticloadbalancing:DescribeTargetGroups",
                "elasticloadbalancing:RegisterTargets",
                "elasticloadbalancing:DeregisterTargets",
                "elasticloadbalancing:DescribeTargetHealth",
                "ec2:DescribeVpcs",
                "ec2:DescribeSubnets",
                "ec2:DescribeInstances",
                "ec2:DescribeInstanceTypes",
                "ec2:DescribeAddresses",
                "ec2:DescribeKeyPairs",
                "ec2:DescribeSecurityGroups",
                "ec2:CreateTags",
                "ec2:DeleteTags",
                "ec2:DescribeImages",
                "ec2:DescribeVolumes",
                "ec2:CreateTrafficMirrorFilterRule",
                "ec2:CreateTrafficMirrorTarget",
                "ec2:CreateTrafficMirrorSession",
                "ec2:CreateTrafficMirrorFilter",
                "ec2:DeleteTrafficMirrorTarget",
                "ec2:DeleteTrafficMirrorSession",
                "ec2:DeleteTrafficMirrorFilter",
                "ec2:DescribeTrafficMirrorSessions",
                "ec2:DescribeTrafficMirrorTargets",
                "ec2:DescribeTrafficMirrorFilters",
```

```
                    "ec2:DescribeVpcEndpointServiceConfigurations",
                    "ec2:DescribeVpcEndpoints",
                    "ram:CreateResourceShare",
                    "ram:DeleteResourceShare",
                    "ram:GetResourceShareInvitations",
                    "ram:AcceptResourceShareInvitation",
                    "ram:DisassociateResourceShare",
                    "iam:GetPolicyVersion",
                    "iam:GetPolicy",
                    "iam:ListAttachedRolePolicies",
                    "iam:ListRolePolicies",
                    "iam:ListAccountAliases",
                    "kms:ListAliases"
                    "kms:GenerateDataKeyWithoutPlaintext"
                ],
                "Resource": "*"
            }
        ]
    }
```

For more information regarding policies and permissions, refer to AWS Documentation.

If you are using inline policy or basic authentication, then you must update the policy with the relevant IAM service. For more information, see GigaVUE-FM Instance Multi Account Support Using Amazon STS.

What to do Next:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

Install GigaVUE-FM on AWS

You can launch GigaVUE-FM in AWS by subscribing it in the marketplace.

Refer to the following topics for instruction on installing GigaVUE-FM in AWS:

- Subscribe to GigaVUE Products
- Initial Configuration

Subscribe to GigaVUE Products

You can deploy the GigaVUE Cloud Suite for AWS from the AWS Marketplace. The following GigaVUE Cloud Suite products are listed in the AWS Marketplace:

- GigaVUE V Series Node
- GigaVUE V Series Controller
- GigaVUE-FM
- UCT-V Controller

NOTE: To subscribe to GigaVUE Products, you must add "aws-marketplace:ViewSubscriptions" permission to the IAM policy.

To subscribe to the GigaVUE products, perform the following steps:

1. Login to your AWS account.
2. Go to https://aws.amazon.com/marketplace/.
3. In the **Search** field, type Gigamon and click **Search**.
4. In the **Pricing model** section, filter the results by selecting **Bring Your Own License** (BYOL).
5. Select the latest version GigaVUE Cloud Suite BYOL version. For more information on Licensing, refer to Licensing for GigaVUE Cloud Suite for AWS
6. Review the Terms and Conditions and then click **"Accept Terms**".
7. Review the summary and then click "**Continue to Configuration**".
8. In the **Configure this software** page, enter the following details for your deployment:
   a. Set **Fulfillment Option**to the default value.
   b. Select the latest version in the **Software Version** field.
   c. Choose your deployment **Region**.
   d. Click **Continue to Launch.**

9. In the **Configure this software** page, select the following:
    a. Select **Launch from Website** option in the **Choose Action** field.
    b. Select the instance type from **EC2 Instance Type** drop-down list. Refer to Recommended and Supported Instance Types for AWS.
    c. Choose the VPC for deploying GigaVUE-FM from **VPC Settings** drop-down list.
    d. In the **Subnet Settings**, choose your desired Subnet.
    e. Configure the security group in the **Security Group Settings** to match your access and permissions needs. Refer to Security Group for more details.
    f. Choose your preferred **Key Pair** for secure access to the instance.
    g. Click **Launch**.

GigaVUE-FM is launched in AWS. You perform the initial configuration before

Initial Configuration

It may take several minutes for the GigaVUE-FM instance to start up. Once it is up and running, you can verify that it is working properly by following these steps:

1. In your EC2 Instances page, select the **Instance ID** of the launched GigaVUE-FM and to view the instance information.
2. Copy and paste the **Public IP address** into a new browser window or tab.
3. The GigaVUE-FM GUI appears.

NOTE:

- If GigaVUE-FM is deployed inside AWS, use **admin** as the username and the **Instance ID** as the default password for the admin user to login to GigaVUE-FM, for example i-079173111e2d73753 **(Instance ID)**. You can get the **Instance ID** of GigaVUE-FM in the EC2 Instances page.
- If GigaVUE-FM is deployed outside the AWS, use admin123A!! as the default admin password.

When you first log in to GigaVUE-FM, you will be asked to change your default password.

What to do Next:

Configure the required permission and privileges in AWS. For detailed instructions on configuring required AWS permissions and privileges for your chosen deployment option, refer to the following topics:

Deployment Options	Reference Topics
Acquire Traffic using UCT-V	Minimum Permissions Required for Acquiring Traffic using the UCT-V
Acquire Traffic using Customer Orchestrated Source	Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source
Acquire Traffic using Customer Orchestrated Source when configuring Gateway Load Balancer in AWS	Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source with GwLB
Acquire Traffic using Customer Orchestrated Source when configuring Network Load Balancer in AWS	Minimum Permissions Required for Acquiring Traffic using the Customer Orchestrated Source with NwLB
Acquire Traffic using VPC Mirroring	Minimum Permissions Required for Acquiring Traffic using VPC Mirroring
Acquire Traffic using VPC Mirroring when configuring Gateway Load Balancer in AWS	Minimum Permissions Required for Acquiring Traffic using VPC Mirroring and GwLB
Acquire Traffic using VPC Mirroring when configuring Network Load Balancer in AWS	Minimum Permissions Required for Acquiring Traffic using VPC Mirroring with Network Load Balancer

Install Custom Certificate on AWS

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 **Choose File** Button to upload the certificate.
Private Key	Click on the **Choose File** 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.

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 using Third Party Orchestration - Integrated Mode

For generic mode:

- Refer to Configure GigaVUE Fabric Components in AWS section inGigaVUE Cloud Suite Deployment Guide - Third Party Orchestration

Adding Certificate Authority

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.
Certificate Authority	Use any of the following option to enter the Certificate Authority
Copy and Paste	
Certificate	Enter the certificate.
Install from URL	
Path	Enter the URL in the following format: <protocol>://<username>@<hostname/IP address>/<file path>/<file name>
Password	Enter the password
Install from Local Directory	
File Name	Click **Choose File** button and choose the certificate from the desired location.

4. Click **Save**.

Create a Monitoring Domain

GigaVUE-FM connects to the AWS Platform through the public API endpoint. HTTPS is the default protocol which GigaVUE-FM uses to communicate with the API. For more information about the endpoint and the protocol used, refer to AWS service endpoints.

GigaVUE-FM provides you the flexibility to monitor multiple VPCs. You can choose the VPC ID and launch the GigaVUE fabric components in the desired VPCs.

NOTE: To configure the Monitoring Domain and launch the fabric components in AWS, you must be a user with **fm_super_admin** role or a user with write access to the **Infrastructure Management** category. Refer to Role Based Access Control for more detailed information.

Prerequisites:

Before configuring creating a Monitoring Domain in GigaVUE-FM, you must first complete one of the following actions, depending on your deployment option:

Deployment Options	Reference Topics
Deploying GigaVUE Fabric Components using GigaVUE-FM	Create AWS Credentials
Deploying GigaVUE Fabric Components using AWS - Third Party Orchestration	Configure Role-Based Access for Third Party Orchestration

To create a Monitoring Domain:

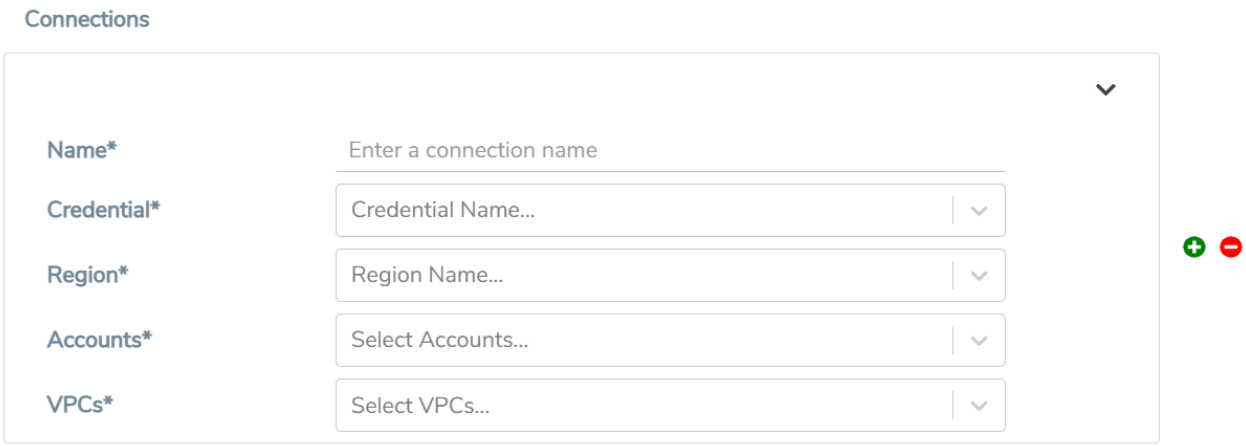
1. Go to **Inventory > VIRTUAL > AWS** , and then click **Monitoring Domain**.
2. On the Monitoring Domain page, click the **New** button. The **Monitoring Domain**

Configuration page appears.

3. Click **Check Permissions** and validate whether you have the required permissions.

4. Enter or select the appropriate information as shown in the following table.

Field	Action
Monitoring Domain	An alias used to identify the monitoring domain.
Traffic Acquisition Method	Select a tapping method. The available options are: ▪ **UCT-V**: UCT-Vs are deployed on your VMs to acquire the traffic and forward the acquired traffic to the GigaVUE V Series Nodes. If you select UCT-V as the tapping method, you must configure the UCT-V Controller to communicate to the UCT-Vs from GigaVUE-FM. You can also configure the UCT-V Controller and UCT-Vs from your own orchestrator. Refer to Configure GigaVUE Fabric Components using AWS Orchestrator for detailed information. ▪ **VPC Traffic Mirroring**: If you select the VPC Traffic Mirroring option, the mirrored traffic from your workloads is directed directly to the GigaVUE V Series nodes, and you need not configure the UCT-Vs and UCT-V Controllers. For more information on VPC Peering, refer to VPC peering connections in the AWS Documentation. Peering is required to send mirrored traffic from other VPCs into a centralized GigaVUE V Series deployment. You can choose to use an external load balancer for VPC Traffic Mirroring. Select **Yes** to use load balancer. Refer to Configure an External Load Balancer for detailed information. UCT-V Controller configuration is not applicable for VPC Traffic Mirroring.VPC mirroring does not support cross-account solutions without a load balancer.For VPC Traffic Mirroring option, additional permissions are required. Refer to the Permissions and Privileges (AWS) topic for details.After deploying the Monitoring Session, a traffic mirror session is created in your AWS VPC consisting of a session, a filter, sources, and targets. For more details, refer to Traffic Mirroring in AWS Documentation. ▪ **Customer Orchestrated Source**: If you use select **Customer Orchestrated Source** as the tapping method, you can use the Customer Orchestrated Source as a source option in the monitoring session, where the traffic is directly tunneled to the GigaVUE V Series nodes without deploying UCT-Vs and UCT-V Controllers. The user is responsible for creating this tunnel feed and pointing it to the GigaVUE V Series node(s). **NOTE:** When using Application Metadata Exporter (AMX) application, select the **Traffic Acquisition Method** as **Customer Orchestrated Source**.
Traffic Acquisition Tunnel MTU	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 8951. When using IPv4 tunnels, the maximum MTU value is 8951. The UCT-V tunnel MTU should be 50 bytes less than the agent's destination interface MTU size. When using IPv6 tunnels, the maximum MTU value is 8931. The UCT-V tunnel MTU should be 70 bytes less than the agent's destination interface MTU size.
Use FM to Launch Fabric	Select **Yes** Configure GigaVUE Fabric Components in GigaVUE-FM to or select **No** to Configure GigaVUE Fabric Components in AWS using Third Party Orchestration -

Field	Action
	Integrated Mode.
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  **NOTE:** You can add multiple connections in a Monitoring Domain. Refer to Create AWS Credentials for more information on adding multiple AWS **Basic Credentials**.	
Name	An alias used to identify the connection.
Credential	Select an AWS credential. For detailed information, refer to Create AWS Credentials.
Region	AWS region for the monitoring domain. For example, US West.
Accounts	Select the AWS accounts
VPCs	Select the VPCs to monitor

5. Click **Save**.

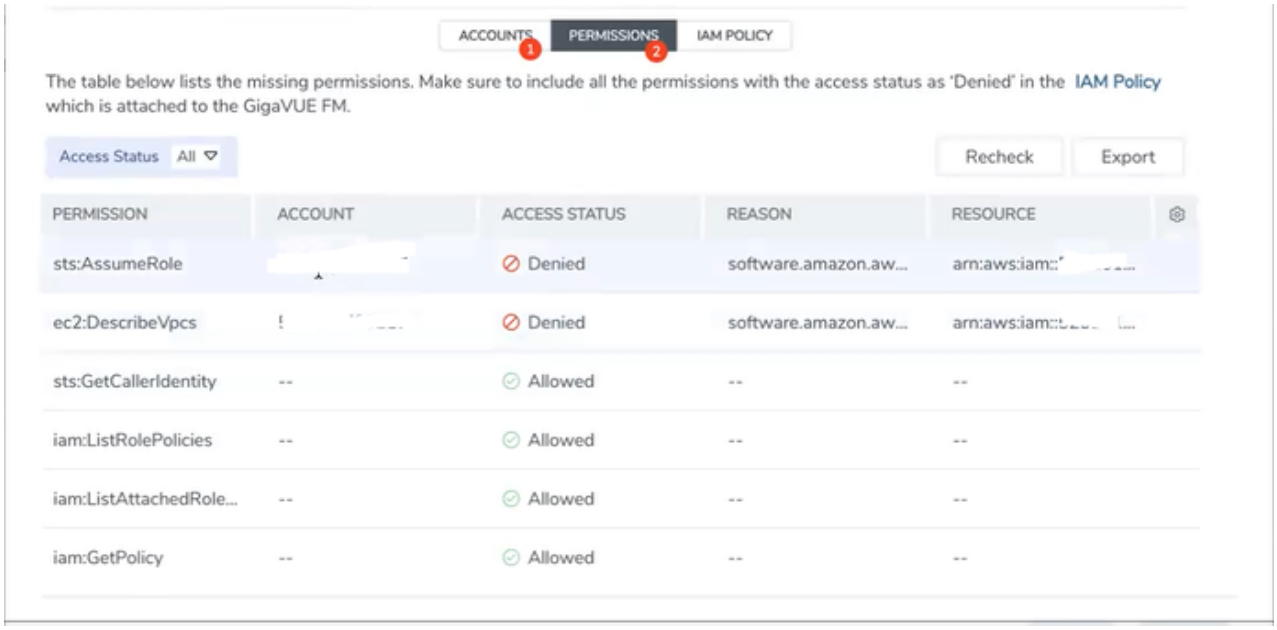
The newly created Monitoring Domain appears in the list view of the **Monitoring Domain** page.

To edit a Monitoring Domain, select the deployed Monitoring Domain and click **Actions**. From the drop-down list, select **Edit**, the **Monitoring Domain Configuration** page appears.

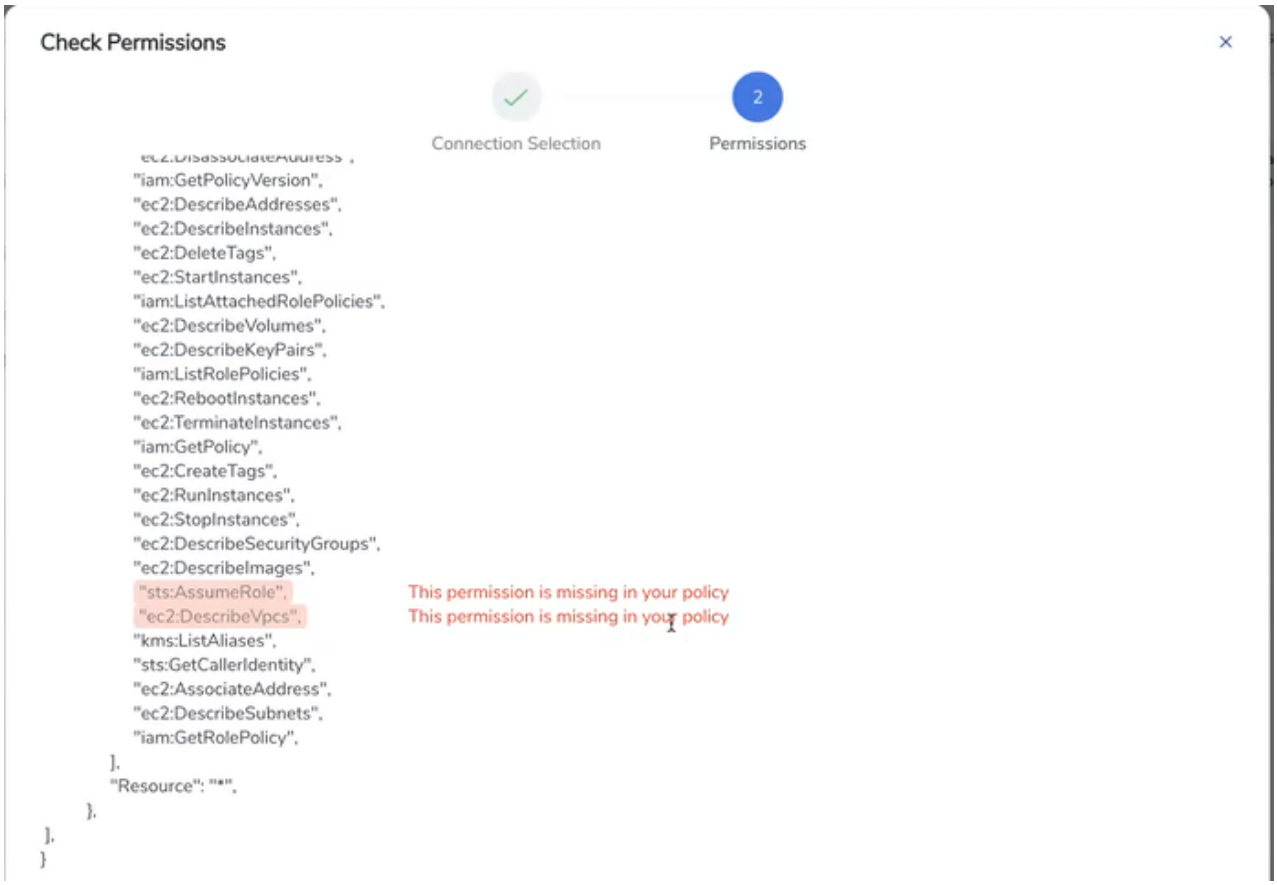
Check Permissions while Creating a Monitoring Domain

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

1. Go to **Inventory > VIRTUAL > AWS**, 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 a 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 on the **Permission Status** to view the missing permissions.
7. The **ACCOUNTS** tab lists the accounts and the permissions status. Review the accounts that has an error in the permission status.
8. The **PERMISSIONS** tab lists the permissions required to run GigaVUE Cloud Suite for AWS. Make sure to include all the permissions with Access Status as 'Denied' in the IAM policy.



9. The **IAM POLICY** tab lists the sample policy containing the required permissions for deploying the GigaVUE Cloud Suite for AWS. You must update the AWS 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.



When you click Copy or Download, the entire JSON will be copied or downloaded.

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

You can view the permission status reports in the **Monitoring Domain** page. 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 AWS Settingsfor more detailed information.

To view permission status report, in the **Monitoring Domain** page, click **Actions > View Permission Status Report**. To view or delete individual reports, select the report and click **Actions** button.

What to do Next:

Based on your chosen deployment option, perform any of the following actions:

- **Use FM to Launch Fabric** is enabled: You are navigated to the **AWS Fabric Launch Configuration** page. Refer to Configure GigaVUE Fabric Components in GigaVUE-FM for more detailed information on how to deploy GigaVUE Fabric Components using GigaVUE-FM.
- **Use FM to Launch Fabric** is disabled: You must deploy GigaVUE Fabric Components using AWS. Refer to Configure GigaVUE Fabric Components in AWS using Third Party Orchestration - Integrated Mode for more detailed information on how to deploy GigaVUE Fabric Components using AWS.

Managing 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
- Fabric
- UCT-V
- UCT-V Upgrade

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 based on the Monitoring 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
- Load Balancer
- Centralized connection
- Management Subnet

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	You can select a Monitoring Domain and then perform the following options: • **Edit Monitoring Domain**- Select a Monitoring Domain and then click **Edit Monitoring Domain** to update the configuration. • **Delete Fabric**- You can delete all the fabrics associated with the Monitoring Domain of the selected Fabric. • **Delete Monitoring Domain** - You can select a Monitoring Domain or multiple Monitoring Domains to delete them. • **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. • **Edit SSL Configuration** - You can use this option to add Certificate Authority and the SSL Keys when using the Secure Tunnels. • **Check Permissions** - You can use this option to validate whether policy attached to the GigaVUE-FM using "EC2 Instance Role" or "Access Credential" has the required IAM permissions and notifies the users about the missing permissions. • **View Permission Status Report** - You can use this option to get the reports of previously run **Check permissions**. • **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. • **Edit CA** - You can use this option to edit the existing CA or add a new CA if you haven't added to the selected Monitoring Domain for the Secure Tunnel feature.
Filter	Filters the Monitoring Domain based on the list view options that are configured: • **Tunnel MTU** • **Load Balancer** • **Acquisition Method** • **Centralised Connection** • **Management Subnet** 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.

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
- Credential
- 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

You can use the Actions button to perform the following actions:

- **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 fabric components.
- **Delete Fabric** - You can delete all the fabrics associated with the Monitoring Domain of the selected fabric.
- **Upgrade Fabric** - You can select a Monitoring Domain or multiple Monitoring Domains to upgrade the fabric. You can upgrade the GigaVUE V Series Nodes using this option.

UCT-V

To view all the UCT-Vs associated with the available Monitoring Domains click the **UCT-V** tab.

The list view shows the following details:

- Monitoring Domain
- IP address
- Registration time
- Last heart beat time
- Mode
- Secure Tunnel Status
- Status

- Version

UCT-V Upgrade

To upload and upgrade the UCT-V packages, click the **UCT-V** Upgrade tab . UCT-V Upgrade drop-down includes Dashboard, Jobs, and Images options.

Dashboard

The Dashboard list view shows the following details:

- Overview Stages
- UCT-V Upgrade Stages
- Name
- IP address
- Mode
- Type
- Monitoring Domain
- Fetch
- Install
- Verify
- Upgrade Status
- Image Version
- Image Type
- Health
- Registration Mode

Jobs

You can view Immediate and scheduled tasks in the Jobs tab. The list view shows the following details:

Immediate tab	Scheduled tab
Shows the following details: ▪ Task Name ▪ Task Status ▪ Created Time ▪ Created By ▪ Start Time ▪ End Time	Shows the following details: ▪ Task Name ▪ Task Status ▪ Created By ▪ Created Time ▪ Start Time ▪ End Time ▪ Scheduled Time ▪ Time Left

Images

The Images list view shows the following details:

- Image Name
- Version
- Image Type
- Build Number
- Size

Configure GigaVUE Fabric Components in GigaVUE-FM

GigaVUE Fabric Components can be deployed in the **AWS Fabric Launch Configuration** page. You can navigate to the **AWS Fabric Launch Configuration** page in any of the following ways:

- After creating a Monitoring Domain, you are navigated to the **AWS Fabric Launch Configuration** page.
- You can also open **AWS Fabric Launch Configuration** page from the **Monitoring Domain** page. To launch the **AWS Fabric Launch Configuration** from the Monitoring Domain, go to **Inventory > VIRTUAL > AWS**. Click **Actions > Deploy Fabric**. The **AWS Fabric Launch Configuration** page appears.

Prerequisite:

Create a Monitoring Domain in GigaVUE-FM to establish connection between your AWS environment and GigaVUE-FM. Refer to Create a Monitoring Domain for more details on how to create a Monitoring Domain.

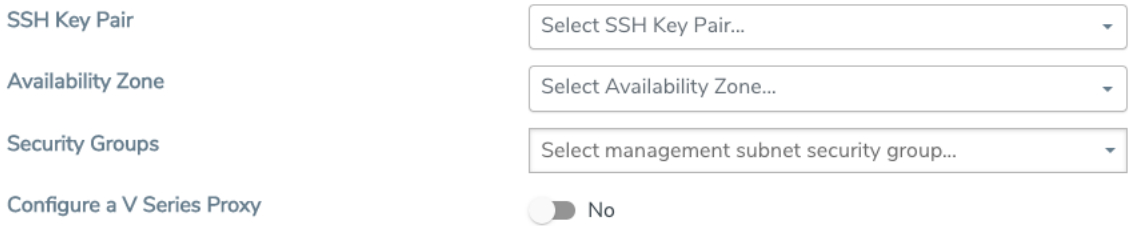
In the **AWS Fabric Launch Configuration** page, you can configure the following fabric components:

- Configure UCT-V Controller
- Configure GigaVUE V Series Proxy
- Configure GigaVUE V Series Node

In the **AWS Fabric Launch Configuration** page, click **Check Permissions** and validate whether you have the required permissions and then enter or select the required information as described in the following table.

Fields	Description
Centralized VPC	Alias of the centralized VPC in which the UCT-V Controllers, V Series Proxies and the GigaVUE V Series Nodes are launched.
EBS Volume Type	The Elastic Block Store (EBS) volume that you can attach to the fabric components. The available options are: ▪ gp2 (General Purpose SSD) ▪ io1 (Provisioned IOPS SSD) ▪ Standard (Magnetic)
Enable Encryption	Select **Yes** to enable encryption or select **No** to disable encryption. On selecting Yes to enable encryption, a **KMS Key** field appears. Enter the KMS key for the encryption.
SSH Key Pair	The SSH key pair for the GigaVUE fabric nodes. For more information on Key Pairs, refer to Key Pairs.
Management Subnet	The subnet that is used for communication between the controllers and the nodes, as well as to communicate with GigaVUE-FM. This is a required field.
Security Groups	The security group created for the GigaVUE fabric nodes. For more information on security groups, refer toPrerequisites for AWS .
Enable Custom Certificates	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. **NOTE:** If the certificate expires after the successful deployment of the fabric components, then the fabric components moves to failed state.
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 on AWS.
Prefer IPv6	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. **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.

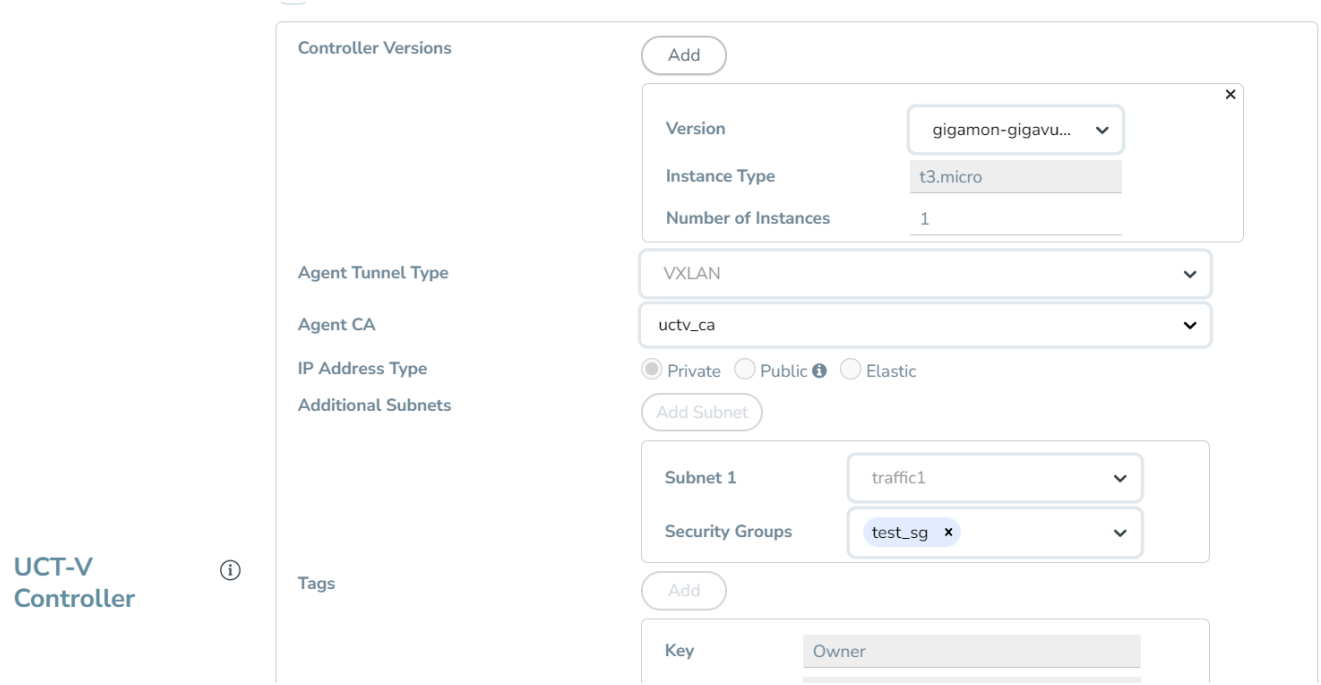
Select **Yes** to configure a GigaVUE V Series Proxy.



Configure UCT-V Controller

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

- Only if UCT-Vs are used for capturing traffic, then the UCT-V Controllers must be configured in the AWS cloud.
- A UCT-V Controller can only manage UCT-Vs that have the same version.



Enter or select the required information in the UCT-V Controller section as described in the following table.

Table Section Outside Table:
Table Row Outside Table:

Table Cell Outside Table: **Fields**	Table Cell Outside Table: **Description**
Table Row Outside Table: Table Cell Outside Table: Controller Version(s)	Table Cell Outside Table: The UCT-V Controller version that you configure must always have the same version number as the UCT-Vs deployed in the instances. For more detailed information refer GigaVUE-FM Version Compatibility Matrix. **NOTE: Note**: If there is a version mismatch between the UCT-V Controllers and UCT-Vs, GigaVUE-FM cannot detect the agents in the instances. To add UCT-V Controllers: **a.** Under **Controller Versions**, click **Add**. **b.** From the **Version** 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 **Instance Type** drop-down list, select a size for the UCT-V Controller. Refer to Recommended Instance Types for AWS for more details on the recommended instance for UCT-V Controller. **d.** In **Number of Instances**, specify the number of UCT-V Controllers to launch. The minimum number you can specify is 1.
Table Row Outside Table: Table Cell Outside Table: Agent Tunnel Type	Table Cell Outside Table: The type of tunnel used for sending the traffic from UCT-Vs to GigaVUE V Series nodes. The options are GRE, VXLAN, and Secure tunnels (TLS-PCAPNG). If any Windows agents co-exist with Linux agents, VXLAN must be selected.
Table Row Outside Table: Table Cell Outside Table: Agent CA (optional - This field is used when configuring secure tunnels)	

Table Cell Outside Table:
The Certificate Authority (CA) that should be used for connecting the tunnel. This will be used as a CA in UCT-V and it is used to verify the GigaVUE V Series Node server side certificate.

Table Row Outside Table:

Table Cell Outside Table:
IP Address Type

Table Cell Outside Table:
The IP address type. Select one of the following:

- 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 and GigaVUE-FM.
- Select **Public** if you want the IP address to be assigned from Amazon's pool of public IP address. The public IP address gets changed every time the instance is stopped and restarted.
- Select **Elastic** if you want a static public IP address for your instance. Ensure to have the available elastic IP address in your VPC.

NOTE: Note: The elastic IP address does not change when you stop or start the instance.

Table Row Outside Table:

Table Cell Outside Table:
Additional Subnet(s)

Table Cell Outside Table:
(Optional) If there are UCT-Vs on networks that are not IP routable from the management network, additional networks or subnets must be specified so that the UCT-V Controller can communicate with all the UCT-Vs.

Click **Add Subnet** to specify additional networks (subnets), if needed. Also, make sure that you specify a list of security groups for each additional network.

Table Row Outside Table:

Table Cell Outside Table:
Tag(s)

Table Cell Outside Table:
(Optional) The key name and value that helps to identify the UCT-V Controller instances in your 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 (also known as a tag) that is easy to identify such as us-west-2-uctv-controllers.

To add a tag:

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

The fields in the GigaVUE V Series Proxy configuration section are the same as those on the UCT-V Controller Configuration section. Refer to Configure UCT-V Controller for the field descriptions.

Configure GigaVUE V Series Node

Creating a GigaVUE V Series node profile automatically launches the V Series nodes. Enter or select the required information in the GigaVUE V Series Node section as described in the following table.

Fields	Description
SSL Key	Select the SSL key from the drop-down.
Version	GigaVUE V Series Node version.
Instance Type	The instance type for the GigaVUE V Series Node. Refer to Recommended Instance Types for AWS for more details on the recommended instance for GigaVUE V Series Node. You can review and modify the number of instances for the nitro-based instance types in the Configure AWS Settings page.
Volume Size	The size of the storage disk. The default volume size is 8. The recommended volume size is 80. **NOTE:** When using Application Metadata Exporter, the minimum recommended Volume Size is 80GB.
IP Address Type	Select one of the following IP address types: ▪ 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 Controller and GigaVUE-FM instances in the same network. ▪ Select **Elastic** if you want a static IP address for your instance. Ensure to have the available elastic IP address in your VPC. The elastic IP address does not change when you stop or start the instance.
Min Number of Instances	The minimum number of GigaVUE V Series Nodes that must be deployed in the monitoring domain. The minimum number of instances must be 1. When 0 is entered, no GigaVUE V Series Node is launched. **NOTE:** If the minimum number of instances is set as '0', then the nodes will be launched when a monitoring session is deployed if GigaVUE-FM discovers some targets to monitor.

Fields	Description
Max Number of Instances	The maximum number of GigaVUE V Series Nodes that can be deployed in the monitoring domain.
Data Subnets	The subnet that receives the mirrored GRE or VXLAN tunnel traffic from the UCT-Vs. **NOTE:** Using the Tool Subnet checkbox you can indicate the subnets to be used by theGigaVUE V Series to egress the aggregated/manipulated traffic to the tools.
Tags	(Optional) The key name and value that helps to identify the GigaVUE V Series Node instances in your AWS environment. For example, you might have GigaVUE V Series Node deployed in many regions. To distinguish these GigaVUE V Series Node based on the regions, you can provide a name that is easy to identify such as us-west-2-vseries. To add a tag: a. Click **Add tag**. 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-vseries.

Click **Save** to save the AWS Fabric Launch Configuration.

To view the fabric launch configuration specification of a fabric component, click on a GigaVUE V Series Node or Proxy, and a quick view of the Fabric Launch Configuration appears on the Monitoring Domain page.

What to do Next:

After deploying the GigaVUE Fabric Components in GigaVUE-FM, based on your chosen deployment option, perform any of the following actions:

Deployment Options	Reference Topics
Acquire traffic using UCT-V	Configure UCT-V
Acquire traffic using VPC Mirroring or Customer Orchestrated Source	Configure Monitoring Session

Configure Role-Based Access for Third Party Orchestration

Prerequisites:

Configure the AWS credentials in GigaVUE-FM to monitor workloads across multiple AWS accounts within one Monitoring Domain. Refer to Create AWS Credentials for more details.

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

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:

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

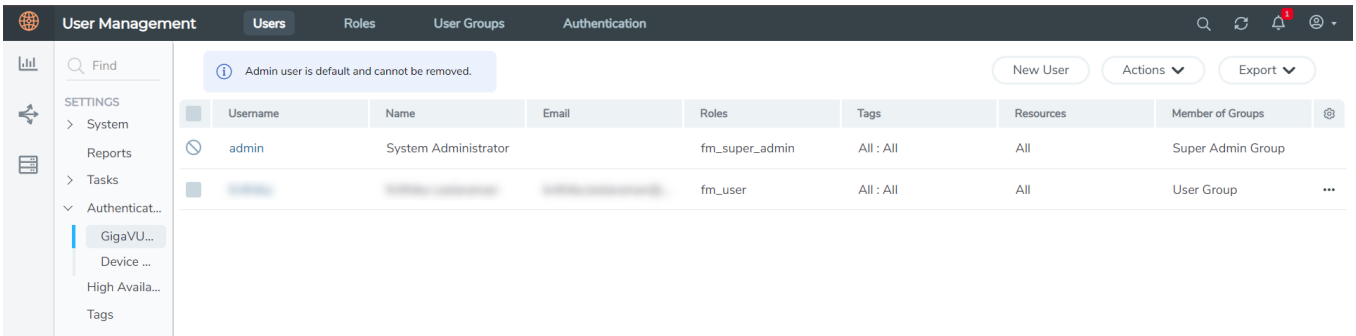


Figure 1 *FM Users Page*

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

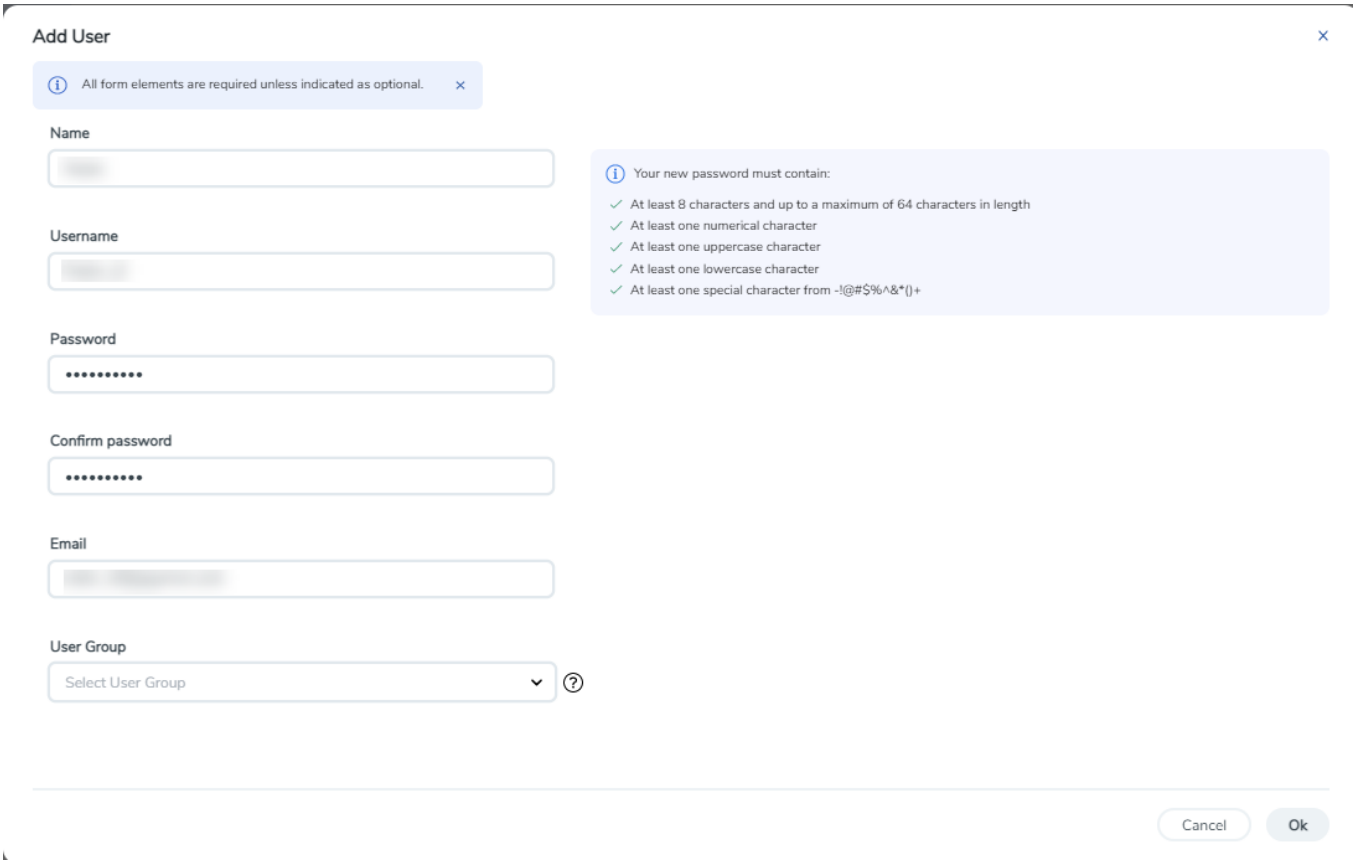


Figure 2 *Create User*

a. In the Add User pop-up box, enter the following details:

- **Name:** Actual name of the user
- **Username**: User name configured in GigaVUE-FM
- **Email**: Email ID of the user
- **Password/Confirm Password**: Password for the user.
- **User Group:** Select the User Group that you want to associate the user with.

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 used in the registration data, used for deploying the fabric components.

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.

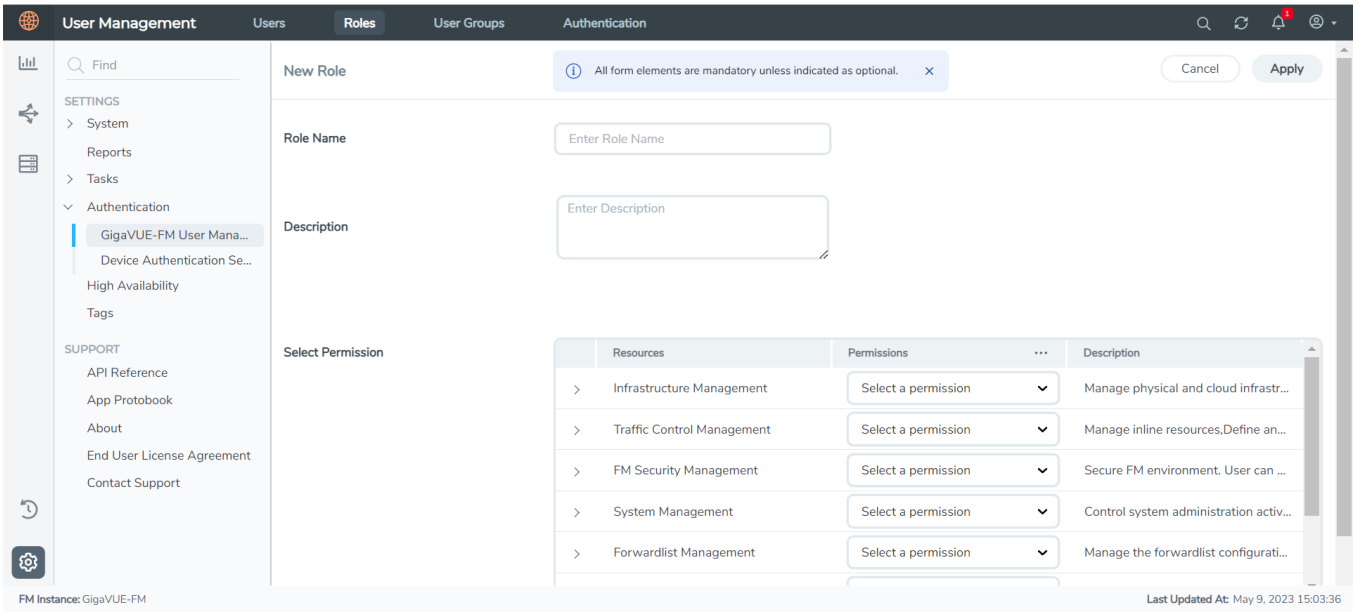
Create Roles for Third Party Orchestration

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.

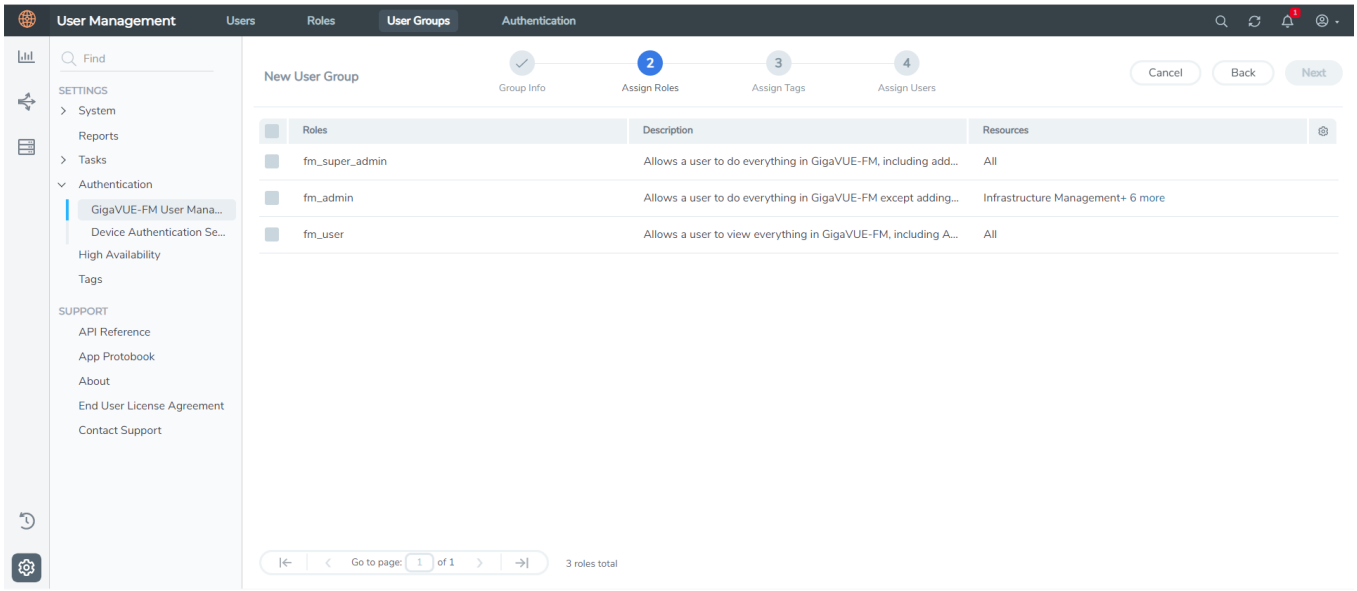
User Groups

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 that you want to assign to the user group.
5. In the **Assign Tags** tab, select the required tag key and tag value.
6. 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:

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

What to do Next:

Create a Monitoring in GigaVUE-FM to establish connection between your AWS environment and GigaVUE-FM. Refer to Create a Monitoring Domain for detailed instructions on how to create a Monitoring Domain.

Configure GigaVUE Fabric Components in AWS using Third Party Orchestration - Integrated Mode

You can use your own AWS orchestration system to deploy GigaVUE fabric components and use GigaVUE-FM to configure the advanced features supported by these nodes. These nodes register themselves with GigaVUE-FM using the information provided by creating the Registration files on each component (/etc/gigamon-cloud.conf) . Once the nodes are registered with GigaVUE-FM, you can configure monitoring sessions and related services in GigaVUE-FM. Health status of the registered nodes are 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.

Recommended Instance Type

The following table lists the recommended instance type for deploying the fabric components:

Fabric Component	Machine type
GigaVUE V Series Node	c5n.xlarge
UCT-V Controller	t2.medium

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

- When you deploy the fabric components using third party orchestration, you cannot delete the monitoring domain without unregistering the registered fabric components.
- When using VPC mirroring as the traffic acquisition method, you must add a key and value when deploying the respective fabric components in the AWS orchestrator. The key must be **GigamonNode** and the value can be anything but it must not contain numbers or special characters.
- GigaVUE V Series Node must have a minimum of two Networks Interfaces (NIC) attached to it, a management NIC and a data NIC. You can add both these interfaces when deploying the GigaVUE V Series Node in AWS. Refer to Launch an instance using the Launch Instance Wizard topic in Amazon EC2 Documentation for more detailed information on how to add network interfaces when launching an instance.

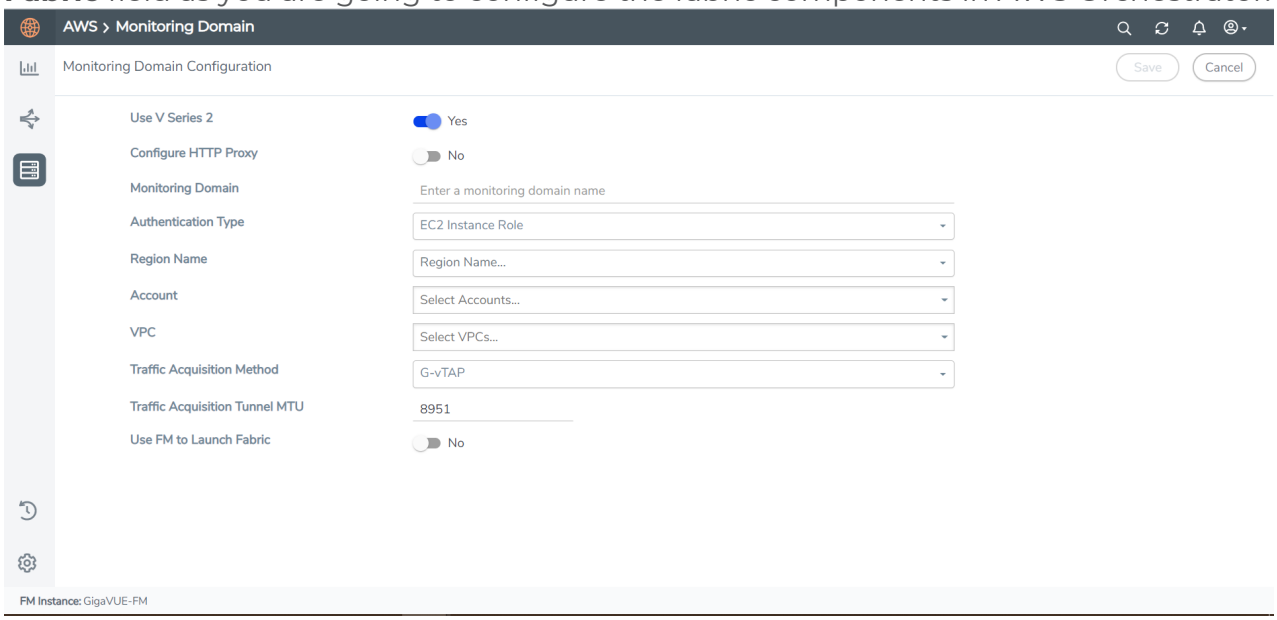
In your AWS EC2, you can configure the following GigaVUE fabric components:

- Configure GigaVUE V Series Nodes and V Series Proxy in AWS
- Configure UCT-V Controller in AWS
- Configure UCT-V in AWS

Configure GigaVUE V Series Nodes and V Series Proxy in AWS

To configure GigaVUE V Series Nodes and Proxy in AWS platform:

1. Before configuring GigaVUE fabric components through AWS, you must 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 AWS Orchestrator.



3. In your AWS environment, you can deploy GigaVUE V Series Nodes or V Series proxy using the following methods:
   - Register GigaVUE V Series Nodes or Proxy using User Data
   - Register GigaVUE V Series Node or Proxy using a configuration file

Register GigaVUE V Series Nodes or Proxy using User Data

To register GigaVUE V Series Nodes or proxy using the user data in AWS GUI:

1. On the Instances page of AWS EC2, click **Launch instances**. The Launch Instance wizard appears. For detailed information, refer to Launch an instance using the Launch Instance Wizard topic in Amazon EC2 Documentation.

2. On the **Step 3: Configure Instance Details** tab, enter the User data as text in the following format and deploy the instance. The GigaVUE V Series Nodes or V Series proxy uses this user 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	`#cloud-config`
	` write_files:`
	` - path: /etc/gigamon-cloud.conf`
	`  owner: root:root`
	`  permissions: '0644'`
	`  content: |`
	`  Registration:`
	`  groupName: <Monitoring Domain Name>`
	`  subGroupName: <VPC Name>`
	`  user: <Username>`
	`  password: <Password>`
	`  remoteIP: <IP address of the GigaVUE-FM> or <IP address of the Proxy>`
	`  remotePort: 443`

User data with custom certificate	`#cloud-config`
	` write_files:`
	` - path: /etc/cntlr-cert.conf`
	`  owner: root:root`
	`  permissions: "0644"`
	`  content: |`
	`  -----BEGIN CERTIFICATE-----`
	`  <certificate content>`
	`  -----END CERTIFICATE-----`
	` - path: /etc/cntlr-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: <VPC Name>`
	`  user: <Username>`
	`  password: <Password>`
	`  remoteIP: <IP address of the GigaVUE-FM> or <IP address of the Proxy>`
	`  remotePort: 443`
	NOTE: The minimum value for the authentication key encryption length provided

Field	User Data
	during the key generation is 2048.

- 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 or if you wish to deploy GigaVUE V Series Node using V Series proxy then, enter the **`remotePort`** value as 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.

3. You can navigate to **Instances > Actions > Instance Settings > Edit user data** and edit the user data.

Register GigaVUE V Series Node or Proxy using a configuration file

To register GigaVUE V Series Node or Proxy using a configuration file:

1. Log in to the GigaVUE V Series Node or Proxy.
2. Edit the local configuration file (**/etc/gigamon-cloud.conf**) and enter the following user data. You can also install custom certificates to GigaVUE V Series Node or Proxy, refer to the below table for details:

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

NOTE: If you wish to register GigaVUE V Series Node using GigaVUE V Series Proxy then, enter the **`remotePort`** value as 8891.

3. Restart theGigaVUE V Seriesproxy service.
   - V Series node:
     `$ sudo service vseries-node restart`
   - V Series proxy:
     `$ sudo service vps restart`

The deployed GigaVUE V Series node or proxy registers with the GigaVUE-FM. After successful registration theGigaVUE V Series node or proxy sends heartbeat messages to GigaVUE-FM every 30 seconds. If one heartbeat is missing ,the fabric components status

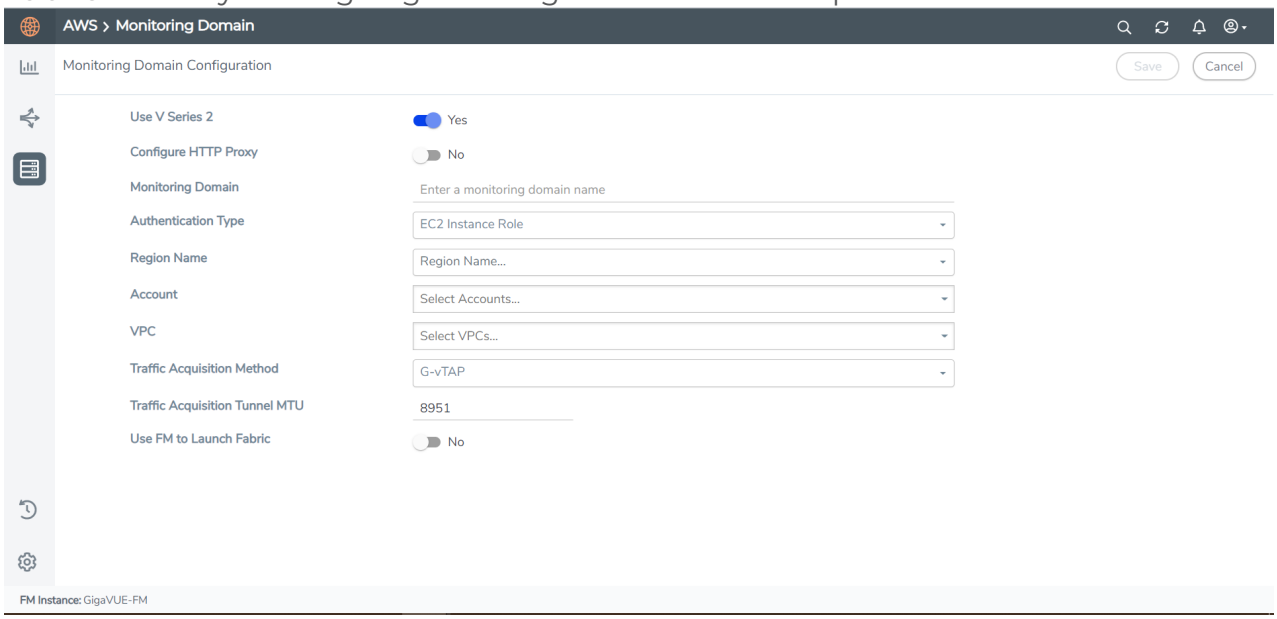
appears as 'Unhealthy'. If more than five heartbeats fail to reach GigaVUE-FM, GigaVUE-FM tries to reach the GigaVUE V Series node or proxy and if that fails as well then GigaVUE-FM unregisters the GigaVUE V Series node or proxy and it will be removed from GigaVUE-FM.

Configure UCT-V Controller in AWS

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

To configure UCT-V Controller in AWS platform:

1. Before configuring GigaVUE fabric components through AWS, you must create a monitoring domain in GigaVUE-FM. While creating the monitoring domain, select **UCT-V** as the Traffic Acquisition Method. 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 AWS Orchestrator.

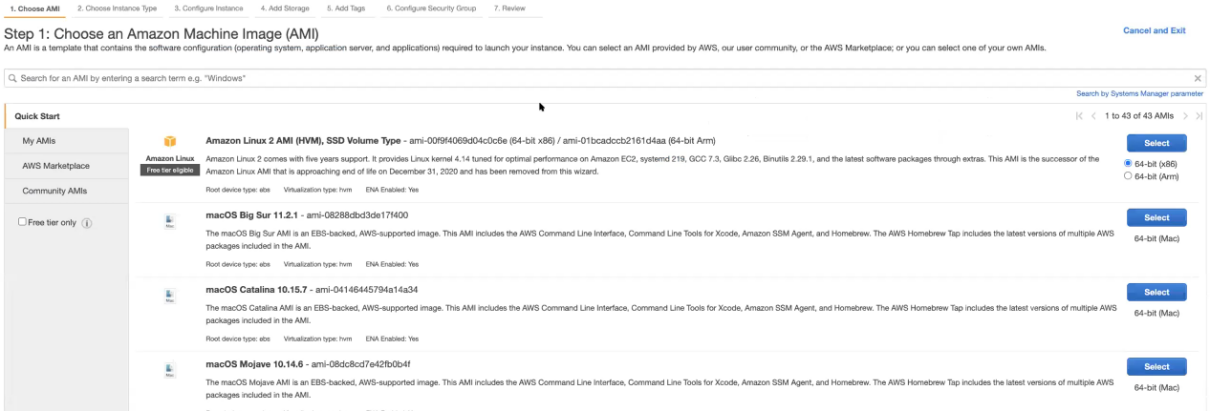


3. In your AWS environment, launch the UCT-V Controller AMI instance using any of the following methods:
   - Register UCT-V Controller using User Data
   - Register UCT-V Controller using a configuration file

Register UCT-V Controller using User Data

To register UCT-V Controller using the user data in AWS GUI:

a. On the Instances page of AWS EC2, click **Launch instances**. The Launch Instance wizard appears. For detailed information, refer to Launch an instance using the Launch Instance Wizard topic in Amazon EC2 Documentation.



b. On the **Step 3: Configure Instance Details** tab, enter the User data as text in the following format and deploy the instance. The UCT-V Controller uses this user data to generate config file (**/etc/gigamon-cloud.conf**) used to register with GigaVUE-FM. You can also install custom certificates to UCT-V Controller, refer to the below table for details:

Field	User Data

User data without custom certificate	`#cloud-config`
	` write_files:`
	` - path: /etc/gigamon-cloud.conf`
	`  owner: root:root`
	`  permissions: '0644'`
	`  content: |`
	`  Registration:`
	`  groupName: <Monitoring Domain Name>`
	`  subGroupName: <VPC Name>`
	`  user: <Username>`
	`  password: <Password>`
	`  remoteIP: <IP address of the GigaVUE-FM>`
	`  sourceIP: <IP address of UCT-V Controller> (Optional Field)`
	`  remotePort: 443`

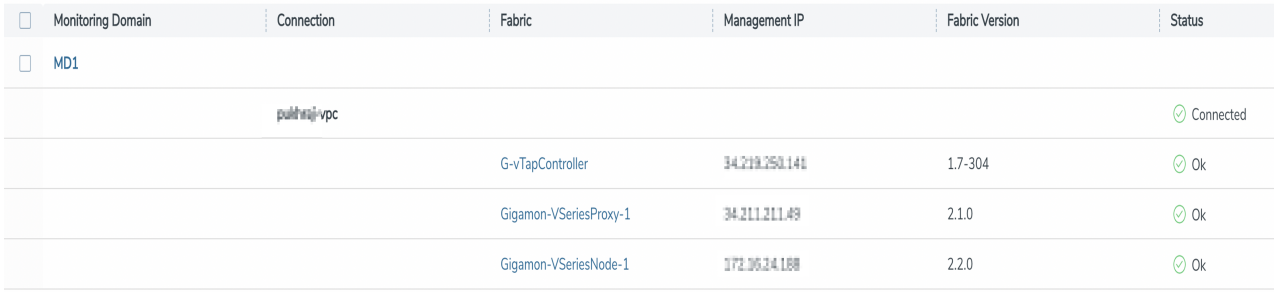
User data with custom certificate	`#cloud-config`
	` write_files:`
	` - path: /etc/cntlr-cert.conf`
	`  owner: root:root`
	`  permissions: "0644"`
	`  content: |`
	`  -----BEGIN CERTIFICATE-----`
	`  <certificate content>`
	`  -----END CERTIFICATE-----`
	` - path: /etc/cntlr-key.conf`
	`  owner: root:root`
	`  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: <VPC Name>`
	`  user: <Username>`
	`  password: <Password>`
	`  remoteIP: <IP address of the GigaVUE-FM>`
	`  sourceIP: <IP address of UCT-V Controller> (Optional Field)`
	`  remotePort: 443`

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

- 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.

c. You can navigate to **Instances > Actions > Instance Settings > Edit user data** and edit the user data.

The UCT-V Controller deployed in AWS EC2 appears on the Monitoring Domain page of GigaVUE-FM.



Register UCT-V Controller using a configuration file

To register UCT-V Controller using a configuration file:

a. Log in to the UCT-V Controller.

b. Edit the local configuration file (**/etc/gigamon-cloud.conf**) and enter the following user data. You can also install custom certificates to UCT-V Controller, refer to the below table for details:

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

c. 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:

a. Navigate to **/etc/netplan/** directory.
b. Create a new **.yaml** file. (Other than the default 50-cloud-init.yaml file)
c. 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>
```

d. Save the file.
e. Restart theUCT-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 components 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 AWS

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

NOTE: Deployment of UCT-Vs 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.

To register UCT-V using a configuration file:

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.
3. Create a local configuration file and enter the following user 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: <VPC 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
```

   - 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>
   - 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.

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

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.

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.

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.

Install UCT-V

UCT-V can be installed on both Linux and Windows environments. Refer to the following topics for detailed instructions on how to configure UCT-V:

- Linux UCT-V Installation
- Windows UCT-V Installation

Supported Operating Systems for UCT-V

Supported Operating System for UCT-V[1] is 6.5.00, 6.6.00, 6.7.00, 6.8.00, 6.9.00

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 9.0
RHEL	Versions 7.5 through 9.4
Windows Server	Versions 2012 through 2022
Rocky OS	Versions 8.4 through 8.8

GigaVUE-FM version 6.9 supports UCT-V version 6.9 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:

1. **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 GigaVUE Fabric Components using Generic Mode section in GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration
   - Integrated Mode - Deploy GigaVUE Fabric Components using Integrated Mode section in GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration

   Refer to Modes of Deployment section in GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration for more detailed information on generic and integrated

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

mode.

2. **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:

- Single Network Interface Configuration
- Multiple Network Interface Configuration
- Loopback Network Interface Configuration
- Linux Network Firewall Requirements
- Install Linux UCT-Vs

Single Network Interface Configuration

A single network interface card (NIC) acts as the source and the destination interface. 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 are 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 when 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

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

For example, assume that eth0 and eth1 are 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 purposes. 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. The loopback interface is always configured as bidirectional 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, you must open the following ports for the virtual machine. Refer to Network Firewall Requirement for GigaVUE Cloud Suite for 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 Linux UCT-Vs

You must have sudo/root access to edit the UCT-V configuration file. Establish an SSH connection to the virtual machine and ensure you have permission to execute the sudo command.

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

Prerequisites

UCT-V requires specific packages to function properly. Ensure you have the following packages installed before installing deb or rpm packages on your Linux VMs. If you have already installed UCT-V, use the uctv-wizard pkg-install command to install the 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.

By default, most modern Linux operating systems come pre-installed with all the necessary packages for the UCT-V to function without additional configuration.

Before installing UCT-V, you can provide your own configuration file (uctv.conf) /etc/gigamon-cloud.conf in the tmp directory.

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

- Install Linux UCT-Vs using Installation Script
- Install Linux UCT-Vs using Manual Configuration

Refer to the following sections for more detailed information and step-by-step instructions.

Install Linux UCT-Vs using Installation Script

1. **To install UCT-V from Ubuntu/Debian:**
   a. Download the UCT-V**6.9.00** Debian (.deb) package from the Gigamon Customer Portal. For assistance, contact Contact Technical Support.
   b. Copy this package to your instance. Install the package with root privileges, for example:

   ```
   $ ls gigamon-gigavue_uctv_6.9.00_amd64.deb
   $ sudo dpkg -i gigamon-gigavue_uctv_6.9.00_amd64.deb
   ```

2. **To install UCT-V from RPM, Red Hat Enterprise Linux, and CentOS:**
   a. Download the UCT-V**6.9.00** RPM (.rpm) package from the Gigamon Customer Portal. For assistance, contact Contact Technical Support.
   b. Copy this package to your instance. Install the package with root privileges, for example:

   ```
   $ ls gigamon-gigavue_uctv_6.9.00_x86_64.rpm
   $ sudo rpm -i gigamon-gigavue_uctv_6.9.00_x86_64.rpm
   ```

3. Once the UCT-V package is installed, use the command below to perform pre-check, installation, and configuration functionalities.

```
sudo uctv-wizard
```

> **NOTE:** You can use the installation script (installation_wizard.sh/uctv-wizard) only after the UCT-V is installed. It will not be provided with the Debian or RPM packages.

Refer to the table below to know more about **uctv-wizard** command usage options and functionalities:

Options	Use Command	Description
pre-check	sudo uctv-wizard pre-check	Checks the status of the required packages and firewall requirements. If there are any missing packages, it will display an appropriate message with the missing package details. If all the packages are installed, it will display a success message indicating that UCT-V is ready for configuration.
pkg-install	sudo uctv-wizard pkg-install	Displays the missing package and version details. To proceed with the installation, you can choose between the following: If you wish to skip the prompts and proceed with the system update, enter your option as **y**. The console interface will install the missing packages and restart the UCT-V service. Enter **N** if you wish to install it manually. Refer to the Install Linux UCT-Vs using Manual Configuration section for more details.
configure	sudo uctv-wizard configure	First, it checks for any existing configured file in the tmp directory. If available, UCT-V will use that configuration. If unavailable, UCT-V will automatically add the interface configuration in uctv.conf file, excluding the loopback (lo) interface, with all permissions enabled (source ingress, source egress, and destination). You can add the required policy for the available port if a firewall is installed. If you wish to skip the prompts to add

Options	Use Command	Description
		the required firewall policy, enter your option as **y**. The console interface will add the firewall rules automatically. Enter **N** if you wish to configure manually. Refer to the Install Linux UCT-Vs using Manual Configuration section for more details.
uninstall	sudo uctv-wizard uninstall	Automatically stops the UCT-V service, removes the firewall rules, and uninstalls the UCT-V.

Notes:

- Use the command below to view all the log messages generated from uctv-wizard. These log messages are stored at /**var/log/uctv-installation.log**

```
sudo vi / var/log/uctv-installation.log
```

- Use the command below to know the usage descriptions for the individual operations.

```
sudo uctv-wizard help
```

Linux UCT-V Installation Scenarios

1. **Zero Touch Installation** - When using a cloud-integrated script to deploy UCT-V in a virtual machine, there is zero interference required as the script installs and configures everything automatically.
2. **One Touch Installation** - When using .deb or .rpm packages with all prerequisite packages in place, UCT-V determines that all dependencies are met, and it will perform auto-configuration and restart the service.
3. **Two Touch Installation** - When using .deb or .rpm packages with missing prerequisite packages, the platform displays a warning message about the missing packages. You should install the missing packages using the 'sudo uctv-wizard pkg-install' command.

Install Linux UCT-Vs using Manual Configuration

- 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-V**6.9.00** 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_6.9.00_amd64.deb
$ sudo dpkg -i gigamon-gigavue_uctv_6.9.00_amd64.deb
```

3. 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.

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 using the following command:

```
$ sudo service uctv status
```

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

NOTE: 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-V**6.9.00** 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_6.9.00_x86_64.rpm
$ sudo rpm -i gigamon-gigavue_uctv_6.9.00_x86_64.rpm
```

3. Once the UCT-V package is installed, 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
```

What to do Next:

After installing UCT-V, you must create Monitoring Session. Refer to Configure Monitoring Session for detailed instructions on how to create a Monitoring Session, tunnel end points, add applications to the Monitoring Session, and deploy a Monitoring Session.

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 tunnel type supported 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, you must open the following ports for the virtual machine. Refer to Network Firewall Requirement for GigaVUE Cloud Suite for 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

Install Windows UCT-Vs

You can install the UCT-Vs using MSI package in two ways.

- Install Windows UCT-Vs using Installation Script
- Install Windows UCT-Vs using Manual Configuration

Refer to the following sections for more detailed information and step-by-step instructions.

Install Windows UCT-Vs using Installation Script

1. Download the Windows UCT-V**6.9.00** 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.

3. Once the UCT-V package is installed, use the command below to perform pre-check, adapter setup, adapter restore, and configuration functionalities.

```
sudo uctv-wizard
```

Refer to the table below to know more about **uctv-wizard** command usage options and functionalities:

Options	Use Command	Description
pre-check	sudo uctv-wizard pre-check	Checks the network adapter properties and firewall requirements. It notifies the user if the network adapter's send buffer size is smaller than the required size for the Windows UCT-V and if any firewall rules need to be added.
adapter-setup	sudo uctv-wizard adapter-setup	Checks the compatible network adapters, increases the send buffer size and restarts the service. Before changing the buffer size, the existing configuration is saved as a backup. You can choose between the following: • If you wish to skip the prompts for changing the buffer size of compatible network adapters, enter the option as **y**. • Enter **N** if you wish to set it up manually. Refer to the Install Windows UCT-Vs using Manual Configuration section for more details.
adapter-restore	sudo uctv-wizard adapter-restore	Using this command, you can restore the backup copy of the network adapter buffer size configuration saved in the in the **uctv-wizard adapter-setup** step. **NOTE:** You need to manually restart the network adapters for changes to take effect immediately. You can choose between the following: • If you wish to skip the prompts for restoring the buffer size of the compatible network adapters, enter the option as **y**. • Enter **N** if you wish to restore it manually. Refer to the Install Windows UCT-Vs using Manual Configuration section for more

Options	Use Command	Description
		details.
configure	sudo uctv-wizard configure	First, it checks for any existing configured file in the tmp directory. If available, UCT-V will use that configuration. If unavailable, UCT-V will automatically add the interface configuration in uctv.conf file, excluding the loopback (lo) interface, with all permissions enabled (source ingress, source egress, and destination). You can add the required policy for the available port if a firewall is installed. • If you wish to skip the prompts to add the required firewall policy, enter your option as **y**. The console interface will add the firewall rules automatically. • Enter **N** if you wish to configure manually. Refer to the Install Windows UCT-Vs using Manual Configuration section for more details.
uninstall	sudo uctv-wizard uninstall	Automatically stops the UCT-V service, removes the firewall rules, and uninstalls the UCT-V.

Notes:

- Use the command below to view all the log messages generated from uctv-wizard. These log messages are stored at /**C:\ProgramData\uctv\uctv-installation.txt**

  ```
  sudo vi / var/log/uctv-installation.log
  ```

- Use the command below to know the usage descriptions for the individual operations.

  ```
  uctv-wizard help
  ```

Windows UCT-V Installation Scenarios

1. **Zero Touch Installation** - When using a cloud integrated script to deploy UCT-V in a virtual machine, there is zero interference required as the script installs and configures everything automatically.
2. **One Touch Installation** - When using a .msi package with all prerequisite packages in place, UCT-V determines that all dependencies are met, and it will perform auto-configuration and restart the service.

Install Windows UCT-Vs using Manual Configuration

1. Download the Windows UCT-V**6.9.00** 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.

3. Once the UCT-V package is installed, modify the file **C:\ProgramData\Uct-v\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.

What to do Next:

After installing UCT-V, you must create Monitoring Session. Refer to Configure Monitoring Session for detailed instructions on how to create a Monitoring Session, tunnel end points, add applications to the Monitoring Session, and deploy a Monitoring Session.

Create Images with Agent Installed

If you want to avoid downloading and installing the UCT-Vs every time there is a new instance to be monitored, you can save the UCT-V running on an instance as a private AMI.

To save the UCT-V as an AMI from your EC2 console, right click on the instance and navigate to **Image and Templates** > **Create Image**.

Uninstall UCT-V

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

- For Linux, to uninstall the UCT-V in Ubuntu/Debian, RPM, Red Hat Enterprise Linux, and CentOS packages, use the following command:

  ```
  sudo uctv-wizard uninstall
  ```

- For Windows, to uninstall the UCT-V in the MSI package, use the following command:

  ```
  CMD uctv-wizard uninstall
  ```

NOTE: Uninstall command automatically stops the UCT-V service, removes the firewall rules, and uninstalls the UCT-V.

Upgrade or Reinstall UCT-V

You can upgrade UCT-V in your virtual machine in two ways.

- Upgrade UCT-V manually on Virtual Machine
- Upgrade UCT-V through GigaVUE-FM

Refer to the following sections for more detailed information and step-by-step instructions on how to upgrade UCT-V:

Upgrade UCT-V manually on Virtual Machine

To upgrade UCT-V manually on a virtual machine, delete the existing UCT-V and install the new version of UCT-V.

NOTE: Before deleting the UCT-V, take a backup copy of the **/etc/uctv/uctv.conf** configuration file. This step avoids reconfiguring the source and destination interfaces.

1. Uninstall the existing UCT-V. Refer to the *Uninstall UCT-V* section in the respective GigaVUE Cloud Suite Deployment Guide.
2. Install the latest version of the new UCT-V. Refer to the Linux UCT-V Installation and the Windows UCT-V Installation topics in the respective GigaVUE Cloud Suite Deployment Guides.
3. Restart the UCT-V service.
   - Linux platform:
     ```
     $ sudo service uctv restart
     ```
   - Windows platform: Restart from the Task Manager.

Upgrade UCT-V through GigaVUE-FM

Upgrading UCT-V manually involves a series of steps to uninstall, install, and restart the service again. This method can be complicated when you need to upgrade UCT-Vs for a large number of VMs.

However, you can upgrade UCT-V in the workload VM without any hands-on involvement through GigaVUE-FM. Refer to the sections below for more details and step-by-step process:

1. Upload the UCT-V Images
2. Upgrade the UCT-V

Rules and Notes:

- Currently, upgrades are only allowed to versions 6.9.00 or later. Ensure that the UCT-V Controller version is compatible with the version to which you are upgrading.
- You should have Infrastructure Management permission to upgrade the UCT-Vs.
- Currently, you can upgrade the UCT-Vs to n+2 versions and any number of patch releases through GigaVUE-FM.
- Before you proceed with the upgrade, ensure that the UCT-Vs are in a healthy state.
- A UCT-V can only be associated with one active job at a time. If the selected UCT-V is part of another job, you cannot trigger the immediate job using the same UCT-V.
- You must upload a compatible image type to upgrade the UCT-V; otherwise, the UCT-V will be rejected for the upgrade job.
- Upgrade through GigaVUE-FM is not applicable for OVS agents. For OVS tapping, you should upgrade the UCT-Vs manually.

Upload the UCT-V Images

Follow the below-listed steps to upload UCT-V image files in GigaVUE-FM:

1. Go to **Inventory > Virtual** and select your cloud platform. The **Monitoring Domain** page appears.
2. Click the **UCT-V Upgrade** drop-down menu and select **Images**.

3. In the **Images** page, click **Upload**. The **Upload Internal Image Files** wizard appears.
4. Click **Choose File**, upload the UCT-V files from your local, and click **Ok**.

   Notes:
   - You can download the UCT-V image files from Gigamon software portal.
   - You can upload a maximum of 15 UCT-V files at a time.
   - The supported file formats are **.deb**, **.rpm**, and **.msi**.
   - Ensure that you do not change the file names. GigaVUE-FM will not accept the image files with modified names.
   - When the upload is in process, GigaVUE-FM will not allow to upload a file with similar type and version.
5. Once completed, the uploaded UCT-V images will be listed in the **Images** page.

In the **Images** page, click **Filter** to filter the images based on Image Name, Version, and Image Type. You can delete one or multiple images. Select the required images and click **Delete** or **Delete All** from the Actions drop-down menu. You can only delete those image files that are not associated with any tasks created for the upgrade process.

Upgrade the UCT-V

Follow the steps below to upgrade UCT-V in GigaVUE-FM:

1. In the **UCT-V Upgrade** drop-down menu, click **Dashboard** to view the UCT-V upgrade landing page.
2. In the Dashboard page, you can view the upgrade status of individual UCT-Vs and the stages of the upgrade process (Fetch, Install, Verify). The page also displays the overall progress of the upgrade.
3. Select the required UCT-Vs and click **Upgrade** from the **Actions** drop-down menu. **UCT-V Upgrade task** page appears.
4. Enter the task name.
5. In the **Image Version** drop-down menu, select the required version you want to upgrade to from the list of available image versions.
6. You can choose to upgrade immediately or schedule a time for the upgrade to happen. Select the required option in the **Time Selection** field. If you prefer to schedule the upgrade, enter the choice of your date and time in the respective fields.

   NOTE: The upgrade should not be scheduled for a time in the past.

7. Click **Create**. The image upgrade task is now created.

> **Note:**
> - You cannot edit the upgrade task once it is created.
> - You can only reschedule the scheduled task but cannot edit the UCT-V selected for the particular task.
> - In the event of the errors listed below, GigaVUE-FM will display a pop-up message with the list of UCT-Vs that are not compatible for upgrade. Click **Proceed** to ignore the unsupported UCT-Vs and upgrade the compatible ones, or click "**Edit**" to modify your changes. The errors include:
>   - Controller version is not compatible with the upgrade version.
>   - Inconsistency between the uploaded image file type and the selected UCT-V.

You can view the created task details (both immediate and scheduled) in the **UCT-V Upgrade > Jobs** section.

> **Notes:**
> - For better progress monitoring, it is recommended to split the upgrade task to a limited number, such as 50 or 100 UCT-Vs.
> - When you create a new upgrade task for the same UCT-V, the status of any existing UCT-V will change to 'In Progress' until the latest task is completed. Once the upgrade for the existing tasks is successfully finished, you can create another task for that same UCT-V.

You can view the different stages of the upgrade process in UCT-V Upgrade Dashboard page. Each stage will be marked with if it is successful and in case of failure. If the upgrade is successful, GigaVUE-FM will update the upgrade status as **Success** for the selected UCT-V.

> **Notes:**
> - The default wait time for the upgrade status to get updated is 15 minutes.
> - In case of failure, you can upgrade the failed instance manually.

Configure Secure Tunnel (AWS)

The Secure tunnel can be configured on:

- 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 in PCAPng format.

When you enable the secure tunnel option for mirrored traffic and Precryption traffic, two TLS secure tunnel sessions are created.

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

For more information about PCAPng, refer to PCAPng Application.

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

- TCP Port 11443 should be enabled in security group settings. Refer to Security Group 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:

<table>
<tr><th>S. No</th><th>Task</th><th>Refer to</th></tr>
<tr><td>1.</td><td>Upload a Custom Authority Certificate (CA)</td><td>You must upload a Custom Certificate for establishing a connection with the GigaVUE V Series node.

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

1. Go to Inventory > Resources > Security > CA List.
2. Click New, to add a new Custom Authority. The Add Custom Authority page appears.
3. Enter or select the following information.
<table><tr><th>Field</th><th>Action</th></tr><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></table>4. Click Save.

For more information, refer to the section Adding Certificate Authority</td></tr>
<tr><td>2.</td><td>Upload an SSL Key</td><td>You must add an SSL key to GigaVUE V Series node. To add an SSL Key, follow the steps in the section Upload SSL Keys.</td></tr>
</table>

S. No	Task	Refer to
3	Enable the secure tunnel	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 feature follow these steps: **1.** In the Edit Monitoring Session page, click **Options**. The **Monitoring Session Options** page appears. **2.** Enable the **Secure Tunnel** button. You can enable secure tunnel for both mirrored traffic and Precryption traffic. **NOTE:** When GigaVUE V Series Node is upgraded or deployed to 6.5, all the existing monitoring sessions will be redeployed, and individual TLS Tunnel End Points are created for each UCT-V.
4.	Select the SSL Key while creating a monitoring domain and configuring the fabric components in GigaVUE-FM.	You must select the added SSL Key in GigaVUE V Series Node Key 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 If the existing Monitoring Domain does not have an SSL key, you can add it by following the given steps: **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:

<table>
<tr><th>S. No</th><th>Task</th><th>Refer to</th></tr>
<tr><td>1.</td><td>Upload a Certificate Authority (CA) Certificate</td><td>You must upload a Custom Certificate to UCT-V Controller to establish a connection between the GigaVUE V Series node.

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 Certificate Authority. The Add Certificate Authority page appears.
3. Enter or select the following information.
<table><tr><th>Field</th><th>Action</th></tr><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></table>4. Click Save.
5. Click Deploy All.

For more information, refer to the section Adding Certificate Authority</td></tr>
<tr><td>2.</td><td>Upload an SSL Key</td><td>You must add an SSL key to GigaVUE V Series Node. To add an SSL Key, follow the steps in the section Upload SSL Keys.</td></tr>
<tr><td>3</td><td>Creating a secure tunnel between UCT-V and the first GigaVUE V Series Node.</td><td>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:
1. In the Edit Monitoring Session page, click Options. The Monitoring Session option page appears.
2. Enable the Secure Tunnel button. You can enable secure tunnel for both mirrored and precrypted traffic.</td></tr>
<tr><td>4.</td><td>Select the added SSL Key while creating a Monitoring Domain</td><td>Select the SSL Key added in the Step 2 while creating a Monitoring Domain and configuring the fabric components in GigaVUE-FM for the first GigaVUE V Series Node.
You must select the SSL Key added in the first GigaVUE V Series Node.
To select the SSL key, follow the steps in the section Configure GigaVUE Fabric Components in GigaVUE-FM.</td></tr>
</table>

<table>
<tr><th>S. No</th><th>Task</th><th>Refer to</th></tr>
<tr><td>5.</td><td>Select the added CA certificate while creating the monitoring domain</td><td>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.</td></tr>
<tr><td>6</td><td>Create an Egress tunnel from the first GigaVUE V Series Node with tunnel type as TLS-PCAPNG while creating the Monitoring Session.</td><td>You must create a tunnel for traffic to flow out from the first GigaVUE V Series Node with tunnel type as TLS-PCAPNG while creating the monitoring session. Refer to Configure Monitoring Session to know about monitoring session.

To create the egress tunnel, follow these steps:
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><tr><th>Field</th><th>Action</th></tr><tr><td>Alias</td><td>The name of the tunnel endpoint.</td></tr><tr><td>Description</td><td>The description of the tunnel endpoint.</td></tr></table></td></tr>
</table>

<table>
<tr><th>S. No</th><th>Task</th><th>Refer to</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th>Field</th><th>Action</th></tr>
<tr><td>Type</td><td>Select TLS-PCAPNG for creating egress secure tunnel</td></tr>
<tr><td>Traffic Direction</td><td>Choose Out (Encapsulation) for creating an egress tunnel from the GigaVUE V Series Node to the destination. Select or enter the following values:
MTU- The default value is 1500.
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.
DSCP - Enter the Differentiated Services Code Point (DSCP) value.
Flow Label - Enter the Flow Label value.
Source L4 Port- Enter the Souce L4 Port value
Destination L4 Port - Enter the Destination L4 Port value.
Flow Label
Cipher- Only SHA 256 is supported.
TLS Version - Select TLS Version1.3.
Selective Acknowledgments - Choose Enable to turn on the TCP selective acknowledgments.
SYN Retries - Enter the value for number of times the SYN has to be tried. The value ranges from 1 to 6.
Delay Acknowledgments - Choose Enable to turn on delayed acknowledgments.</td></tr>
<tr><td>Remote Tunnel IP</td><td>Enter the interface IP address of the second GigaVUE V Series Node (Destination IP).</td></tr>
</table>
4. Click Save.
</td></tr>
<tr><td>7.</td><td>Select the added SSL Key while creating a</td><td>You must select the added SSL Key in GigaVUE V Series</td></tr>
</table>

<table>
<tr><th>S. No</th><th>Task</th><th>Refer to</th></tr>
<tr><td></td><td>monitoring domain and configuring the fabric components in GigaVUE-FM in the second GigaVUE V Series Node.</td><td>Node. To select the SSL key, refer to Configure GigaVUE Fabric Components in GigaVUE-FM section.</td></tr>
<tr><td>8</td><td>Create an ingress tunnel in the second GigaVUE V Series Node with tunnel type as TLS-PCAPNG while creating the Monitoring Session for the second GigaVUE V Series Node.</td><td>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 Configure Monitoring Session to know about monitoring session.

To create the ingress tunnel, follow these steps:
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>
<tr><th>Field</th><th>Action</th></tr>
<tr><td>Alias</td><td>The name of the tunnel endpoint.</td></tr>
<tr><td>Description</td><td>The description of the tunnel endpoint.</td></tr>
<tr><td>Type</td><td>Select TLS-PCAPNG for creating egress secure tunnel.
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.</td></tr>
<tr><td>Traffic Direction</td><td>Choose in (Decapsulation) for creating an ingress tunnel that receives traffic from the first GigaVUE V Series Node. Select or enter the values as described in Step 6:</td></tr>
<tr><td>IP Version</td><td>The version of the Internet Protocol. IPv4 and IPv6 are supported.</td></tr>
<tr><td>Remote Tunnel IP</td><td>Enter the interface IP address of the first GigaVUE V Series Node (Destination IP).</td></tr>
</table>
4. Click Save.</td></tr>
</table>

For more information, refer to Secure Tunnels.

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 Damain**. 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 source or destination port value in the **Value** field.

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.

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	Choose any one of the following options: • Pass — Passes the traffic. • Drop — Drops the traffic. **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.
Direction	Choose any one of the following options: • 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	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.
Filters	
Filter Type	Select the **Filter Type** from the following options: • L3 • L4 **NOTE:** L4 Filter Type can only be used with L3.
L3:	
Filter Name	Select the **Filter Name** from the following options: • IPv4 Source • IPv4 Destination • IPv6 Source

Fields	Description
	• IPv6 Destination • Protocol - It is common for both IPv4 and IPv6.
Filter Relation	Select the **Filter Relation** from any one of the following options: • Not Equal to • Equal to
Value	Enter or Select the Value based on the selected **Filter Name**. **NOTE:** When using **Protocol** as the **Filter Name**, select **TCP** from the drop-down menu.
L4:	
Filter Name	Select the **Filter Name** from the following options: • Source Port • Destination Port
Filter Relation	Select the **Filter Relation** from any one of the following options: • 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 Configure Monitoring Session Options (AWS) 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 (AWS)
- Create Ingress and Egress Tunnels (AWS)
- Create Raw Endpoint (AWS)
- Create a New Map (AWS)
- Add Applications to Monitoring Session (AWS)
- Interface Mapping (AWS)
- Deploy Monitoring Session (AWS)
- View Monitoring Session Statistics (AWS)
- Visualize the Network Topology (AWS)

Create a Monitoring Session (AWS)

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 Session** page appears.
2. Click **New Monitoring Session** button to open the New Monitoring Session configuration page.
3. Enter the required information as described in the following table.

Field	Description
Alias	The name of the Monitoring Session.
Monitoring Domain	Select the required Monitoring Domain from the drop-down list or click **Create New** to create a new one.
Connections	Select the required connections that are to be included as part of the Monitoring Domain.

4. Click **Save**. The Monitoring Session Overview page appears.

Monitoring Session Page (AWS)

You can view the following tabs on the Monitoring Session page:

Tab	Description
Overview	You can view the high level information of the selected Monitoring Session such as, connections, tunnel details, health status, deployment status, and information related to Application Intelligence statistics. You can also view the statistics of the incoming and outgoing traffic on an hourly, daily, weekly, and monthly basis. You can filter the statistics based on the elements associated with the Monitoring Session. For more information, refer to View Monitoring Session Statistics (AWS)
Sources	Displays the sources and target details monitored by the Monitoring Session. You can view and edit the connection details of the Monitoring Session. You can view the deployment status, number of targets, and targets source health. **NOTE:** In the case of OVS Mirroring, the Sources tab also displays the Hypervisor details along with the Instances.

Tab	Description
Traffic Acquisition	You can enable or disable Prefiltering, Precryption, and Secure Tunnel here. You can also create a prefiltering template and apply it to the Monitoring Session. Refer to Configure Monitoring Session Options (AWS) for more detailed information. **NOTE:** Traffic Acquisition is only applicable for Monitoring Domain created with UCT-V as Acquisition method.
Traffic Processing	You can view, add, and configure applications, tunnel endpoints, raw endpoints, and maps. You can view the statistical data for individual applications and also apply threshold template, enable user defined applications, and enable or disable distributed De-duplication. Refer to Configure Monitoring Session Options (AWS) for more detailed information.
V Series Nodes	You can view the V Series nodes associated with the Monitoring Session. In the split view, you can view details such as name of the V Series Node, health status, deployment status, Host VPC, version, and Management IP. You can also change the interfaces mapped to an individual GigaVUE V Series Node. Refer to Interface Mapping (AWS) section for details.

The Monitoring Session page **Actions** button has the following options. The Actions menu is placed common in all the tabs explained above.

Button	Description
Delete	Deletes the selected Monitoring Session.
Clone	Duplicates the selected Monitoring Session.
Deploy	Deploys the selected Monitoring Session.
Undeploy	Undeploys the selected Monitoring Session.

You can use the  icon on the left side of the Monitoring Session page to view the Monitoring Sessions list. Click  to filter the Monitoring Sessions list. In the side bar, you can perform the following bulk actions by selecting a single or multiple Monitoring Sessions:

- Delete
- Deploy
- Undeploy

Configure Monitoring Session Options (AWS)

In the Monitoring Session page, you can perform the following actions in the **TRAFFIC ACQUISITION** and **TRAFFIC PROCESSING** tabs.

- Enable Prefiltering
- Enable Precryption

- Apply Threshold Template
- Enable User-defined applications
- Enable Distributed De-duplication

TRAFFIC ACQUISITION

To navigate to **TRAFFIC ACQUISITION** tab, follow the steps given below:

1. Go to **Traffic > Virtual > Orchestrated Flows > Select your cloud platform**.
2. Select a Monitoring Session from the Monitoring Sessions list view on the left side of the screen and click the **TRAFFIC ACQUISITION** tab.

You can perform the following actions in the **TRAFFIC ACQUISITION** page:

- Enable Prefiltering
- Enable Precryption

Enable Prefiltering

To enable Prefiltering, follow the steps given below:

1. In the Monitoring Session **TRAFFIC ACQUISITION** page, click **Mirroring** tab and click **Edit Mirroring**.
2. Enable the **Mirroring** toggle button.
3. Enable the **Secure Tunnel** button if you wish to configure Secure Tunnels. For more information about Secure Tunnel, refer to Configure Secure Tunnel (AWS).
4. You can select an existing Prefiltering template from the **Template** drop-down menu, or you can create a new template using **Add Rule** option and apply it. Refer to Create Prefiltering Policy Templatefor more details on how to create a new template. Click the **Save as Template** button to save the newly created template.
5. Click **Save** to apply the template to the Monitoring Session.

Enable Precryption

Rules and Notes

- To avoid packet fragmentation, you should change the option precryption-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.

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 detailed information refer to *Secure Tunnels* in in the respective GigaVUE Cloud Suite Deployment Guide.

To enable Precryption, follow the steps given below:

1. In the Monitoring Session **TRAFFIC ACQUISITION** 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. The **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. Click **Add**. The **Add Application** widget opens.
   e. Select **csv** as the **Type**, if you wish to add the applications using a .csv file. Click **Choose File** and upload the file.
   f. Select **Manual** as the **Type**, if you wish to add the applications manually. Enter the **Application Name** and click + icon to add more applications.
   g. 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.
4. Enable the **Secure Tunnel** button if you wish to use Secure Tunnels. Refer to the *Configure Secure Tunnel* section in the respective GigaVUE Cloud Suite Deployment Guide.

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.

Limitations

During Precryption, UCT-V generates a TCP message with the payload being captured in clear text. Capturing the L3/L4 details of this TCP packet by probing the SSL connect/accept APIs. The default gateway's MAC address will be the destination MAC address for the TCP packet when SSL data is received on a specific interface. If the gateway is incorrectly configured, the destination MAC address could be all Zeros.

TRAFFIC PROCESSING

To navigate to **TRAFFIC PROCESSING** tab, follow the steps given below:

1. Go to **Traffic > Virtual > Orchestrated Flows > Select your cloud platform**.
2. Select a Monitoring Session from the Monitoring Sessions list view on the left side of the screen and click **TRAFFIC PROCESSING** tab.

You can perform the following actions in the **TRAFFIC PROCESSING** page:

- Apply Threshold Template
- Enable User Defined Applications
- Enable Distributed De-duplication

Apply Threshold Template

To apply threshold, follow the steps given below:

1. In the Monitoring Session **TRAFFIC PROCESSING** page, select **Thresholds** under **Options** menu.
2. Select the template you wish to apply from the drop-down. Click **Apply**. Refer to Traffic Health Monitoring section for more details on Threshold Template.

Enable User Defined Applications

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

1. In the Monitoring Session **TRAFFIC PROCESSING** page, click **User Defined Applications** under **Options** menu.
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.

Enable Distributed De-duplication

Enabling the "Distributed De-duplication" option identifies duplicate packets across different GigaVUE V Series Nodes when traffic from various targets is routed to these instances for monitoring. Refer to Distributed De-duplication section for more details.

Notes:

- Distributed De-duplication is only supported on V Series version 6.5.00 and later.
- From version 6.9, Traffic Distribution option is renamed to Distributed De-duplication.

Create Ingress and Egress Tunnels (AWS)

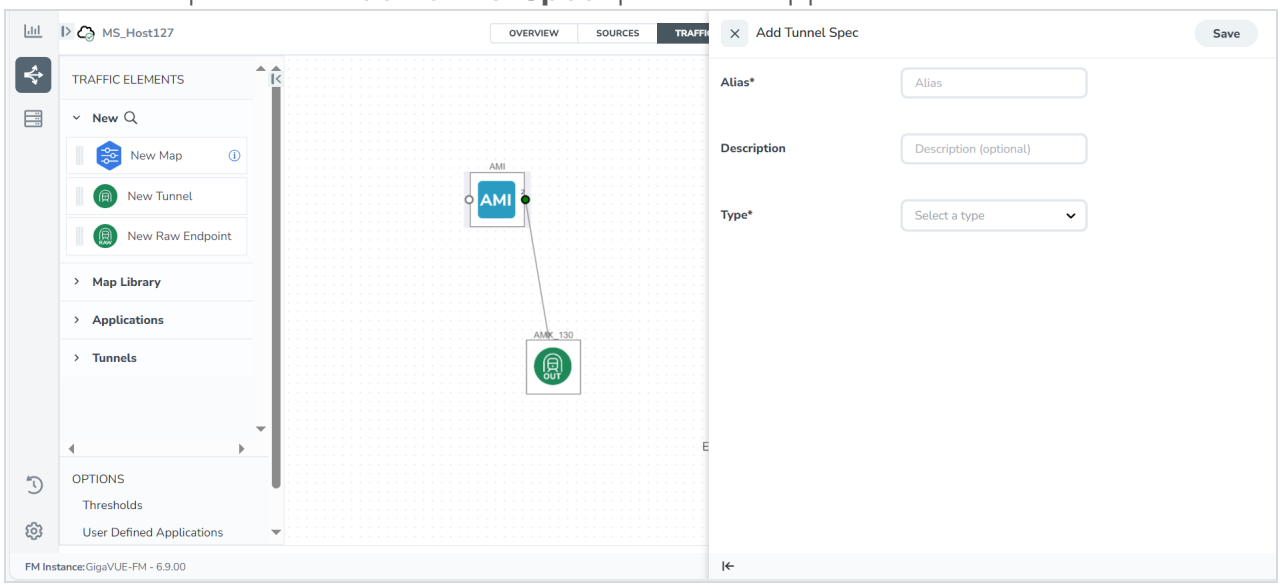
Traffic from the GigaVUE V Series Node is distributed to tunnel endpoints in a monitoring session. A tunnel endpoint can be created using a standard L2GRE, VXLAN, UDPGRE, UDP, or ERSPAN tunnel.

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 on an existing Monitoring Session, navigate to the **TRAFFIC PROCESSING** tab. The GigaVUE-FM Monitoring Session canvas page appears.

2. In the canvas, click the  icon on the left side of the page to view the traffic processing elements. 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.	
Description	The description of the tunnel endpoint.	
Admin State **NOTE:** This option appears only after the Monitoring session deployment.	Use this option to send or stop the traffic from GigaVUE-FM to the egress tunnel endpoint. Admin State is enabled by default. You can use this option to stop sending traffic to unreachable tools or tools that are in a down state. Each egress tunnel configured on the GigaVUE V Series Node has an administrative state that enables GigaVUE-FM to halt the tunnel's traffic flow. The tunnels will only be disabled by GigaVUE-FM when it receives a notification via REST API indicating that a tool or group of tools is down. **NOTE:** This option is not supported for TLS-PCAPNG tunnels.	
Type	The type of the tunnel. Select from the below options to create a tunnel. ERSPAN, L2GRE, VXLAN, TLS-PCAPNG, UDP, or UDPGRE.	
VXLAN		
Traffic Direction The direction of the traffic flowing through the GigaVUE V Series Node. **NOTE:** In the scenario where secure tunnels need to be established between a GigaVUE V Series Node and a GigaVUE HC Series, you can utilize the **Configure Physical Tunnel** option provided in the GigaVUE V Series Secure Tunnel page. This allows you to conveniently configure secure tunnels on your physical device. Refer to the Secure Tunnels section.		
In	Choose **In** (Decapsulation) for creating an ingress tunnel, which will carry 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, the 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	The 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	The 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 GigaVUE V Series Node to the destination endpoint.	

Field	Description	
	Remote Tunnel IP	For egress tunnel, the 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 session needs to be available. The value ranges from 1 to 255. The default value is 64.
	DSCP	Differentiated Services Code Point (DSCP) is a value that 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 being 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. The 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	The 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	The 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.
UDPGRE		
Traffic Direction The direction of the traffic flowing through the GigaVUE V Series Node.		
In	Choose **In** (Decapsulation) for creating an ingress tunnel, which will carry 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, the Remote Tunnel IP is the IP address of the tunnel source.
	Key	Identifier used to differentiate different UPDGRE/L2GRE tunnels. It is used to route the encapsulated frames to the appropriate tunnel on the remote endpoint. Enter a value between 0 and 4294967295.

Field	Description	
	Source L4 Port	The 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	The 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.
L2GRE		
Traffic Direction The direction of the traffic flowing through the GigaVUE V Series Node. **NOTE:** In the scenario where secure tunnels need to be established between a GigaVUE V Series and a GigaVUE HC Series, you can utilize the **Configure Physical Tunnel** option provided in the GigaVUE V Series Secure Tunnel page. This allows you to conveniently configure secure tunnels on your physical device . Refer to the Secure Tunnels section.		
In	Choose **In** (Decapsulation)to create an ingress tunnel, which will carry 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, the Remote Tunnel IP is the IP address of the tunnel source.
	Key	Identifier used to differentiate different UPDGRE/L2GRE tunnels. It is used to route the encapsulated frames to the appropriate tunnel on the remote endpoint. Enter a value between 0 and 4294967295.
Out	Choose **Out** (Encapsulation) for creating an egress tunnel from the V Series Node to the destination endpoint.	
	Remote Tunnel IP	For egress tunnel, the 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 session needs to be available. The value ranges from 1 to 255. The default value is 64.
	DSCP	Differentiated Services Code Point (DSCP) is a value that 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 being the lowest priority.
	Flow Label	Unique value, which is used to identify packets that

Field	Description	
		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. The accepted value is between 0 and 1048575.
	Key	Identifier used to differentiate different UPDGRE/L2GRE tunnels. It is used to route the encapsulated frames to the appropriate tunnel on the remote endpoint. Enter a value between 0 and 4294967295.
ERSPAN		
Traffic Direction The direction of the traffic flowing through the GigaVUE V Series Node.		
In	**IP Version**	The version of the Internet Protocol. Select IPv4 or IPv6.
	Remote Tunnel IP	For ingress tunnel, the Remote Tunnel IP is the IP address of the tunnel source.
	Flow ID	The ERSPAN flow ID is a numerical identifier that distinguishes different ERSPAN sessions or flows. The value ranges from 1 to 1023.
TLS-PCAPNG		
Traffic Direction The direction of the traffic flowing through the GigaVUE V Series Node. **NOTE:** In the scenario where secure tunnels need to be established between a GigaVUE V Series and a GigaVUE HC Series, you can utilize the **Configure Physical Tunnel** option provided in the GigaVUE V Series Secure Tunnel page. This allows you to conveniently configure secure tunnels on your physical device . Refer to the Secure Tunnels section.		
In	**IP Version**	The version of the Internet Protocol. Only IPv4 is supported.
	Remote Tunnel IP	For ingress tunnel, the 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	The 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	The 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.

Field	Description	
	Key Alias	Select the Key Alias from the drop-down.
	Cipher	Only SHA 256 is supported.
	TLS Version	Only TLS Version 1.3.
	Selective Acknowledgments	Enable to receive the acknowledgments.
	Sync Retries	Enter the 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, the 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) is a value that 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 being 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. The accepted value is between 0 and 1048575.
	Source L4 Port	The 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	The 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 Version 1.3.

Field	Description	
	Selective Acknowledgments	Enable to receive the acknowledgments.
	Sync Retries	Enter the 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.
	Source L4 Port	The 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	The 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 a 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 a threshold template, refer to the *Monitor Cloud Health* topic in the respective GigaVUE Cloud Suite Guides.

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.

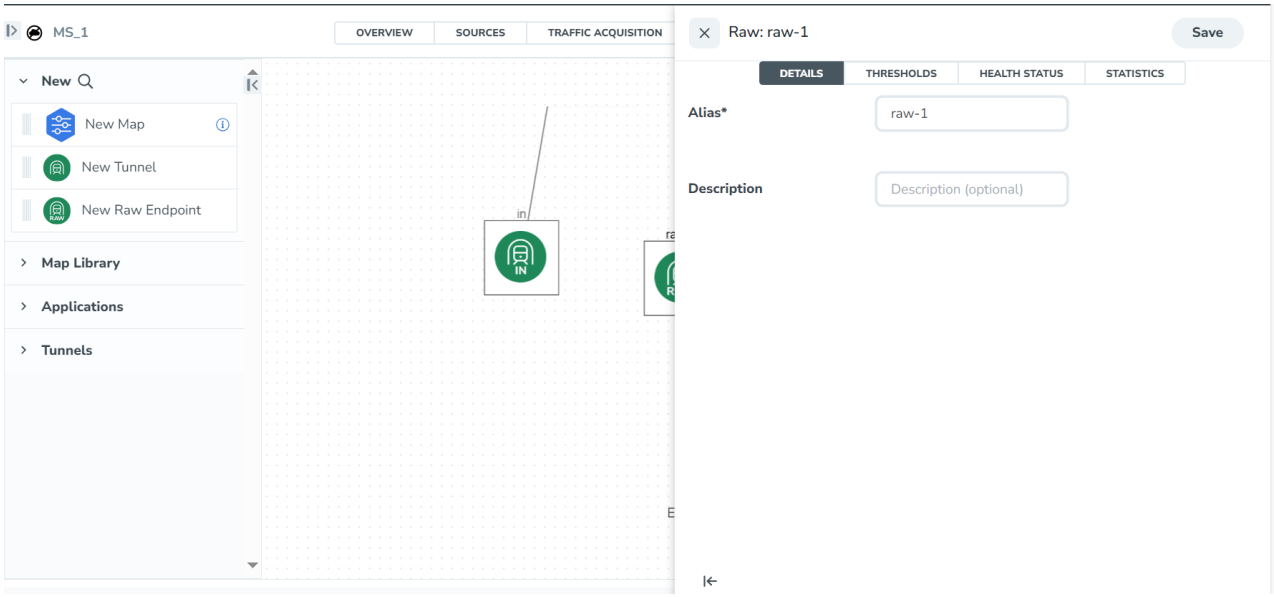
After configuring the tunnels and deploying the Monitoring Session, you can view the number of ingress and egress tunnels configured for a Monitoring Session. Click on the numbers of tunnels displayed to view the tunnel names and their respective **ADMIN STATUS** and **HEALTH STATUS**.

Create Raw Endpoint (AWS)

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 Endpoint** 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** from the **Actions** drop-down menu on the 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 (AWS)

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.

Exclusion Map	An exclusion map determines the instances to be excluded from monitoring. This map is used only for target selection.
Automatic Target Selection (ATS)	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. The below formula describes how ATS works: **Selected Targets = Traffic Filter Maps ∩ Inclusion Maps - Exclusion Maps** Below are the filter rule types that work in ATS: 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. The traffic direction is as follow: 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. **Notes:** • 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.
Group	A group is a collection of maps that are pre-defined and saved in the map library for reuse.

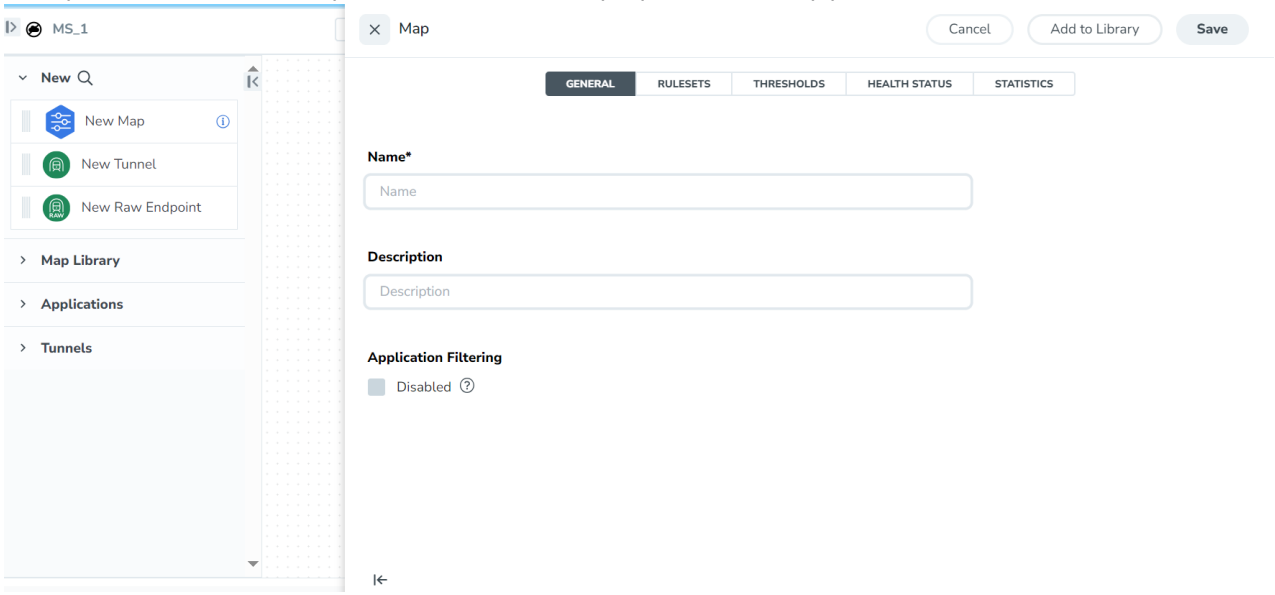
Rules and Notes:

- 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.
- 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 "Review Map Statistics with Map Rule Counters" section in *GigaVUE Fabric Management Guide* for detailed information.

To create a new map:

1. After creating a new Monitoring Session, or on an existing Monitoring Session, navigate to the **TRAFFIC PROCESSING** tab. The GigaVUE-FM Monitoring Session canvas appears.

2. In the canvas, click on the  icon expand icon on the left side of the page to view the traffic processing elements. 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
Application Filtering	Enable this option if you wish to use Application Filtering Intelligence. Enabling this option allows you to filter traffic based on Application name or family. Refer to Application Filtering Intelligence for more details.

> 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**.

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 Thresholds tab. For more details on how to create or apply threshold templates, refer to Monitor Cloud Health.

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 **RULESETS** 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 **RULESETS**, 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 **RULESETS** 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 **TRAFFIC PROCESSING**. The GigaVUE-FM canvas page appears.
2. Click the map you wish to save as a template. Click **Details**. The Application quick view appears.
3. Click **Add to Library**. Select an existing group from the **Select Group** list or create a **New Group** with a name.
4. Enter a description in the **Description** field, and click **Save**.

The Map is saved to the **Map Library** in the **TRAFFIC PROCESSING** 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 (AWS)

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
- GENEVE Decap
- Header Stripping
- Application Metadata Exporter
- SSL Decrypt
- GigaSMART NetFlow Generation
- 5G-Service Based Interface Application
- 5G-Cloud Application

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

Interface Mapping (AWS)

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:

1. Go to **Traffic > Virtual > Orchestrated Flows** and select your cloud platform. The **Monitoring Sessions** landing page appears.
2. Navigate to **V SERIES NODES** tab and click **Interface Mapping**.
3. The **Deploy Monitoring Session** dialog box appears. Select the GigaVUE V Series Nodes for which you wish to map the interface.

4. 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**.

NOTE: When using Raw and Tunnel In, Interface Mapping is mandatory before you deploy the Monitoring Session.

Deploy Monitoring Session (AWS)

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).

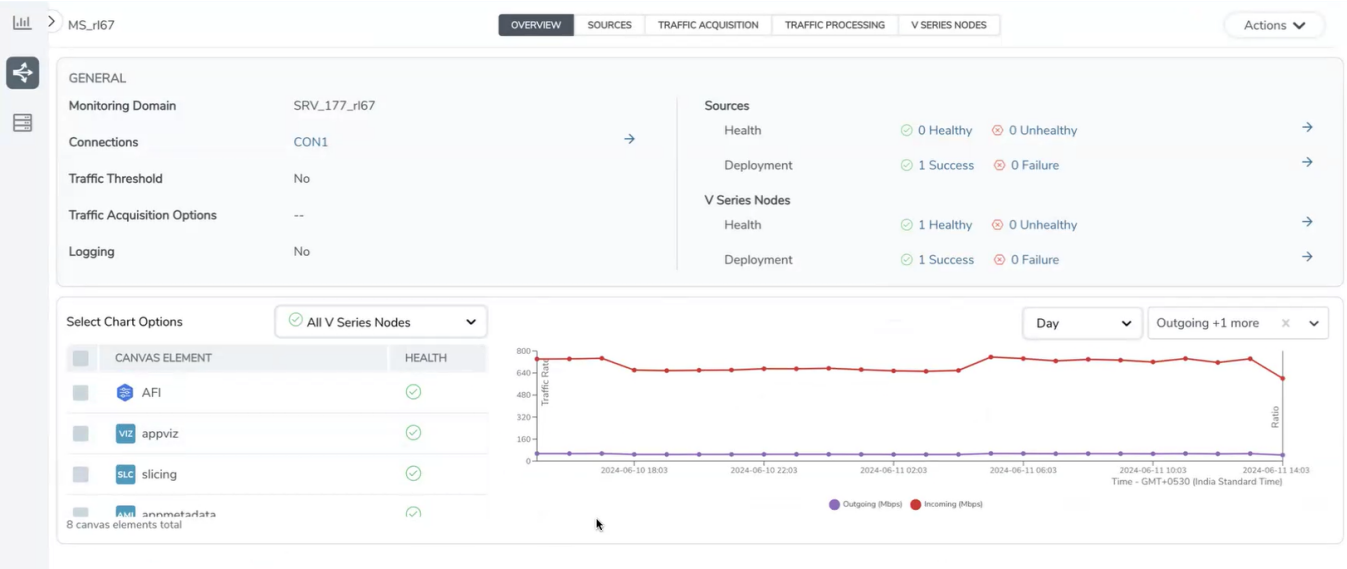
   NOTE: You can drag multiple arrows from a single map and connect them to different maps.
3. (Not applicable for NSX-T solution and Customer Orchestrated Source as Traffic Acquisition Method) Click **SOURCES** tab to view details about the subnets and monitored instances.
4. Click **Deploy** from the **Actions** menu 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.
5. You can view the Monitoring Session Deployment Report in the **SOURCES** and **V SERIES NODES** tab. 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.
   - Success—The session is not deployed on one or more instances due to V Series Node failure.
   - Failure—The session is not deployed on any of the V Series Nodes or Instances.

   The **Monitoring Session Deployment Report** displays the errors that appeared during deployment.

View Monitoring Session Statistics (AWS)

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

You can view the high level information of the selected Monitoring Session such as, connections, tunnel details, health status, deployment status, and information related to Application Intelligence statistics. You can view the detailed statistics of an individual traffic processing element in the **TRAFFIC PROCESSING** tab.



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

- You can view the incoming and outgoing traffic on an hourly, daily, weekly, and monthly basis.
- 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 in the **TOTAL TRAFFIC** section of the **OVERVIEW** page.
- 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** for which you want to view the statistics from the GigaVUE V Series Node drop-down list on the bottom left corner of the **OVERVIEW** page.

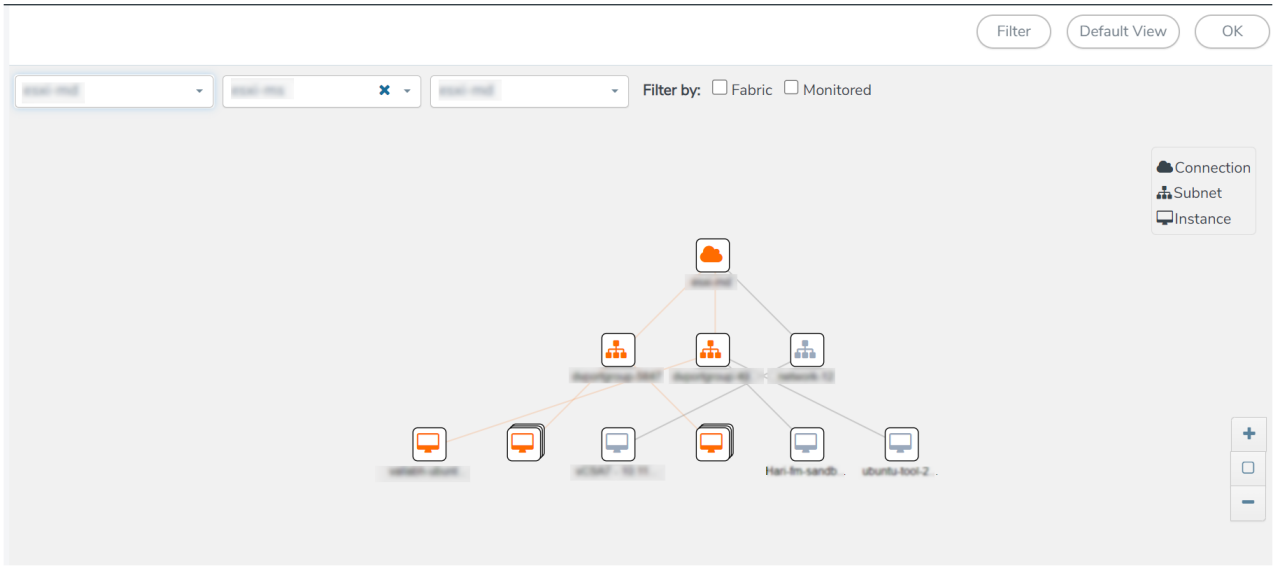
Visualize the Network Topology (AWS)

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.

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 In GigaVUE Administration Guide 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 the *Configure Monitoring Session Options* topic in the respective GigaVUE Cloud Suite Deployment Guide for information about 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 section in the GigaVUE V Series Applications Guide 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 theApplication 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.

Configure AWS Elastic Load Balancing

You can use a load balancer to uniformly distribute the traffic from AWS target VMs to GigaVUE V Series Nodes. The load balancer distributes the traffic to the GigaVUE V Series Nodes and the GigaVUE-FM auto-scales the GigaVUE V Series Nodes based on the traffic.

The following load balancers are supported:

- AWS Network Load Balancer
- Gateway Load Balancer

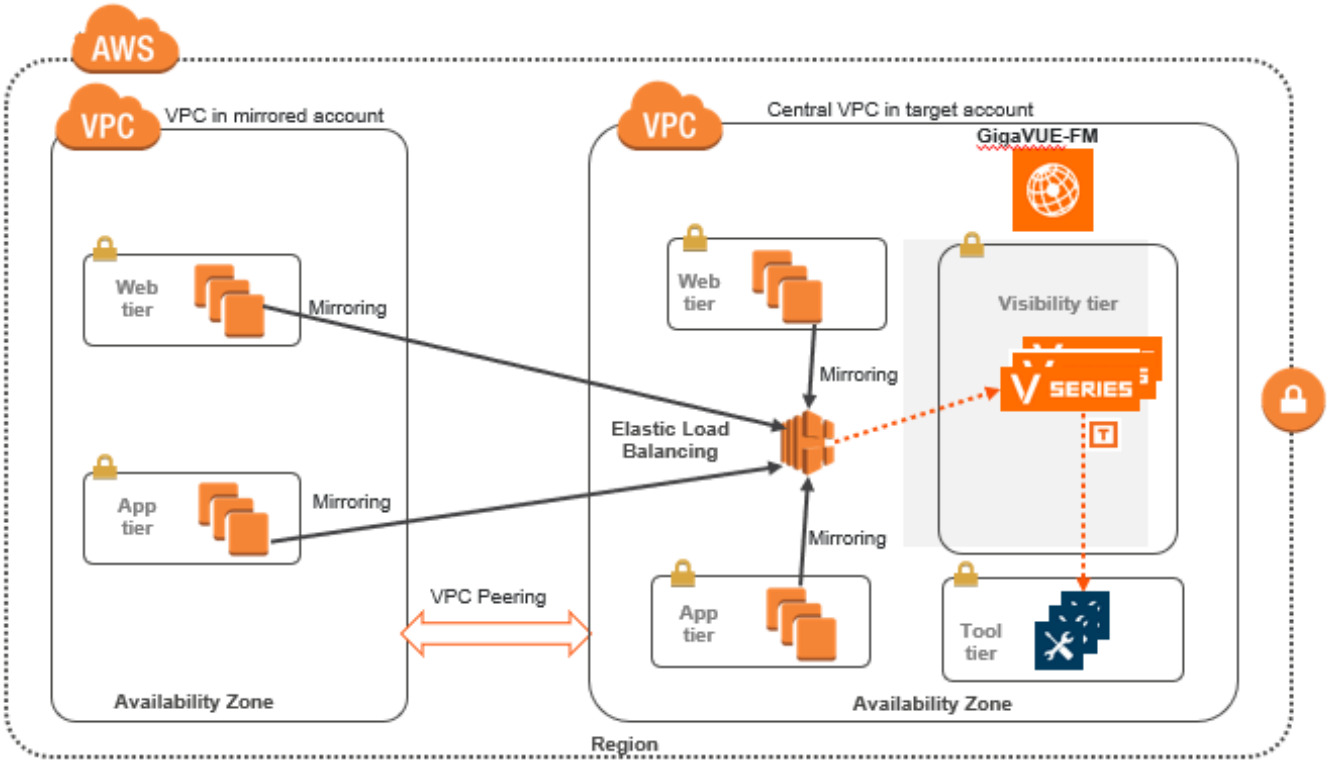
AWS Network Load Balancer

You can use a load balancer to uniformly distribute the traffic from AWS target VMs to GigaVUE V Series Nodes. The load balancer distributes the traffic to the GigaVUE V Series Nodes and the AWS platofrm auto-scales the GigaVUE V Series Nodes based on the traffic by using the AWS autoscaling group. GigaVUE-FM creates a traffic mirror from the target VMs to the load balancer that all the targets must have the same traffic load balancer destination. Load balancer forwards the traffic to the GigaVUE V Series nodes and the AWS Auto Scaling group monitors the load of all GigaVUE V Series nodes. AWS Auto Scaling group can add or remove nodes if the traffic load is heavy or low.

Refer to the following topics for detailed information.

- Architecture
- Configure Network Load Balancer
- Deploy Visibility Fabric with Network Load Balancer

Architecture



The design shows how to deploy GigaVUE Cloud Suite fabric components in a centralized VPC where the target VMs of multiple AWS accounts are deployed behind an external AWS network load balancer. GigaVUE-FM creates VPC mirroring on the target VMs to mirror and forward the traffic to the load balancer. The load balancer then deploys or deletes additional GigaVUE V Series Nodes and distributes the traffic among them to aggregate, filter, and forward the traffic to the tools over the tunnel endpoint. In AWS, the Auto Scaling group monitors the load among all the GigaVUE V Series Nodes and adds or removes them via RESTful API integration with the GigaVUE-FM when the traffic load crosses or drops below a pre-defined threshold.

A typical AWS deployment to support the external load balancer requires the following components:

- GigaVUE-FM (GigaVUE-FM fabric manager)
- GigaVUE V Series Node
- AWS Network Load Balancer (uniformly distributes traffic from AWS target VMs to GigaVUE V Series nodes)

Configure Network Load Balancer

Prerequisites

- Create or update Security Group polices of GigaVUE Cloud Suite components. Refer to Security Group topic for detailed information.
- Create or update routes in various VPCs across participating mirrored AWS accounts so that all mirrored account VPCs can connect to the target account VPC where the AWS Network Load Balancer is deployed. Refer to Amazon VPC for more information.

  NOTE: The target account VPC is considered as the centralized VPC by GigaVUE-FM and the connections towards all other mirrored account VPCs either through 1 : 1 VPC peering or via 1 : M transit gateway (that connects all participating VPCs across mirrored AWS accounts). VPC peering has no bandwidth limitation and no additional cost within the same region (recommended). Transit gateway costs more and it also has a limitation of 50 Gbps burst per VPC.

- Create or update existing IAM role for GigaVUE-FM in the centralized VPC. Additionally trust relationship needs to be created between the mirrored and the target account for GigaVUE-FM to execute the above permissions at the IAM role level. Refer to AMI and Permissions section for detailed information.
- User and Password provided in the registration data must be configured in the **User Management** page for deploying GigaVUE V Series Node using Third Party Orchestration. Refer to Configure Role-Based Access for Third Party Orchestration for more detailed information.

Points to Note:

When configuring Network Load Balancer, the GigaVUE V Series Nodes must be deployed using Third Party Orchestration.

Perform the following steps to configure an external load balancer in AWS:

1. In the **Target Groups** page, click **Create target group** and the Create target group wizard appears. Enter or select the following values and create the target group.
   a. Select **IP addresses** as the target type.
   b. Enter a name for the target group.
   c. Select the **UDP** as the Protocol and **4789** as the port number.
   d. Select the VPC of your target group where the targets are registered.
   e. Select **TCP** as the Health check protocol in port number **8889** with **10 seconds** health check interval.

   NOTE: For detailed instructions, refer to Create a target group for your Network Load Balancer topic in the AWS Elastic Load Balancing document.

2. Navigate to the **Load Balancer** page and click **Create Load Balancer** the Create elastic load balancer wizard appears. Enter or select the following values and create the load balancer.
   a. Select **Network Load Balancer** as the load balancer type and click **Create**.
   b. Enter a name for the Network Load Balancer.
   c. Select **Internal** load balancer as the Scheme.
   d. Select the **VPC** for your targets (GigaVUE V Series Nodes).
   e. Select the regions/zones and the corresponding subnets.
   f. Select **UDP** as the Listener Protocol with Port number **4789**.

   NOTE: For detailed instructions, refer to Create a Network Load Balancer topic in the AWS Elastic Load Balancing document.

3. Navigate to the **Launch Templates** page and click **Create launch template** the Create launch template wizard appears. Enter or select the following values and create the launch template.
   a. Enter a name for the launch template.
   b. Select the AMI of the GigaVUE V Series node.
   c. Select **t3a.xlarge** as the instance type.
   d. Select a Key pair for the instance.
   e. Select **VPC** as the Networking platform and don't specify the security group.
   f. Add 2 Network Interfaces for the GigaVUE V Series Node with device index as **0** and **1** (mgmt and data interface respectively) and for the interfaces, select the appropriate security group.
   g. In the **Advanced details** section, enter the User data as text in the following format and deploy the instance. The GigaVUE V Series Nodes uses this user data to generate config file (**/etc/gigamon-cloud.conf**) used to register with GigaVUE-FM using Third Party Orchestration.

```
#cloud-config
 write_files:
 - path: /etc/gigamon-cloud.conf
   owner: root:root
   permissions: '0644'
   content: |
     Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <VPC Name>
        user: <Username>
        password: <Password>
        remoteIP: <IP address of the GigaVUE-FM>
        remotePort: 443
```

   NOTE: Enter the UserName and Password created in the **Add Users** Section of the **User Management** page.

4. Navigate to the **Auto Scaling groups** page, and click **Create an Auto Scaling group** the Create Auto Scaling group wizard appears. Enter or select the following values and create the Auto Scaling group.
   a. Enter a name for the Auto Scaling group.
   b. Select an existing launch template.
   c. Select the VPC and subnet.
   d. In the Group size section, enter the Desired capacity as 0. The Desired capacity value must be less that the Maximum Capacity value.

      NOTE: Once the monitoring Domain and connection is configured, edit this value to the number of GigaVUE V Series Node that needs to be deployed in this Monitoring Domain.

   e. In the Scaling policies section, select **Target tracking scaling policy** and choose Average network in (bytes) for the Metric type with **1000000000 (bytes)** as target value and **300** seconds warm up value.
   f. (optional) Add **Tags** to the instances.

   NOTE: For detailed instructions, refer to Creating an Auto Scaling group using a launch template topic in the AWS EC2 Auto Scaling document.

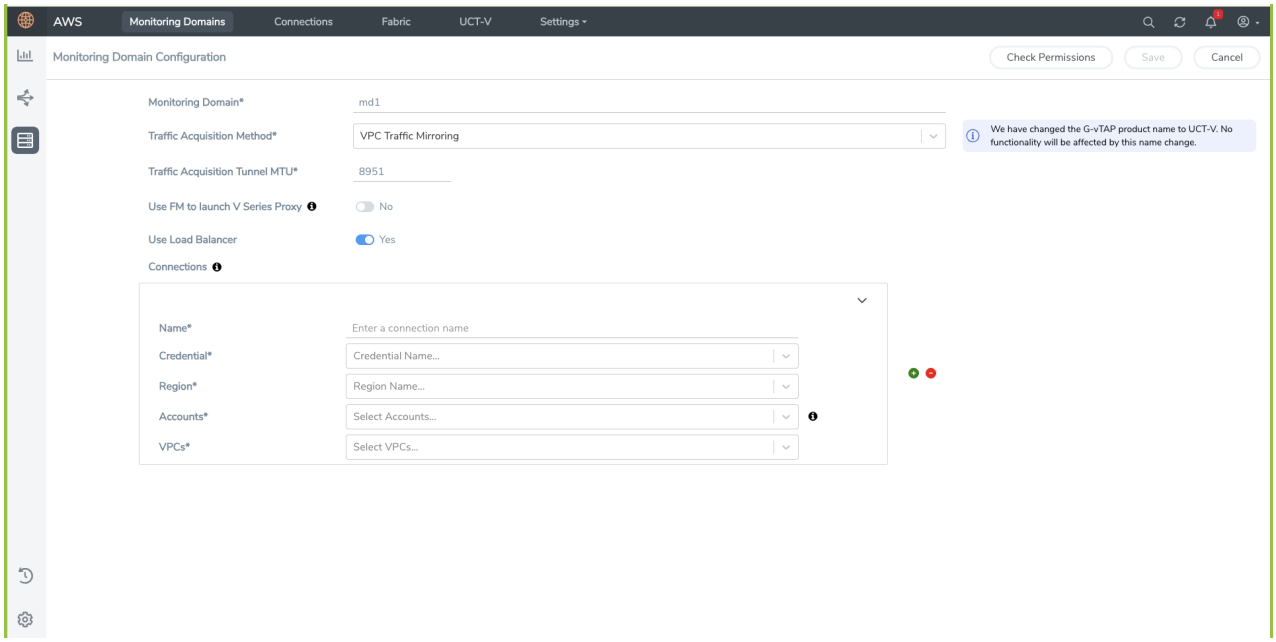
5. **NOTE:** Once the monitoring Domain and connection is configured, edit this value to the number of GigaVUE V Series Node that needs to be deployed in this Monitoring Domain.

In the Instances page, you can view the GigaVUE V Series Node instance deployed by the load balancer.

Deploy Visibility Fabric with Network Load Balancer

To deploy GigaVUE V Series Node across the AWS accounts with Network Load Balancer in GigaVUE-FM:

1. In the **Monitoring Domain Configuration** page, select **VPC Traffic Mirroring** or **Customer Orchestrated Source** as the Traffic Acquisition method. Refer to Create a Monitoring Domain for detailed information.
2. Enter the Monitoring Domain name and the Connection name as mentioned in the user data provided during the template launch in AWS. Refer to Configure Network Load Balancer section for more detailed information.
3. For the **Use Load Balancer** field, select **Yes**.
4. Select **No** for the **Use FM to Launch Fabric** option. This allows you to deploy the fabric components using Third Party Orchestration.



5. Click **Save**. The Monitoring Domain is created successfully.
6. In the AWS Fabric Launch Configuration page, select the following for the load balancer.
   - Select the VPC from the drop down menu.
   - Select the Load Balancer configured in AWS
   - Select the Auto Scaling Group configured in AWS
7. Click **Save** to save the configuration.

Once the Monitoring Domain is successfully configured, edit the **Desired capacity** value for the Auto Scaling Group in AWS. Refer to Create an Auto Scaling group using a launch template section in AWS for more detailed information.

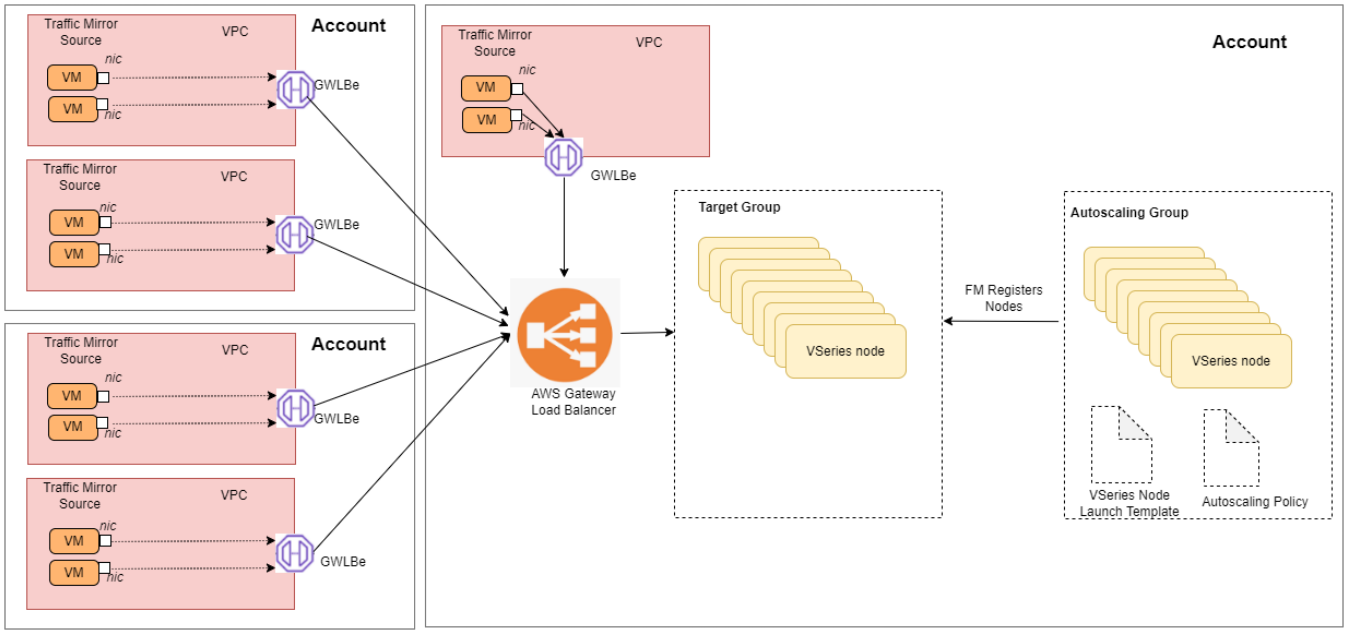
What to do Next:

To monitor the traffic, you must create a Monitoring Session. For more information on creating a Monitoring Session, see Configure Monitoring Session.

AWS Gateway Load Balancer

The gateway load balancer (GWLB) uses the gateway load balancer end points to distribute the traffic across the end points. It is a VPC endpoint that provides connectivity in between virtual machines. With GWLB Endpoint as a target, mirrored traffic can be forwarded from any subnet. You can monitor network traffic across multiple VPCs and accounts, with centralized traffic inspection in a single VPC across the entire organization.

Architecture



In the architecture, you can see the deployment of GigaVUE Cloud Suite for AWS environments that have GWLB implementation for the security appliances, such as firewalls. In such deployments, the applications and your appliances are in different VPCs. The workload VPC is configured with the Gateway load balancer endpoint while the service VPC is configured with the Gateway load balancer. Gigamon deployed VPC has the solution components, such as GigaVUE-FM, GigaVUE V Series Nodes, and the OOB tools which consume the mirrored and decapsulated data.

Configure a Gateway Load Balancer

Prerequisites

- Create or update Security Group policies of GigaVUE Cloud Suite components. Refer to Security Group topic for detailed information.
- Create or update routes in various VPCs across participating mirrored AWS accounts so that all mirrored account VPCs can connect to the target account VPC where the AWS Gateway Load Balancer is deployed. Refer to Amazon VPC for more information.
- Create or update existing IAM role for GigaVUE-FM in the centralized VPC. Additionally trust relationship needs to be created between the mirrored and the target account for GigaVUE-FM to execute the above permissions at the IAM role level. Refer to AMI and Permissions section for detailed information.
- For more information on AWS recommended design for Gateway Load Balancer implementation with inline services, such as firewall. see Getting started with Gateway Load Balancers - Elastic Load Balancing (amazon.com)
- You must create a VPC endpoint and endpoint service. For more information, see Create endpoint service
- Create a routing table. For more information, see Amazon documentation.
- User and Password provided in the registration data must be configured in the **User Management** page for deploying GigaVUE V Series Node using Third Party Orchestration. Refer to Configure Role-Based Access for Third Party Orchestration for more detailed information.

Points to Note:

When configuring Gateway Load Balancer, the GigaVUE V Series Nodes must be deployed using Third Party Orchestration.

Perform the following steps to configure an external load balancer in AWS:

1. In the **Target Groups** page, click **Create target group** and the Create target group wizard appears. Enter or select the following values and create the target group.
   a. Select **IP addresses** as the target type.
   b. Enter a name for the target group..
   c. Select the VPC of your target group where the targets are registered.
   d. Select **TCP** as the Health check protocol in port number **8889** with **10 seconds** health check interval.

   NOTE: You must select GENEVE protocol and port 6081 while creating the targets groups. For detailed instructions, refer to Target groups for your Gateway Load Balancers.

2. Navigate to the **Load Balancer** page and click **Create Load Balancer** the Create elastic load balancer wizard appears. Enter or select the following values and create the load balancer.
   a. Select **Gateway Load Balancer** as the load balancer type and click **Create**.
   b. Enter a name for the Gateway Load Balancer.
   c. Select the **VPC** for your targets (GigaVUE V Series Nodes).
   d. Select the regions/zones and the corresponding subnets.
   e. Associate the load balancer to the target group.
   f. By default, **GENEVE** as the Listener Protocol with Port number **6081** is selected.

NOTE: For detailed instructions, refer to Create a Gateway Load Balancer topic in the AWS Elastic Load Balancing document

3. Navigate to the **Launch Templates** page and click **Create launch template** the Create launch template wizard appears. Enter or select the following values and create the launch template.
   a. Enter a name for the launch template.
   b. Select the AMI of the GigaVUE V Series node.
   c. Select **c5n.xlarge** as the instance type.
   d. Select a Key pair for the instance.
   e. Select **VPC** as the Networking platform and don't specify the security group.
   f. Add 2 Network Interfaces for the GigaVUE V Series Node with device index as **0** and **1** (mgmt and data interface respectively) and for the interfaces, select the appropriate security group.
   g. In the **Advanced details** section, enter the User data as text in the following format and deploy the instance. The GigaVUE V Series Nodes uses this user data to generate config file (**/etc/gigamon-cloud.conf**) used to register with GigaVUE-FM using Third Party Orchestration.

```
#cloud-config
 write_files:
 - path: /etc/gigamon-cloud.conf
   owner: root:root
   permissions: '0644'
   content: |
     Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <VPC Name>
        user: <Username>
        password: <Password>
        remoteIP: <IP address of the GigaVUE-FM>
        remotePort: 443
```

NOTE: Enter the UserName and Password created in the **Add Users** Section of the **User Management** page.

NOTE: For detailed instructions, refer to Creating a launch template for an Auto Scaling group topic in the AWS EC2 Auto Scaling document.

4. Navigate to the **Auto Scaling groups** page, and click **Create an Auto Scaling group** the Create Auto Scaling group wizard appears. Enter or select the following values and create the Auto Scaling group.
   a. Enter a name for the Auto Scaling group.
   b. Select an existing launch template.
   c. Select the VPC and subnet.
   d. In the Group size section, enter the Desired capacity as 0. The Desired capacity value must be less that the Maximum Capacity value.

      NOTE: Once the monitoring Domain and connection is configured, edit this value to the number of GigaVUE V Series Node that needs to be deployed in this Monitoring Domain.

   e. In the Scaling policies section, select **Target tracking scaling policy** and choose Average network in (bytes) for the Metric type with **1000000000 (bytes)** as target value and **300** seconds warm up value.
   f. (optional) Add **Tags** to the instances.

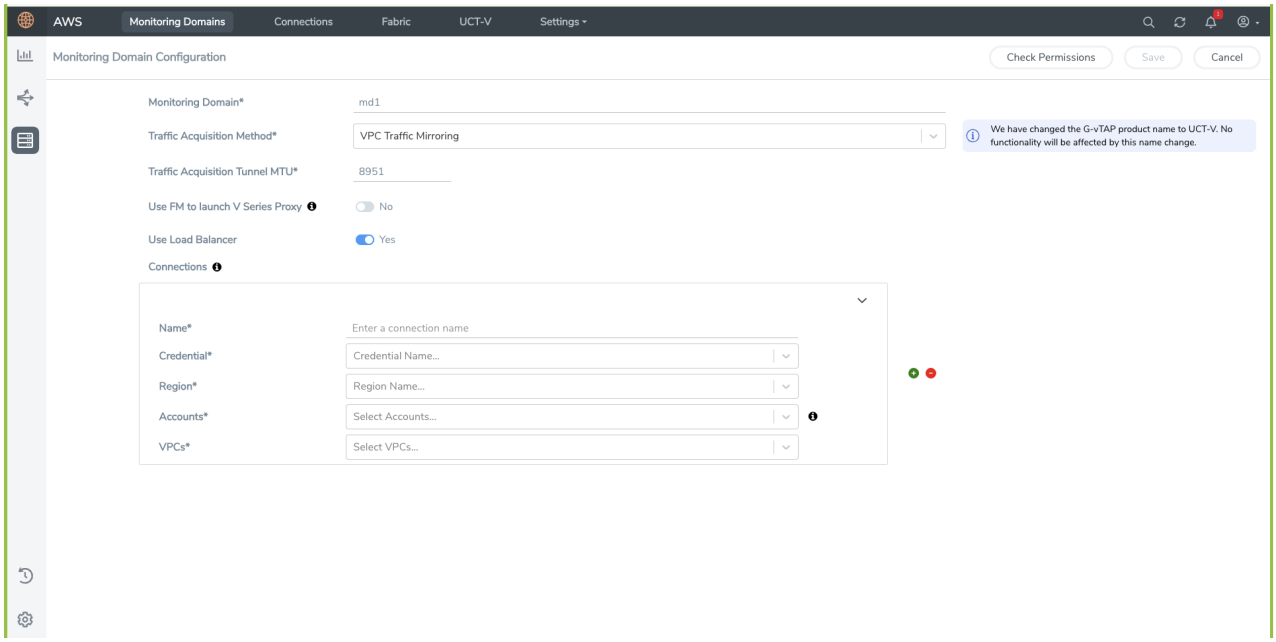
   NOTE: For detailed instructions, refer to Creating an Auto Scaling group using a launch template topic in the AWS EC2 Auto Scaling document.

In the Instances page, you can view the GigaVUE V Series Node instance launched by the auto scaling group.

Deploy Visibility Fabric with Gateway Load Balancer

To deploy GigaVUE V Series Node across the AWS accounts with Gateway Load Balancing in GigaVUE-FM:

1. In the **Monitoring Domain Configuration** page, select **VPC Traffic Mirroring** or **Customer Orchestrated Source** as the Traffic Acquisition method. Refer to Create a Monitoring Domain for detailed information.
2. Enter the Monitoring Domain Name and the Connection Name as mentioned in the user data provided during the template launch in AWS. Refer to Configure a Gateway Load Balancer section for more detailed information.
3. For the **Use Load Balancer** field, select **Yes**.
4. Select **No** for the **Use FM to Launch Fabric** option. This allows you to deploy the fabric components using Third Party Orchestration.



5. Click **Save**. The Monitoring Domain is created successfully.
6. In the AWS Fabric Launch Configuration page, select the following for the load balancer.
   - Select the VPC from the drop down menu.
   - Select the Load Balancer configured in AWS
   - Select the Auto Scaling Group configured in AWS
7. Click **Save** to save the configuration.

Once the monitoring domain is successfully configured, edit the Desire capacity value for the Auto Scaling Group in AWS. Refer to Configure a Gateway Load Balancer section for more detailed information.

To monitor the traffic, you must create a monitoring session. For more information on creating a monitoring session, see Configure Monitoring Session.

For more information on the best practices and architectures, see the following links:

- Getting started with Gateway Load Balancers
- Scaling network traffic inspection using AWS Gateway Load Balancer

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 precryption-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.

Limitations

During precryption, the agent generates a TCP message with the payload being captured in clear text. Capturing the L3/L4 details of this TCP packet by probing the SSL connect/accept APIs. The default gateway's MAC address will be the destination MAC address for the TCP packet when SSL data is received on a specific interface. If the gateway is incorrectly configured, the destination MAC address could be all Zeros.

To know more, refer to Precryption™.

Check for Required IAM Permissions

GigaVUE-FM allows you to validate whether policy attached to the GigaVUE-FM using "EC2 Instance Role" or "Access Credential" has the required IAM permissions and notifies the users about the missing permissions. You can check permissions while creating Monitoring Domain and deploying GigaVUE Fabric Components using GigaVUE-FM, by clicking the **Check Permissions** button on the **Monitoring Domain Configuration** page and **AWS Fabric Launch Configuration** page. The GigaVUE-FM displays the minimum required IAM permissions.

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

- IAM permissions - Checks whether the minimum required permissions are granted for the instance where the GigaVUE-FM is deployed. Refer to Permissions and Privileges (AWS) for more detailed information on how to configure the required permissions in AWS.
- Access to public cloud end points - Check for access to the AWS cloud end point APIs.
- Subscription to the GigaVUE Cloud Suite for AWS- Before deploying the solution, you must subscribe to the GigaVUE Cloud Suite components from the AWS marketplace. It checks whether the required components are subscribed in the marketplace. Refer to Subscribe to GigaVUE Products for more detailed information on how to subscribe to the Gigamon Products.
- Security Group - Checks whether the required ports are configured in the security group. For more information on the security groups, seeSecurity Group .

  NOTE: Security group rules validation does not validate prefix List and user groups. For a successful validation, the ports and CIDR range should be updated in the Security Group.

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.

Refer to the following sections for more detailed information:

- Check for Required IAM Permissions
- Check for Required IAM Permissions

Upgrade GigaVUE-FM in AWS

This chapter describes how to upgrade the GigaVUE-FM instance deployed in AWS.

Refer to the following sections for details:

- Upgrade GigaVUE-FM using Snapshot in AWS
- Upgrade from UI. For more information on upgrading from UI, refer to the Upgrade from UI topic in GigaVUE-FM Installation and Upgrade Guide.

At a Glance

To upgrade the GigaVUE-FM instance successfully, you must perform the following steps:

Step 1: Stop the existing version of the GigaVUE-FM instance.

Step 2: Create a snapshot of the second disk (dev/sdb) of the GigaVUE-FM instance.

Step 3: Make a note of the snapshot ID.

Step 4: Launch the latest version of the GigaVUE-FM instance. While launching the latest version, enter the snapshot ID of the old version of the GigaVUE-FM instance in **Add Storage** > **Add New Volume**.

Step 5: Complete the launch.

Step 6: Verify if the data from the previous GigaVUE-FM instance is restored in the new instance.

Step 7: Terminate the old GigaVUE-FM instance.

Stop GigaVUE-FM Instance

Before upgrading the GigaVUE-FM instance, the existing version of the GigaVUE-FM instance must be stopped.

NOTE: Do not terminate the GigaVUE-FM instance.

To stop the GigaVUE-FM instance:

1. Login to the AWS account and select **Services > EC2**.
2. In the left navigation pane, select **Instances**.
3. In the search field, enter the name of the existing GigaVUE-FM instance and select the Instance ID.

NOTE: If the instance ID is the password for logging in to the existing GigaVUE-FM, make note of this instance ID. This instance ID will be used as the password for logging in to the upgraded GigaVUE-FM as well. If the password is changed, use the changed password to login to the upgraded GigaVUE-FM.

4. Go to **Actions** > **Instance State** > **Stop**.

Create Snapshot of the GigaVUE-FM Instance

You must create a snapshot of the volume of the existing version (dev/sdb) of the GigaVUE-FM instance. Snapshots capture data that are written to your Amazon EBS volume at the time the snapshot is taken. This excludes any data that are cached by any applications or the operating system.

To create a snapshot:

1. Select the GigaVUE-FM instance and click the **Description** tab.
2. Scroll down and locate Block Devices.
3. Click the **/dev/sdb** link. The Block Device dialog box is displayed with the volume ID link.
4. In the Block Device dialog box, click the volume ID link. The Volumes page is displayed.
5. Click **Actions** and select **Create Snapshot.**

   The Create Snapshot dialog box is displayed.
6. In the Create Snapshot dialog box, enter the following information:

Table 1: Fields for Creating a Snapshot

Field	Description
Name	The name of the snapshot.
Description	The description of the snapshot.

7. Click **Create**. It will take several minutes for the snapshot to be created.

NOTE: Make a note of the snapshot ID. This snapshot ID will be used to find the snapshot and add the volume while upgrading the GigaVUE-FM instance.

Upgrade GigaVUE-FM Instance

While upgrading the GigaVUE-FM instance, the Amazon EBS volume must be restored with the data from the snapshot that is created in Create Snapshot of the GigaVUE-FM Instance.

To upgrade the GigaVUE-FM instance:

1. Select **Services > EC2**.
2. Click **Launch Instance** and go to **AWS Marketplace** or **Community AMIs**.
3. Search for **Gigamon**, locate the latest version of the GigaVUE-FM AMI, and click **Select**.
4. Choose the Instance Type. The recommended instance type is **m4.xlarge**.

NOTE: Do not select the t2 instance types as they are not supported.

5. Click **Next: Configure Instance Details.**
6. Enter the following information.
   - **Network**— Select the VPC where you want to launch the AMI.
   - **Subnet**— Select the management subnet that the instance will use after launch. (Required)
   - **Auto-assign Public IP**— Select **Enable**.
   - **IAM role**—Select an existing IAM role to associate with the instance. Refer to the *GigaVUE Cloud Suite for AWS Quick Start Guide*.
7. Click **Configure storage** and then click **Advanced**.
8. Select **Volume 2** and then select the Snapshot that you created in Create Snapshot of the GigaVUE-FM Instance.
9. Click **Next: Tag Instance,** and then add a key-value pair to identify the instance.
10. Click **Next: Add Security Group**. Click the **Select an existing security group** check box if the security group is already created. Otherwise, select the **Create a new security group** check box and click **Add Rule**. For more information on creating a security group, refer to the *Security Group* section in GigaVUE Cloud Suite Deployment Guide - AWS.
11. Click **Review and Launch**. Review the instance launch details and click **Launch**.
12. Select the SSH key pair, check the acknowledgment check box, and click **Launch Instances**.
13. It will take several minutes for the instance to initialize. After the initialization is completed, verify the instance through the Web interface as follows:
    a. Find the instance and expand the page in the **Descriptions** tab to view the instance information, if necessary.

b. Copy the Public DNS value and paste the value into a new browser window or tab.

c. Copy the Instance ID of the previous version of the GigaVUE-FM. If the password is changed, use the changed password to login to the upgraded GigaVUE-FM.

NOTE: Do not have multiple versions of GigaVUE-FM instances monitoring the same AWS connection.

Launch the new version of the GigaVUE-FM instance. Verify if the data from the previous GigaVUE-FM instance is restored in the new instance. Once the data is verified, terminate the old version of the GigaVUE-FM instance.

Upgrade GigaVUE Fabric Components in GigaVUE-FM for AWS

This chapter describes how to upgrade GigaVUE V Series Proxy and GigaVUE V Series Nodes. For more detailed information about UCT-V, 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

Before you upgrade the GigaVUE V Series Proxy and GigaVUE V Series Nodes, you must upgrade GigaVUE-FM to software version 5.13 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 **AWS Fabric Launch Configuration** page.

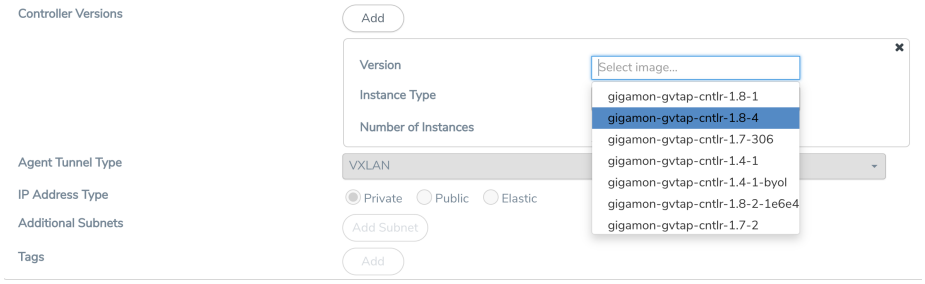
To change the UCT-V Controller version follow the steps given below:

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.

a. Under **Controller Versions**, click **Add**.
b. From the **Version** 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 **Instance Type** drop-down list, select a size for the UCT-V Controller.

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

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

a. From the **Version** 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 with the same version.

Upgrade GigaVUE V Series Nodes and GigaVUE V Series Proxy

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

There are two ways to upgrade the GigaVUE V Series Proxy and Nodes. You can:

- Launch and replace the complete set of nodes and proxy at a time.

  For example, if you have 1 GigaVUE V Series Proxy and 10 GigaVUE V Series Nodes in your VPC, you can upgrade all of them at once. First, the new version of GigaVUE V Series Proxy is launched. Next, the new version of GigaVUE V Series Nodes are launched. Then, the old version of V Series Proxy and Nodes are deleted from the VPC.

  NOTES:

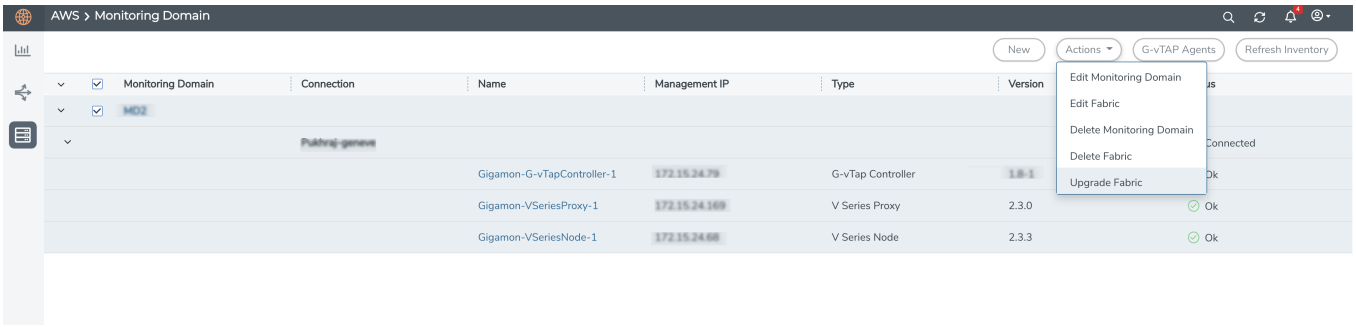
- When the new version of nodes and proxy are launched, the old version is not deleted by GigaVUE-FM until the new version of node and proxy is launched and the status is changed to **Ok**. Make sure that the instance type of the node and proxy selected during the configuration can accommodate the total number of new and old fabric components present in the VPC. If the instance type cannot support so many Virtual Machines, you can choose to upgrade the fabric components in multiple batches.
- If there is an error while upgrading the complete set of proxy and nodes present in the VPC, the new version of the fabric is immediately deleted and the old version of the fabric is retained as before.
- Prior to upgrading the GigaVUE V Series Proxy and Nodes, you must ensure that the required number of free addresses are available in the respective subnets. Otherwise, the upgrade will fail.

- Launch and replace the nodes and proxy in multiple batches.

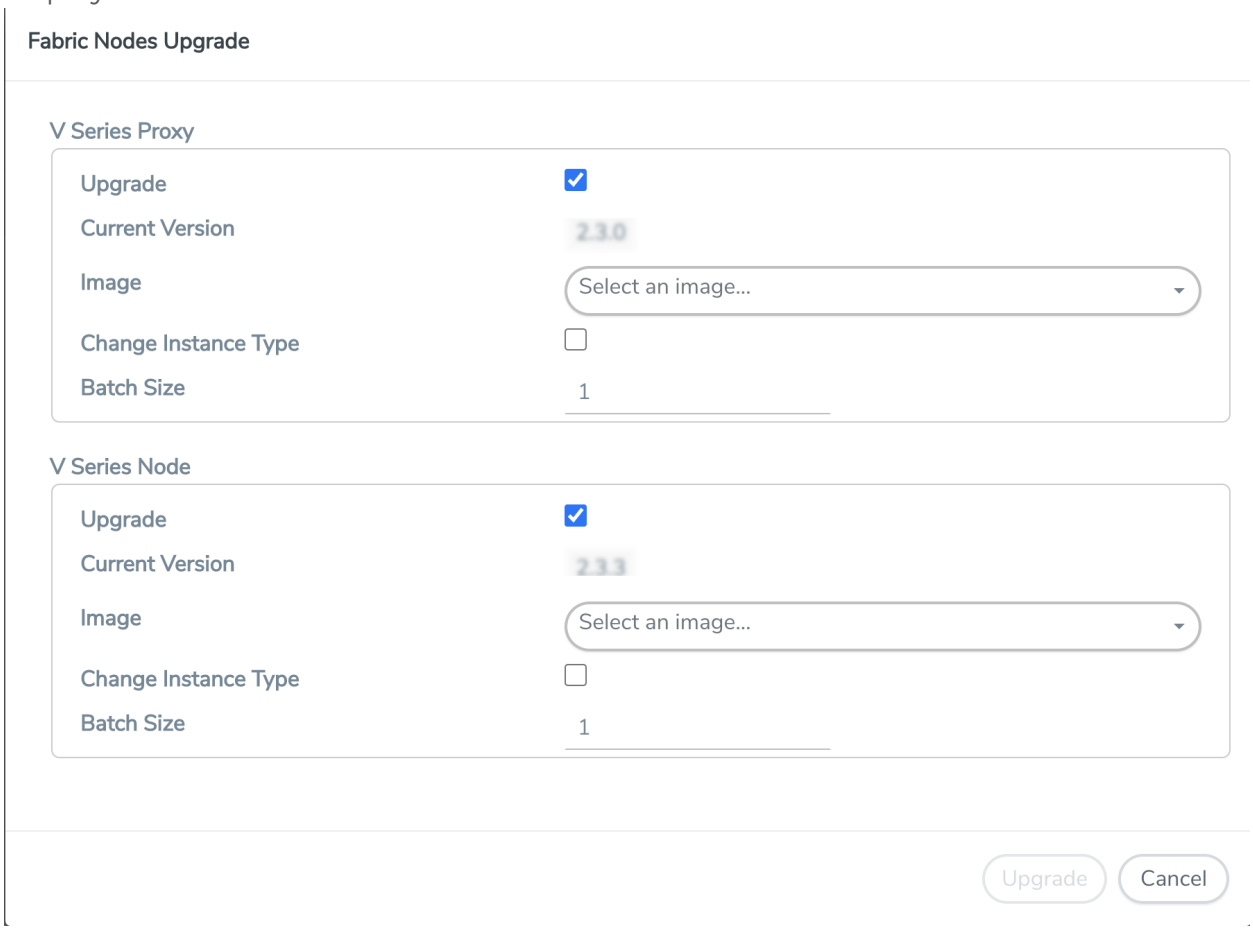
  For example, if there are 18 GigaVUE V Series Nodes to be upgraded, you can specify how many you want to upgrade per batch.

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

1. Go to **Inventory > VIRTUAL > AWS** , 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.



4. To upgrade the GigaVUE V Series Nodes/Proxy, select the **Upgrade** checkbox.
5. From the **Image** drop-down list, select the latest version of the GigaVUE V Series Proxy/Nodes.
6. Select the **Change Instance Type** checkbox to change the instance type of the nodes/proxy, only if required.
7. To upgrade the GigaVUE V Series Nodes/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. Click **Upgrade**.

The upgrade process takes a while depending on the number of GigaVUE V Series Proxy and Nodes upgrading in your AWS 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. In the V Series Proxy page, click the link under Progress to view the upgrade status.

Once the nodes are upgraded successfully, the monitoring session is re-deployed automatically.

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:

Configuration Health Monitoring	GigaVUE Cloud Suite for AWS	GigaVUE Cloud Suite for Azure	GigaVUE Cloud Suite for OpenStack	GigaVUE Cloud Suite for VMware	GigaVUE Cloud Suite for Nutanix
GigaVUE V Series Nodes	✓	✓	✓	✓	✓
UCT-V	✓	✓	✓	×	×
VPC Mirroring	✓	×	×	×	×
OVS Mirroring and VLAN Trunk Port	×	×	✓	×	×

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 the 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 and applying 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 Templates
- Apply 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	1. Tx Packets 2. Rx Packets 3. Tx Bytes 4. Rx Bytes 5. Tx Dropped 6. Rx Dropped 7. Tx Errors 8. Rx Errors	1. Difference 2. Derivative	1. Over 2. Under
RawEnd Point	1. Tx Packets 2. Rx Packets 3. Tx Bytes 4. Rx Bytes 5. Tx Dropped 6. Rx Dropped 7. Tx Errors 8. Rx Errors	1. Difference 2. Derivative	1. Over 2. Under
Map	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
Slicing	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
Masking	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
Dedup	1. Tx Packets 2. Rx Packets	1. Difference 2. Derivative	1. Over 2. Under

	3. Packets Dropped		
HeaderStripping	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
TunnelEncapsulation	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
LoadBalancing	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
SSLDecryption	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
Application Metadata	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
AMI Exporter	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
Geneve	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under

5G-SBI	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
SBIPOE	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under
PCAPNG	1. Tx Packets 2. Rx Packets 3. Packets Dropped	1. Difference 2. Derivative	1. Over 2. Under

Create Threshold Templates

To create threshold templates:

1. Go to **Inventory > Resouces > Threshold Templates**.
2. The **Threshold Templates** 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. Ex: TEP, REP, Maps, Applications like Slicing, De-dup 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 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 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** templates 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. In the **TRAFFIC PROCESSING** tab, select **Thresholds** under **Options** menu.
3. 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 **Apply**.

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 threshold template across Monitoring Session will not over write the threshold value applied specifically for an application. When a threshold value is applied to a particular application, it over writes the existing threshold value for that particular application.

1. On the **Monitoring Session** page. Click **TRAFFIC PROCESSING** tab. The Monitoring Session 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**.

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 **TRAFFIC PROCESSING** tab. The Monitoring Session 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** landing page appears.
2. Select the Monitoring Session and navigate to **TRAFFIC PROCESSING > Options > Thresholds**, click **Clear Thresholds**.
3. The **Clear Threshold** pop-up appears. Click **Ok**.

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 and navigate to **TRAFFIC PROCESSING** tab.
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 required Monitoring Session from the list view.
2. In the **Overview** tab, you can view the health status of the required GigaVUE V Series Node from the chart options.

Administer GigaVUE Cloud Suite for AWS

You can perform the following administrative tasks in GigaVUE-FM for GigaVUE Cloud Suite for AWS:

- Configure AWS Settings
- Configure Proxy Server
- Role Based Access Control
- About Events
- About Audit Logs

Configure AWS Settings

This section provides information on how to configure refresh intervals for instance and non-instance inventory, and maximum batch size for monitoring session updates.

1. Go to **Inventory > VIRTUAL > AWS**.
2. Click **Settings > Advanced Setting**.

Refresh interval for instance 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	9001
Permission status purge interval in days	30
Reboot threshold limit for UCT-V Controller down ⓘ	2

3. In the **Advanced Setting** page, you can edit the following details:

Settings	Description
Refresh interval for instance target selection inventory (secs)	Specifies the frequency for updating the state of EC2 instances in AWS.
Refresh interval for fabric deployment inventory (secs)	Specifies the frequency for deploying the fabric nodes
Number of UCT-Vs per V Series Node	Specifies the maximum number of instances that can be assigned to the GigaVUE V Series node. You can modify the number of instances for the nitro-based instance types
Refresh interval for UCT-V inventory (secs)	Specifies the frequency for discovering the UCT-Vs available in the VPC.
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.

4. Click **Save**.

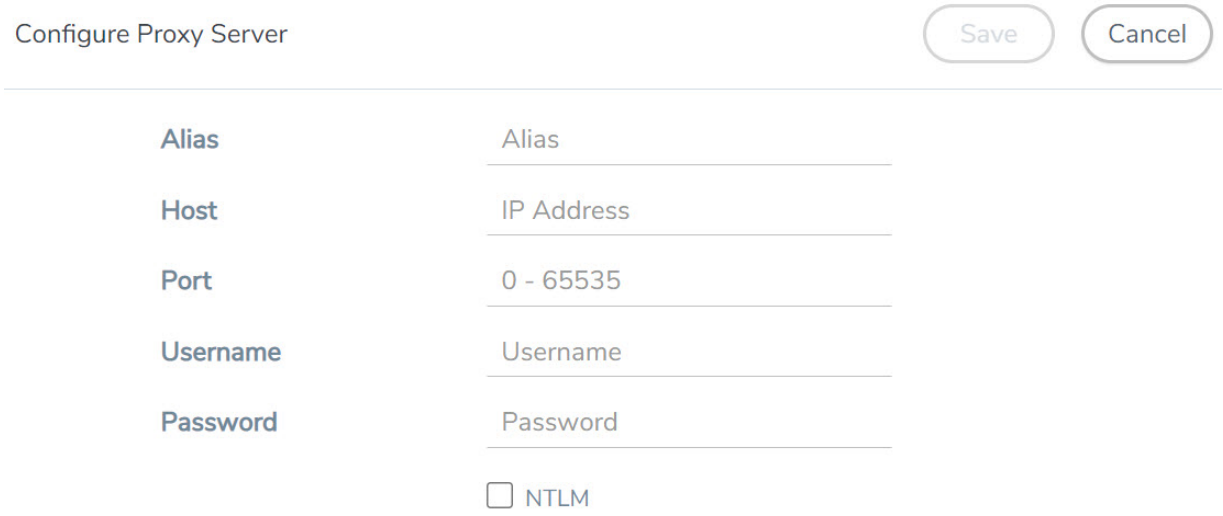
Configure Proxy Server

Sometimes, the VPC in which the GigaVUE-FM is launched may not have access to the Internet. Without Internet access, GigaVUE-FM cannot connect to the AWS API endpoints. For GigaVUE-FM to connect to AWS, a proxy server must be configured to communicate with the public AWS API endpoints.

NOTE: To configure the proxy server, you must be a user with **fm_super_admin** role or a user with write access to the **Infrastructure Management** category.

To create a proxy server:

1. Go to **Inventory > VIRTUAL > AWS** and then click **Settings**.
2. From the Settings drop-down list, select **Proxy Server Configuration**.
3. Click **Add**. The **Configure Proxy Server** page is displayed.



4. Select or enter the appropriate information as shown 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 VPC. On enabling NTML, enter the following information: • **Domain**—domain name of the client accessing the proxy server. • **Workstation**—name of the workstation or the computer accessing the proxy server.

5. Click **Save**. The new proxy server configuration is added to the **Proxy Server Configuration** page. The proxy server is also listed in the AWS Connection page.

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
Infrastructure Management: This includes the following cloud infrastructure resources: • Cloud Connections • Cloud Proxy Server • Cloud Fabric Deployment • Cloud Configurations • Sys Dump • Syslog • Cloud licenses • Cloud Inventory	• Configure GigaVUE Cloud Components • Create Monitoring Domain and Launch Visibility Fabric • Configure Proxy Server
Traffic Control Management: This includes the following traffic control resources: • Monitoring session • Threshold Template • Stats • Map library • Tunnel library • Tools library • Inclusion/exclusion Maps	• Create, Clone, and Deploy Monitoring Session • Create and Apply Threshold Template • Add Applications to Monitoring Session • Create Maps • View Statistics • Create Tunnel End Points
Third Party Orchestration: This includes the following resource: • Cloud Orchestration	• Deploy the fabric components using Third Party Orchestration. Refer to Configure Role-Based Access for Third Party Orchestration for more details on how to create user, roles, and user groups for Third Party Orchestration.

NOTE: Cloud APIs are also RBAC enabled.

Refer to the *GigaVUE Administration Guide* for detailed information about Roles, Tags, User Groups.

About Events

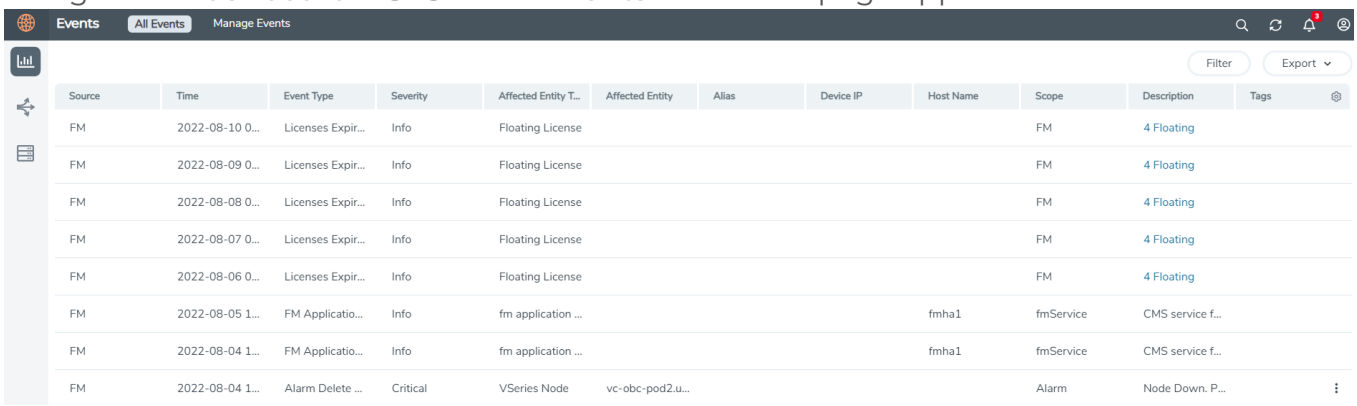
The Events page displays all the events occurring in the virtual fabric component, VM Domain, and VM manager. An event is an incident that occur at a specific point in time. Examples of events include:

- 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.



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: ▪ FM - indicates the event was flagged by the GigaVUE-FM fabric manager. ▪ 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.
Duration	The timestamp when the event occurred or the duration in which the event occured. **IMPORTANT:**Timestamps or the duration are shown in the time zone of the client browser's computer and not the time zone of the node reporting the event. The

Controls/ Parameters	Description
	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.
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.
Alarm Type	The type of events that generate the alarms. The types of alarms can be Abnormal Fan Operation, Card Unhealthy, Circuit Tunnel Unhealthy, CPU Over Loaded, Device Upgrade Failed.
Event Severity	The severity is one of Critical, Major, Minor, Warning or Info. Info is informational messages. For example, when power status change notification is displayed, then the message is displayed as Info.
Event Status	The status of the event. The status can be Acknowledged or Unacknowledged.
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.
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.
Cluster ID	Enter the Cluster ID.
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.
Device IP	The IP address of the device.
Host Name	The host name of the device.
Alias	Event Alias
Monitoring Domain	The name of the Monitoring Domain.
Connection	The name of the Connection.
Show Non-taggable Entities	Enable to display the events for entities that cannot be tagged. For example, Policies, GigaVUE-FM instance and other such entities.
Tags	Select the Key and the Value from the drop-down list.

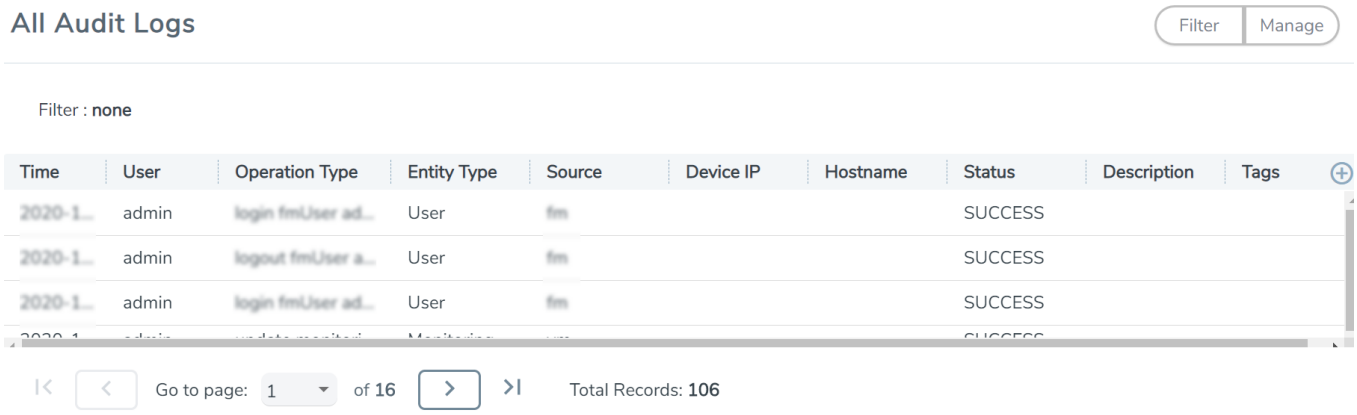
To filter the alarms and event:

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.



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: ▪ 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.

Glossary

This appendix lists the AWS terminologies used in this document. To find a brief definition of these terms, refer to AWS Glossary.

- Access Key
- Access key ID
- Amazon API Gateway
- Amazon Elastic Compute Cloud (Amazon EC2)
- Amazon VPC
- AMI
- AWS
- AWS Identity and Access Management (IAM)
- CIDR block
- EC2 Instances
- Elastic IP address
- Endpoint
- Instance
- Instance type
- Internet gateway
- Key pair
- Secret access key
- Subnet
- Tag
- Target Instance
- Tunnel

Additional Sources of Information

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

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

Documentation

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

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

Table 1: Documentation Set for Gigamon Products

GigaVUE Cloud Suite 6.9 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 6.9 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 6.9 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)
Factory Reset Guidelines for GigaVUE-FM and GigaVUE-OS Devices Sanitization guidelines for GigaVUE Fabric Management Guide and GigavUE-OS devices.
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**	*(URL for where the issue is)*
	Topic Heading	*(if it's a long topic, please provide the heading of the section where the issue is)*
For PDF Topics	**Document Title**	*(shown on the cover page or in page header)*
	Product Version	*(shown on the cover page)*
	Document Version	*(shown on the cover page)*
	Chapter Heading	*(shown in footer)*
	PDF page #	*(shown in footer)*
How can we improve?	**Describe the issue**	*Describe the error or issue in the documentation.* *(If it helps, attach an image to show the issue.)*
	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 contact 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)