Gigamon®

GigaVUE Cloud Suite for AWS Secret Regions - Deployment Guide

GigaVUE Cloud Suite

Product Version: 6.5
Document Version: 1.1
Last Updated: Thursday, October 10, 2024

(See Change Notes for document updates.)

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
6.5.00	1.1	10/10/2024	This update includes bug fixes and minor cosmetic changes for improved usability and document consistency.
6.5.00	1.0	12/11/2023	The original release of this document with 6.5.00 GA.

Contents

GigaVUE Cloud Suite For AWS Secret Regions

GigaVUE Cloud Suite for AWS Secret Regions

The GigaVUE Cloud Suite for AWS Secret Regions option consists of the following components:

- **GigaVUE® Fabric Manager (GigaVUE-FM)**- GigaVUE-FM is a web-based fabric management and orchestration interface that provides a single pane of glass visibility, management, and orchestration of both the physical and virtual traffic that form the GigaVUE Cloud Suite Cloud.
- **UCT-Vs** -UCT-V is an agent that is installed in your Virtual Machine (VM). This agent mirrors the selected traffic from the VMs to the GigaVUE® V Series node.
- **UCT-V Controllers**- UCT-V Controller manages multiple UCT-Vs and orchestrates the flow of mirrored traffic to GigaVUE V Series nodes.
- **GigaVUE V Series Proxy (Optional)**- GigaVUE® V Series Proxy manages multiple V Series nodes and orchestrates the flow of traffic from GigaVUE V Series nodes to the monitoring tools
- **GigaVUE V Series Nodes** -GigaVUE® V Series Node is a visibility node that aggregates mirrored traffic from multiple UCT-Vs. It applies filters, manipulates the packets using GigaSMART applications, and distributes the optimized traffic to cloud-based tools or backhaul to GigaVUE Cloud Suite Cloud using GRE or VXLAN tunnels, provided the cloud platform supports

The images of all the fabric components are available in the Gigamon Customer Portal. For information about installing GigaVUE-FM in your enterprise data center, refer to the *GigaVUE-FM Installation, Migration, and Upgrade Guide.*

Prerequisites

This section lists the minimum requirements that are required for deploying the fabric components:

1. GigaVUE V Series Node requires a minimum of two network interfaces (NIC). Both can be on the same subnet or different subnets.
2. GigaVUE V Series Node requires a minimum of one Management interface (MGMT). Management interface is used for communicating between GigaVUE-FM and V Series Node.
3. GigaVUE V Series Node requires a minimum of one Data/Tunnel interface.
4. The minimum system requirements for a UCT-V Controller and V Series Proxy is 1CPU/1GB RAM.

Network Firewall Requirement

The following table lists the Network Firewall Requirements for GigaVUE V Series Node deployment.

Direction	Type	Protocol	Port	CIDR	Purpose
GigaVUE-FM					
Inbound	• HTTPS • SSH	TCP	• 443 • 22	Administrator Subnet	Management connection to GigaVUE-FM
Inbound	Custom TCP Rule	TCP	5671	GigaVUE V Series Node IP	Allows GigaVUE V Series Nodes to send traffic health updates to GigaVUE-FM Allows Next Generation UCT-V to send statistics to GigaVUE-FM
Outbound	Custom TCP Rule	TCP(6)	9900	GigaVUE-FM IP	Allows UCT-V Controller to communicate with GigaVUE-FM
Outbound (optional)	Custom TCP Rule	TCP	8890	GigaVUE V Series Proxy IP	Allows GigaVUE-FM to communicate with V Series Proxy
Outbound	Custom TCP Rule	TCP	8889	GigaVUE V Series Node IP	Allows GigaVUE-FM to communicate with GigaVUE V Series node
UCT-V Controller					
Inbound	Custom TCP Rule	TCP(6)	9900	GigaVUE-FM IP	Allows UCT-V Controller to communicate with GigaVUE-FM
Inbound (This is the port used for Third Party Orchestration)	Custom TCP Rule	TCP(6)	8891	UCT-V or Subnet IP	Allows UCT-V Controller to communicate registration requests from UCT-V .
Outbound (This is the port used for Third Party Orchestration)	Custom TCP Rule	TCP(6)	443	GigaVUE-FM IP	Allows UCT-V Controller to communicate the registration requests to GigaVUE-FM
Outbound	Custom TCP Rule	TCP(6)	9901	UCT-V Controller IP	Allows UCT-V Controller to communicate with UCT-Vs
Outbound	Custom TCP Rule	TCP	5671	GigaVUE-FM IP	Allows UCT-V Controller to send traffic health updates

Direction	Type	Protocol	Port	CIDR	Purpose
					to GigaVUE-FM.
UCT-V					
Inbound	Custom TCP Rule	TCP(6)	9901	UCT-V Controller IP	Allows UCT-Vs to communicate with UCT-V Controller
Outbound (This is the port used for Third Party Orchestration)	Custom TCP Rule	TCP(6)	8891	UCT-V or Subnet IP	Allows UCT-V to communicate with UCT-V Controller for registration and Heartbeat
Outbound	• UDP • IP	• UDP (VXLAN) • IP Protocol (L2GRE)	VXLAN (default 4789)	UCT-V or Subnet IP	Allows UCT-Vs to (VXLAN/L2GRE) tunnel traffic to V Series nodes
Outbound	Custom TCP Rule	TCP	11443	UCT-V subnet	Allows UCT-V to securely transfer the traffic to GigaVUE V Series Node
GigaVUE V Series V Series Proxy (optional)					
Inbound	Custom TCP Rule	TCP	8890	GigaVUE-FM IP	Allows GigaVUE-FM to communicate with V Series Proxy
Outbound	Custom TCP Rule	TCP	8889	GigaVUE V Series Node IP	Allows V Series Proxy to communicate with V Series node
GigaVUE V Series V Series Node					
Inbound	Custom TCP Rule	TCP	8889	• GigaVUE-FM IP • V Series Proxy IP	Allows V Series Proxy or GigaVUE-FM to communicate with V Series node
Inbound	• UDP • IP	• UDP (VXLAN) • IP Protocol (L2GRE)	• VXLAN (default 4789) • L2GRE	UCT-V or Subnet IP	Allows UCT-Vs to (VXLAN/L2GRE) tunnel traffic to V Series nodes
Inbound	UDP	UDPGRE	4754	Ingress Tunnel	Allows to UDPGRE Tunnel to communicate and tunnel traffic to V Series nodes
Outbound	Custom TCP Rule	TCP	5671	GigaVUE-FM IP	Allows GigaVUE V Series Node to send traffic health updates to GigaVUE-FM

Direction	Type	Protocol	Port	CIDR	Purpose
Outbound	Custom UDP Rule	• UDP (VXLAN) • IP Protocol (L2GRE)	VXLAN (default 4789)	Tool IP	Allows V Series node to communicate and tunnel traffic to the Tool
Outbound (optional)	ICMP	ICMP	• echo request • echo reply	Tool IP	Allows V Series node to health check tunnel destination traffic
Bi-directional	Custom TCP Rule	TCP	11443	GigaVUE V Series Node subnet	Allows to securely transfer the traffic in between GigaVUE V Series Nodes.

Prepare UCT-V to Monitor Traffic

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

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

A UCT-V consists of a source interface and a destination interface. The network packets collected from the source interface are sent to the destination interface. From the destination interface, the packets traverse through the L2GRE/VXLAN tunnel interface to the GigaVUE V Series node.

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

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

Refer to the following sections for more information:

- Linux UCT-V Installation
- Windows UCT-V Installation
- Create Images with Installed UCT-V

Linux UCT-V Installation

Refer to the following sections for the Linux agent installation:

- Single ENI Configuration
- Dual ENI Configuration
- Install UCT-Vs

Single ENI Configuration

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

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 purpose. The egress and ingress traffic from eth0 is mirrored and sent out using the same interface.

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

Dual ENI Configuration

A UCT-V lets you configure two ENIs. One ENI can be configured as the source interface and another ENI can be configured as the destination interface.

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

Install UCT-Vs

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

For dual or multiple ENI configuration, you may need to modify the network configuration files to make sure that the extra NIC/ENI will initialize at boot time.

> **NOTE:** Before installing UCT-V **.deb** or **.rpm** packages on your Linux VMs, you must install packages like Python3 and Python modules (netifaces, urllib3, and requests). Package iproute-tc, tc is also required on RHEL and CentOS VMs.

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

Refer to the following topics for details:

- Install UCT-V from Ubuntu/Debian Package
- Install UCT-V from RPM package
- Install UCT-V from Red Hat Enterprise Linux and CentOS with Selinux Enabled

Install UCT-V from Ubuntu/Debian Package

To install from a Debian package:

1. Download the UCT-V `6.5.00` Debian (.deb) package from the Gigamon Customer Portal. For assistance contact Gigamon Technical Support.
2. Copy this package to your instance. Install the package with root privileges, for example:

    ```
    $ ls gigamon-gigavue_uctv-agent_6.5.00_amd64.deb
    $ sudo dpkg -i gigamon-gigavue_uctv_6.5.00_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:** If you make any changes to the UCT-V config file after the initial setup, you need to restart the agent and refresh or synchronize the inventory from GigaVUE-FM to reflect the changes and start traffic mirroring again. However, if you have an ongoing monitoring session that is active and functioning well, modifying the UCT-V config file can cause traffic to be lost until GigaVUE-FM performs an automatic synchronization every 15 minutes.

Example 1—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—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—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
```

4. Save the file.

5. To enable the third-party orchestration, a configuration file **/etc/gigamon-cloud.conf** needs to be created with the following contents:

```
Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <Connection Name>
        user: <username>
        password: <password>
        remoteIP: <controller list IP addresses separated by comma>
        remotePort: 8891
```

6. Reboot the instance.

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

```
$ sudo /etc/init.d/uctv status
UCT-V is running
```

Install UCT-V from RPM package

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

1. Download the UCT-V **6.5.00** RPM (.rpm) package from the Gigamon Customer Portal. For assistance contact Gigamon Technical Support.

2. Copy this package to your instance. Install the package with root privileges, for example:

   ```
   $ ls gigamon-gigavue_uctv_6.5.00_x86_64.rpm

   $ sudo rpm -i gigamon-gigavue_uctv_6.5.00_x86_64.rpm
   ```

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

   > **NOTE:** If you make any changes to the UCT-V config file after the initial setup, you need to restart the agent and refresh or synchronize the inventory from GigaVUE-FM to reflect the changes and start traffic mirroring again. However, if you have an ongoing monitoring session that is active and functioning well, modifying the UCT-V config file can cause traffic to be lost until GigaVUE-FM performs an automatic synchronization every 15 minutes.

   Example 1—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—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—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
   ```

4. Save the file.

5. To enable the third-party orchestration, a configuration file **/etc/gigamon-cloud.conf** needs to be created with the following contents:

```
Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <Connection Name>
        user: <username>
        password: <password>
        remoteIP: <controller list IP addresses separated by comma>
        remotePort: 8891
```

6. Run the following command to enable and restart the UCT-V:

```
sudo systemctl enable uctv
sudo systemctl restart uctv
```

To check the status of the UCT-V, run the following command:

$ sudo service uctv status

UCT-V is running

Install UCT-V from Red Hat Enterprise Linux and CentOS with Selinux Enabled

Prerequisite:

You must ensure that port 9901 is allowed in the Firewall. This port is required for the communication between UCT-V and UCT-V Controller.

> **NOTE:** Using systemctl and service utilities together leads incorrect results.

To install, follow these steps:

1. Download the following packages from the Gigamon Customer Portal. For assistance contact Gigamon Technical Support.
   - gigamon-gigavue_uctv_**6.5.00**_x86_64.rpm
2. Copy the downloaded UCT-V package files to UCT-V.
3. Install UCT-V package:
   sudo rpm -ivh gigamon-gigavue_uctv_6.5.00_x86_64.rpm
4. Edit uctv.conf file to configure the required interface as source/destination for mirror:

> **NOTE:** If you make any changes to the UCT-V config file after the initial setup, you need to restart the UCT-V and refresh or synchronize the inventory from GigaVUE-FM to reflect the changes and start traffic mirroring again. However, if you have an ongoing monitoring session that is active and functioning well, modifying the UCT-V config file can cause traffic to be lost until GigaVUE-FM performs an automatic synchronization every 15 minutes.

 # eth0 mirror-src-ingress mirror-src-egress mirror-dst
 # sudo service uctv restart

5. Reboot the instance.

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.

VXLAN is the only supported tunnel type for Windows UCT-V.

Windows UCT-V Installation Using MSI Package

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

1. Download the Windows UCT-V `6.5.00` MSI package from the Gigamon Customer Portal. For assistance contact Gigamon 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:** If you make any changes to the UCT-V config file after the initial setup, you need to restart the UCT-V and refresh or synchronize the inventory from GigaVUE-FM to reflect the changes and start traffic mirroring again. However, if you have an ongoing monitoring session that is active and functioning well, modifying the UCT-V config file can cause traffic to be lost until GigaVUE-FM performs an automatic synchronization 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— Monitor ingress and egress traffic at interface 192.168.1.0/24 and use the same interface to send out the mirrored packets.

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

Example 2— 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.

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

4. Save the file.

5. To enable the third-party orchestration, a configuration file **C:\ProgramData\uctv\gigamon-cloud.conf** needs to be created with the following contents:

```
Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <Connection Name>
        user: <username>
        password: <password>
        remoteIP: <controller list IP addresses separated by comma>
        remotePort: 8891
```

6. To restart the Windows UCT-V, perform one of the following actions:
    - Restart the VM.
    - Run 'sc stop uctv' and 'sc start uctv' from the command prompt.
    - Restart the UCT-V from the Windows Task Manager.

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

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

Windows UCT-V Installation Using ZIP Package

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

1. Download the Windows UCT-V `6.5.00` ZIP package from the Gigamon Customer Portal. For assistance contact Gigamon Technical Support.
2. Extract the contents of the .zip file into a convenient location.
3. Run 'install.bat' as an **Administrator** and the UCT-V service starts automatically.

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

> **NOTE:** If you make any changes to the UCT-V config file after the initial setup, you need to restart the UCT-V and refresh or synchronize the inventory from GigaVUE-FM to reflect the changes and start traffic mirroring again. However, if you have an ongoing monitoring session that is active and functioning well, modifying the UCT-V config file can cause traffic to be lost until GigaVUE-FM performs an automatic synchronization 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— Monitor ingress and egress traffic at interface 192.168.1.0/24 and use the same interface to send out the mirrored packets.

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

Example 2— 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.

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

5. Save the file.

6. To enable the third-party orchestration, a configuration file **C:\ProgramData\uctv\gigamon-cloud.conf** needs to be created with the following contents:

```
Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <Connection Name>
        user: <username>
        password: <password>
        remoteIP: <controller list IP addresses separated by comma>
        remotePort: 8891
```

7. To restart the Windows UCT-V, perform one of the following actions:

- Restart the VM.
- Run 'sc stop uctv' and 'sc start uctv' from the command prompt.
- Restart the UCT-V from the Windows Task Manager.

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

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

Create Images with Installed UCT-V

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**.

Configure GigaVUE Fabric Components

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

The GigaVUE fabric components register themselves with GigaVUE-FM using the information provided by you. Once the nodes are registered with GigaVUE-FM, you can configure monitoring sessions and related services in GigaVUE-FM. After launching the fabric component images in your orchestration system use the registration data provided in the sections below to deploy your fabric components to GigaVUE-FM. Health status of the registered nodes is determined by the heartbeat messages sent from the respective nodes.

This section provides step-by-step information on how to register GigaVUE fabric components using your own orchestration system or a configuration file.

Configure UCT-V Controller

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

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

1. Log in to the UCT-V Controller.
2. Create a local configuration file (**/etc/gigamon-cloud.conf**) and enter the following custom data.
    ```
    Registration:
            groupName: <Monitoring Domain Name>
            subGroupName: <VPC ID>
            user: orchestration
            password: orchestration123A!
            remoteIP: <IP address of the GigaVUE-FM>
            remotePort: 443
    ```
3. Restart the UCT-V Controller service.
    ```
    $ sudo service uctv-cntlr restart
    ```

The deployed UCT-V Controller registers with the GigaVUE-FM.

Configure UCT-V

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

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

To register UCT-V after launching the instance using a configuration file, refer to Configure GigaVUE Fabric Components topic for more detailed information.

Configure GigaVUE V Series Node and GigaVUE V Series Proxy

> **NOTE:** It is not mandatory to register GigaVUE V Series Nodes via V Series proxy however, if there are a large number of nodes connected to GigaVUE-FM or if you do not wish to reveal the IP addresses of the nodes, then you can register your nodes using GigaVUE V Series Proxy. In this case, GigaVUE-FM communicates with GigaVUE V Series Proxy to manage the GigaVUE V Series Nodes.

To register GigaVUE V Series Proxy or node after launching the instance using a configuration file, follow the steps given below:

1. Log in to the GigaVUE V Series Proxy or Node.

2. Create a local configuration file (**/etc/gigamon-cloud.conf**) and enter the following custom data.

```
Registration:
        groupName: <Monitoring Domain Name>
        subGroupName: <VPC ID>
        user: orchestration
        password: orchestration123A!
        remoteIP: <IP address of the GigaVUE-FM> or
                  <IP address of the Proxy>
        remotePort: 443
```

> - You can register your GigaVUE V Series Node directly with GigaVUE-FM or you can use V Series proxy to register your GigaVUE V Series node with GigaVUE-FM. If you wish to register GigaVUE V Series Node directly, enter the `remotePort` value as 443 and the `remoteIP` as *<IP address of the GigaVUE-FM>* or if you wish to deploy GigaVUE V Series node using GigaVUE V Series proxy then, enter the `remotePort` value as 8891 and `remoteIP` as *<IP address of the Proxy>*.
> - Use only the default `user` and `password` details given in the custom data.

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

The deployed GigaVUE V Series proxy or node registers with the GigaVUE-FM.

After successful registration, the fabric components send heartbeat messages to GigaVUE-FM every 30 seconds. If one heartbeat is missing, the fabric node status appears as 'Unhealthy'. If more than five heartbeats fail to reach GigaVUE-FM, GigaVUE-FM tries to reach the fabric components and if that fails GigaVUE-FM unregisters the fabric component and it will be removed from GigaVUE-FM.

In the monitoring domain page you can view all the deployed fabric components and UCT-Vs.

Configure and Manage Resources

GigaVUE-FM automatically collects inventory data on all target instances available in your 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 into your monitoring session. Similarly, when an instance is removed, it updates the monitoring sessions.

To design your monitoring session, refer to the following sections:

- Create a Monitoring Session
- Create Tunnel Endpoint
- Create Raw Endpoint
- Create a New Map
- Deploy Monitoring Session
- Add Header Transformations
- View Monitoring Session Statistics
- Visualize the Network Topology

Create a Monitoring Session

To create a new session:

1. From the left navigation pane, select **Traffic > VIRTUAL > Orchestrated Flows > AnyCloud**. The Monitoring Session page appears.
2. In the Monitoring Session page, click **New**. The **Create a New Monitoring Session** window appears.

Create A New Monitoring Session

Alias	Alias
Monitoring Domain	Select domain...

Create   Cancel

3. Enter the appropriate information in the Monitoring Session Info as described in the following table.

Field	Description
Alias	The name of the monitoring session.
Monitoring Domain	The name of the monitoring domain.
Agent Pre-filtering	When enabled, traffic is filtered at the UCT-V-level, before mirroring to the V Series Nodes, which reduces the load on the V Series Nodes and the Cloud networks. Refer to Agent Pre-filtering.

4. Click **Create**.

Create Tunnel Endpoint

The customized traffic from the GigaVUE V Series node is distributed to the tunnel endpoints.

To create a new tunnel endpoint:

1. After creating a new monitoring session, or click **Edit** on an existing monitoring session, the GigaVUE-FM canvas appears.
2. In the canvas, select **New > New Tunnel**, drag and drop a new tunnel template to the workspace. The **Add Tunnel Spec** quick view appears.
3. On the New Tunnel quick view, enter or select the required information as described in the following table.

| Field	Description
Alias	The name of the tunnel endpoint. **NOTE:** Do not enter spaces in the alias name.
Description	The description of the tunnel endpoint.
Type	The type of the tunnel. Select L2GRE or VXLAN to create a tunnel. If you choose VXLAN, you must enter the remote tunnel port.
Traffic Direction	The direction of the traffic flowing through the GigaVUE V Series node. Choose **Out** for creating a tunnel from the GigaVUE V Series node to the destination endpoint. **NOTE:** Traffic Direction **In** is not supported in the current release.
Remote Tunnel IP	The IP address of the tool. **NOTE:** You cannot create two tunnels from a GigaVUE V Series node to the same IP address.
Remote Tunnel Port	Port number for the tunnel end point.

4. Click **Save**.

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

Create Raw Endpoint

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

To add Raw Endpoint to the monitoring session:

1. Drag and drop **New RAW** from **NEW** to the graphical workspace.
2. Click the **New RAW** icon and select **Details**. The **RAW** quick view page appears.
3. Enter the alias and description. In the **Alias** field, enter a name for the Raw End Point and click **Save**.
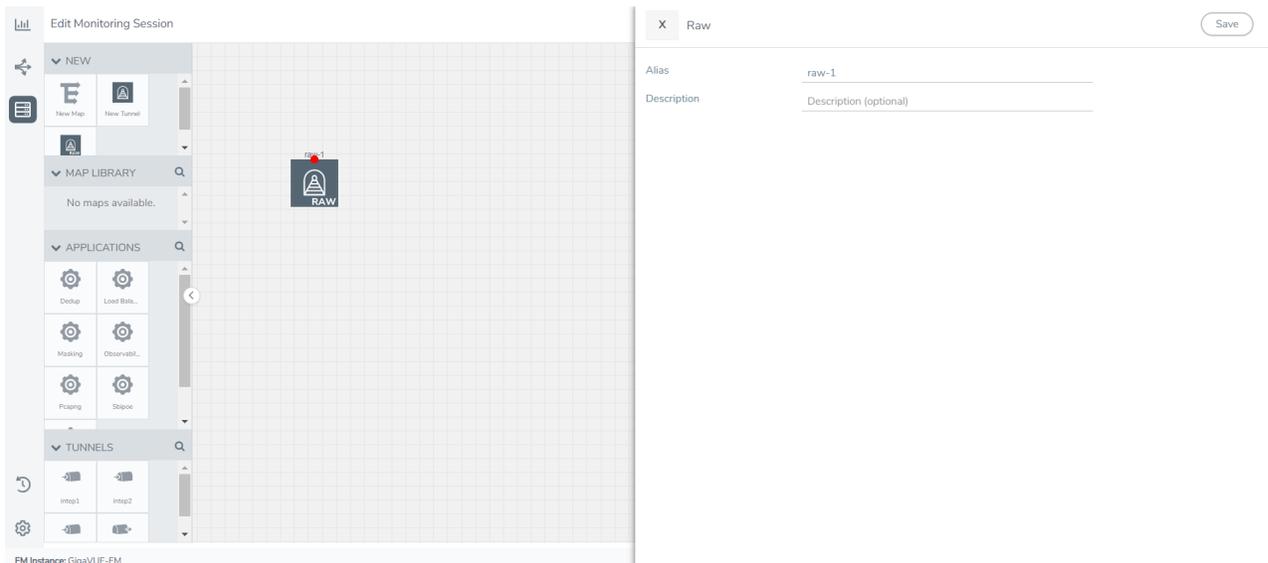
4. To deploy the monitoring session after adding the Raw Endpoint click the **Deploy** button on the edit monitoring session page.
5. The **Select nodes to deploy the Monitoring Session** dialog box appears. Select the V Series Nodes for which you wish to deploy the monitoring session.
6. After selecting the V Series Node, select the interfaces for each of the REPs and the TEPs deployed in the monitoring session from the drop-down menu for the selected individual V Series Nodes. Then, click **Deploy**.

Create a New Map

Each map can have up to 32 rules associated with it. The following table lists the various rule conditions that you can select for creating a map, inclusion map, and exclusion map.

Conditions	Description
L2, L3, and L4 Filters	
EtherType	The packets are filtered based on the selected ethertype. The following conditions are displayed: • IPv4 • IPv6 • ARP • RARP • Other **L3 Filters** If you choose IPv4 or IPv6, the following L3 filter conditions are displayed: • Protocol • IP Fragmentation • IP Time to live (TTL) • IP Type of Service (TOS) • IP Explicit Congestion Notification (ECN) • IP Source • IP Destination **L4 Filters** If you select TCP or UDP protocol, the following L4 filter conditions are displayed: • Port Source • Port Destination
MAC Source	The egress traffic from the VMs matching the specified source MAC address is selected.
MAC Destination	The ingress traffic from the VMs matching the specified destination MAC address is selected.
VLAN	All the traffic matching the specified IEEE 802.1q Virtual LAN tag is filtered. Specify a number from 0 to 4094.
VLAN Priority Code Point (PCP)	All the traffic matching the specified IEEE 802.1q Priority Code Point (PCP) is filtered. Specify a value between 0 to 7.
VLAN Tag Control Information (TCI)	All the traffic matching the specified VLAN TCI value is filtered. Specify the exact TCI value.
Pass All	All the packets coming from the monitored instances are passed through the filter. When Pass All is selected, the L3 and L4 filters are disabled.

When you select a condition without source or destination specified, then both egress and ingress traffic is selected for monitoring the traffic. For example, if you select IPv4 as the EtherType, TCP as the protocol, and do not specify IP source or destination, then both egress and ingress traffic is selected for monitoring purpose.

When you select a condition with either source or destination specified, it determines the direction based on the selection.

X Cloud_Map	Save	Add to Library

Alias	Cloud_Map
Comments	Comments
Map Rules	Add a Rule

✖ Rule 1   Search Layer 2 Conditions...   Search Layer 3 Conditions...
             Search Layer 4 Conditions...   Search Other Conditions...▾

Priority 0   ActionSet 0

Rule Comment   Comment

Pass All Selected   ✖

✖ Rule 2   Search Layer 2 Conditions...   Search Layer 3 Conditions...
             Search Layer 4 Conditions...   Search Other Conditions...▾

Priority 0   ActionSet 0

Rule Comment   Comment

> **NOTE:** You can create Inclusion and Exclusion Maps using all default conditions except EtherType and Pass All.

To create a new map:

1. In the Monitoring Session canvas, from **Maps** section, drag and drop a new map template to the workspace. If you are creating an exclusion or inclusion map, drag and drop a new map template to their respective section at the bottom of the workspace. The new map page is displayed.

2. Enter the appropriate information for creating a new map as described in the following table.

| Parameter	Description
Alias	The name of the new map. **NOTE:** The name can contain alphanumeric characters with no spaces.
Comments	The description of the map.
Map Rules	The rules for filtering the traffic in the map. To add a map rule: a. Click **Add a Rule**. b. Select a condition from the **Search L2 Conditions** drop-down list and specify a value. Based on this selection, the Search L3 Conditions drop-down list is automatically updated. c. Select a condition from the **Search L3 Conditions** drop-down list and specify a value. d. (Optional) If you have selected TCP or UDP as the protocol in the L3 conditions, then select Port Source or Port Destination from the Search L4 Conditions drop-down list and specify a value. If you have selected conditions other than TCP or UDP, then the Search L4 Conditions drop-down list is disabled.
Map Rules	e. (Optional) In the Priority and Action Set box, assign a priority and action set. f. (Optional) In the Rule Comment box, enter a comment for the rule. **NOTE:** • Repeat steps **b** through **f** to add more conditions. • Repeat steps **a** through **f** to add nested rules.

NOTE: Do not create duplicate map rules with the same priority.

3. To reuse the map, click **Add to Library**. Save the map using one of the following options:

   • Select an existing group from the **Select Group** list and click **Save**.

   • Enter a name for the new group in the **New Group** field and click **Save.**

   NOTE: The maps saved in the Map Library can be reused in any monitoring session present in the VNet.

4. Click **Save**.

To edit or delete a map, click a map and select **Details** to edit the map or **Delete** to delete the map as shown in the following figure.
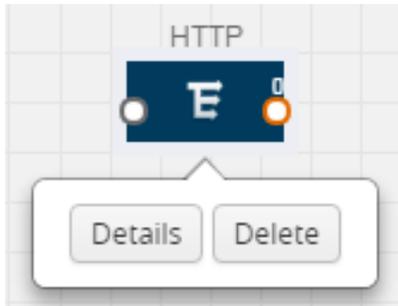
Click the **Show Targets** button to view the monitoring targets highlighted in orange.

Click ⤢ to expand the **Targets** dialog box. Click ☰ to change the view from topology to viewing the target VM names. To view more details about the instance tag name, direction of tapping, and so on, click the arrow next to the instance name.

Agent Pre-filtering

The UCT-V pre-filtering option filters traffic before mirroring it from UCT-V to the V Series Nodes.

Agent pre-filtering is performed directly at the packet capturing point. By filtering at this point, unnecessary traffic is prevented from reaching the fabric nodes that perform filtering and manipulation functions. Preventing this traffic reduces the load on the V Series nodes and the underlying network.

Agent Pre-filtering Guidelines

In cloud environments, there will be limits on how much traffic could be sent out per instance/single or double network interface.

Traffic will be passed if a network packet matches one or more of these rules:

- Only filters from traffic maps will be considered for UCT-V filters. Inclusion and exclusion maps are purely for ATS (automatic target selection); not for UCT-V.
- Only first-level maps of the monitoring session are filtered to create UCT-V maps.
- User-entered L2-L4 filters in the monitoring-session maps must be in the format that V Series Node currently accepts.
- Both egress and ingress maps with filters are supported on UCT-V.
- Both single and dual network interfaces for UCT-V are supported.

Agent Pre-filtering Capabilities and Benefits

UCT-V pre-filtering has the following capabilities and benefits:

- The agent pre-filtering option can be enabled or disabled at the monitoring-session level and is enabled by default.

- When enabled, traffic is filtered at the UCT-V-level, before mirroring to the V Series Nodes. Consequently, traffic flow to the V Series Nodes is reduced, which reduces the load/cost on the Cloud networks.
- Only rules from first-level maps are pushed to the agents.
- Pass rules are supported 100%.
- Drop rules are only supported for simple cases.
- Rules that span all monitoring sessions will be merged for an UCT-V, if applicable.
- If the max-rule limit of 16 is reached, then all the traffic is passed to the V Series node; no filtering will be performed.

Enable/Disable UCT-V Pre-filtering

Agent pre-filtering can be enabled or disabled by the user at the monitoring-session level. This ensures that we provide a knob to the user to turn it on or off at the UCT-V level according to the requirements.

To change the UCT-V Pre-filtering option setting:

1. From the left navigation pane, select **Traffic > VIRTUAL > Orchestrated Flows > AnyCloud**. The Monitoring Session page appears.
2. Click the check box of a monitoring session and then click **Edit** to edit an existing session.
3. Select or deselect the **Agent Pre-filtering** check box in the Monitoring Session info box to change the setting. It is enabled by default.
4. Click **OK**.
5. The Monitoring Session view displays the setting in the Agent Pre-filtering column.

Deploy Monitoring Session

To deploy the monitoring session:

1. Drag and drop one or more maps from the **MAP Library** to the workspace.
2. (Optional) To add Inclusion and Exclusion maps, drag and drop the maps from the Map Library to their respective section at the bottom of the workspace.
3. (Optional) Drag and drop one or more applications from the APPLICATIONS section to the workspace.

> **NOTE:** For information about adding applications to the workspace, refer to Add Applications (GigaVUE V Series 2).

4. Drag and drop one or more tunnels from the TUNNELS section. The following figure illustrates three maps, one exclusion map, one application, and two tunnel endpoints dragged and dropped to the workspace.
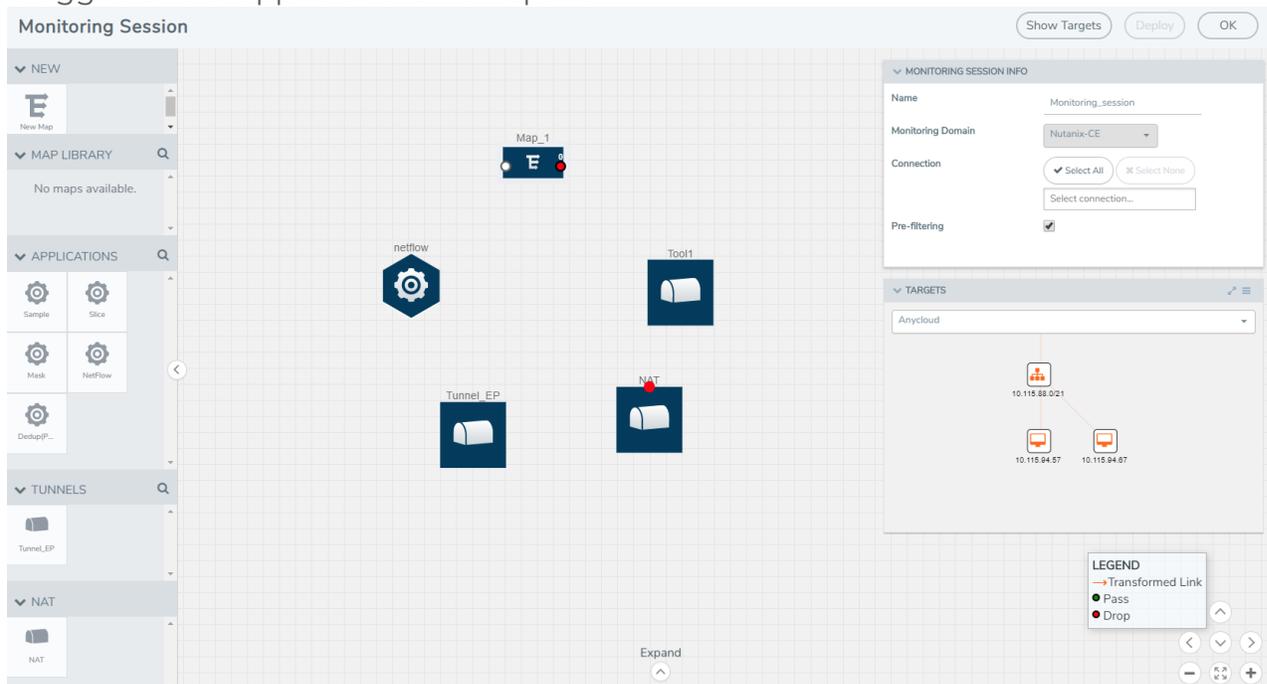
You can add up to 8 links from a action set to different maps, applications, or monitoring tools.

5. Hover your mouse on the map, click the red dot, and drag the link over to another map, application, or tunnel. You can drag more than one link from a map to the destination. On these links, you can apply link transformation to alter the packets. For information about adding link transformation, refer to Add Header Transformations.

6. Hover your mouse on the application, click the red dot, and drag the link (arrow) over to the tunnel endpoints. The traffic matching the rules in each action set is routed to maps, applications, or monitoring tools.

7. Click **Show Targets** to view details about the subnets and monitoring instances.The instances and the subnets that are being monitored are highlighted in orange.

8. Click **Deploy** to deploy the monitoring session. The status is displayed as **Success** in the Monitoring Sessions page. The session is successfully deployed on all GigaVUE V Series Nodes and UCT-Vs. If the monitoring session is not deployed properly, then one of the following errors is displayed:
   - Partial Success—The session is not deployed on one or more instances due to UCT-V or GigaVUE V Series Node failure.
   - Failure—The session is not deployed on any of the GigaVUE V Series Nodes and UCT-Vs.
   Click on the status link to view the reason for the partial success or failure.

9. Click **View** under Statistics to view and analyze the incoming and outgoing traffic.

You can also do the following in the Monitoring Session page:

- Use the **Clone** button to duplicate the selected monitoring session.
- Use the **Edit** button to edit the selected monitoring session.
- Use the **Delete** button to delete the selected monitoring session.

View Monitoring Session Statistics

The Monitoring Session Statistics page lets you analyze the incoming and outgoing traffic on an hourly, daily, weekly, and monthly basis. The traffic can be viewed based on kilobits/second, megabits/second or gigabits/second.
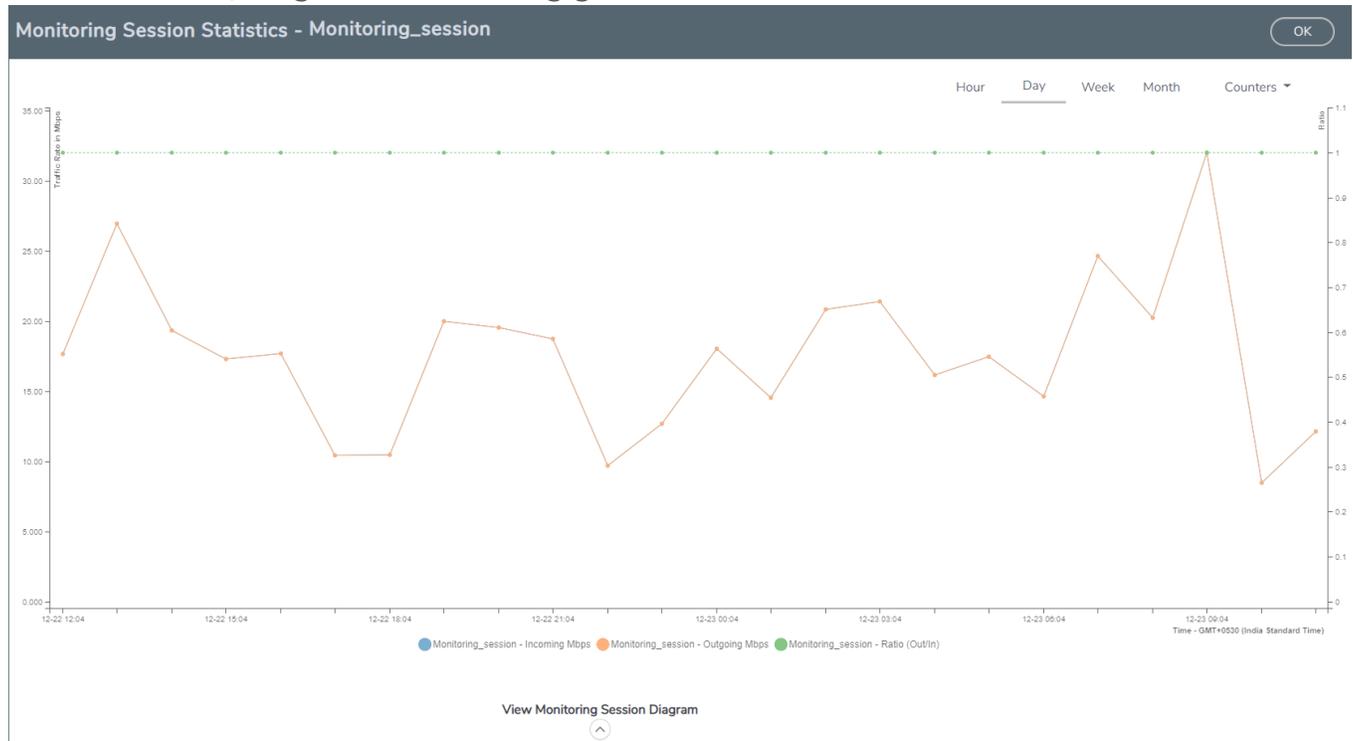
You can click on Incoming Maps, Outgoing Maps, and Ratio at the bottom of the graph to view the statistics individually.

You can expand the **View Monitoring Session Diagram** and click on each individual map, application, and tunnel to view more details about the incoming and outgoing traffic on the selected statistics page. The Map Statistics page lets you choose the map rules to view the traffic matching the selected rule.

Visualize the Network Topology

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:

1. From the left navigation pane, select **Traffic > VIRTUAL > Orchestrated Flows > AnyCloud**. The Monitoring Session page appears.

2. Select **Topology** tab.

3. Select a connection from the **Select connection...** list. The topology view of the subnets and instances is displayed.

4. (Optional) Select a monitoring session from the **Select Monitoring Session...**list. The topology view of the monitored subnets and instances in the selected session are displayed.

5. Select one of the following check boxes:

   - **Source**: Displays the topology view of the source target interfaces that are being monitored.

   - **Destination**: Displays the topology view of the destination target interfaces where the traffic is being mirrored.

   - **Other**: Displays the topology view of the VMs installed with UCT-Vs within the subnets being monitored.
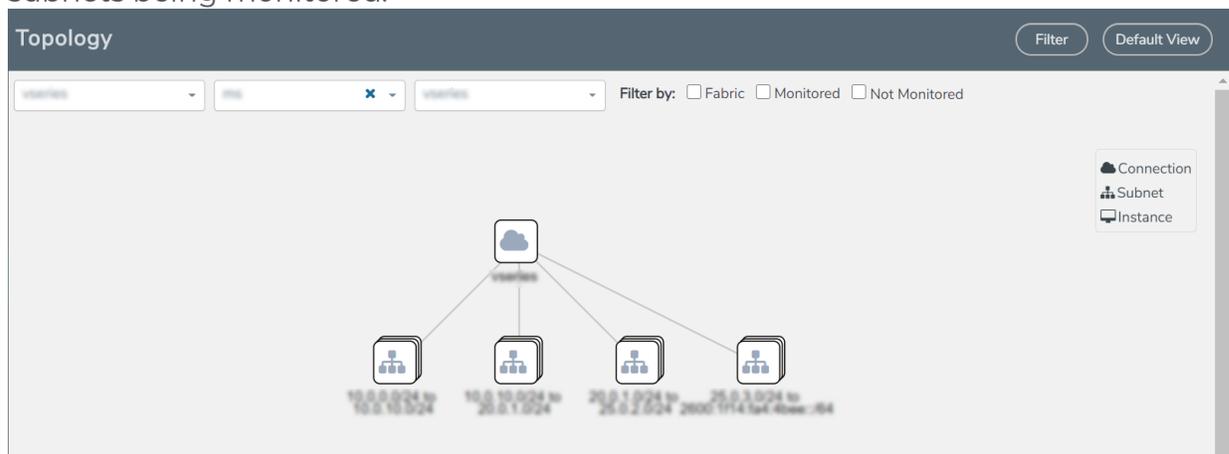
6. (Optional) Hover over or click the subnet or VM Group icons to view the subnets or instances present within the group.

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.

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)