

GigaVUE Cloud Suite for VMWare Configuration Guide

GigaVUE Cloud Suite

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GigaVUE Cloud Suite for VMware

GigaVUE Cloud Suite for VMware provides an intelligent filtering technology that allows virtual machine (VM) traffic flows of interest to be selected, forwarded, and delivered to the monitoring infrastructure centrally attached to the Gigamon Visibility Platform, thereby eliminating any traffic blind spots in the enterprise private clouds or service provider NFV deployments.

This guide provides an overview of GigaVUE Cloud Suite for VMware and also describes how to install, deploy, and operate the GigaVUE[®] Virtual Machine (GigaVUE-VM) from Gigamon[®] Inc.

Topics:

Overview of GigaVUE Cloud Suite for VMware

This section describes the GigaVUE-VM Virtual Traffic Visibility in a virtual environment. This section covers the following topics:

- GigaVUE-VM Overview on page 6
- GigaVUE-VM Configuration on page 6
- GigaVUE-VM Features and Benefits on page 7

GigaVUE-VM Overview

The GigaVUE-VM Virtual Traffic Visibility node extends GigaVUE traffic distribution principles to the virtualized environments, allowing users to filter, monitor, and forward traffic on virtual machines to GigaVUE nodes for distribution to monitoring and analysis tools. GigaVUE-VM nodes support vSphere Distributed Switch, vSphere Standard Switch, and the NSX vSwitch for maximum flexibility. Bundles of GigaVUE-VM nodes may be licensed separately within the GigaVUE-FM interface.

GigaVUE-FM is required for the deployment, configuration, and management of GigaVUE-VM nodes. You work with GigaVUE-VM nodes (through either IP address or DNS name) using the web-based GigaVUE-FM interface. Once you have provided GigaVUE-FM with the IP address and credentials of a VMware vCenter Server, GigaVUE-FM retrieves information on the existing virtual machines managed by the vCenters. Based on this information, GigaVUE-FM helps you manage the GigaVUE-VM nodes deployed throughout your virtual network.

Once you have deployed GigaVUE-VM nodes and GigaVUE-FM has discovered the virtual machines that exist in your virtual network, use GigaVUE-FM to configure **vMaps**. Similar to maps in the GigaVUE H Series, vMaps let you configure packet-matching criteria that distribute matching packets to designated destinations. Virtual packets find their way to physical tool ports through a GigaSMART tunnel to a network port on a GigaSMART-enabled GigaVUE H Series or G Series node. Once the traffic is de-tunneled at the receiving end of the tunnel, it is available for standard GigaVUE traffic distribution to local and stacked tool ports.

GigaVUE-VM Configuration

Once GigaVUE-VM is deployed using GigaVUE-FM, you must use the GigaVUE-FM Web interface to configure and manage virtual nodes and vMaps. The entire standard GigaVUE-OS CLI interface is not supported by GigaVUE-VM. This is to ensure that all traffic management and configuration is managed through GigaVUE-FM.

Because the virtual environment is so dynamic, GigaVUE-FM must stay in constant communication with the vCenter server at all times. This allows GigaVUE-FM to be aware of vMotion events and manage an active inventory of all the virtual nodes in the vCenter. You should ensure that there is a GigaVUE-VM present on each ESXi or NSX host in your virtual datacenter. In this way, you provide GigaVUE-FM with constant access to all virtualized traffic as your VMs move across physical hosts. GigaVUE-FM can support up to 10 vCenters and 1000 virtual nodes (total).

Note: A GigaVUE-FM instance connected to one vCenter does not allow GigaVUE-VM to be configured on both the ESXi and NSX hosts.

GigaVUE-VM Features and Benefits

GigaVUE-VM Visibility Fabric[™] node provides an intelligent filtering technology that allows virtual machine (VM) traffic flows of interest to be selected, forwarded, and delivered to the monitoring infrastructure centrally attached to the GigaVUE[®] platforms, thereby eliminating any traffic blind spots.The following table summarizes the major features and benefits of GigaVUE-VM:

Benefit	Descriptions
Visibility into VM Traffic	Intelligent selection, filtering, and forwarding of VM traffic to the monitoring and tool infrastructure; extend the reach and leverage of existing tools to monitor virtual network infrastructure; on-board virtual traffic visibility for n-tier application cluster.
Multi-Hypervisor Support	Supports the most popular private cloud hypervisors and VMware ESXi.
Support for Packet Slicing	Conserve production network backhaul and optimize monitoring infrastructure processing by slicing VM traffic at required offset, before forwarding it for analysis
Integration with Unified Visibility Fabric and GigaSECURE [®] Security Delivery Platform	Seamless end-to-end visibility across physical and virtual network infrastructure. Optimize monitoring infrastructure by enabling aggregation, replication, and sharing of traffic streams across multiple monitoring tools and IT teams. Additional Flow Mapping [®] and GigaSMART [®] intelligence can be applied on the virtual traffic before forwarding the tools.
Tunneling Support	Leverage the production network to tunnel and forward the filtered virtual traffic from the hypervisor to the GigaVUE platforms; tenant-based IP Tunneling facilitates isolation, privacy, and compliance of monitoring traffic. Simplified virtual traffic policy creation to identify and select the physical tunnel termination end-point where the filtered and transformed virtual workload traffic is to be delivered.
Support for vMotion and LiveMigration	Ensure the integrity of visibility and monitoring policies in a dynamic infrastructure, have real-time adjustment of monitoring and security posture to virtual network changes, and the ability to respond to disasters/failures without losing NOC insight and control.

Table 1: GigaVUE-VM Features and Benefits

Benefit	Descriptions
Virtual Switch Agnostic Solution	VMware: vNetwork Standard Switch (vSS), vNetwork Distributed Switch (vDS), and NSX-V.
Centralized Management	Manage and monitor the physical and virtual fabric nodes using GigaVUE-FM while also configuring the traffic policies to access, select, transform and deliver the traffic to the tools.
Hotspot monitoring	Pro-actively monitor and troubleshoot GigaVUE-VM nodes by elevating Top-N and Bottom- N virtual traffic policies to the centralized dashboards.

GigaVUE-VM Licenses

This section describes how to obtain and apply licenses for GigaVUE-VM. It consists of the following main sections:

- GigaVUE-VM Licenses on page 9 describes the licenses available and how to obtain and apply them.
- GigaVUE-VM License Types on page 10 lists the available licenses and features available with each license type.

Note: To apply licenses and to know about the best practices when upgrading or downgrading license packages, refer to the *"Licenses"* chapter in the *GigaVUE-OS* and *GigaVUE-FM* Administration Guide.

GigaVUE-VM Licenses

GigaVUE-FM is provisioned by default with a Base License that lets you add one physical node and one virtual node. To manage additional physical or virtual nodes, you must obtain and apply licenses, as described in this section.

To run only a single GigaVUE-VM node, there is no requirement to purchase additional licenses for GigaVUE-FM.

Obtain New License

Contact your Sales representative to obtain a new license for GigaVUE-FM or additional GigaVUE-VM Nodes (see Contacting Sales for the contact information).

Retrieve Lost License

If you lost an existing license, contact Gigamon Technical Support for assistance. For the contact information, refer to Contacting Technical Support.

GigaVUE-VM License Types

GigaVUE-VM is available in multiple tiered options along with optional Add-On Features which are also available as a special license (add-on are included with the Prime Package as free-of-charge). GigaVUE-VM is available with base option and with base feature of 1 free physical node and 1 free virtual node and 10 virtual tap points for OpenStack, AWS and Azure. No licenses are required to activate this option.

Additional GigaVUE-VM licenses are available for purchase. The following tables summarizes the available packages and support features with each package.

NOTE: Similar to public cloud, NSX-T licensing is enforced on all the tap points (VMs).

Table 1: GigaVUE-VM Evaluation License Packages

License Types	Physical Nodes	Virtual Nodes	OpenStack/AWS/Azure/NSX-T	Features available	Notes
GigaVUE-VM Evaluation	1 (included as Base)	1	10 Virtual TAP Points	All features for the evaluation period.	License automatically expires after 45 days.

Note: Evaluation licenses are not recommended for deployment in production environment. At the end of the evaluation period, if the license is not upgraded to a fully licensed version, the features are disabled automatically. For an evaluation license, contact your Gigamon representative.

GigaVUE-VM License Packages

The following table summarizes the GigaVUE-VM license packages.

Features	Base (Free-of- Charge)	10- Pack	50- Pack	100-Pack	250- Pack	1000- Pack
Virtual Node Count	1	Up to 10	Up to 50	Up to 100	Up to 250	Up to 1000
Audit, Events Logs	Yes	Yes	Yes	Yes	Yes	Yes
VM Dashboard	Yes	Yes	Yes	Yes	Yes	Yes
Reports	No	Yes	Yes	Yes	Yes	Yes
Trending Data	1 Day	1 Month	1 Month	1 Month	1 Month	1 Month

Table 2: GigaVUE-VM License Packages

Note: To run only GigaVUE-VM, there are no hard requirements to purchase GigaVUE-FM package. However, you will be limited to 1 day of trending data for the dashboard and reports.

GigaVUE virtual tap points (G-vTAP) are available in multiple tiered options for virtual monitoring. A virtual tap point is any end point that can be tapped. For example, a vNic in a VM. All GigaVUE-FM are available with the base option of 1 free G-vTAP. No licenses are required to activate this option.

Additional G-vTAPs are available for purchase. Table 3: G-vTAP License Packages summarizes the available packages and support features with each package.

Features	FM-Base (Free-of- 100-Pack Charge)		250-Pack	1000-Pack
Audit, Events Logs	Yes	Yes	Yes	Yes
Virtual Tap Points	1	Up to 100	Up to 250	Up to 1000
Trending Data	1 Day	1 Month	1 Month	1 Month

Table 3: G-vTAP License Packages

You must purchase an additional license to access the Gigamon Visibility Platform for AWS, which is provisioned with a monthly term license. There are two types of licenses you can purchase in AWS.

Table 4: AWS/Azure/OpenStack License Packages summarizes the available packages. For details about installing and configuring Gigamon Visibility Platform for AWS, refer to the *Gigamon Visibility Platform AWS Getting Started Guide*.

Table 4: AWS/Azure/OpenStack License Packages

License Type	Description
100 Virtual TAP Points	Monthly Term license for traffic visibility up to 100 virtual TAP Points in AWS. Minimum Term is 3 months with a maximum of 12 months.
1000 Virtual TAP Points	Monthly Term license for traffic visibility up to 1000 virtual TAP Points in AWS. Minimum Term is 3 months with a maximum of 12 months.

Virtual Dashboard

This chapter describes the Virtual Dashboard of GigaVUE-FM.

This chapter covers the following topics:

- Overview of the Virtual Dashboard on page 13
- Virtual Dashboard Profiles on page 13
- Virtual Dashboard Widgets on page 14

Overview of the Virtual Dashboard

The Virtual Dashboard is similar to the Physical Dashboard, which is shown in Figure 1: Virtual Dashboard on page 14. The Virtual Dashboard presents four widgets that provide information about GigaVUE-VM. It is only available if a GigaVUE-VM package or packages are purchased. There are no minimum requirements for the size of the pack purchased. However, the dashboard is not available in Basic mode where only one VM node is available.

From the Virtual Dashboard, you can do the following:

- Create multiple profiles using widgets
- Resize or reposition the windows
- Set the default profile as the landing page for the login
- Modify the trending for each widget

Virtual Dashboard Profiles

The Virtual Dashboard allows you to create multiple profiles. There are four widgets in the Virtual dashboard. You can create multiple profiles and customize the widgets to be displayed in each profile.

To create a new profile, refer to the Physical Dashboard Profiles in the GigaVUE-FM User's Guide. The Virtual Dashboard is displayed as shown in Figure 1: Virtual Dashboard on page 14.

🞯 GigaVUE-FM FM In	stance Name	Dashboard	Physical V	'irtual Cl	oud Adı	ministration		Q	C	🙏 admin 🗸 💡
OVERVIEW	Profile: De	fault								Add Widget
Physical & Virtual										
Health Monitor	Highest Traffic	: Physical Maps	\$ →	Highest 7	raffic: Netv	vork Ports	\$ →	Lowest Traffic	: GigaVU	E VM Maps 🔅
name Analyzer			1 Hour 🔻				1 Hour 🔻			1 Hour 🔻
PROFILES	Node	Map Alias	Traffic (Mbps)	Node	Port ID	Port Alias	Traffic (Mbps)	Map Alias		Traffic (Mbps)
New Profile	GigaVUE-HB1-VM	map_g1g2	< 1 Mbps		- oreno	Torchilds	(1115)55	<u>map_1</u>		30.42
Default	GigaVUE-HB1-VM	<u>map_gmip_g5g6</u>	< 1 Mbps	GigaVUE- HB1-VM	<u>1/1/x2</u>		10.12			
				<u>GigaVUE-</u> <u>HB1-VM</u>	<u>1/1/g1</u>		< 1 Mbps			
				<u>GigaVUE-</u> <u>HB1-VM</u>	<u>1/1/g5</u>		< 1 Mbps			
				<u>GigaVUE-</u> <u>HB1-VM</u>	<u>1/1/g3</u>		< 1 Mbps			
				<u>GigaVUE-</u> <u>HB1-VM</u>	<u>1/1/g</u> 7		< 1 Mbps			
				e: 10.0	4.44.6		· · · · · · · · · · · · · · · · · · ·			

Figure 1: Virtual Dashboard

Note: The time interval selected, depends on the GigaVUE-VM package selected. For the base package, only 1 day option is available as the data is not stored for more than 1 day. While the prime package users can select any option including 1 month.

Virtual Dashboard Widgets

This section provides descriptions of each of the widgets available on the Virtual Dashboard. The widgets available are:

- Highest Traffic widgets
- Lowest Traffic widgets

You can customize the widgets by creating and managing profiles. Refer to Virtual Dashboard Profiles on page 13 for more information.

Highest Traffic

The Highest Traffic widget lists the GigaVUE-VMs with the highest traffic within a specified time. You can create as many Highest Traffic widgets as you want listing up to 5, 10, 15, 20, 50, or 100 items in each widget.

The traffic flowing through each GigaVUE-VM is displayed in megabytes per second (Mbps). You can specify the period over which the amount of traffic must be calculated. You can choose 1 hour, 1 day, 1 week, or 1 month.

The GigaVUE-VMs contributing to the highest traffic can be displayed as either a table or a graph. By default, a table is displayed. You can click the arrow to change the display to a graph as shown in Figure 2: Highest Traffic Contributor: Physical Maps Example on page 15.

Highest Traffic: GigaVUE VM Ports				
	1 Hour 🔻			
GVM Node	Traffic (Mbps)			
Gigamon Traffic Visibility (1)	< 1 Mbps			
Gigamon Traffic Visibility (2)	< 1 Mbps			
Gigamon Traffic Visibility (6)	< 1 Mbps			
Gigamon Traffic Visibility (4)	< 1 Mbps			
Gigamon Traffic Visibility (3)	< 1 Mbps			

Figure 2: Highest Traffic Contributor: Physical Maps Example

In the graph view, each ring represents a GigaVUE-VM. You can hover your mouse over the graph to view the percentage of traffic handled by the GigaVUE-VM.

To configure the Highest Traffic widget:

- 1. On the top navigation bar, click **Dashboard**.
- 2. On the Physical & Virtual dashboard page, select the profile in which you want to add the widget.
- 3. Click **Add New Widget**. The Add New Widget window is displayed. Refer to Figure 3: Add New Widget on page 16.



Figure 3: Add New Widget

In the Add New Widget window, select Highest Traffic and click OK. The Highest Traffic configuration window is displayed. Refer to Figure 4: Highest Traffic Configuration on page 17.

Traffic Type	
Choose which type of traf	fic to show on this widget
Virtual	•
Item Type	4
which items do you want	to show
GigaVUE VM Ports	~
Site (optional)	
Select a site to only display	y the items from this site
Select a site	*

Figure 4: Highest Traffic Configuration

- 5. From the **Traffic Type** drop-down list, select Virtual.
- 6. From the Item Type drop-down list, select one of the following items:
 - GigaVUE-VM Ports displays the ports contributing to the highest traffic
 - GigaVUE-VM Maps displays the maps contributing to the highest traffic

Note: Sites are not applicable for GigaVUE-VMs.

- 7. From the **Display Total** drop-down list, select the number of items to be displayed. By default, the number of items selected for display is 5.
- 8. Click **OK**.

Lowest Traffic

The Lowest Traffic widget lists the GigaVUE-VMs that contribute to the lowest traffic within a specified time. You can create as many Lowest Traffic widgets as you want listing up to 5, 10, 15, 20, 50, or 100 items in each widget.

The traffic flowing through GigaVUE-VMs is measured in megabytes per second (Mbps). You can specify the period over which the amount of traffic is calculated. You can choose 1 hour, 1 day, 1 week, or 1 month.

The GigaVUE-VM maps and ports can be displayed as either a table or a graph. By default, a table is displayed. You can click the arrow to change the display to a graph as shown in Figure 5: Lowest Traffic on page 18.

Lowest Traffic: GigaVUE VM Maps		
	1 Hour 🔻	
Map Alias	Traffic (Mbps)	
<u>map_1</u>	30.45	

Figure 5: Lowest Traffic

In the graph view, each ring represents a map or a port. You can hover your mouse over the graph to view the percentage of traffic flowing through the GigaVUE-VM's map or the port.

The Lowest Traffic widget is configured exactly the same way as the Highest Traffic widget. To configure the Lowest Traffic widget, refer to the configuration steps provided in Highest Traffic on page 14.

Configure Tunnel Endpoint

Virtual packets find their way to physical tool ports through a GigaSMART tunnel. The tunnel starts at the GigaVUE-VM node and ends at a network port on a GigaSMART-enabled G Series or H Series node. In both cases, the receiving end of the tunnel must have a tunnel decapsulation GigaSMART Operation bound.

This section covers the following topics:

- Tunnel Configuration Options on page 19
- Create Tunnel Endpoint on page 22
- Tunnel Validation on page 24
- Configure H Series IP Interfaces for the GigaVUE-VM Tunnel Library on page 25

Tunnel Configuration Options

This section describes options available when configuring tunnel endpoint for GigaVUE-VM.

Tunnel End Points

When adding a tunnel endpoint in the Tunnels Library, you are provided with two options:

• GigaVUE

The GigaVUE option lists all the IP interfaces available on the GigaVUE H Series nodes that are connected to the GigaVUE-FM.

• Other

This option gives users the option to add a new IP interface that may not be listed in the GigaVUE Tunnels Library. G-Series tunnel endpoints are not auto-discovered by the Tunnels Library. So use the Other option to add this tunnel.

Creating a GigaSMART tunnel requires configuration on both the sending and receiving ends:

When you provision a vMap for a GigaVUE-VM node The receiving end of the tunnel should be configured as through GigaVUE-FM, in addition to selecting the follows: virtual traffic to be forwarded, you also specify the Configure a Network Tunneled port with an destination and source for traffic to be tunneled with IP address, subnet mask, and default the following settings: gateway. The IP address must match the Tunnel Destination IP — The IP destination IP address specified at the address of the tunneled network port sending end of the tunnel. on the receiving end of the tunnel for • Create a GigaSMART operation with a tunnel L2GRE. For GMIP, ERSPAN: The IP decapsulation component. The address of the IP interface on the H Decapsulation settings include the same Series device with GigaSMART listening UDP port you specified as the (ERSPAN is only supported for destination port at the sending end of the VMware). tunnel. • Tunnel Destination Port — The Bind the GigaSMART operation to the listening UDP port at the destination Network Tunneled port as part of a map that end of the GigaSMART tunnel for distributes arriving traffic to local tool ports GMIP only. This should be the port for analysis with local tools. that is configured to receive traffic from the GigaVUE-VMs. • Tunnel Source Port — The port on the GigaVUE-VM from which mirrored traffic is originating. Enter 1 if this is

DSCP

not expected to be used.

When configuring an IP interface in the Tunnels Library, you can specify a Differential Service Code Point (DSCP) value. (DSCP is only supported on GMIP and GRE tunnels.) This value is a 6-bit field in the IP header and specifies the Per-Hop Behavior (PHB). DSCP allows traffic to be classified so that each traffic class can be managed differently, ensuring preferential treatment for higher-priority traffic on the network.

For GigaVUE-VM traffic to receive preferential treatment in the network, a specific DSCP value can be chosen by the service provider per tunnel. The DSCP values fall into the following three categories:

- Default PHB—best effort traffic. Select a value of 0 for DSCP to specify Default PHB.
- Expedited Forwarding (EF) PHB—dedicated to low-loss, low-latency traffic. Select EF for DSCP to specify this PHB.

• Assured Forwarding (AF) PHB—gives assurance of delivery under prescribed conditions. There are four classes of AF vales and each class is further divided by drop probability. The classes are defined in Table 1: AF Behavior Group Classes.

In addition to these three categories, values from 0 to 63 are allowed.

Drop Probability	Class 1	Class 2	Class 3	Class 4
Low	AF11 (DSCP 10)	AF21 (DSCP 18)	AF31 (DSCP 26)	AF41 (DSCP 34)
Medium	AF12 (DSCP 12)	AF22 (DSCP 20)	AF32 (DSCP 28)	AF42 (DSCP 36)
High	AF13 (DSCP14)	AF23 (DSCP 22)	AF33 (DSCP 30)	AF43 (DSCP 38)

Table 1: AF Behavior Group Classes

Fragmentation

GigaVUE-VM allows fragment of packets leaving the tunnel. Fragmentation can be enabled or disabled per tunnel. Fragmentation is needed if the tunneled packet size plus the tunnel header size is greater than the tunnel MTU size. If fragmentation is not specified in this situation, the tunneled packet is dropped. IP fragment reassembly occurs at the H Series nodes starting with GigaVUE-OS 4.6. For versions lower than version GigaVUE-OS 4.6, it is suggested that fragmentation be disabled on the GigaVUE-VM.

Support for fragmentation is as follows:

- Fragmentation is only supported for IPv4 packets.
- Fragmentation and reassembly is not supported on ERSPAN tunnels.
- Packets encapsulated with a GRE header on G-vTAP agents do not undergo fragmentation in the current release.
- GigaVUE-VM does not reassemble GRE packets received from the G-vTAP agent.
- Filtering on fragmented packets is from layer 2 to layer 3 because only the first fragment will have the transport header. In the current release, GigaVUE-VM does not support filtering on fragments for layer 4.

In VMware environments, packets can be dropped when the packet frame length is greater than the GigaVUE-VM tunnel MTU after adding the tunnel header. In this case, the packets are fragmented and sent out of the tunnel interface. However, it is not guaranteed that the packet will reach the GigaVUE H Series because intermediate devices may not support fragmentation. This is illustrated in Figure 1: Fragmentation on GigaVUE-FM Tunnels in VMware Environments.

Manitored V/M	Port Mirror		GigaVUE VM	T	unnel (GRE/GMIP)	H Series with
Monitored VM	MTU1	MTU2		мтиз	MTU4 M	TUn GigaSMART
Eth IP Paylo	ad Eth	IP Payload	Tun Eth IP	Tun Hdr Eth	IP Payload	

Figure 1: Fragmentation on GigaVUE-FM Tunnels in VMware Environments

Create Tunnel Endpoint

The section provides the steps for creating a GigaVUE-VM tunnel to a GigaSMART device from a virtual environment.

To create a tunnel, do the following:

1. Navigate to the **Tunnels Library** page.

Select the environment that you want to work with under Virtual in the Navigation pane, and then select **Management > Tunnels Library**.

- 2. Click Add.
- 3. The GigaVUE tunnels discovered should be displayed on the Add Tunnels Endpoint page as shown in Figure 2: Adding a Tunnel Endpoint. If it is displayed, do the following:
 - a. Select the tunnel that is configured to receive traffic from the GigaVUE-VMs.
 - b. Enter the **Tunnel Source Port**.

This value can be used on the H Series GigaSMART device to associate which source port the mirrored traffic is originating from. Enter 1 if this is not expected to be used.

For more information about tunnel source ports, refer to Tunnel Configuration Options on page 19.

c. Click OK.

Add Tunnel Endpoint								
I	Port: 🖲 GigaVUE® 🔘 Other							
Destination Tunnel IP	Tunnel Source Port	Tunnel Destination Port	Tunnel Type	DSCP	Fragmentation	Physical Port	Physical Node	Physical Node Type
10.115.40.25	0 - 65535	2101	GMIP	select 🔻	Enabled	<u>1/1/g1</u>	10.115.200.23	HB1
10.210.176.107	0 - 65535	2107	GMIP	select 🔻	Enabled	<u>1/1/g7</u>	10.115.200.23	HB1
10.210.176.103			L2GRE	select 🔻	Enabled	<u>1/1/g3</u>	10.115.200.23	HB1
10.210.176.111	0 - 65535	2111	GMIP	select 🔻	Enabled	<u>1/1/g11</u>	10.115.200.23	HB1
10.210.176.105	0 - 65535	2105	GMIP	select 🔻	Enabled	<u>1/1/g5</u>	10.115.200.23	HB1
			Total Iter	ms : 5				

Figure 2: Adding a Tunnel Endpoint

If the desired GigaVUE tunnel was not discovered, the tunnel was not configured correctly for it to be eligible for a GigaVUE-VM endpoint. For information about correctly configuring the tunnel, refer to Configure H Series IP Interfaces for the GigaVUE-VM Tunnel Library on page 25.

For non-Gigamon tunnels, you must enter the tunnel information manually by doing the following:

- a. Select Other.
- b. For Type, select GMIP, L2GRE, or ERSPAN

If you select, ERSPAN, only the Destination Tunnel IP field is displayed. If you select, L2GRE, the Destination Tunnel IP, DSCP, and Fragmentation fields are displayed.

- c. Specify the following:
 - Destination Tunnel IP
 - Tunnel Destination Port
 - Tunnel Source Port

If a tunnel source port is not expected to be used, enter 1.

For more information about the tunnel IP and the tunnel source and destination ports, refer to Tunnel Configuration Options on page 19.

- d. (Optional) Select the **DSCP** value. For a description of DSCP, refer to DSCP on page 20.
- e. (Optional) Enable **Fragmentation** to allow GigaVUE-VM to fragment large packets. For a description of fragmentation, refer to **Tunnel Configuration Options on page 19**.

Figure 3: Adding a non-GigaVUE Tunnel Endpoint shows an example of a manually configured tunnel endpoint.

Tunnel Endpoint: 10.210.176.11	1	Save	Cancel
Destination Tunnel IP	10.210.176.111		
Tunnel Source Port	2011		
Tunnel Destination Port	2111		
Туре	GMIP		
DSCP	AFI3x •		
Fragmentation	Enabled		

Figure 3: Adding a non-GigaVUE Tunnel Endpoint

4. Click **OK**.

Tunnel Validation

Users are provided with the selection for tunnel validation. This ensures that the tunnels are terminating to a valid physical node and are configured correctly. This is especially important to ensure that the GigaVUE-VM traffic terminates at the appropriate location and is not dropped. GigaVUE-FM provides feedback if the tunnel is malfunctioning (for example, traffic is not correctly flowing to the end point) or if the IP interface is down or missing. This is to ensure timely and prompt debug of any issues relating to the tunneling of the GigaVUE-VM traffic.

A **Tunnel Validation** button is available on the Virtual Nodes page and Virtual Maps page for VMware vCenter. The following figures show the tunnel validation selection on the pages for VMware vCenter. Additionally from the Virtual Nodes page for VMware vCenter, you can select a node, and then select tunnel validation. This brings up the quick view for tunnel status that provides you with the option to ping or traceroute to valid the tunnel path. The purpose of this is to validate whether GigaVUE-VM eth1 can reach the tunnel endpoint.

Note: Tunnel status from G Series node will always show as Red. This does not imply that the port is inactive.

Vii	rtual Nodes			Edit	Delete	Filter	Rediscover	Tunnel Validation
	Û							
	GigaVUE-VM Node Name	GigaVUE-VM IP	Licensed	Version	Data	Center	Cluster	Host Name
Virt	ual Center : 10.115.41.207							
	GigaVUE-VM-10-115-41-161	10.115.46.39	Yes	2.4.00	dc		-	10.115.41.161
	GigaVUE-VM-10-115-41-162	10.115.46.9	No	3.1.00	dc		-	10.115.41.162
Total Items : 2								

Figure 4: Tunnel Validation Selection From Virtual Nodes Page

Virtual Nodes	х	Tunnel Status		Check	Clear
GigaVUE-VM Node Name	GigaVUE-\		Cigo//UE VM 10 115 41 161		
Virtual Center : 10.115.41.207		GVM name	Gigav 02-vivi-10-113-41-101		
GigaVUE-VM-10-115-41-161	10.115.46.	Destination Tunnel IP	10.210.96.203		
GigaVUE-VM-10-115-41-162	10.115.46.				
		Action	ping traceroute		
		Result			
					11

Figure 5: Tunnel Validation Status From Virtual Nodes Page

Vi	rtual Ma	aps			New	Edit	Delete	Redeploy	Redeploy All	Tunnel Validation
	行									
	Map Alias	Virtual center	Comments	Virtual Machines	Deploym	ent Status	Traffic		Tunnel Destina	tion
	vmap890	10.115.41.206	test	GigaVUE-FM-3.1	🔴 Failur	e	Inco	onsistent	[GMIP] 10.10.10	0.10:500 srcPort: 1
	dfgd	10.115.41.207		FM-builder	Succe	SS	Con	sistent	[GMIP] 10.10.10	0.10:500 srcPort: 1
	Total Items : 2									

Figure 6: Tunnel Validation Selection From Virtual Maps Page

Configure H Series IP Interfaces for the GigaVUE-VM Tunnel Library

The Tunnel Library allows you to add the tunnel endpoints into the Tunnels Library that are configured on GigaVUE nodes. However, not every tunnel endpoint that is configured on a physical device is listed in the library. A tunnel endpoint is listed in the library based on the following criteria:

- The IP interface must be configured as a Network port.
- The Network Tunneled port must be configured as a source port in the map on a physical device.

- The GigaSMART Operation for the maps on the GigaVUE nodes must have a Tunnel Decapsulation application defined. The GigaSMART Operation must also be linked to a GigaSMART Group.
- The Tunnel decapsulation application must support GMIP, ERSPAN, or L2GRE. However, make sure to define the port destination as a GMIP port.

To configure the tunnel endpoint, do the following:

1. Add a Physical Node to GigaVUE-FM.

For the steps to add a GigaVUE node to GigaVUE-FM, refer to "Add New Physical Node or Cluster to GigaVUE-FM" in the GigaVUE-FM User's Guide.

If you want to use the port on an physical node already added to GigaVUE-FM, do the following:

- a. Select **Physical Nodes** from the Navigation pane.
- b. Select the device on which you want to configure the tunnel end point by clicking the node's IP address or DNS name.

环 Traffic Analyzer		Name	Node IP	Role	Model		
PHYSICAL		Standalone : 10.115.152.53 (HC2-C03-13) hc2-c03-13.glgamon.com					
🗱 Physical Nodes	115	HC2-C03-13	10.115.152.53	Standalone	HC2		
VIRTUAL		Cluster : tme-visibility-1 (HD8-C04-01)					
🗗 VMware vCenter		🛑 TA1-C04-35	10.115.152.51	Slave	TA1		

Figure 7: Configure Tunnel End Point

- 2. Enable the port to use as an endpoint for the tunnel:
 - a. In the Navigation pane, select **Ports > Ports > All Ports**.
 - b. Select the port to define as an IP interface and click **Edit**.
 - c. On the port configuration page, do the following:
 - (Optional) Enter a name in the **Alias** field to help identify the port.
 - (Optional) Enter any additional comments in the **Comments** field.
 - Enable Admin.
 - Select **Network** for Type.
 - Set Duplex to Full.
 - **Enable** Autonegotiation.

• Click Save.

Figure 8: Network Port Configuration shows an example of a network port configuration.

Ports : 1/1/x10					
Allas Comment:	MyTunnelPort				
✓ Parameters					
	Admin	🗹 Enable			
	Туре	Network			
	Speed	10G 👻			
	Duplex Auto Negotiation	● Full● Half✓ Enable			
	VLAN Tag				
	Force Link Up	Enable			

Figure 8: Network Port Configuration

- 3. Create a GigaSMART Group.
 - a. Select GigaSMART Groups.
 - b. Click New.
 - c. Enter a name for the GigaSMART Group in the **Alias** field.
 - d. Add an engine port in the **Port List** field.
 - e. Click Save.

Figure 9: GigaSMART Group Configured shows an example of a GigaSMART Group with the alias MyTunnelGSgrp and port 1/5/e1.

GigaSMART Group		Save	Cancel
✓ GigaSMART Group Info			
Allas	TunnelGSgrp		
Port List	1 /5/e1 ×		•

Figure 9: GigaSMART Group Configured

- 4. Configure the tunnel endpoint.
 - a. Select **Ports > IP Interfaces**.
 - b. Click New.
 - c. Configure the IP interface as follows:
 - In the Alias and Comment fields, enter the name and description for the IP interface.
 - Select the port configured in Step 2 for Port.
 - Enter the IP Address, IP mask, Gateway, and MTU.
 - Select the GigaSMART Group configured in Step 3.
 - d. Click Save.

IP Interface	
Alias	1_1_x10
Comment	
	Port Editor
Port	N 1/1/x10 ·
Туре	● IPv4 ○ IPv6
IP Address	10.115.152.151
IP Mask	255.255.248.0
Gateway	10.115.152.1
мти	1500
GS Groups	G565 ×
Exporters	Select Exporter 👻

Figure 10: Configuring IP Interface

- 5. Configure the GigaSMART Operation.
 - a. Select GigaSMART > GigaSMART Operations (GSOP).
 - b. Click **New** to add a new GSOP.
 - c. Configure the GSOP as follows:
 - Enter a name for the GSOP in the **Alias** field.
 - Select the GigaSMART Group configured in Step 3.
 - Select Tunnel Decapsulation for the GigaSMART Operations (GSOP).
 - Select the type for the tunnel decapsulation, which is ERSPAN, GMIP, or L2GRE. For ERSPAN, enter a Flow ID. For GMIP, enter the GMIP port. For L2GRE, enter the key.
 - d. Click Save.

GigaSMART Operation (GSOP)							
Allas	MyTunnelGsop						
GigaSMART Groups	MyTunnelGSgrp	•					
GIgaSMART Operations (GSOP)			•				
	Tunnel Decapsulation		×				
	GMIP		•				
	GMIP Port	8002					

Figure 11: Configuring GSOP

- 6. Create a map.
 - a. Select Maps > Maps.
 - b. Click New.
 - c. Configure the map as follows:
 - Enter a name for the map in the **Alias** field.
 - For Type, select Regular. For Subtype, select By Rule.
 - For **Source**, select the port configured in Step 2.
 - For **Destination**, select a tool port, tool port group or tool GigaStream.
 Note: The Destination list displays the available tool ports, tool port groups or tool GigaStreams, including the port aliases and port IDs, as well as the port utilization status (percentage used) of any ports already in use. Utilization status support is available for Individual and Hybrid tool ports.
 - Select the GigaSMART Operation (GSOP) created in Step 5.
 - Use **Add a Rule** to a rule pass all IPv4 and a rule to pass all IPv6 traffic, depending on your requirements.
 - d. Click Save.

New Map	
Comments	
Туре	Regular 💌
Sub Type	By Rule
No Rule Matching	Pass Traffic
✓ Map Source and Destination	
	Port Editor
Source	N 1/1/x10 "MyTunnelPort" ×
Destination	■ 1/1/x7 ×
GigaSMART Operations (GSOP)	MyTunnelGSOP (MyTunnelGSg
✓ Map Rules	
	Quick Editor Mport Add a Rule
x Rule 1	Condition search 👻 🖲 Pass 💿 Drop 🔲 Bi Directional
Rule Comment	Comment
	IP Version × Version v4 ×
× Rule 2	Condition search 👻 🖲 Pass 🔘 Drop 🔲 Bi Directional
Rule Comment	Comment
	IP Version χ Version v6 τ

Figure 12: Creating a Map

- 7. Add the tunnel endpoint to GigaVUE-FM.
 - a. Return to GigaVUE-FM.
 - b. Under VMware vCenter, go to **Management > Tunnels Library**.
 - c. Click Add.
 - d. Select GigaVUE.
 - e. Select the tunnel endpoint created in the previous steps and specify a **Tunnel Source Port**. Figure 13: Adding a Tunnel Endpoint shows the GigaVUE tunnel source port created in the previous steps.

Add Tunnel Endpoint							OK Cancel	
Port: @ GigaVUE® (*) Other								
Destination Tunnel IP	Tunnel Source Port	Tunnel Destination Port	Tunnel Type	DSCP	Fragmentation	Physical Port	Physical Node	Physical Node Type
10.115.152.150	0 - 65535	8001	GMIP	select 🔻	Enabled	<u>1/1/x21</u>	<u>10.115.152.53</u>	HC2
10.115.152.151	888	8002	GMIP	select 🔻	Enabled	<u>1/1/x10</u>	<u>10.115.152.53</u>	HC2

Figure 13: Adding a Tunnel Endpoint

f. Click **OK**.

The tunnel end point is added to the Tunnels Library and can be used for the Virtual Maps. Figure 14: Tunnels Libraryshows the port in the previous step added to the Tunnels Library page.

Virtual Centers Virtua	l Switches Virtual Nodes	Tunnels Library								
Tunnels Library								Add	Edit	Delete
Destination Tunnel IP	Tunnel Source Port	Tunnel Destination Port	Tunnel Type	DSCP	Fragmentation	Physical Port	Physical Node	Physica	I Node Typ	e
10.115.152.151	888	8002	GMIP		disabled	<u>1/1/x10</u>	10.115.152.53	HC2		
10.115.152.150	80	8001	GMIP		disabled	<u>1/1/x21</u>	<u>10.115.152.53</u>	HC2		
Total items : 2										

Figure 14: Tunnels Library

Configure Visibility for VMware

This section introduces GigaVUE-VM virtual traffic visibility node, describing the features and functions and summarizing the relationships between the products.

The chapter includes the following major sections:

- Before You Install on page 32 describes the system requirements, such as the security privileges needed for the vCenter GigaVUE-VM users.
- How to Use GigaVUE-VM VMware vCenter Management on page 35 describes the tasks you must perform the first time you use GigaVUE-VM.
- Deploy GigaVUE-VM Nodes on page 36 provides the procedure to deploy GigaVUE-VM nodes from GigaVUE-FM.
- Bulk Deploy GigaVUE-VM Nodes in Standalone or Cluster on page 41 provides the procedure to deploy a single or multiple GigaVUE-VM nodes from GigaVUE-FM. The GigaVUE-VM nodes can be deployed on a data center or on a cluster within the data center.
- Bulk Upgrade GigaVUE-VM Nodes on page 47 provides the procedure to upgrade a single or multiple GigaVUE-VM nodes from GigaVUE-FM.
- Configure Virtual Maps for VMware vCenter on page 49 describes how to configure virtual maps when deploying GigaVUE-VM nodes.
- Back Up and Restore GigaVUE-FM for VMware on page 56 provides the steps for backing up and restoring GigaVUE-FM in a VMware environment.
- Best Practices for vSphere Integration on page 57 provides tips on optimizing GigaVUE-FM and GigaVUE-VM settings for best performance.

Before You Install

Before installing a GigaVUE-VM node, ensure the following each ESXi host that will be managed:

1. Install VMware vSphere ESXi Standard Version 5.x or greater for NSX-V, and Version 6.5 or greater for NSX-T on hardware that meets minimum requirements.

Note: VMware vSphere Enterprise Plus is required for vSphere Distributed Switch (vDS) deployments.

- 2. Install Virtual Switch. You can use either vSphere Distributed Switch (vDS) or vSphere Standard Switch (vSS) available with vSphere.
 - vSphere Distributed Switch. For versions, refer to VMware ESXi System Requirements on page 33.

Note: The installation wizard does not prevent you from installing GigaVUE-VM on an ESXi host without a virtual switch installed. However, the virtual switch is required for GigaVUE-VM to access traffic.

3. Set the MTU larger than the largest packet expect from the virtual environment or enable fragmentation.

To transport packets of interest from the virtual environment to physical devices, GigaVUE-VM uses a tunneled network connection to a GigaSMART card on a physical appliance. (For information about the tunnel network, refer to Configure Tunnel Endpoint on page 19.) Either the MTU of this tunnel **must be** larger than the size of the largest packet of interest that you expect to forward from the virtual environment to a physical appliance, or you **must** enable fragmentation. (For more information about fragmentation, refer to Fragmentation on page 21.)

If your existing virtual networks use an MTU of 1500 bytes, and if you choose to increase the MTU for the entire network path of the tunnel, you must increase the tunnel MTU to 1600 bytes. This increase must take place on all of the network components from the virtual switch to the GigaSMART card. For NSX-T the MTU is required to be 1600 bytes or greater.

Failure to either increase the tunnel path MTU or use fragmentation will result in packets of interest being dropped by your network infrastructure before they can reach the GigaSMART card. Neither GigaVUE-FM nor GigaVUE-VM will indicate that these packets are being dropped.

VMware ESXi System Requirements

Refer to the GigaVUE-VM Release Notes for the hardware requirements on which VMware ESXi runs GigaVUE-VM.

To support internationalized characters in the VMware vCenter environment ensure that the vCenter character encoding is set to UTF-8.

Required VMware Virtual Center Privileges

This section lists the minimum privileges required for the GigaVUE-FM user in Virtual Center. You assign privileges to Virtual Center users by selecting **Roles > Administration > Role**, and then use the **Edit Role** dialog box in vCenter. Roles should be applied at the vSphere Virtual Center level and not the DataCenter or Host levels.

The following table lists the minimum required permissions for GigaVUE-FM to manage the virtual center.

Category	Required Privilege	Purpose			
Host	Configuration Network Configuration 	VSS Map			
	Inventory • Modify Cluster	Pin GigaVUE-VM to the host in cluster configurations. This prevents automatic migration.			
Datastore	Allocate space	GigaVUE-VM Deployment			
Distributed Switch	VSPAN Operation	VDS Map			
Network	Assign network	GigaVUE-VM Deployment/VSS Map			
Resource	 Assign virtual machine to resource pool 	GigaVUE-VM Deployment			
vApp	 Import vApp instance configuration 	GigaVUE-VM Deployment GigaVUE-VM Deployment			
Virtual machine	Configuration • Add new disk • Modify device settings	GigaVUE-VM Deployment GigaVUE-VM Deployment/VSS Map			
	Interaction Device connection Power on Power Off 	GigaVUE-VM Deployment GigaVUE-VM Deployment GigaVUE-VM Deployment			
	Inventory Create from existing Remove 	GigaVUE-VM Deployment GigaVUE-VM Deployment			
	Provisioning • Clone virtual machine	GigaVUE-VM Deployment			

Table 1: Minimum Required Permissions for GigaVUE-FM to Manage Virtual Center

How to Use GigaVUE-VM VMware vCenter Management

The first time you use the GigaVUE-VM vCenter Management there are a number of tasks that you need to do. The following table outlines those tasks:

Step	Task	Navigation	Notes
1	Connect to Virtual Center	On the top navigation bar, click Virtual . On the left navigation pane, under VMware vCenter go to Management > Virtual Centers	GigaVUE-FM must first gain access to virtual center server database to see which physical nodes are present. Add virtual center login credential to connect to virtual center from GigaVUE-FM. Type in the DNS name or IP address for the vCenter that manages the host hypervisor. GigaVUE-FM can only read and not write into the vCenter server. Refer to Set up Connection between GigaVUE- FM and Virtual Center on page 39.
2	Deploy GigaVUE-VM to multiple ESXi hosts	Under VMware vCenter, go to Management > Virtual Nodes > Deploy Virtual Nodes	To gain access to the virtual traffic, GigaVUE- VM needs to be deployed to the host where the monitoring needs to occur. Only one ova file can exist on the GigaVUE- FM. Any new uploads over-write the existing file. For deployment information refer to Bulk Deploy GigaVUE-VM Nodes in Standalone or Cluster on page 41.
3	Configure a tunnel definition.	Under VMware vCenter, go to Management > Tunnel Library	To add the already configured tunnel endpoint on GigaSMART to the GigaVUE-FM for use in virtual maps. Refer to Configure Tunnel Endpoint on page 19.
4	Verify deployed GigaVUE-VMs and status	Under VMware vCenter, go to Virtual Nodes	To verify the GigaVUE-VM deployment status, check the status on the Virtual Nodes page.
5	Configure Virtual Maps/Rules	Under VMware vCenter, go to Virtual Maps	Virtual rules are created to access the traffic within the hypervisor. Rules consist of filter rules that match specific parameters. These rules specify what traffic is forwarded through the GigaSMART Tunnel to the Gigamon Visibility Fabric. Refer to Configure Virtual Maps for VMware vCenter on page 49.

Deploy GigaVUE-VM Nodes

GigaVUE-VM software package is distributed as a hardened OVA file. The following section describes how to deploy GigaVUE-VM nodes on an **ESXi host.**

Deploying GigaVUE-VM nodes consists of the following major steps:

- 1. Configure port-groups and port-profiles within vSphere. Refer to Configure Port Groups/Port-Profiles on page 36.
- 2. Set up the connection between the Fabric Manager and the Virtual Center. Refer to Set up Connection between GigaVUE-FM and Virtual Center on page 39.
- 3. Deploy GigaVUE-VM nodes using the Bulk Deploy feature in GigaVUE-FM. Bulk-deployed nodes are automatically added to GigaVUE-FM's list for management. Refer to Bulk Deploy GigaVUE-VM Nodes in Standalone or Cluster on page 41.

Notes:

- The Bulk Deploy process replaces the manual OVF package deployment procedure used to install GigaVUE-VM nodes in previous releases. Gigamon recommends using the Bulk Deploy feature for all GigaVUE-VM node installations.
- If the host is part of a DRS cluster, the GigaVUE-VM node is automatically pinned to the host if the permissions are available. Pinning the host avoids automatic migrations. The permission required for pinning the host is Host\Inventory\Modify Cluster.

Configure Port Groups/Port-Profiles

GigaVUE-VM nodes use Port Groups (vSphere Standard Switch and vSphere Distributed Switch) for management, network, and tunneling traffic, as follows:

- One port group/port-profile for management communications with the GigaVUE-VM node.
- One port group/port-profile for network monitoring of traffic crossing the virtual switch.
- One port group/port-profile for the starting point of the GigaSMART tunnel used to forward virtual network traffic to the Gigamon Visibility Fabric nodes.

Before deploying GigaVUE-VM in a vSphere environment that uses the native standard switch implementation, you need to use the vSphere Client to configure port groups for management, tunneling, and network traffic. You select these port groups during deployment of the GigaVUE-VM node, so they must be configured before deploying the OVA file.

Note: It is important that the port group assigned to the GVM network ports are not uplinked.
The following table shows the GigaVUE-VM traffic and corresponding virtual switches used for port group/port-profile creation. **Yes** indicates that you can create a port group/port-profile for the GigaVUE-VM traffic, while **No** indicates no action is required.

GigaVUE-VM	vSS	vDS
Management	Yes	Yes
Tunnel	Yes	Yes
Network	No	Yes

Refer to the following sections for information on setting up Port Groups/Port-Profiles:

- Configure Port Group/Port-Profile for GigaVUE-VM Management on page 37
- Configure Port Group/Port-Profile for GigaVUE-VM Tunnel on page 38
- Configure Port Group/Port-Profile for GigaVUE-VM Network on page 39

Configure Port Group/Port-Profile for GigaVUE-VM Management

You can configure a port group/port-profile for GigaVUE-VM Management traffic using:

- vSphere Standard Switch
- vSphere Distributed Switch

In general, the Management port group must be connected to a dedicated out-of-band network to ensure access. See Best Practices for vSphere Integration on page 57.

For convenience, it is suggested that you use, **PG_GVM_Management** for the Management port group name to help you deploy multiple nodes using the GigaVUE-VM Bulk Deploy feature.

Configure Management Port Group for vSS Example

You can use the following steps as an example of how to configure a virtual standard switch (vSS) port group. This procedure shows how to configure the management port group on a vSS. This example is also applicable for configuring a vSS for the Tunnel port group.

- 1. Log in to the vSphere client and add a vSphere Standard Switch to your Data Center, followed by populating it with Hosts and Network Adapters. Refer to the vSphere documentation for details.
- 2. Select the **Host > Configuration > Networking inventory** view.
- 3. Go to Add Networking and select New Port Group.
- 4. Supply the following **Properties** for the Management Port Group:

Name	Use a name that helps identify the purpose of the port group in GigaVUE- VM. For example, vss_PG_GVM_Management .
Number of Ports	Optional. Either enter the number of ports in the field or use the scroll up-down button to enter the value.
VLAN Type	Optional. Select one of the following: • None • VLAN • VLAN Trunking • Private VLAN

- 5. Click the **Next** button.
- 6. Click the **Finish** button.

The new Network Port Group appears under the **Standard Switch** entry in the vSphere Client.

You will select the port groups for **Management**, but not for **Network**, that you created here in Step 3 of the GigaVUE-VM Bulk Deploy wizard.

Configure Port Group/Port-Profile for GigaVUE-VM Tunnel

You can configure a port group/port-profile for GigaVUE-VM Tunnel traffic using:

- vSphere Standard Switch
- vSphere Distributed Switch

In general, for optimal performance, you must maintain the IP interface on a dedicated VMNIC rather than sharing the same VMNIC as the Management or Network Ports. See Best Practices for vSphere Integration on page 57.

For convenience, it is suggested that you use, **dvPG_GVM_Tunnel** for the Tunnel port group name to help you deploy multiple nodes using the GigaVUE-VM Bulk Deploy feature.

Configure Tunnel Port Group for vDS Example

You can also use the following example to configure the Tunnel port group for the vSS. This procedure shows how to configure for a vDS:

- Log in to the vSphere Client and add a vSphere Distributed Switch to your Data Center, followed by populating it with Hosts and Network Adapters. Refer to the vSphere documentation for details.
- 2. Select the **Networking inventory** view.
- 3. Right-click on the **Distributed Switch** entry and select **New Port Group**.
- 4. Supply the following **Properties** for the Tunnel Port Group:

Name	Use a name that helps identify the purpose of the port group in GigaVUE- VM. For example, dvPG_GVM_Tunnel .
Number of Ports	Optional. Either enter the number of ports in the field or use the scroll up-down button to enter the value.
VLAN Type	Optional. Select one of the following: • None • VLAN • VLAN Trunking • Private VLAN

- 5. Click Next.
- 6. Click Finish.

The new Tunnel Port Group appears under the **Distributed Switch** entry in the vSphere Client.

Configure Port Group/Port-Profile for GigaVUE-VM Network

You can configure a port group/port-profile for GigaVUE-VM Network traffic using:

• vSphere Distributed Switch

For information on vSS configuration for Network traffic, see Create vMap using a vNIC on vSS on page 39.

Create vMap using a vNIC on vSS

When creating a vMap using a vNIC on vSS to monitor traffic, there are no additional actions to perform. The following occurs:

- GigaVUE-VM automatically creates a port group called, GigaPG_<vswitch name> in order to monitor traffic.
- The port group is configured as **Promiscuous mode** with VLAN 4095.
- The port group is automatically deleted when deleting the vMap.

Set up Connection between GigaVUE-FM and Virtual Center

To set up the connection between GigaVUE-FM and the Virtual Center:

- 1. On the top navigation bar, click **Virtual**.
- On the left navigation pane, under VMware vCenter, go to Management > Virtual Centers.
 The VMware vCenter Virtual Centers page displays.

🔞 GigaVUE-FM FM	Instance Name	Dashboard	Physical	Virtual	Cloud	Administration	Q	C		admin 🗸	•
🗗 VMware vCenter	Virtual Centers	Virtual Switches	Virtual No	des T	unnels Library						
면 Virtual Nodes 때 Virtual Maps	Virtual Cente	ers						Action 👻	Add	Edit	Delete
🌣 Management											
11 VMware vCenter/NSX-V	 Virtual Center 10.210.27.10 	0	Status	Ver 6.5	s.0	Login Time Jul 31, 2017 10:46:23 AM	User Name	e tor@vsphere	e.local		
砲 Virtual Nodes 鄲 Virtual Maps						Total Items : 1					
🌣 Management											

Figure 1: VMware vCenter Configuration

Note: GigaVUE-FM supports up to 10 Virtual Center connections.

3. Click Add.

The Virtual Center Connection dialog opens.

Add Virtual Center	Save	Cancel
Virtual Center		
IP address/DNS		
Username		
username		
Password		
password		

Figure 2: Add Virtual Center Page

- 4. Enter the IP address or DNS name for the Virtual Center.
- 5. In the Username field, enter a username.
- 6. In the Password field, enter a password.
- 7. Click Save.

GigaVUE-FM uses the IP, username, and password to log in to the specified Virtual Center. The vCenter user must have the proper privileges listed in Required VMware Virtual Center Privileges on page 33.

Bulk Deploy GigaVUE-VM Nodes in Standalone or Cluster

You can deploy a single GigaVUE-VM node or multiple GigaVUE-VM nodes simultaneously using the **Bulk Deploy** feature. All nodes added using this feature are automatically added to the GigaVUE-VM's list of managed nodes available for review in the **Management** page for VMware vCenter.

Nodes deployed using the Bulk Deploy feature can either be assigned a static IP address or use DHCP to obtain an IP address. GigaVUE-FM automatically discovers the IP address assigned to the GigaVUE-VM node and displays it with the node's entry in the **Virtual Nodes** page.

IMPORTANT: Before you use the Bulk Deploy feature, make sure you have already added a Virtual Center server to GigaVUE-FM by selecting **VMware vCenter > Management > Virtual Centers** and adding the Virtual Center.

The following procedure explains how to use the Bulk Deploy feature:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under VMware vCenter, go to **Management > Virtual Nodes**.

🎯 GigaVUE-FM	Dashboard Physical V	firtual Cloud Admir	nistration				Q		C	evan 🗸 ?
	Virtual Centers Virtual Sw	itches Virtual Nodes	Tunnels Library							
	Virtual Nodes					Filter	Deploy Vi	rtual Node	Upgrade	e Virtual Nodes
Management										
	Host Name	Data Center Name		Cluster	GigaVUE-VM Node Name			Host	State	
			No Vir	tual Nodes found.						
				Total l	tems : 0					
🌲 Alarms/Events										
Q Audit Logs										

Figure 3: Bulk Deploy GigaVUE-VM Nodes

- 3. Click Deploy Virtual Nodes.
- 4. Open the OVA control plane and select the OVA image file to be used for the Bulk Deployment as shown in Figure 4: Virtual Node Deployment Page on page 42. Use the Browse and Upload to Server buttons to upload an image file from your local client computer to GigaVUE-FM, or use an Existing File that has already been uploaded to GigaVUE-FM.

If you upload a new OVA file, make sure that you do not exit the upload page until the file has completely uploaded. Leaving the page will cancel an upload in progress.

Existing File does not appear in the **File Name** field until after an image file has been uploaded to GigaVUE-FM.

Deploy GigaVUE-VM	Deploy Cancel
 ◇ ➤ End User License Agreem ◇ ➤ OVA File 	ient
File Name Existing file	Browse Upload to Server
File Details Product Version Vendor Download Size Size on disk Description	GigaVUE-VM 3.3.00 Gigamon Inc. 502 MB 1101 MB (thin provisioning) 2048 MB (thick provisioning) This is a Gigamon GigaVUE-VM Virtual Network Appliance. It provides network traffic visibility from within a virtualized environment.
⊘ ➤ Disk Provisioning	
Hosts Properties	

Figure 4: Virtual Node Deployment Page

- 5. End User License Agreement—after careful review of the EULA, select I accept the End user License ("EULA").
- 6. **Disk Provisioning**—select the provisioning policy to be used by the virtual disk for GigaVUE-VM nodes.
- 7. Open the Hosts Properties control plane, and then click **Select Hosts** to select the host where you want to deploy GigaVUE-VM nodes.

The wizard that appears automatically displays all available ESXi hosts associated with the selected data center or cluster (ESXi hosts with existing GigaVUE-VM nodes installed are not listed). An example is shown in Figure 5: Bulk Deploy Hosts.

Deploy GigaVUE-VM	x	Hosts	ОК	Cancel
⊘ ➤ End User License Agreement		Virtual Center	10.115.152.254	•
⊘ ➤ OVA File		Data Center	TME-DC1	•
⊘ ➤ Disk Provisioning		Cluster	All	•
O Hosts Properties		Host Nat	ne	
Select Hosts		Cluster: Indy		
		10.115.1	53.1	
		10.115.1	53.17	
		10.115.1	53.18	
		10.115.1	53.2	
		Cluster: MicroCloud-	I	
		10.115.1	53.10	
		10.115.1	53.11	

Figure 5: Bulk Deploy Hosts

A cluster is defined in the data center as a group of hosts. GigaVUE-VM does not manage creation or modification of the cluster or clusters. It only reads the cluster information. If the Datacenter does not have any cluster, the option in the drop down for the cluster will state None while all the hosts are still available.

- Select each host where you would like to deploy a GigaVUE-VM node. You can select all hosts by selecting the **Host Name** checkbox.
- Select the virtual center, Datacenter, and cluster with the ESXi hosts to be provisioned with GigaVUE-VM nodes. The drop-down lists all Datacenters and clusters in the Datacenter, available on the virtual center server specified in the **Virtual Centers** page.
- Once you have selected the hosts where you want to deploy GigaVUE-VM nodes, click OK to continue.
- 8. Next configure settings for the GigaVUE-VM nodes to be deployed, supplying a name and password and selecting the port groups for management, tunnel, and network ports.

IMPORTANT: Make sure you have configured port groups using the instructions in Configure Port Groups/Port-Profiles on page 36 before assigning IP addresses to the Mgmt and IP interfaces using DHCP. This ensures that GigaVUE-VM nodes are deployed with a desired IP address.

Set Bulk Values

Set Bulk Value feature makes it easy to apply the same template of settings to all GigaVUE-VM nodes selected for deployment:

1. Click the **Set Bulk Values** button and choose settings for each of the options described in Table 2: GigaVUE-VM Node Options on page 44.

- 2. After clicking the **OK** button, you will return to the list of hosts with the new bulk values applied to each host in the list.
- 3. Once you have applied bulk values, you can go back and edit any necessary settings for specific individual nodes. This can be a time saving feature when deploying a large number of nodes.

Deploy GigaVUE-VM	×	Bulk Deploy Editor		OK	Cancel
	_				
End User License Agreement		Detestore	N/A		
OVA File		Power	ON .		
Disk Provisioning		GigaVUE-VM Name Prefix	GigaVUE-VM-		
		GigaVUE-VM Name suffix			
Select Hosts Set Bulk Value		Password		ø	
✓ Host 10.115.48.8		Confirm Password			
Detestore	date	Management Switch/Port Group:	vSwitch0 / VM Network *		
0	Cata	Management IP	DHCP .		
	Cint	Tunnel Switch/Port Group	DSwitch-01 / VM_Tunnel •		
Deserved and	Cigar	Tunnel IP	DHCP ·		
Confirm Password		Network Switch/Port Group	DSwitch-01 / VM_Network •		
Management Switch/Port Group	1500	Deployment Folder	Main/Sub/Second-Sub/Place		
Management IP	DHC				
Tunnel Switch/Port Group	1000	Warning: Please turn off Cluster automatic r	migration for GigaVUE-VM, refer to	Best Practices	for details.
Tunnel IP	0.00				
	Den				
Network Switch/Port Group					
Deployment Folder	-				
✓ Host 10 115 48 9					

Figure 6: Bulk Deploy Editor

Regardless of whether you select **Set Bulk Values** or configure individual nodes, you set the same set of options described in Figure 4: Virtual Node Deployment Page.

Table 2: GigaVUE-VM	Node Options
---------------------	--------------

GigaVUE-VM Node Option	Description
Datastore	Select the datastore on the target host where the GigaVUE-VM node should be installed.
Power	Choose whether to power on the GigaVUE-VM node after deployment.
GigaVUE-VM Name	Supply a name for the GigaVUE-VM node. The name supplied here will be used to identify the GigaVUE-VM instance in Virtual Center.
	If you are applying bulk values, you choose a suffix to be used for individual hostnames, assuring that names are not duplicated. GigaVUE-FM automatically prepends the specified prefix with the ESXi hostname. DNS support for these hostnames is provided.

GigaVUE-VM Node Option	Description
Password	Supply and confirm a password for the GigaVUE-VM node. Passwords must contain at least eight characters with one numerical character, one upper case character, one lower case character, and one special character (for example, \$, %, !, and so on). The maximum number of characters is 30.

Use the drop-down lists to select the port groups (vSphere Standard Switch) for the Management Port, IP interface, and Network Port for the GigaVUE-VM instance. The port groups you configured in Configure Port Groups/Port-Profiles on page 36 are available for assignment.

Management Switch/Port Group Management IP	This is the port used for communications between GigaVUE-VM and GigaVUE-FM. This port does not carry monitored traffic. You can either assign a Static IP address or use DHCP. GigaVUE-FM automatically discovers the assigned address and displays it in the Management > Virtual Nodes page.
	If you are configuring bulk values, you can specify a range of static IP addresses to be used. Note that the range specified must consist of contiguous values (for example 10.1.1.25 to 10.1.1.50 with a subnet mask of 255.255.255.0) and must not overlap with a range specified for the Tunnel Port Group.
Tunnel Switch/Port Group Tunnel IP	This port that is used as the starting point for that GigaSMART tunnel that will carry packets matching a vMap to the Gigamon visibility fabric. The other end of the tunnel is a Network- Tunneled Port on a GigaVUE-2404, or a GigaVUE H Series family with GigaSMART blade and tunneling encapsulation enabled.
	You can either assign a Static IP address or use DHCP. If you are configuring bulk values, you can specify a range of static IP addresses to be used. Note that the range specified must consist of contiguous values (for example 192.168.1.25 to 192.168.1.50 with a subnet mask of 255.255.255.0) and must not overlap with a range specified for the Management Port Group.
	Note: For optimal performance, Gigamon recommends maintaining the IP interface on a separate subnet than that used by the management port or network ports.
Network Switch/Port Group	These are the ports that GigaVUE-VM uses to monitor network traffic. All of the virtual switch traffic being monitored arrives at the GigaVUE-VM node via these ports.
Deployment folder	Parameter to indicate where GVM should be deployed (optional).

4. Click **Deploy** when you have finished configuring settings for GigaVUE-VM nodes. The wizard reminds you to disable automatic cluster migration for each GigaVUE-VM node. This prevents situations where migration could inadvertently cause a situation with two GigaVUE-VM nodes on the same host, which is not allowed. Refer to Best Practices for vSphere Integration on page 57 for details and additional tips on configuring vSphere settings for GigaVUE-VM nodes.

- 5. Click **Finish** to launch the Bulk Deploy. To monitor the progress of the Bulk Deploy:
 - a. On the right side of the top navigation bar, click
 - b. On the left navigation pane, select **Events**.

For example: Bulk Deploy takes place by deploying an initial OVF template to the first requested host. Once the initial OVF file is deployed, vSphere clones that template to all other requested hosts. Cloning takes place in waves of four GigaVUE-VM nodes at a time – if you request a Bulk Deploy of 21 GigaVUE-VM nodes, the OVF file is deployed to the first node in the list, followed by two successive waves of four cloned nodes.

6. Once the Bulk Deploy completes, log in to the vSphere Client and verify that there is only one GigaVUE-VM node installed per ESXi host. For example, after navigating to the **Related Objects > Virtual Machines** tab for the ESXi host on 10.210.17.11, we can see that there is only one GigaVUE-VM node installed here as shown in Figure 7: vCenter Client Showing the GigaVUE-VM Installation.

vmware [®] vSphere Web Client	↑ @					ひ I root@loc	alos 🕶 丨 Help 🕶		
📢 vCenter 🕞 🐌 🖡	▶ 🐑 I 🚺 10.210.17.11 Actions - 📼								
	Getting Started Summary Monitor	ing Starled Summary Monitor Manage Related Objects							
	Virtual Machines VM Templates Datastores Networks Distributed Switches								
10.210.17.12	Name	1 A State	Status F	Provisioned Space	Used Space	Host CPU	Host Mem		
GigaVUE-FM-17.111	GigaVUE-FM-17.111	Powered On	Normal	18.09 GB	7.96 GB	47 MHz	1,834 MB		
GigaVUE-FM-17.112	GigaVUE-VM-10-210-17-11	Powered On	Normal	6.09 GB	6.09 GB	47 MHz	333 MB		
	10, 000000 0000000000000000000000000000								
	- 0. 01cm/05-01-10-210-17-11								
	M						11 Objects 📑 🗸		

Figure 7: vCenter Client Showing the GigaVUE-VM Installation

DHCP Problems?

If for some reason the DHCP server is unable to allocate an IP address for a GigaVUE-VM node, the node will be listed in the **Virtual Nodes** page with an Unconfigured entry in the GigaVUE-VM IP column. If this occurs, make sure the DHCP server is up and accessible, and then go to **Virtual Nodes** page and click **Rediscover**.

About GigaVUE-VM vApp Product Name

The installation wizard automatically configures all GigaVUE-VM nodes with a **Product Name** of **GigaVUE-VM**. GigaVUE-FM recognizes GigaVUE-VM nodes using this name. The Product Name must remain **GigaVUE-VM** at all times – do not change it to another value.

Note: The name is not case-sensitive, so you can change it to **gigavue-vm** if your environment requires lowercase names.

You can see the **Product Name** by right-clicking a GigaVUE-VM node in the vSphere Data Center and choosing **Edit Settings > Options > vApp Options > Advanced**, as shown in the following figure:



Figure 8: vApp Options

Bulk Upgrade GigaVUE-VM Nodes

You can upgrade a single GigaVUE-VM node or multiple GigaVUE-VM nodes simultaneously using the **Upgrade Virtual Nodes** feature. All nodes upgraded using this feature are shown in the GigaVUE-VM's list of managed nodes with the latest software version.

The following procedure explains how to use the Bulk Upgrade feature:

- 1. On the top navigation bar, click Virtual.
- 2. On the left navigation pane, under VMware vCenter, go to Management > Virtual Nodes.
- 3. Click the Upgrade Virtual Nodes.
- Open the OVA control plane and select the OVA image file to be used for the Bulk Deployment as shown in Figure 9: Software Version Upgrade on Virtual Nodes Page on page 48. Use the Browse and Upload to Server buttons to upload an image file from your local client computer to GigaVUE-FM, or use an Existing File that has already been uploaded to GigaVUE-FM.

If you upload a new OVA file, make sure that you do not exit the upload page until the file has completely uploaded. Leaving the page will cancel an upload in progress.

Existing File does not appear in the **File Name** field until after an image file has been uploaded to GigaVUE-FM.

Upgrade GigaVUE-VM	Upgrade	Cancel
⊘ ➤ End User License Agreement		
⊘ ✔ OVA File		
File Name vma_2015-12-04.ova Browse Upload to Server File Details Product GigaVUE-VM Version 3.1.00		
Vendor Gigamon Inc. Download Size 442 MB Size on disk 975 MB (thin provisioning) 2048 MB (thick provisioning) Description This is a Gigamon GigaVUE-VM Virtual Network Appliance. It provides network traffic visibility from within a virtualized environment.		
S Disk Provisioning		
○ > GigaVUE-VM Properties		

Figure 9: Software Version Upgrade on Virtual Nodes Page

- 5. End User License Agreement After careful review of the EULA, select I accept the End user License ("EULA").
- 6. **Disk Provisioning** Select the provisioning policy to be used by the virtual disk for GigaVUE-VM nodes.
- 7. Open the GigaVUE-VM Properties.

Upgrade GigaVUE-VM			l	Upgrade Cancel
⊘ ⊁ End User License Agreement				
⊘ ➤ OVA File				
⊘ ➤ Disk Provisioning				
◯ ✔ GigaVUE-VM Properties				
Virtual Center 10.210.27.22	▼ Data Center	DC_Systems V	Cluster Cluster_System:	5 🔻
Select GigaVUE-VM Nodes from the list bel	ow to upgrade: Enter passw	ord ONLY if it is required to be c	hanged.	
GigaVUE-VM Node Name	Enter Password	Confirm Password	Cluster Name	Host Name
GigaVUE-VM-10-210-27-206	(optional)		Cluster_Systems	10.210.27.206
GigaVUE-VM-10-210-27-207	(optional)		Cluster_Systems	10.210.27.207
GigaVUE-VM-10-210-27-208	(optional)		Cluster_Systems	10.210.27.208

Figure 10: Upgrade Virtual Nodes Page

8. Perform the following:

- a. Select the virtual center from the **Virtual Center** drop-down list. The **Datacenter** field appears.
- b. From the **Datacenter** drop-down list, select the Virtual Center Data Center with the ESXi hosts to be provisioned with GigaVUE-VM nodes.

The list shows all data centers available on the Virtual Center Server specified on the **Virtual Centers** page. After selecting the data center the **Cluster** field appears.

- c. From the **Cluster** drop-down list, select the cluster to upgrade. At this point the page should look similar to the page shown in Figure 10: Upgrade Virtual Nodes Page on page 48.
- d. In the **Enter Password** column, provide the existing node password for the GigaVUE-VM upgrade.

The Enter Password and Confirm Password columns are optional. Entering and confirming a password is only required if you want to change the password on the upgraded GigaVUE-VM.

- e. Select the hosts where you want to upgrade GigaVUE-VM nodes. Click **Upgrade** to continue.
- 9. Click Upgrade.

Configure Virtual Maps for VMware vCenter

To configure Virtual Maps on the virtual nodes for VMware, under VMware vCenter, go to **Virtual Maps** to display the Virtual Maps page shown in Figure 11: Creating virtual maps for VMware using GigaVUE-FM.

Note: It is imperative that you create a tunnel prior to creating the maps. Verify that the tunnel is active by clicking **Tunnel Validation**. For information on how to create tunnels, refer to **Configure Tunnel Endpoint on page 19**.

Vi	Virtual Maps				New	Edit	Delete	Redeploy	Redeploy All	Tunnel Validation
	Map Alias	Virtual center	Comments	Virtual Machines		Deployment	Status	Traffic	Tunnel De	stination
	test123	10.115.41.205	test56	vm4a , vm4b , vn	n4_db	🛑 Failure		Inconsiste	nt [GMIP] 3.3	.3.3:666 srcPort: 777
	test56	10.115.41.205	hhhh	vm4a , vm3b		PartialSuc	cess	Inconsiste	nt [GMIP] 3.3	.3.3:666 srcPort: 777
	test78	10.115.41.205		vm4a , vm3b		PartialSuc	cess	Inconsiste	nt [GMIP] 1.2	.3.4:777 srcPort: 111
	vmap100	10.115.41.205	test123789	vm4a , vm3b		PartialSuc	cess	Inconsiste	nt [GRE-ERSP	AN] 2.2.2.2
	vmap200	10.115.41.205	test	vm3b , vm4b , vn	n4_app	PartialSuc	cess	Inconsiste	nt [GMIP] 3.3	.3.3:666 srcPort: 777
					Total Iter	ms : 5				

Figure 11: Creating virtual maps for VMware using GigaVUE-FM

This page allows you to configure maps that define the traffic to be monitored on the virtual network adapters on different virtual machines. Before configuring maps, you first need to set up the connection between the Fabric Manager and the Virtual Center.

The Virtual Maps page has controls that allow you to create virtual maps and manage the information that appears in the table. The controls are described in Table 3: Controls Available on the Virtual Maps Page.

Table 3: Controls Available on the Virtual Maps Page

Controls	Description
New	Opens the Create Map dialog, allowing you to create a virtual map. (See Configure vMap for VMware on page 52)
Edit	Opens the Edit Map dialog, allowing you to edit a virtual map.
Delete	Deletes the selected virtual map.
Redeploy	Redeploys the selected virtual map.
Redeploy All	Redeploys all of the virtual maps.
Tunnel Validation	Allows users to validate that an active tunnel exists between the GigaVUE-VM and IP interface on the Gigamon node.

The fields displayed on the virtual maps page are defined in Table 4: Parameters Displayed in the Virtual Map Page for VMware vCenter.

Table 4: Parameters Displayed in the Virtual Map Page for VMware vCenter

Column Parameter	Description
Map Alias	Alias for the virtual map that is unique and best if it describes the function of the vMap.
Virtual Center	Virtual Center where the GigaVUE-VM is deployed.
Comments	Brief description on the virtual map and its purpose.
VM Name	Name of the virtual machine that is using the virtual map. The virtual machines should belong to the virtual center listed in the 2nd column.
Deployment Status	 Deployment status of the map. The three states and conditions leading to the states are: Success—When the vMap is deployed in the vCenter environment as expected, which means: successfully created maps, gsops in GVMs, and necessary vssPG/ port mirror sessions in the vCenter. Partial Success—When any one of the aspect of creating a vMap fails, including failure to create maps or gsops in GVMs, or vssPG/ port mirror sessions in the vCenter. Failure—The status is unclear for FM. Click Redeploy to get the latest status is recommended. If the status does not change, contact Gigamon customer service to further identify the issue. The quick view provides information under the status tab about what part of the deployment has failed.
Traffic	Traffic column provides the status of the GigaVUE-VM traffic. The two states are: • Consistent —When all the monitored vNIC are
	up and are able to transmit/receive traffic. • Inconsistent —When one of the monitored vNIC is not able to transmit/receive traffic due to various possible reasons; for example, VM is powered off, vNIC is removed, or, vNIC is not connected.

Column Parameter	Description
Tunnel Destination	Destination IP of the node where the tunnel terminates including the tunnel source port and destination port. This information is pulled directly from the IP interface that is created on the node and is available in the tunnels library.

When you select a map in the table, a quick view displays. The parameters covered in the quick view window are described in Table 5: Parameters Displayed in the Virtual Map Quick View. By clicking on **Edit** on the quick view, you can review or update these parameters.

Parameters	Description
Virtual Map Info	The Virtual Center and Tunnel Destination information.
Status	The errors associated with the rule, if any. This will also list any issues that are preventing the deployment or traffic interruptions.
VM Map Rules	Map Rules defined for the virtual machine.
Network Adapters Monitored	Details relating to the vNIC.

Table 5: Parameters Displayed in the Virtual Map Quick View

Configure vMap for VMware

To configure the vMap for VMware, do the following:

1. Click **New** to open the configuration page, which is shown in Figure 12: Virtual Map Configuration Page.

🚳 GigaVUE-FM FM I		Dashboard	Physical	Virtual	Cloud	Administration	Q (с 🌢	admin 🗸	•
	Virtual Map								Save	Cancel
										_
🜃 Virtual Maps	🗸 VM Map Info									
🍄 Management	Alias	v_map								
	Comments	Comments								
🔟 Virtual Maps	Tunnel Destination	[GMIP] 10.210	.176.105:2105	srcPort: 1500						- 1
🍄 Management	✔ Map Rules									
ALL VIRTUAL Alarms/Events Q. Audit Logs	× Rule 1	Add a Rule	rch	▼ Ø Bi	directional T	Fraffic flow from vN	ic 🔻 Slicing	80		
		IPv4 Source 10.210.108.9 32				*	Sircing			

Figure 12: Virtual Map Configuration Page

- 2. Enter an alias, comments (optional), and select the tunnel destination.
- 3. Add a rule or rules to the vMap by clicking **Add a Rule**. You can define a rule based on the following:
 - Rule Type:
 - IPv4 Source
 - IPv4 Destination
 - IPv6 Source
 - IPv6 Destination
 - IPv6 Flow Label
 - Protocol: TCP, UDP
 - Port Source
 - Port Destination
 - MAC Source
 - MAC Destination
 - VLAN

Note: If no rules are added to the vMap, then the vMap acts as a 'pass all' where in all the traffic coming from the vNIC are passed through the filter.

Note: passed through the filter.

- Traffic Flow:
- from vNic

- to vNic
 - Slicing

Figure 13: Virtual Map with a Rule shows a Virtual Map with one rule added.

Virtual Map	Save Cancel
✔ VM Map Info	
Allas Comments Tunnel Destination	Vm_map Comments [GMIP] 10.210.176.107:2107 srcPort: 333
✔ Map Rules	
× Ri	Add a Rule Ile 1 Condition search Image: Search and the search and

Figure 13: Virtual Map with a Rule

Note: For Virtual Map rules, the bidirectional option is always selected because traffic is always monitored in both directions while From vNic and To vNic options specify the filter criteria. In Figure 13: Virtual Map with a Rule, the rule specifies the following on the GigaVUE-VM: monitor traffic that is coming from the vNIC and that is IPv4 Source. Because traffic is also monitored in the other direction, an additional rule will be created on the GigaVUE-VM, reversing the rule filter criteria appropriately. This rule will specify: monitor traffic that is going to the vNIC and that is IPv4 Destination.

4. Select a VM (Network Adapter) to associate with the vMap by clicking **Virtual Machine Browser**. Refer to Figure 2: Add Virtual Center Page.

This opens a the Virtual Machine Browser where you can select the VM Network Adapter. Select the virtual center, data center, and optionally the cluster. Click **Find** to load the virtual machines. Select the virtual machine network adapter by selecting the checkbox to the left of the VM name.

Virtual Map	x	Virtu	al Machine B	rowser					ОК
✔ VM Map Info		search							
Allas	Alias		10.115.152.254	•	TME-DC1	MicroCloud	-1 Find		E
Comments	Comments		VM Name	Hostname	GVM	Cluster	Network Adapter	Port Group	Switch
Tunnel Destination			TestCenter-1	10.115.153.15	GVM not installed	MicroCloud-1	00:50:56:A2:80:29	VM Network	vSwitch0
✓ Map Rules		V	ESX16-WireShark	10.115.153.16	GVM not installed	MicroCloud-1	00:50:56:AF:FD:16	VM Network	vSwitch0
	Add a		ESX16-WireShark	10.115.153.16	GVM not installed	MicroCloud-1	00:50:56:AF:9C:E9	Tools	vSwitch1

Figure 14: Selecting Virtual Machine Network Adapter

vMap Rules

Keep in mind the following rules when working with vMaps:

• Slicing can only be used together with other vMap rules. It cannot be used as the only criteria in a vMap.

Create vMap using a vNIC on vSS

When creating a vMap using a vNIC on vSS to monitor traffic, there are no additional actions to perform. The following occurs:

- GigaVUE-VM automatically creates a port group called, GigaPG_<vswitch name> in order to monitor traffic.
- The port group is configured as **Promiscuous mode** with VLAN 4095.
- The port group is automatically deleted when deleting the vMap.

vMaps and vMotion Migration

If a monitored virtual machine uses vMotion migration to move to a new host, GigaVUE-VM takes the following actions:

- Logs an entry in the Events page. To view the Events page, go to **Virtual** > **Events** or navigate to the Events page through the admin icon.
- Reconfigures maps to use GigaVUE-VM to deploy on the new host for the monitored VM if there is one deployed there.



GigaVUE-VM: Monitor Intra-Host and Inter-Host Traffic

GigaVUE-VM includes the ability to monitor inter-host traffic when both hosts are instrumented with GigaVUE-VM nodes. Figure 16: Monitoring Intra-Host and Inter-Host Traffic illustrates how this works, summarizing the traffic available for monitoring between the Server and Client Virtual Machines (S1-S3 and C1-C3) on two different ESXi hosts instrumented with GigaVUE-VM nodes.

Monitoring Intra and Inter-Host Traffic Each GigaVUE-VM node can monitor traffic in both direc own ESXi host. In addition, each GigaVUE-VM node can t the clients and servers on its own node. This is illustrated	tions for the clients and servers on its monitor the inter-host traffic sent from d in the figure below.
C1 S1 S2 GigaVUE-VM1 C1 <> 51 C1 <> 52 C1 <> 52 C1 > 53 S1 > C2 S1 > C3 S2 > C2 S2 > C3	C2 C3 S3 GigaVUE-VM2 C2 <> S3 C3 <> S3 C2 >> S1 C2 >> S1 C2 >> S2 C3 -> S2 S3 -> C1
ESXi Host 1	ESXi Host 2

Figure 16: Monitoring Intra-Host and Inter-Host Traffic

Changes in vDS Port ID Require vMap Redeployment

If the vDS Port ID for a vNIC changes, any vMaps using the vNIC must be redeployed before their traffic begins to flow from network ports to tool ports again. Changes in a vNIC's vDS Port ID can happen in the following situations:

- A vNIC used by a GigaVUE-VM node is swapped from a vDS Port Group to a vSS Port Group and then back to a vDS Port Group. When the vNIC returns to the vDS Port Group, it will have a new vDS Port ID.
- A vNIC used by a GigaVUE-VM node is deleted from a vDS Port Group and then added back to the vDS Port Group. When the vNIC is added back to the vDS Port Group, it will have a new vDS Port ID.

Back Up and Restore GigaVUE-FM for VMware

To backup and restore GigaVUE-FM in a VMware environment, do the following:

1. Log in to GigaVUE-FM and make a backup of GigaVUE-FM.

For the steps to backup GigaVUE-FM, refer to the "Data Saved When Backing Up GigaVUE-FM" section in the GigaVUE-OS and GigaVUE-FM Administration Guide.

- 2. Shut down the virtual machine.
- 3. Log in to the new GigaVUE-FM instance and restore the configuration.

For the steps to restore GigaVUE-FM, refer to the *"Restoring GigaVUE-FM Configuration Files"* in the *GigaVUE-OS and GigaVUE-FM Administration Guide*.

- Log in to vCenter and reboot the GigaVUE-FM instance. (In vCenter, select Power > Power Off/Power On.)
- 5. Reboot the GigaVUE-VMs.
- After GigaVUE-FM is up and running, redeploy the virtual maps from the Virtual Maps page.
 For more information about vMaps in the VMware environment, refer to Configure Virtual Maps for VMware vCenter on page 49.

Note: After restore, the licenses will no longer be valid for the new GigaVUE-FM.

Best Practices for vSphere Integration

Gigamon recommends the following best practices to ensure smooth operations of GigaVUE-FM and GigaVUE-VM in the vSphere environment:

How to Use Jumpstart Configuration for making changes

Always use jumpstart when there are no maps or gsops configured. Using jumpstart will clear any pre-existing configurations. Additionally, use the command write memory to save all the changes

How to Use Out-of-Band Networks for Management Port

Gigamon recommends deploying the GigaVUE-VM node's Management port on a network that is out-of-band from that used by the IP interface or Network Ports.

How to Use Dedicated VMNIC for IP Interface

For optimal performance, Gigamon recommends maintaining the IP interface on a dedicated VMNIC rather than sharing the same VMNIC as the Management or Network Ports.

How to Prevent Migration of GigaVUE-VM Nodes Operating in Clusters

GigaVUE-FM supports a maximum of one GigaVUE-VM node per ESXi host. Because of this, you will want to configure GigaVUE-VM nodes operating in clusters to prevent them from migrating automatically when a host becomes unavailable, possibly resulting in multiple GigaVUE-VM nodes

on the same ESXi host. The procedure is slightly different depending on whether the node is deployed in a High-Availability (HA) cluster or a DRS cluster.

Notes:

- Make sure that the GigaVUE-VM nodes that you are applying bulk values is powered **Off**.
- If the host is part of a DRS cluster, the GigaVUE-VM node is automatically pinned to the host if the permissions are available. For information about setting the permission, refer to Required VMware Virtual Center Privileges on page 33.

To prevent GigaVUE-VM node migration in High Availability Clusters:

- 1. Open the vSphere client, select the vSphere Cluster with the GigaVUE-VM nodes, and select **Edit Settings**.
- 2. Select vSphere HA > Virtual Machine Options.
- 3. Sort the Virtual Machine column by name and select all GigaVUE-VM nodes.
- 4. Set the VM Restart Priority option to Disabled.

To prevent GigaVUE-VM node migration in DRS Clusters:

- 1. Open the vSphere client, select the vSphere Cluster with the GigaVUE-VM nodes, and select **Edit Settings**.
- 2. Select vSphere DRS > Virtual Machine Options.
- 3. Sort the Virtual Machine column by name and select all GigaVUE-VM nodes.
- 4. Set the Automation Level option to Disabled.

Configure GigaVUE-VM Nodes to Restart Automatically After Reboot

In addition to preventing GigaVUE-VM nodes operating in clusters from migrating automatically when an ESXi host reboots, you can also configure them to restart automatically when the ESXi host is back up. After making the changes listed above to prevent automatic migration, do the following to ensure the GigaVUE-VM nodes restart automatically with the ESXi host:

- 1. Select the ESXi host where the GigaVUE-VM node is deployed.
- 2. Select the Virtual Machine Startup/Shutdown option in the Configuration tab.
- 3. Select Properties.
- 4. Select Allow virtual machines to start and stop automatically with the system.
- 5. In the **Startup Order** section, move the GigaVUE-VM node to the **Automatic Startup** section.

GigaVUE-VM Nodes and Maintenance Mode

Maintenance Mode is a commonly used vSphere feature used for host servicing. When a host enters the maintenance node, its virtual machines are automatically shut down. When a host exits the maintenance mode, its virtual machines are turned back on by GigaVUE-FM.

How to Shape Tunnel Traffic

Depending on the amount of traffic to be tunneled by a GigaVUE-VM node and any other traffic on the VMNIC, bandwidth constraints can become a concern. You can tune traffic rates using the vSphere Distributed Switch (vDS) Traffic Shaping features for the Network port-group:

- Enable the Traffic Shaping Egress option for the Network port-group (not the Tunnel port-group).
- Track the ratio of tunneled traffic to other traffic on the VMNIC to avoid contention.
- You can also send Tunneled traffic to a dedicated VMNIC to avoid contention issues using either of the following techniques:
 - NIC Teaming Load Balancing policies
 - Dedicated VMNICs for Tunnel traffic

Events

The Events page displays all the events that occur in the GigaVUE-VM virtual traffic visibility node. An event is an incident that occur at a specific point in time. Examples of events include:

- Authentication failure
- G-vTAP Controller VM Installation status
- Port link status changed

Refer to the "Events" section in the GigaVUE-OS and GigaVUE-FM Administration Guide.

To view the events:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, click **Events** to view the Events page. Refer to Figure 17: Virtual Events on page 60.

🞯 GigaVUE-FM FM I		ame Dashbo	oard Physic	al Virtual Cloud A		on Q	C	adm	in - ?
라 VMware vCenter	Aları	ms / Events							Filter
면 Virtual Nodes									
🔟 Virtual Maps	Alarms/I	Events: 339 Filtered	By : severity:Mi	nor					Columns 🌣
🍄 Management	Source	Time 🔻	Scope	Event Type	Severi	Description			
tt VMware vCenter/NSX-V	VMM	2017-07-20 16:15:50	vmManager	VmmGvmCameOnline	Minor	vCenter [10.2	10.27.100] -	GigaVUE-VM with	IP [10.210.30.1
የ Virtual Nodes	VMM	2017-07-20 16:15:46	vmManager	VmmGvmCameOnline	Minor	vCenter [10.2	10.27.100] -	GigaVUE-VM with	IP [10.210.30.1
🔟 Virtual Maps	VMM	2017-07-20 16:15:23	vmDomain	VmmVmPoweredOn	Minor	vCenter [10.2	10.27.100] -	DRS powered On	Gigamon Traff
ີ Management	VMM	2017-07-20 16:15:16	vmDomain	VmmVmPoweredOn	Minor	vCenter [10.2	10.27.100] -	DRS powered On	Gigamon Traff
ALL VIRTUAL	VMM	2017-07-20 16:13:28	vmDomain	VmmVmPoweredOff	Minor	vCenter [10.2	10.27.100] -	Gigamon Traffic V	/isibility (2) on 1
Q Audit Logs	VMM	2017-07-20 16:12:20	vmDomain	VmmVmPoweredOff	Minor	vCenter [10.2	10.27.100] -	Gigamon Traffic V	isibility (1) on 1

Figure 17: Virtual - Events

For information about the parameters for each event, refer to the "Events" sections in the GigaVUE-OS and GigaVUE-FM Administration Guide:

Note: The events can be purged or archived only from the Events page. For more information, refer to the *"Archiving or Purging Event Records"* section in the *GigaVUE-OS and GigaVUE-FM Administration Guide*.

Alarms

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. Examples of alarms include:

- GigaSMART CPU Utilization
- Power failure
- Unexpected shutdown of a module

The alarms broadly fall into the following categories: Critical, Major, Minor, or info.

Refer to the "Alarms" section in the GigaVUE-OS and GigaVUE-FM Administration Guide for details.

Audit Logs

With Audit Logs, changes and activities that occurred in the GigaVUE-VM virtual traffic visibility node due to user actions can be easily tracked for auditing. There are 10 results shown by default on every page. The logs can also be further filtered to view specific information.

For information about the parameters in the audit log page, refer to the "Overview of Audit Logs" section in the *GigaVUE-OS and GigaVUE-FM Administration Guide*. Filtering the audit logs allows you to display specific type of logs. For more information, refer to the "Filtering Audit Logs" section in the *GigaVUE-OS and GigaVUE-FM Administration Guide*.

🞯 GigaVUE-FM FM	/l Instance Name	Dashboard	Physical Virtu	al Cloud	Administration	Q C	admin 🗸 💡
🗗 VMware vCenter	Audit Logs						Filter
🔁 Virtual Nodes							
🜃 Virtual Maps	↓ Time	User	Operation Type	Source	Status	Description	
🌣 Management	2017-07-25 16:08:41	admin	update monitoringSes sion e840392a-cd46-4 681-85a8-2	VM	SUCCESS		•
III VMware vCenter/NSX-V 덴 Virtual Nodes	2017-07-25 16:08:41	admin	update monitoringSes sion e840392a-cd46-4 681-85a8-2	VM	SUCCESS		
🌣 Management	2017-07-25 16:06:51	admin	create monitoringSess ion	VM	SUCCESS		
ALL VIRTUAL	2017-07-20 16:17:14	admin	update nsxProfile serv iceprofile-5	VM	SUCCESS		
Q Audit Logs	2017-07-20 16:17:14	admin	update nsxProfile serv iceprofile-5	VM	FAILURE	IllegalStateExcept already been clos	ion: Entity input stream has ed.

Figure 18: Virtual - Audit Logs

Configure Visibility with NSX-V

GigaVUE-FM integrates with VMware NSX-V as a partner service, using NSX-V Service Insertion. Service Insertion allows partner services such as Gigamon Traffic Visibility to integrate with NSX-V. When the NSX-V Manager is registered in GigaVUE-FM, a Gigamon Traffic Visibility Service is registered with NSX-V. The Traffic Visibility Service is then installed on the NSX-V compute clusters through the vCenter UI. Installing the Gigamon Traffic Visibility Service deploys the GigaVUE-VM Service VMs to each host in the cluster. Security policies are then created that will make a copy of the network traffic and forward it to the Gigamon Traffic Visibility Service.

The chapter includes the following major sections:

- Prerequisites for GigaVUE-VM NSX-V Integration on page 62
- Integrate GigaVUE-VM with NSX-V on page 63
- Upgrade GigaVUE-VM on NSX-V on page 71
- Remove Gigamon Service from NSX-V and GigaVUE-FM on page 75

The prerequisites for integration are described in Prerequisites for GigaVUE-VM NSX-V Integration on page 62.

This chapter also describes the following steps for integrating GigaVUE-FM and VMware NSX-V:

- Integrate GigaVUE-VM with NSX-V on page 63
- Step 2: Register NSX-V vCenter and NSX-V Manager in GigaVUE-FM on page 65
- Step 3: Upload the GVM OVA Image on page 66
- Step 4: Install Gigamon Traffic Visibility Service on vCenter Clusters on page 67
- Step 5: Configure GigaVUE-FM Tunnels and Virtual Maps on page 68
- Step 6: Create NSX-V Security Group and Security Policy on page 69

Note: These steps assume that VMware NSX-V is installed and configured.

To upgrade GigaVUE-VM nodes on VMware NSX-V, refer to Upgrade GigaVUE-VM on NSX-V on page 71.

Prerequisites for GigaVUE-VM NSX-V Integration

The following are the prerequisites for integrating GigaVUE-VM with NSX-V:

- For VMware ESXi and NSX-V Hardware Requirements, refer to VMware ESXi System Requirements on page 33.
- GigaVUE-FM 3.4 or later.
- GigaVUE 4.5 or later node with GigaSMART to support tunnel configuration.

• VMware tools or open VM tools must be installed in VMs to tap the traffic.

Note: To upgrade to NSX-V 6.2.4, you must perform a full NSX-V upgrade including host cluster upgrade (which upgrades the host VIBs to 6.2.4). For more information, refer to the NSX-V for vSphere 6.2.4 Release Notes.

Integrate GigaVUE-VM with NSX-V

Step 1: Create Users in VMware vCenter and GigaVUE-FM

For VMware NSX-V and GigaVUE-FM to communicate, a Gigamon-FM user must be created in VMware and an NSX-V user must be created in Gigamon-FM. Also, a GigaVUE-FM user must be created in VMware vCenter for GigaVUE-FM to perform vCenter inventory functions. For VMware NSX-V and GigaVUE FM to communicate, users with the proper permissions must be created in both GigaVUE-FM and VMware NSX-V.

Note: GigaVUE-FM connects to NSX-V Manager that supports TLSv1.0, TLSv1.1, and TLSv1.2.

This section provides the steps for creating an GigaVUE-FM user in vCenter and creating an NSX-V callback user in GigaVUE-FM.

Create GigaVUE-FM User in NSX-V vCenter

For GigaVUE-FM to communicate with VMware NSX-V, you must first create a user with an NSX-V Administrator role in vCenter. This user will be a GigaVUE-FM user that VMware NSX-V uses to communicate with GigaVUE-FM.

To add an NSX-V Administrator role for a user, do the following:

- 1. Create a user in vCenter using the standard procedure for creating vCenter users.
- 2. To add the NSX-V Administrator role to the user from the vCenter Web Client, do the following:
 - a. Select Networking & Security.

Figure 1: VMware vSphere Home Page

b. Select Networking & Security Inventory > NSX-V managers.

Figure 2: Networking & Security Page

c. Select an NSX-V Manager.

Figure 3: NSX-V Managers Page

- d. Select Manage > Users > Add.
- e. Specify the user created in step 1, for example, fm@vsphere.local, and then click Next.
- f. Select the NSX-V Administrator role.
- g. Click Finish.

Create VMware NSX-V user in GigaVUE-FM

For VMware NSX-V to be able to communicate with GigaVUE-FM, you need to create a callback user in GigaVUE-FM who has the admin role. To create the callback user, do the following:

- 1. On the right side of the top navigation bar, Click
- 2. On the left navigation pane, select **Authentication > FM Users**.
- 3. Click Add.
- 4. On the FM Users page, specify the following for the new user:
 - In the **Name** field, enter the name of the call back user. For example, you can use NSX-V Manger Callback as the user name to help you associate this user with the NSX-V Manger.
 - In the **Username** field, enter a username for the user. For example, you can use nsxv to help you remember that this user is associated with NSX-V.
 - In the **Password** field, enter the password for the user specified in the **Name** and **Username** fields.
 - In the **Role** field, enter the user's role. Enter fm_admin in this field.

The FM Users NSX-V page should look like the example shown in the following figure when you are done.

Figure 4: FM Users NSX-V Page

5. Click Save.

Step 2: Register NSX-V vCenter and NSX-V Manager in GigaVUE-FM

There is a one-to-one mapping between vCenters and NSX-V Managers. Both the vCenter registered with the NSX-V Manager and the NSX-V Manager must be added to GigaVUE-FM.

When the NSX-V Manager is registered in GigaVUE-FM, it registers the Gigamon Traffic Visibility Service in NSX-V as a Network Introspection Service. The Gigamon Traffic Visibility Service is used to install GigaVUE-VM Service Virtual Machines and define profiles for forwarding traffic to the GigaVUE visibility fabric.

Add vCenter Registered with NSX-V to GigaVUE-FM

To add the vCenter to GigaVUE-FM, do the following:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under VMware vCenter, select Management > Virtual Centers.
- 3. Click Add. The Add Virtual Center page displays.

🚳 GigaVUE-FM FM I		Dashboard	Physical	Virtual	Cloud	Administration	Q	C	4 ¹	admin 🗸	•
🗗 VMware vCenter	Add Virtu	al Center								Save	Cancel
🖸 Virtual Nodes											
🖬 Virtual Maps	Virtual Center	10.210.27.100									
🍄 Management	Username	administrator@vsphe	re.local								
11 VMware vCenter/NSX-V	Password										
🖸 Virtual Nodes											
Wirtual Maps											
₩ Management											



- 4. On the Add Virtual Center page, do the following:
 - In the Virtual Center field, Enter the DNS name or IP address of the vCenter server.
 - In the **Username** field, enter the VMware vCenter username that has a minimum of the Read Only role or higher.
 - In the **Password** field, enter the password for vCenter.

Register NSX-V Manager in GigaVUE-FM

To register the NSX-V Manger with VMware vCenter, do the following:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under NSX-V, select Management > NSX-V Managers.
- 3. Click Add. The Add NSX-V Manager page displays.

Add NSX Manager	
NSX Manager	Enter IP address or Hostname
NSX Username	Enter username of NSX Manager
NSX Password	Enter password of NSX Manager
FM Username	Enter FM username
FM Password	Enter FM password
Connected vCenter	10.210.31.220

Figure 6: Add NSX-V Manager Page

- 4. Enter the information in the fields as follows:
 - In the **NSX-V Manager** field, enter the hostname or IP address of the NSX-V Manager.
 - In the NSX-V Username field, enter the user that FM uses to authenticate with NSX-V. This is the user created during the steps described in Integrate GigaVUE-VM with NSX-V on page 63.
 - In the NSX-V Password field, enter the password for the NSX-V user.
 - In the **FM User** field, enter in the user in GigaVUE-FM for NSX-V to communicate back with FM. This the user created in Integrate GigaVUE-VM with NSX-V on page 63.
 - In the **FM Password**, enter a password for the GigaVUE-FM user.
 - In the Connected vCenter field, select the connected vCenter IP.
- 5. Click Save.

Step 3: Upload the GVM OVA Image

The GVM OVA image must be uploaded to the Fabric Manager[™] so that NSX-V can install the GVM when the Gigamon Traffic Visibility Service is installed on vCenter Clusters.

To upload the GVM OVA image, do the following in GigaVUE-FM:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under **NSX-V**, go to **Management > Image Upload**.
- 3. Select the I accept the End User License Agreement ("EULA") check box.

🛞 GigaVUE-FM FM	l Instance Name	Dashboard	Physical	Virtual	Cloud	Administration	Q	C	4	admin 🗸	•
	NSX Managers	Image Upload	Tunnels Lik	orary							
🔁 Virtual Nodes 🔟 Virtual Maps	Image Uplo	bad								Save	Cancel
🌣 Management	√ ✓ End User	License Agreemen	t								
‡‡ VMware vCenter/NSX-V 昭 Virtual Nodes 웹 Virtual Maps	End User License Ag This End User Licen "Your") concerning I acceptance of this E	greement ("EULA") se Agreement ("EULA") is a Gigamon Software license ULA. If you do not accept	a legal agreemen d hereunder ("Gi; this EULA, you wi	t between Gigam gamon Software' ill NOT be author	on LLC ("Gigam). Opening the j ized to use the	on") and the entity that pu package, installing or usinį Gigamon Software.	irchases Gig g the Gigam	amon hardwa on Software o	re or softwar onstitutes yo	e products ("Yo ur agreement v	ou" or vith and
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	🗹 I accept the E	nd User License Agre	ement ("EULA").							
🌲 Alarms/Events	🔗 🕽 OVA File										
Q Audit Logs	O > Hosts Prop	perties									

Figure 7: Upload GVM OVA Image

- 4. Click the **OVA File** link.
- 5. Click **Browse**, navigate to the GVM OVA file, and click **Open**.
- 6. Click **Upload to Server**.
- 7. Click the Hosts Properties link.
- 8. In the **Password** field, enter the password you would like to set for the GVM administrator account.
- 9. In the **Confirm Password** field, reenter the same password.
- 10. Click **Save**.

Step 4: Install Gigamon Traffic Visibility Service on vCenter Clusters

The Gigamon Traffic Visibility service must be installed on each of the clusters in the NSX-V environment. Installing the Gigamon Traffic Visibility service installs the GigaVUE-VM Service VM on each of the hosts in the cluster. This Gigamon Traffic Visibility service installation should be performed by the Cloud Administrator.

To install the Traffic Visibility Service, do the following in vSphere:

- 1. In vSphere, select **Network & Security > Installation**.
- 2. Select the Service Deployments tab.
- 3. Click the green + button for New Service deployment.

- 4. On the Deploy Network & Security Services page, select the **Gigamon Traffic Visibility** service.
- 5. Click **Next**.
- 6. Select the clusters to install the Gigamon Traffic Visibility service. All the compute clusters where VMs to be monitored should be selected.
- 7. Select the shared Datastore. The datastore selected must be accessible by every host in the cluster for the install to succeed.
- 8. Select the Network. This network port group will be used for both the management and tunnel interfaces.
- 9. Select DHCP for the IP Assignment.

DHCP and Static are currently supported for the management interface. For tunnels, it is only DHCP.

10. Click **Next**, and then **Finish**.

After you click the Finish, the installation will start. Once the installation is completed, if 'Installation Status' shows 'Succeeded', but the 'Service Status' shows 'Unknown', check to see if the 'Gigamon Traffic Visibility' service VMs received the IP addresses.

Step 5: Configure GigaVUE-FM Tunnels and Virtual Maps

NSX-V traffic needs to be sent to the H-Series device. A tunnel must be created in the Tunnels Library that defines the destination port to which the traffic is sent.

Virtual maps are also needed to monitor NSX-V traffic. A separate map needs to be created for each separate GigaSMART tunnel destination to send NSX-V traffic, or if specific map rules or slicing is required. If the same parameters will be applied for all NSX-V traffic, only one map is needed to handle all NSX-V traffic. Creating a map creates a corresponding profile in NSX-V that will be used to associate the NSX-V traffic with the virtual map during security policy creation.

Create Tunnel to GigaSMART Device

To create a tunnel, do the following in GigaVUE-FM:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under **NSX-V**, select **Management > Tunnels Library**.
- 3. Click **Add** to open the Add Tunnel Endpoint page.

When the page opens, GigaVUE-FM should discover and display the GigaVUE tunnels if the H-series device is a physical node. If the tunnel is displayed, do the following:

a. Select the tunnel that is configured to receive traffic from NSX-V.

- b. Enter the Tunnel Source Port. This value will be used on the H-Series GigaSMART device to specify the source port from which the mirrored traffic is originating. The port range is from 0 to 65535.
- c. Click **OK**.

If the desired GigaVUE tunnel was not discovered, the tunnel was not configured properly on the H Series device. For information on how to configure the tunnel, refer to Configure Tunnel Endpoint on page 19.

Create Virtual Maps

To create the virtual maps, do the following in GigaVUE-FM:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under **NSX-V**, select **Virtual Maps** and then click **New**.
- 3. On the NSX-V Virtual Map page, do the following:
 - a. For Alias, enter an alias that will help you identify this map.
 - b. For **Tunnel Destination**, click in the field and select the GigaSMART tunnel destination to which NSX-V traffic will be sent.
 - c. For **Virtual Center**, select the VMware vCenter registered with the NSX-V Manager to be monitored.
 - d. (Optional) Click **Add a Rule** if you need slicing or filtering beyond what the NSX-V security filtering policy provides.
 - e. Click Save.

The GigaVUE-FM virtual maps will be distributed to every GigaVUE-VM installed in the NSX-V clusters. An NSX-V Profile will also be created for the map.

Step 6: Create NSX-V Security Group and Security Policy

An NSX-V security group and security policy must be created to redirect network traffic to the Gigamon Traffic Visibility service. A security group defines which VMs will be monitored. The security policy associates the Gigamon Traffic Visibility service and map profile to the security group. The cloud tenant user should create the security group and security policy.

Create Security Group

A security group should be created that contains the VMs to forward NSX-V network traffic to the Gigamon Traffic Visibility service.

To create the security group, do the following in the vCenter UI:

- 1. In vCenter, select Networking & Security > Service Composer > Security Groups > + New Security Group.
- 2. Enter the Name and description.
- 3. Click **Next**.
- 4. Click **Select Objects** to include.
- 5. For the Object Type, select an Object Type from the drop-down list.
- 6. Move the desired Objects from the Available Objects column to the Selected Objects Column.
- 7. Click Finish.

The monitored Objects can also be selected using dynamic membership or any of the available object types.

For additional details on creating security groups, Refer to the "Service Composer" chapter of the NSX-V Administration Guide.

Create Security Policy

The steps presented in this section create a security policy with the source virtual machines defined as the virtual machines in the applied security groups. Additional configurations of the security policy are available. For additional details on creating security policies, refer to the "Service Composer" chapter of the *NSX-V Administration Guide*.

To create the security policy, do the following in the vCenter UI:

- 1. In vCenter, select Networking & Security > Service Composer.
- Select the Security Policies tab, and then click + Create Security Policy.
 Before you proceed to Step , make sure that you specify the Guest Introspection and Firewall Rules.
- 3. On the new Security Policy page, do the following.
 - a. In the Name and Description fields, enter name and description for the security policy, respectively.
 - b. Click "4 Network Introspection Services" to select the Network Introspection Services tab.
 - c. Click + Add Network Introspection Service.
 - d. In the Name and Description fields, enter any name and description.
 - e. For Action, select Redirect to service.
 - f. For Service Name, select Gigamon Traffic Visibility.
 - g. For Profile, select the profile corresponding to the desired virtual map. A profile is created for each virtual map.

h. Based on the required traffic type, select the Source and Destination as described in the following table.

Traffic	Source	Destination
Incoming	Any	Policy's Security Groups
Outgoing	Policy's Security Groups	Any

- i. For Service, If filtering based on ports is desired, click Change to select the service to filter on. A service defines tcp/udp ports to filter.
- j. For State, select **Enabled**.
- k. For Log, select **Do not log**.
- I. Click **OK**.
- 4. On the New Security Policy page, click Finish.

Map Security Policy to Security Group

The security policy is mapped to a security group by applying the security policy to one or more security groups. The steps presented in this section configure the Visibility Fabric to allow monitored traffic to flow to the H-Series chassis with GigaSMART. Monitored traffic can be observed using a tool that is connected to a tool port of the H-Series device.

To map the security policy to the security group, do the following in the vCenter UI:

- 1. In vCenter, select **Networking & Security > Service Composer**.
- 2. Select the Security Policies tab.
- 3. Select the security policy.
- 4. Select Actions > Apply Security Policy.
- 5. Select the security groups to which to apply the security policy.
- 6. Click **OK**.

Upgrade GigaVUE-VM on NSX-V

To upgrade the GigaVUE-VM Nodes on NSX-V, do the following:

- Upload OVA file on page 72
- Upgrade Gigamon Traffic Visibility in the VMware vCenter on page 73
- View Upgraded GigaVUE-VM Nodes on page 75

Upload OVA file

To upload the OVA file:

- 1. Login to GigaVUE-FM.
- On the top navigation bar, click Virtual. Under NSX-V, go to Management > Image Upload. Refer to Figure 8: VMware vCenter Management Page on page 72.

🎯 GigaVUE-FM FM		Dashboard	Physical	Virtual	Cloud	Administration	Q	C	4 ⁰	admin 🗸	•
	NSX Managers	Image Upload	Tunnels Lil	brary							
Virtual Nodes Virtual Maps	Image Uplo	bad								Save	Cancel
🌣 Management											
計 VMware vCenter/NSX-V	End User License Ag This End User License "Your") concerning of	reement ("EULA") se Agreement ("EULA") is a Sigamon Software license	a legal agreemen d hereunder ("Gi	t between Gigam gamon Software	on LLC ("Gigam '). Opening the j	on") and the entity that pu package, installing or usin	irchases Gig g the Gigam	amon hardwa on Software ce	ire or softwari onstitutes you	e products ("Yo ur agreement v	ou" or with and
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	🗹 l accept the Er	nd User License Agree	ement ("EULA").							
Alarms/Events	⊘ ≯ OVA File										
Q Audit Logs	🔵 🕻 Hosts Prop	erties									

Figure 8: VMware vCenter Management Page

- Under End User License Agreement, select the I accept the End User License Agreement ("EULA") check box.
- 4. Click the OVA File link and click **Browse**. Navigate to the GVM OVA file, and click **Open**. Refer to Figure 9: Browse the OVA File on page 72

NSX Managers Image Up	oload Tunn	els Library			Help
Image Upload				Save	Cancel
Send User License Agre	eement				
⊘ ✔ OVA File					
File Name	vma_2017-01-14	ova	Browse Upload to Server		
File Details	Product Version Vendor Download Size Size on disk Description	GigaVUE-VM 3.4.00 Gigamon Inc. 590 MB 1187 MB (thin pro 2048 MB (thick pr This is a Gigamon	visioning) ovisioning) GigaVUE-VM Virtual Network Appliance. It provides network traffic visibility from within a virtualized environment		
● Hosts Properties					

Figure 9: Browse the OVA File
Once the upload is complete, a confirmation message is displayed. Refer to Figure 10: Upload the OVA File to Server on page 73.

NSX Managers Image	Upload Tu	nnels Library											
Image Upload												Save	Cancel
OVA uploaded successfu	lly												×
Send User License A	greement												
🧭 🗸 OVA File													
File Name	vma_2017-01-14	ova	Browse	Upload to Server									
File Details	Product Version Vendor Download Size Size on disk Description	GigaVUE-VM 3.5.01 Gigamon Inc. 590 MB 1187 MB (thir 2048 MB (thir This is a Gigar	provisionir k provisioni non GigaVU	ıg) ng) JE-VM Virtual Netwoi	rk Applia	ance. It pr	rovides net	work traffic	visibility fro	ım within a	virtualized	environn	nent.
O > Hosts Properties													

Figure 10: Upload the OVA File to Server

 Click the Hosts Properties link. Enter the password in the **Password** field. Re-enter the same password in the **Confirm Password** field. Refer to Figure 11: Enter the Password on page 73.

NSX Managers Image Upload Tunne	els Library					
Image Upload					Save	Cancel
⊘ ▶ End User License Agreement						
⊘ > OVA File						
⊘ Hosts Properties						
Password		0				
Confirm Password						

Figure 11: Enter the Password

6. Click Save.

Upgrade Gigamon Traffic Visibility in the VMware vCenter

To upgrade the Gigamon Traffic Visibility service in the VMware vCenter:

- 1. Login to the VMware vCenter.
- Select Networking & Security > Installation > Service Deployment. The Gigamon Traffic Visibility service shows as Upgrade Available. Refer to Figure 12: Service Deployment Page on page 74.

Navigator I	Installation									
🖣 Home 🕨 🔊	Management Host Preparati	Ianagement Host Preparation Logical Network Preparation Service Deployments								
Networking & Security	NSX Manager: 10.210.27.161	SX Manager: 10.210.27.161 💌								
🕂 NSX Home	Network & Security Service De	ployments								
🚱 Dashboard	Network & security services are	twork & security services are deployed on a set of clusters. Manage service deployments here by adding new services or deleting								
🔅 Installation	existing ones.									
🐏 Logical Switches	💠 🗙 🔅 🚖					Q Filt	er	•		
NSX Edges	Service	Version	Installation Status	Service Status	Cluster 1 V	Datastore	Port Group	IP Address		
🌅 Firewall	🐣 Gigamon Traffic Visibility	3400	 Succeeded 	🖌 Un	唱 Com	E isc	2 dv	DHCP		
🜇 SpoofGuard	- organien frank violonity	00	👚 Upgrade Available	¢ Sp				2		
Service Definitions										

Figure 12: Service Deployment Page

3. Select the Gigamon Traffic Visibility service and click the **Upgrade** icon. Refer to Figure 13: Upgrade the Gigamon Traffic Visibility Service on page 74.

Navigator I	Installation									
Home 🕨 🔊	Management Host Preparati	anagement Host Preparation Logical Network Preparation Service Deployments								
Networking & Security	NSX Manager: 10.210.27.161	IX Manager: (10.210.27.161 🔍								
👯 NSX Home	Network & Security Service De	ployments								
💫 Dashboard	Network & security services are	etwork & security services are deployed on a set of clusters. Manage service deployments here by adding new services or deleting								
🔅 Installation	existing ones.		_			-		_		
🐏 Logical Switches	💠 🗙 🔅 🚖					Q Filt	er	•		
NSX Edges	Service	Version	Installation Status	Service Status	Cluster 1 V	Datastore	Port Group	IP Address		
10 Firewall	🛗 Gigamon Traffic Visibility	3.4.00	 Succeeded 	🖌 Up	🕮 Com	I iSC	🧟 dv	DHCP		
🜇 SpoofGuard			👚 Upgrade Available							
Service Definitions										

Figure 13: Upgrade the Gigamon Traffic Visibility Service

4. To upgrade the GigaVUE-VMs right away, select the **Upgrade now** radio button and click **OK**. Refer to Figure 14: Confirm Upgrade Dialog Box on page 74.

Confirm Upgrade	
Upgrade selected service deployments? Specify schedule:	
● Upgrade now ○ Schedule the upgrade	1:55 PM 👻
	OK Cancel

Figure 14: Confirm Upgrade Dialog Box

- 5. During the upgrade, the Installation Status goes through three stages:
 - Scheduled for upgrade
 - Enabling
 - Succeeded (refer to Figure 15: Update Succeeded on page 75.)

Installation									
Management Host Preparati	on Log	ical Network Preparation	Service Deplo	yments					
NSX Manager: 10.210.27.161 💌									
Network & Security Service Deployments									
Network & security services are	deployed	on a set of clusters. Manage	e service deplo	yments here	by adding ne	ew services	or deleting existing ones.		
🕂 🗙 🔅 🛧								Q Filter 🔹	
Service	Version	Installation Status	Service Status	Cluster 1	Datastore	Port Group	IP Address Range		
🋗 Gigamon Traffic Visibility	3.5.01	 Succeeded 	🗸 Up	🗗 Com	isc	🚨 dv	DHCP		

Figure 15: Update Succeeded

The GigaVUE-VM upgrade is completed when the Installation Status displays the status as Succeeded and the Service Status displays the status as Up.

View Upgraded GigaVUE-VM Nodes

To view the upgraded GigaVUE-VM Nodes:

- 1. Log back in to GigaVUE-FM.
- 2. On the top navigation bar, click **Virtual**. On the left navigation pane, under **NSX-V**, select **Nodes**.

The GigaVUE-VM node names now show 'u' for the upgraded virtual nodes. The version displays the new upgraded version. Refer to Figure 16: Upgraded NSX-V Virtual Nodes on page 75.

NSX Virtual Nodes				Edit	Delete Filter	Rediscover	Tunnel Validation
GigaVUE-VM Node Name	GigaVUE-VM IP	Licensed	Version	Data Center	Cluster		Host Name
Virtual Center : 10.210.19.70							
 Gigamon Traffic Visibility (285)u 	10.210.29.73	Yes	3.5.01	NSX	Compute-Clu	ster-1	10.210.27.87
 Gigamon Traffic Visibility (286)u 	10.210.29.72	Yes	3.5.01	NSX	Compute-Clu	ster-1	10.210.27.88
		Total Item	s : 2				

Figure 16: Upgraded NSX-V Virtual Nodes

Remove Gigamon Service from NSX-V and GigaVUE-FM

To clean up the Gigamon Visibility Platform from NSX-V and GigaVUE-FM, you must perform the following steps:

- Step 1: Delete Network Monitoring Services on page 76
- Step 2: Delete NSX-V Virtual Maps from GigaVUE-FM on page 77
- Step 3: Delete Traffic Visibility Service from NSX-V on page 77
- Step 4: Delete NSX-V Manager from GigaVUE-FM on page 78
- Step 5: Delete Virtual Center from GigaVUE-FM on page 78

Step 1: Delete Network Monitoring Services

To delete the network introspection services:

- 1. In vCenter, select Networking & Security > Service Composer.
- 2. Select the **Security Policies** tab.
- 3. Select the security policy from which you wish to delete the network monitoring services.
- 4. Click **Actions** > **Edit**. The Edit Security Policy page is displayed.



Figure 17: Edit Policy

5. Select Network Introspection Services.

🖉 Database_SecurityPolicy - Edit Se	ecurity Polic	у				4 (S
✓ 1 Name and description	Network In	trospection Services				
✓ 2 Guest Introspection Services						
✓ 3 Firewall Rules	🕈 🖌		Source	Destination	Service	Action
A Network Introspection Services	♥ 1	Traffic Visibility	Policy's S	* Any	* Any	Redirect to Gig
✓ 5 Ready to complete						
	M					1 items 📑 🗧
					Back Next	Finish Cancel
					Dack	

Figure 18: Edit Network Introspection Services

6. Select the Network Introspection Services that you wish to remove from the security policy and click the red \mathbf{x} (delete) icon.

Step 2: Delete NSX-V Virtual Maps from GigaVUE-FM

To delete the NSX-V virtual maps from GigaVUE-FM:

1. In GigaVUE-FM, go to Virtual > NSX-V > Virtual Maps.

🎯 GigaVUE-FM	Das	hboard	Physical	Virtual	Cloud Ad	dministration				C	x c	•	admin -
🗗 VMware vCenter		SX Virtu	al Maps					New	Edit	Delete	Redeploy	Redeploy All	Tunnel Validation
🖸 Virtual Nodes													
🎬 Virtual Maps		Map Alias	Deployme	ent Status	Traffic	Virtual center	NSX Profile	NSX Security	Group	Tunnel Desi	ination		Comments
🍄 Management		map_1	Succes	SS	Consistent	10.210.19.70	Gigamon Traffic Visi			[GMIP] 10.2	10.176.105:2	2105 srcPort: 25	500
tt vMware vCenter/NSX-V							Total Items : 1						
🖸 Virtual Nodes													
Virtual Maps													
🍄 Management													

Figure 19: NSX-V Virtual Maps Delete

2. In the NSX-V Virtual Maps page, select the map and click **Delete**. The vendor template and the profile that corresponds to the map is deleted in NSX-V.

Step 3: Delete Traffic Visibility Service from NSX-V

To delete the Traffic Visibility Service from each cluster:

- 1. In vSphere, select Network & Security > Installation.
- 2. Select the **Service Deployments** tab.
- 3. From the table, select the service you wish to delete and click the red **X** (delete) icon. The selected service is deleted from all the hosts in the cluster.

vmware• vSphere Web Client ♠=		/			U	Administrat	or@VSPHERE	LOCAL - H			
Navigator	Installation										
History	Management	Host Prepara	tion Logical I	Network Prepar	ation Servic	e Deployments					
Networking & Security	NSX Manager:	NSX Manager: 10.210.27.161									
🚰 NSX Home	Network & Sec	Network & Security Service Deployments									
🚱 Dashboard	Network & security services are deployed on a set of clusters. Manage service deployments here by adding new										
installation	services or del	eting existing o	nes.								
🌺 Logical Switches	🔶 🛞 🔶	企					Q Filter	•			
III NSX Edges	Service	Version	Installation Status	Service Status	Cluster	Datastore	Port Group	IP Address Range			
🛅 Firewall	🛗 Gigam	5.2.00	🖌 Succee	🖌 Up	🛱 Comp	iscsi	AvPort	DHCP			
Kanal Spool Guard											
Bervice Definitions											
Service Composer											
🕥 Data Security											
🙀 Flow Monitoring											
Activity Monitoring											
traceflow											
✓ Networking & Security Inventory											
RSX Managers								1 items			

Figure 20: Delete the Selected Service

Step 4: Delete NSX-V Manager from GigaVUE-FM

To delete the NSX-V Manager:

- 1. In GigaVUE-FM, go to Virtual > NSX-V > Management.
- 2. Under NSX-V Managers, select the IP address of the NSX-V Manager that you wish to delete and click **Delete**.

🞯 GigaVUE-FM	Dashboard Physical Virtual	Cloud Administration		Q C 🌲 admin	• • •
P VMware vCenter	NSX Managers Image Upload	Tunnels Library			
🖸 Virtual Nodes 🎬 Virtual Maps	NSX Managers			Add Edit	Delete
🍄 Management	NSX Manager	Virtual Center	NSX Username	FM Username	
₩ vMware vCenter/NSX-V	☑ 10.210.27.161	10.210.19.70	admin	admin	
대 Virtual Nodes 앱 Virtual Maps			Total Items : 1		
🌣 Management					

Figure 21: Delete the NSX-V Manager

Step 5: Delete Virtual Center from GigaVUE-FM

To delete the Virtual vCenter:

- 1. In GigaVUE-FM, go to **Virtual** > **VMware vCenter** > **Management.**
- 2. Under Virtual Centers, select the IP address of the virtual center you wish to delete and click **Delete**.

🞯 GigaVUE-FM	Dashboard Physical Vir	tual Cloud Ac	Iministration		Q C 🦼	admin -
C VMware vCenter	Virtual Centers Virtual Swi	ches Virtual Nod	es Tunnels L	Ibrary		
🔁 Virtual Nodes	Virtual Centers				Action - Add	Edit Delete
🌣 Management	Virtual Center	Status	Version	Login Time	Liser Name	
tt vMware vCenter/NSX-V	 Intellicentel I0.210.19.70 	Connected	6.0.0	Nov 21, 2017 6:43:11 PM	administrator@vsphere.local	
🔁 Virtual Nodes	0 10.210.108.0	Connected	6.5.0	Nov 21, 2017 6:57:10 PM	administrator@vsphere.local	
🛱 Management				Total ltems : 2		

Figure 22: Delete the Virtual vCenter

Configure Visibility with NSX-T

GigaVUE-FM integrates with VMware NSX-T as a service definition, using NSX-T Service Insertion. Service Insertion allows service definitions such as GigaVUE Cloud Suite to integrate with NSX-T. When the NSX-T Manager is registered in GigaVUE-FM, a GigaVUE Cloud Suite is registered as a service with NSX-T. The GigaVUE-VMs can then be deployed as a Service Instances to specific clusters. Service Chains are then created that will make a copy of the network traffic and forward it to the GigaVUE-VM.

The chapter includes the following major sections:

- Prerequisites for GigaVUE-VM NSX-T Integration
- Integrate GigaVUE-VM with NSX-T
- Remove Gigamon Service from NSX-T and GigaVUE-FM

Note: These steps assume that VMware NSX-T is installed and configured.

Prerequisites for GigaVUE-VM NSX-T Integration

The following are the prerequisites for integrating GigaVUE-VM with NSX-T:

- For VMware ESXi and NSX-T Hardware Requirements, refer to VMware ESXi System Requirements.
- GigaVUE-FM 5.8 or later.
- Shared storage is must to deploy GigaVUE-VM.
- GigaVUE-VM image (.ova) must be extracted to an Image Host Server so that http://<Server_ IP>/GigaVUE-VM file2.ovf is accessible from GigaVUE-FM, NSX Manager, and vCenter.

Integrate GigaVUE-VM with NSX-T

To integrate GigaVUE-VM with NSX-T, perform the following steps:

- "Step 1: Create Users in VMware vCenter and GigaVUE-FM" on the next page
- "Step 2: Register NSX-T vCenter and NSX-T Manager in GigaVUE-FM" on page 83
- "Step 3: Deploy GigaVUE-VM on vCenter Clusters" on page 85
- "Step 4: Configure GigaVUE-FM Tunnels and Virtual Maps" on page 87
- "Step 5: Create NSX-T Group and Service Chain" on page 89

Step 1: Create Users in VMware vCenter and GigaVUE-FM

For NSX-T and GigaVUE-FM to communicate, a Gigamon-FM user must be created in NSX-T, and an NSX-T user must be created in Gigamon-FM. Also, a GigaVUE-FM user must be created in NSX-T for GigaVUE-FM to perform NSX-Tinventory functions. For NSX-T and GigaVUE FM to communicate, users with the proper permissions must be created in both GigaVUE-FM and VMware NSX-T. Refer to Required VMware Virtual Center Privileges for more information on user roles and privileges.

Note: GigaVUE-FM connects to NSX-T Manager that supports TLSv1.0, TLSv1.1, and TLSv1.2.

Create GigaVUE-FM User in NSX-T manager

For GigaVUE-FM to communicate with NSX-T, you must first create a user with an NSX-T Enterprise Admin role in NSX-T manager. This user will be a GigaVUE-FM user that VMware NSX-T uses to communicate with GigaVUE-FM.

To add an NSX-T Enterprise admin role for a user, do the following:

1. In NSX-T, navigate to **System > Settings > Users** and click **ROLES ASSIGNMENTS** tab.

vm NSX-T			Q	Â	@~	admin v
Home Networking Se	urity Inventory Plan & Troubleshoot System Advanced Networking & Security					
«						
System Overview	ROLES ASSIGNMENTS CONFIGURATION					0
Configuration	User/User Group Name	Roles				
Appliances	: 🖾 nsx_policy	Enterprise Admin				
Get Started	음, admin	Enterprise Admin				
e ⁷ Service Deployments	E & audit	Auditor				
Active Directory	C Refresh					1 - 3 of 3 Users
Lifecycle Management						
Settings						
巻 Users						
🔍 Licenses						
E Certificates						
Support Bundle						
🔛 Customer Experience Impr						
Proxy Settings						

- 2. On the ROLES ASSIGNMENTS tab, click **ADD** and then select **Principal Identity with Role** from the drop-down list.
- 3. On the New User/User Group, enter the required information and select the **Role** as Enterprise Admin.
- 4. Click **Save** and then a GigaVUE-FM user is created in NSX-T.

Create VMware NSX-T user in GigaVUE-FM

For NSX-T to be able to communicate with GigaVUE-FM, you need to create a user in GigaVUE-FM who has the admin role. To create an NSX-T user in GigaVUE-FM, do the following:

- 1. On the right side of the top navigation bar, click
- 2. On the left navigation pane, select **Authentication > User Management**.
- 3. Click Add. The CREATE USER dialog box appears.

🌐 GigaVUE-FM				al Cloud	Q Search 🗘 🛕	@- \$ 0
ADMINISTRATION	User Management	Users User Groups Roles				
Ξ Events					Add Edit	
Q All Audit Logs						
i≣ Tasks 🖍					Exp	and All Collapse All
Reports	Username	Name	Email	Group	Resources	Ð
💄 Authentication 🛛 🗸	> admin	System Administrator		1	1 show all	
User Management						
RBAC						
Authentication Ty						
🗱 High Availability 🕮						
👒 Tags						
🏟 System 🖍						
SUPPORT						
↔ API Reference						
About						

4. On the CREATE USER dialog box, enter or select the information as follows:

CREATE USER		
Name	Name	
Username	Username	
Email	Email	
Password	Password	•
Confirm Password	Confirm Password	
	Cancel Save	

- In the Name field, enter the name of the call back user.
- In the **Username** field, enter a user name for the user.
- In the **Email** field, enter the Email address of the user.
- In the **Password** field, enter the password for the user.
- In the **Confirm Password** field, enter the same password that you entered for **Password**.
- 5. Click Save.

Step 2: Register NSX-T vCenter and NSX-T Manager in GigaVUE-FM

Before adding a NSX-T Manager, you must add a vCenter to GigaVUE-FM .

When the NSX-T Manager is registered in GigaVUE-FM, it registers the GigaVUE Cloud Suite in NSX-T as a Network Monitoring Service. The GigaVUE Cloud Suite is used to install GigaVUE-VM Service Virtual Machines and define profiles for forwarding traffic to the GigaVUE visibility fabric.

Add vCenter Registered with NSX-T to GigaVUE-FM

To add the vCenter to GigaVUE-FM:

- 1. On the top navigation bar, click **Virtual**.
- On the left navigation pane, under VMware vCenter, select Management > Virtual Centers. The Virtual Centers page appears.
- 3. Click Add. The Add Virtual Center page appears.

🋞 GigaVUE-FM		Dashboard	Physical	Virtual	Cloud	Q Search	\$ \$ \$ \$ \$ \$ \$
VMware vCenter	Add	Virtual Center					Save Cancel
Virtual Nodes		Virtual IP add	dress/DNS				
Virtual Maps		Username	ame				
Management		Password passv	vord				
NSX-V	^						
NSX-T	^						
	~						
🗕 Events Q. Audit Logs							

- 4. On the Add Virtual Center page, do the following:
 - In the Virtual Center field, Enter the DNS name or IP address of the vCenter server.
 - In the **Username** field, enter the VMware vCenter username that has a minimum of the Read Only role or higher.
 - In the **Password** field, enter the password for vCenter.
- 5. Click Save.

Add a NSX-T Manager in GigaVUE-FM

To add a NSX-T Manger with VMware vCenter, do the following:

- 1. On the top navigation bar, click **Virtual**.
- 2. On the left navigation pane, under **NSX-T**, select **Management > NSX-T Managers**.
- 3. Click Add. The NSX-T Manager page appears.

🋞 GigaVUE-FM	Dashboard	Physical Virtual Cl	oud Q Search	¢ £ @- \$ Ø
	NSX-T Manager			Save Cancel
VMware vCenter 🔒	Virtual Contor	Ester ID est to a		
NSX-V	Virtual Center	Enter IP address		
	NSX-T Manager	Enter IP address or Hostname		
NSA-1 🗸	NSX-T Username	Enter the NSX-T Manager username		
Virtual Nodes	NSX-T Password	Enter the NSX-T Manager password		
Virtual Maps	FM Username	Enter the FM username		
Management	FM Password	Enter the FM password		
ALL VIRTUAL 🗸	Image Host	Enter IP address		
🚍 Events				
Q Audit Logs				

- 4. Enter the information in the fields as follows:
 - In the Virtual Center field, enter the IP address of the vCenter.
 - In the NSX-T Manager field, enter the hostname or IP address of the NSX-T Manager.
 - In the NSX-T Username field, enter the user that FM uses to authenticate with NSX-T. This is the user created during the steps described in Create VMware NSX-T user in GigaVUE-FM.
 - In the **NSX-T Password** field, enter the password for the NSX-T user.
 - In the FM Username field, enter in the user in GigaVUE-FM for NSX-T to communicate back with FM. This the user created in Create GigaVUE-FM User in NSX-T manager on page 81.
 - In the **FM Password**, field enter a password for the GigaVUE-FM user.
 - In the Image Hostfield, enter the IP address of the Image Host. Refer to GigaVUE-VM image (.ova) must be extracted to an Image Host Server so that http://<Server_IP>/GigaVUE-VM file2.ovf is accessible from GigaVUE-FM, NSX Manager, and vCenter. for more information.
- 5. Click Save.

NOTE:

- A GigaVUE-FM managing a NSX-T environment cannot be used to manage vCenter or NSX-V environment.
- You cannot connect more than one GigaVUE-FM to a NSX-T manager simultaneously.

Step 3: Deploy GigaVUE-VM on vCenter Clusters

The GigaVUE-VM must be installed on each of the clusters in the NSX-T environment. Installing the GigaVUE-VM installs the GigaVUE-VM Service on each of the hosts in the cluster. This GigaVUE-VM installation must be performed by the GigaVUE-FM Administrator.

To deploy GigaVUE-VM in GigaVUE-FM:

- 1. On the top navigation bar, click **Virtual**.
- On the left navigation pane, under NSX-T, select Management > GVM Deployment. The GigaVUE-VM Deployment page appears.

🌐 GigaVUE-FM	Dashbo	oard Physical	Virtual	Cloud	Q Search	¢Ļ	@- \$ ⑦
VMware vCenter	Management	NSX-T Managers	GVM Deploym	nent Tunno	els Library		
NSX-V	^						(Deploy GVM)
NSX-T	Virtual Center	S	Select Virtual Center	r	•		
Virtual Nodes	Cluster	S	elect Cluster		-		
Virtual Maps	Datastore	S	elect Datastore		-		
Management	Management Netw	rork	elect Management	Network	*		
ALL VIRTUAL	Service Attachment	t	elect Service Attac	hment	•		
🚍 Events	Deployment Count	1					
Q Audit Logs							

- 3. Enter or select the required information as follows:
 - Virtual Center—select the IP address of the vCenter.
 - **Cluster**—select a cluster where you want to deploy the GigaVUE-VM.

Note: Only Cluster-based deployment is supported in NSX-T

• Datastore—select a network datastore shared among all ESXi hosts.

Note: You must configure at least one shared datastore across all hosts in any cluster where you want to deploy the GigaVUE-VMs.

• **Management Network**—select a Management Network. For GigaVUE-VM, VM Network is the management network.

Note: Only DHCP is supported on GigaVUE-VM's network

- **Service Attachment**—select a Service Attachment (created on NSX-T before GigaVUE-FM configuration).
- **Deployment Count**—enter number of nodes where the GigaVUE-VM is required to be deployed. Deployment count must be lesser than or equal to the number of ESX hosts.
- 4. Click **Deploy GVM**. Then the specified number of GigaVUE-VMs are deployed in the hosts of vCenter.

To view the status of the GigaVUE-VM deployment in GigaVUE-FM:

 Navigate to Virtual > NSX-T > Virtual Node. The Virtual Node page appears with the deployed GigaVUE-VM.

To view the status of the GigaVUE-VM deployment in NSX-T:

- 1. Navigate to System > Service Deployment > DEPLOYMENT.
- 2. On the DEPLOYMENT tab, for **Partner Service**, select GigaVUE Cloud Suite and then click **VIEW SERVICE DETAILS**. A list of active service instances appears.

Note: You can view the status of the deployed GigaVUE-VMs and wait for the status to be **Up**.

Step 4: Configure GigaVUE-FM Tunnels and Virtual Maps

NSX-T traffic needs to be sent to the H-Series device. A tunnel must be created in the Tunnels Library that defines the destination port to which the traffic is to be sent.

Virtual maps are also needed to monitor NSX-T traffic. A separate map needs to be created for each separate GigaSMART tunnel destination to send NSX-T traffic, or if a specific map rule or slicing is required. If the same parameters are applied for all NSX-T traffic, only one map is required to handle all NSX-T traffic. Creating a map creates a corresponding profile in NSX-T that is used to associate the NSX-T traffic with the virtual map during service chain creation.

Create Tunnel to GigaSMART Device

To create a tunnel in GigaVUE-FM:

- 1. On the top navigation bar, click Virtual.
- 2. On the left navigation pane, under **NSX-T**, select **Management > Tunnels Library**.
- 3. Click **Add** to open the **Add Tunnel Endpoint** page. The page displays a list of available GigaVUE tunnels, if the H-series device is a physical node.

🋞 GigaVUE-FM			Dashboard	Physical	Virtual	Cloud	Q Search	φţ	@- 0	
VMware vCenter		Add Tunnel Enc	lpoint						Cancel	
	^	Port:	● Giga\	/UE® Other						
		Destination Tunnel IP	Tunnel Source Port	Tunnel Destination Port	Tunnel Type	DSCP Fragmentation	Physical Port	Physical Node	Physical Node Type	
			No GigaVUE Tunnels found.							
Virtual Maps					Total Item	s:0				
🚍 Events										
Q Audit Logs										

If the list of tunnels is displayed, do the following:

- a. Select the tunnel that is configured to receive traffic from NSX-T.
- b. Enter the Tunnel Source Port. This value will be used on the H-Series GigaSMART device to specify the source port from which the mirrored traffic is originating. The port range is from 0 to 65535.

If the desired GigaVUE tunnel was not discovered, the tunnel was not configured properly on the H Series device. For information on how to configure the tunnel, refer to Configure Tunnel Endpoint on page 19.

4. Click **OK**. A Tunnel Endpoint is created.

To view the status of the virtual nodes, navigate to **NSX-T** > **Virtual Nodes**. The **NSX-T Virtual Nodes** page displays the list of GigaVUE-VMs and respective details.

Create Virtual Maps in GigaVUE-FM

To create a virtual map:

- 1. On the top navigation bar, click **Virtual**.
- On the left navigation pane, select NSX-T > Virtual Maps and then click New. The NSX-T Virtual Map page appears.

🌐 GigaVUE-FM		Dashboard Physical Virtual Cloud Q Search 🗘 🏚 🕲 - 🎄 🧒
VMware vCenter	NSX-T Virtual Map	Save Cancel
NSX-V	VM Map Info	
NSX-T	- Alias	Alias
Virtual Nodes	Comments	Comments
Virtual Maps	Tunnel Destination	Select a tunnel destination.
Management	vCenter	Select a virtual center.
ALL VIRTUAL	✓ Map Rules	
🚍 Events		
Q Audit Logs		Add a Rule
		* Rule 1 Condition search • Keiner Bi-directional , Traffic flow from vNic • Slicing 64-9000
		x Rule 2 Condition search ▼ Bi-directional , Traffic flow from vNic ▼ Slicing 64-9000

- 3. On the NSX-T Virtual Map page, do the following:
 - a. For **Alias**, enter an alias that will help you identify this map.
 - b. For **Comments**, enter any additional comments for the Virtual Map.
 - c. For **Tunnel Destination**, click in the field and select the GigaSMART tunnel destination to which NSX-T traffic will be sent.
 - d. For **vCenter**, select the VMware vCenter registered with the NSX-T Manager to be monitored.
 - e. (Optional) Click **Add a Rule** if you need slicing or filtering beyond what the NSX-T security filtering policy provides.
 - f. Click **Save**. A Virtual Map is created and you can view the Virtual Map in the SERVICE PROFILES tab of Network Introspection (E-W) page in NSX-T.

The GigaVUE-FM virtual maps is distributed to every GigaVUE-VM installed in the NSX-T clusters and an NSX-T Profile is also created for the map.

Note: GigaVUE-FM verifies the NSX-T license while creating or updating the Virtual Map.

Step 5: Create NSX-T Group and Service Chain

An NSX-T group and service chain must be created to redirect network traffic to the GigaVUE Cloud Suite. An NSX-T group defines which VMs will be monitored. The service chain associates the GigaVUE Cloud Suite and map profile to the group.

Create Service Chain

The steps presented in this section create a service chain with the source virtual machines defined as the virtual machines in the applied groups. Additional configurations of the service chain are available. For additional details on creating security policies, refer to the "Service Composer" chapter of the *NSX Administration Guide*.

To create the service chain in NSX-T:

- 1. Select Security > Network Introspection (E-W) and then click SERVICE CHAINS tab.
- 2. On the SERVICE CHAINS tab, click **ADD CHAIN**.

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- 3. On the New Service Chain, do the following:
 - a. In the **Name** and **Description** fields, enter name and description for the service chain, respectively.
 - b. For Service Segments, select a service segment.
 - c. Click Forward Path and a Set Forward Path dialog box appears.
 - Select a Service Profile for Forward Path.
 - d. For **Reverse Path**, select or deselect the **Inverse Forward Path** to define the direction of the traffic.
 - e. For Failure Policy, specify whether to allow or block the service chain.
- 4. Click Save. A Service Chain is created.

The new Service Chain is then updated in the NSX-T Virtual Maps page of GigaVUE-FM.

Create Group

A group should be created that contains the VMs to forward NSX-T network traffic to the GigaVUE Cloud Suite.

To create the group, do the following in the NSX-T:

- 1. In NSX-T, select **Inventory > Groups**. The Groups page appears.
- 2. On the Groups page, click **ADD GROUP**.

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- 3. On the New Group, enter or select the values as follows.
 - a. Enter a name for the new group.
 - b. Click Set Members and the Select Members dialog box appears.
 - Add or select Membership Criteria, Members, IP/MAC Addresses, and AD Groups.
 - c. Enter the description for the group.
- 4. Click **Save** and then a group is created and appears in the **Groups** page.

Create and Publish a Policy

A Policy is a set of rules defined to filter the traffic. A Policy is to be created and published for passing the traffic from NSX-T to the configured tunnel endpoint.

To create and publish a policy in NSX-T:

- 1. Select **Security > Network Introspection (E-W)** and then click **RULES** tab.
- 2. On the RULES tab, click **ADD POLICY**.

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- 3. On the New Policy, enter or select the values as follows:
 - a. Enter a name for the policy.
 - b. Select the **Sources** of the traffic.
 - c. Select the **Destinations** of the traffic.
 - d. Select the **Services** for the traffic.
 - e. For Applied To field, select the appropriate groups.
 - f. On Action field, specify whether to redirect the traffic or not.
- 4. Click **Publish**. On publishing the rule/policy you can view the traffic flow from GigaVUE-VM to the tunnel endpoint.

Remove Gigamon Service from NSX-T and GigaVUE-FM

To clean up the Gigamon Visibility Platform from NSX-T and GigaVUE-FM, perform the following steps:

- Step 1: Remove the Service Chains
- Step 2: Delete the vMaps
- Step 3: Undeploy GigaVUE-VMs
- Step 4: Delete the NSX-T manager and vCenter connections

Step 1: Remove the Service Chains

To delete the network monitoring services:

- 1. In NSX-T, select Security > Network Introspection (E-W).
- 2. Select the SERVICE CHAINS tab.

3. On the appropriate Service Chain, click i and then select **Delete** to delete the selected Service Chain.

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Step 2: Delete the vMaps

To delete the Virtual Maps from GigaVUE-FM:

1. Navigate to Virtual > NSX-T > Virtual Maps. The NSX-T Virtual Maps page appears.

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2. In the NSX-T Virtual Maps page, select the map and click **Delete**. The service profile and the profile that corresponds to the map is deleted in NSX-T.

Step 3: Undeploy GigaVUE-VMs

To undeploy GigaVUE-VMs from GigaVUE-FM:

1. Navigate to **NSX-T > Virtual Nodes**. The **Virtual Nodes** page appears.

2. On the Virtual Nodes page, select the appropriate virtual node (GigaVUE-VM) that you wish to delete and then click **Delete**.

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Step 4: Delete the NSX-T manager and vCenter connections

To delete the NSX-T Manager from GigaVUE-FM:

- 1. Navigate to **Virtual > NSX-T > Management** and click **NSX-T Managers** tab.
- 2. On the NSX-T Managers tab, select the appropriate NSX-T Manager that you wish to delete and then click **Delete**.

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To delete the Virtual Center from GigaVUE-FM:

- 1. Navigate to **Virtual > VMware vCenter > Management** and click **Virtual Centers** tab.
- 2. On the Virtual Centers tab, select the appropriate virtual center that you wish to delete and then click **Delete**.

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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 Gigamon Community

Documentation

The following table provides a list of the additional documentation provided for GigaVUE H Series and TA Series nodes. "*" indicates new documents in this release.

TIP: If you keep all PDFs for a particular 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.

Table 1: Documentation Suite for Gigamon Products

Summary	Document		
• complete doc set for the respective release, minus Release Notes, in a zip file	All-Documents Zip		
 new features, resolved issues, and known issues in this release 	GigaVUE-OS, GigaVUE-FM, GigaVUE-VM, and GigaVUE Cloud Suite Release Notes		
 important notes regarding installing and upgrading to this release 	Note: Registered Customers can download the Release Notes from the Software & Docs page on to My		
Note: In 5.7.00, the Release Notes documents combines GigaVUE-OS, GigaVUE-FM, and GigaVUE Cloud Suite into one document.	Gigamon. Refer to How to Download PDFs from My Gigamon.		

Hardware Installation Guides

Summary	Document
• how to unpack, assemble, rack-mount, connect, and	GigaVUE-HC1 Hardware Installation Guide
 initially configure the respective GigaVUE devices reference information and specifications for the respective 	GigaVUE-HC2 Hardware Installation Guide
GigaVUE devices	GigaVUE-HC3 Hardware Installation Guide
	GigaVUE TA Series Hardware Installation Guide

Software Installation and Upgrade Guides

 how to migrate GigaVUE-FM on VMware ESXi, Hardware Appliance, and AWS. 	*GigaVUE-FM Migration Guide
 how to install and upgrade GigaVUE-FM on VMware ESXi, MS Hyper-V, and KVM 	GigaVUE-FM Installation and Upgrade Guide
 how to upgrade the embedded GigaVUE-OS on GigaVUE H Series and GigaVUE TA Series nodes 	GigaVUE-OS Upgrade Guide
Administration Guide	
 how to administer the GigaVUE-OS and GigaVUE-FM software 	GigaVUE-OS and GigaVUE-FM Administration Guide

Configuration and Monitoring Guides

how to install, deploy, and operate GigaVUE-FMhow to configure GigaSMART operations	GigaVUE-FM User's Guide
 how to deploy the GigaVUE Cloud Suite solution in any cloud platform 	GigaVUE Cloud Suite for AnyCloud Configuration Guide
how to configure the GigaVUE Cloud Suite components	GigaVUE Cloud Suite for AWS Configuration Guide
and set up traffic monitoring sessions for the respective cloud platform	GigaVUE Cloud Suite for AWS QuickStart Guide
	*GigaVUE Cloud Suite for AWS Secret Regions Configuration Guide
	GigaVUE Cloud Suite for Azure Configuration Guide
	GigaVUE Cloud Suite for Kubernetes Configuration Guide
	*GigaVUE Cloud Suite for Nutanix Configuration Guide
	GigaVUE Cloud Suite for OpenStack Configuration Guide
	GigaVUE Cloud Suite for VMware Configuration Guide

Summary	Document
Reference Guides	
 library of GigaVUE-OS CLI (Command Line Interface) commands used to configure and operate GigaVUE H Series and TA Series devices 	GigaVUE-OS CLI Reference Guide
 guidelines for the different types of cables used to connect Gigamon devices 	GigaVUE-OS Cabling Quick Reference Guide
 compatibility information and interoperability requirements for Gigamon devices 	GigaVUE-OS Compatibility and Interoperability Matrix
 samples uses of the GigaVUE-FM Application Program Interfaces (APIs) 	GigaVUE-FM REST API Getting Started Guide
Note: Content will be merged into the GigaVUE-FM User's Guide in a future release.	
In-Product Help	·
 how to install, deploy, and operate GigaVUE-FM. Provided from the GigaVUE-FM interface. 	GigaVUE-FM Online Help

 the web-based GUI for the GigaVUE-OS. Provided from the GigaVUE-OS H-VUE interface.
 GigaVUE-OS H-VUE interface.

Note: Registered customers can log in to My Gigamon to download documentation for specific releases under Software & Documentation Downloads. Refer to How to Download PDFs from My Gigamon.

How to Download PDFs from My Gigamon

To download release-specific PDFs:

- 1. Log in to My Gigamon
- 2. Click on the Software & Documentation link.
- 3. Use the **Product** and **Release** filters to find documentation for the current release. For example, select Product: "GigaVUE-FM" and Release: "5.7," enter "pdf" in the search box, and then click **GO** to view all PDF documentation for GigaVUE-FM 5.7.xx.

Documentation Feedback

To send feedback and report issues in our documentation, complete the short survey at the following link:

https://www.surveymonkey.com/r/gigamondocumentationfeedback

Contact Technical Support

See https://www.gigamon.com/support-and-services/contact-support for Technical Support hours and contact information. You can also email Technical Support at support@gigamon.com.

Contact Sales

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

Telephone: +1.408.831.4025

Sales: inside.sales@gigamon.com

Partners: www.gigamon.com/partners.html

Premium Support

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

The Gigamon Community

The Gigamon 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 Gigamon 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.
- Submit and vote on feature enhancements and share product feedback. (Customers only)

- Open support tickets (Customers only)
- Download the latest product updates and documentation (Customers only)

The Gigamon 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