



# GigaVUE V Series Applications Guide

**GigaVUE Cloud Suite**

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# Change Notes

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# GigaVUE V Series Application Guide

This guide describes the list of supported V Series Applications and how to add the V Series Applications to monitoring session and configure it.

- [Supported V Series Applications](#)
- [Application Intelligence](#)
- [De-duplication](#)
- [GENEVE De-encapsulation](#)
- [Header Stripping](#)
- [Load Balancing](#)
- [Masking](#)
- [SSL Decrypt](#)
- [PCAPng Application](#)
- [5G-Service Based Interface Application](#)
- [Slicing](#)

# Overview of GigaVUE V Series Applications

GigaVUE V Series Node is a virtual machine running in the customer's infrastructure which processes and distributes network traffic. It plays the same role as an H Series appliance in a physical deployment, running many of the same GigaSMART applications and feeding data to tools in a similar manner. Because GigaVUE V Series nodes reside in a virtual environment, inbound and outbound traffic is tunneled (because there are no physical device ports).

GigaVUE V Series Applications run on GigaVUE V Series Nodes. All these applications use Volume- Based License. Refer to [Volume-Based License](#) for more detailed information.

You can use these applications to optimize the traffic sent from your instances to the monitoring tools. GigaVUE Cloud Suite supports the following applications:

- [Application Intelligence](#)
- [De-duplication](#)
- [GENEVE De-encapsulation](#)
- [Header Stripping](#)
- [Load Balancing](#)
- [Masking](#)
- [SSL Decrypt](#)
- [PCAPng Application](#)
- [5G-Service Based Interface Application](#)
- [Slicing](#)

Refer to the [Supported V Series Applications](#) table for more information on the platforms in which these applications will be supported.

# Supported V Series Applications

GigaSMA RT Operation	GigaVUE Cloud Suite for AWS	GigaVUE Cloud Suite for Azure	GigaVUE Cloud Suite for OpenStack	GigaVUE Cloud Suite for VMware(ESXi)	GigaVUE Cloud Suite for VMware(NSX-T)	GigaVUE Cloud Suite for Third Party Orchestration	GigaVUE Cloud Suite for Nutanix
Masking	✓	✓	✓	✓	✓	✓	✓
Packet Slicing	✓	✓	✓	✓	✓	✓	✓
De-Duplication	✓	✓	✓	✓	✓	✓	✓
Application Metadata Exporter	✓	✓	x	✓	✓	✓	x
L2GRE Tunnel Encapsulation	✓	x	✓	✓	✓	✓	✓
VXLAN Tunnel Encapsulation	✓	✓	✓	✓	✓	✓	✓
L2GRE Tunnel Decapsulation	✓	x	✓	✓	✓	✓	✓
VXLAN Tunnel Decapsulation	✓	✓	✓	✓	✓	✓	✓
ERSPAN Tunnel Decapsulation	✓	x	✓	✓	✓	✓	✓
UDPGRE Tunnel Decapsulation	✓	x	✓	✓	✓	✓	x
GENEVE Decap	✓	x	x	x	✓ (NSX-T)	✓	x



GigaSMART Operation	GigaVUE Cloud Suite for AWS	GigaVUE Cloud Suite for Azure	GigaVUE Cloud Suite for OpenStack	GigaVUE Cloud Suite for VMware(ESXi)	GigaVUE Cloud Suite for VMware(NSX-T)	GigaVUE Cloud Suite for Third Party Orchestration	GigaVUE Cloud Suite for Nutanix
Header Stripping	✓	✓	✓	✓	✓	✓	✓
Header Addition	✗	✗	✗	✗	✗	✗	✗
FlowVUE (IP-based)	✗	✗	✗	✗	✗	✗	✗
Adaptive Packet Filtering (APF) without RegEx	✓	✓	✓	✓	✓	✓	✗
Application Session Filtering (ASF)	✓	✓	✗	✓	✓	✓	✗
Application Filtering Intelligence (AFI)	✓	✓	✗	✓	✓	✓	✗
Application Metadata Intelligence (AMI)	✓	✓	✗	✓	✓	✓	✗
NetFlow	✓	✓	✗	✓	✓	✓	✗
Application Visualization	✓	✓	✗	✓	✓	✗	✗
Load Balancing (Stateless)	✓	✓	✓	✓	✓	✓	✓
Load Balancing (Stateful)	✗	✗	✗	✗	✗	✗	✗

GigaSMART Operation	GigaVUE Cloud Suite for AWS	GigaVUE Cloud Suite for Azure	GigaVUE Cloud Suite for OpenStack	GigaVUE Cloud Suite for VMware(ESXi)	GigaVUE Cloud Suite for VMware(NSX-T)	GigaVUE Cloud Suite for Third Party Orchestration	GigaVUE Cloud Suite for Nutanix
SSL Decryption for Out-of-Band Tools (Passive SSL)	✓	✓	✓	✓	✗	✓	✓
SSL Decryption for Inline Tools	✗	✗	✗	✗	✗	✗	✗
5G-Service Based Interface Application (5G-SBI)	✗	✗	✓	✓	✓	✓	✗

# Application Intelligence

Application Intelligence provides a comprehensive solution that:

- identifies the applications contributing to the network traffic.
- isolates preferred application-specific traffic and directs it to the appropriate tools.
- exports relevant application metadata for further analytics and analysis.

Application Intelligence provides the following capabilities for virtual nodes:

- **Application Visualization**
- **Application Filtering Intelligence**
- **Application Metadata Intelligence**
- **Application Metadata Exporter**

Refer to the following topics for step by step instruction on how to configure Application Intelligence Session for GigaVUE V Series Nodes:

- Configure Application Intelligence Solutions on GigaVUE V Series Nodes for AWS
- Configure Application Intelligence Solutions on GigaVUE V Series Nodes for Azure
- Configure Application Intelligence Solutions on GigaVUE V Series Nodes for Third Party Orchestration
- Configure Application Intelligence Solutions on GigaVUE V Series Nodes for VMware ESXi
- Configure Application Intelligence Solutions on GigaVUE V Series Nodes for VMware NSX-T

## Application Visualization

Application Visualization identifies and monitors all applications contributing to the network traffic, and reports on the total applications and the total bandwidth they consume over a select period. Application Visualization allows you to identify more than 3,200 applications. It displays the traffic statistics in bytes, packet and flows.

## Application Filtering Intelligence

Application Filtering Intelligence allows filtering of traffic based on the application (such as YouTube, NetFlix, Sophos, or Facebook) or application family (such as antivirus, web, erp, or instant-messaging). Enables traffic filtering by layer 7 applications, which means you can filter out high-volume, low-risk traffic from reaching the tools and distribute high-risk network traffic of interest to the right tool at the right time.

Refer to Application Filtering Intelligence section in the *GigaVUE Fabric Management Guide* for more detailed information and step-by-step instructions on how to configure Application Filtering Intelligence.

## Application Metadata Intelligence

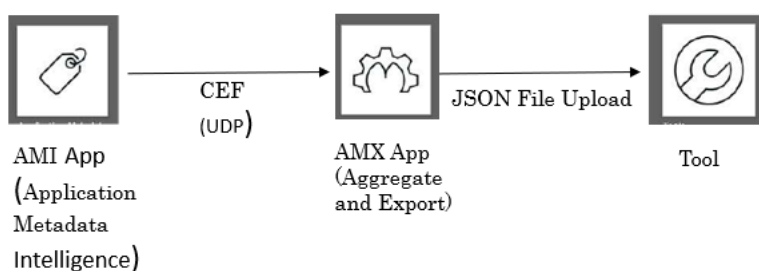
Application Metadata Intelligence allows you to export metadata from applications that are detected in the network traffic. The records can be exported to a collector either in IPFIX or CEF format through the IP interface or the management interface. You can also use the application metadata attributes for purposes other than security, such as to determine the network or application health, to track the long-lived sessions seen in the network, and so on. Supports exporting over 5000 attributes of metadata that provide relevant usage context on over 3,200 applications, thus enabling you to rapidly identify indicators of compromise (IoC) for security analytics and forensics tools.

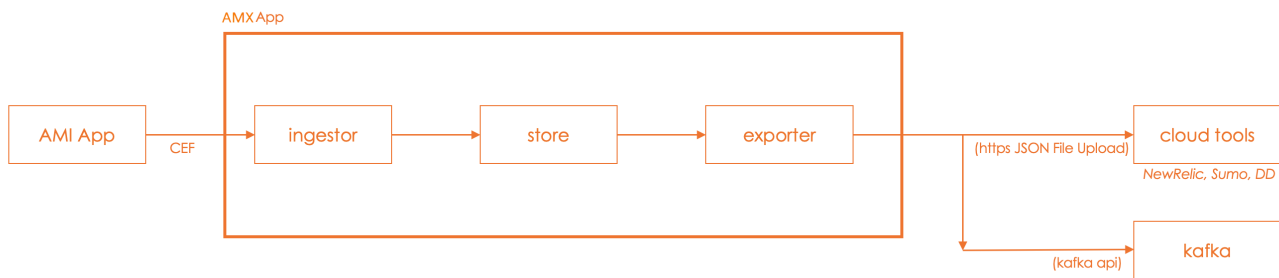
Refer to Application Metadata Intelligence section in the respective cloud deployment guides for more detailed information and step-by-step instructions on how to configure Application Metadata Intelligence.

You can convert the output from the Application Metadata Intelligence (AMI) which is in CEF format into JSON format and sends it to the cloud tools and kafka. Refer to [Observability Gateway Application Application Metadata Exporter](#) for detailed information.

## Application Metadata Exporter

Application Metadata Exporter(AMX) application converts the output from the Application Metadata Intelligence (AMI) in CEF format into JSON format and sends it to the cloud tools and kafka.





The AMX application can be deployed only on a GigaVUE V Series Node and can be connected to Application Metadata Intelligence running on a physical node or a virtual machine. The AMX application and the AMI are managed by GigaVUE-FM.

## AMX Application Deployment

AMX application can be deployed on:

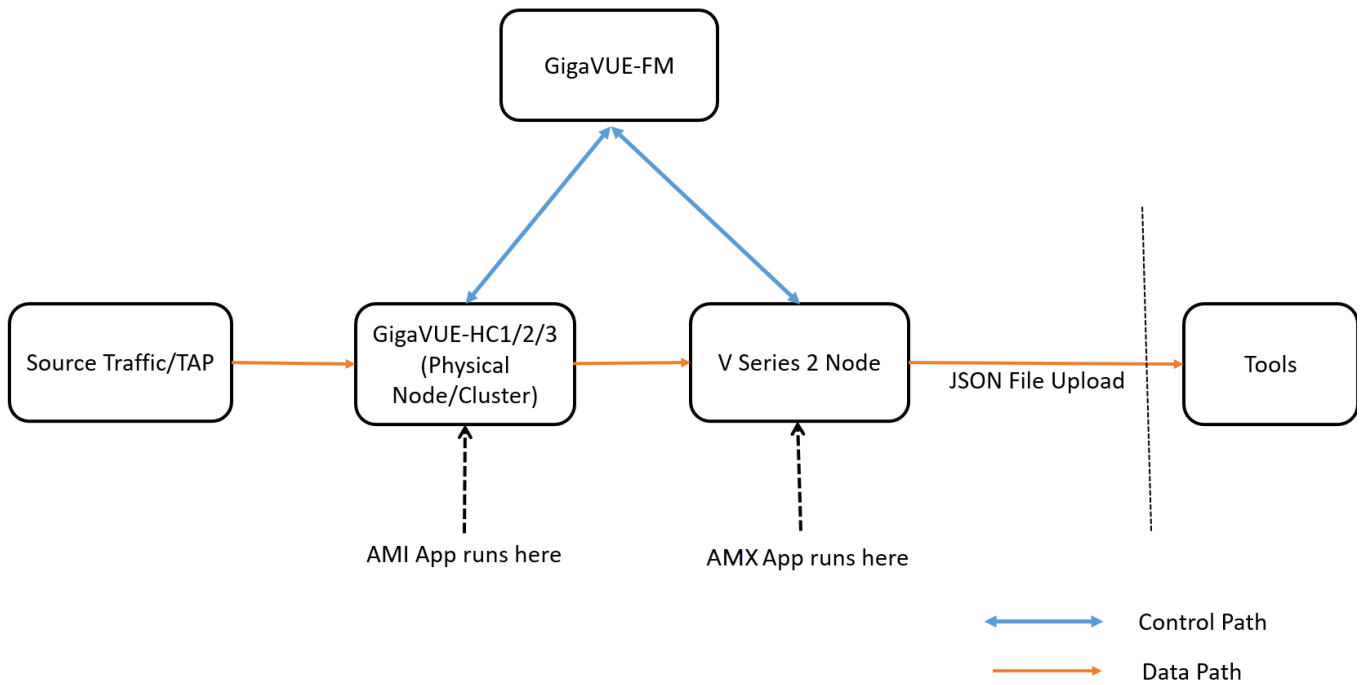
- On-Premises
  - Hardware
  - Virtual (VMware)
- Public Cloud

### On-Premises

#### Hardware

In hardware deployments, the Application Metadata Intelligence (AMI) runs on a physical node/cluster, and the AMX application is deployed on a GigaVUE V Series Node. The output from the AMI in CEF format is sent to the AMX application running in GigaVUE V Series Node. The AMX application converts the CEF packets in to JSON format that can be exported to the cloud tools or the Kafka. The performance of the device and the application is managed by GigaVUE-FM. The AMI output from the following devices can be ingested to the AMX application:

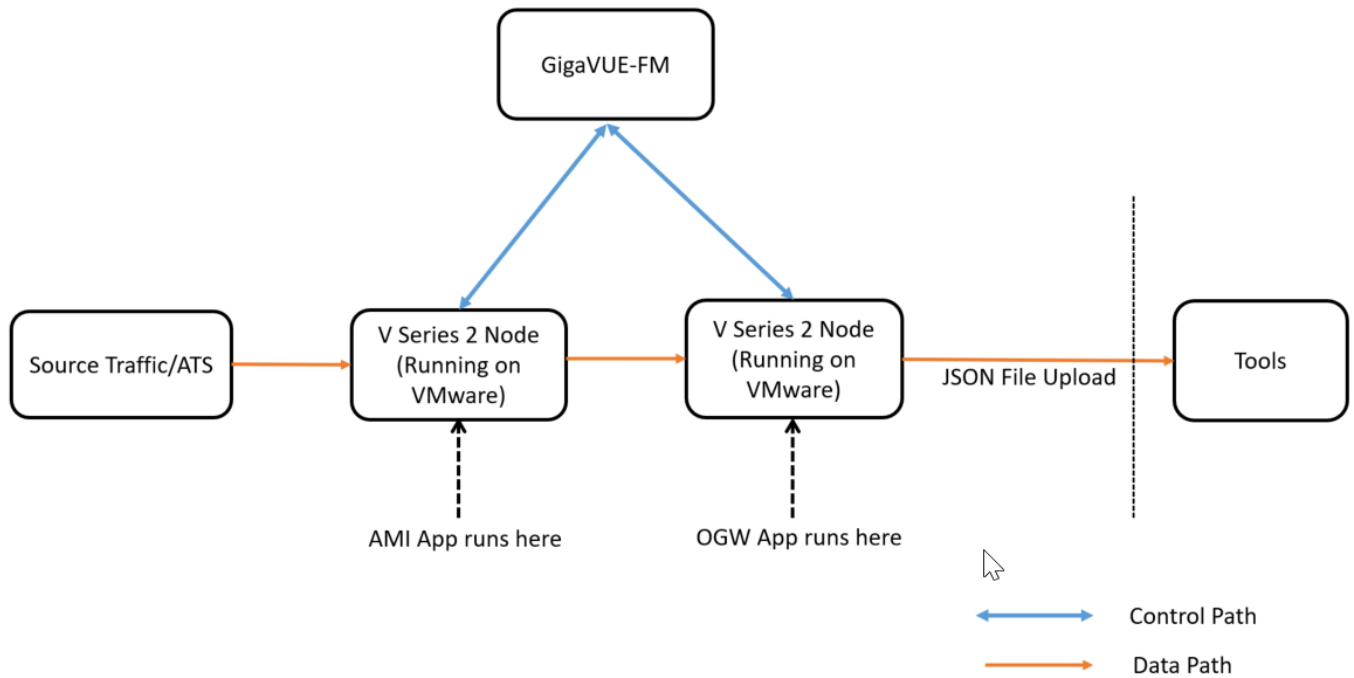
- GigaVUE-HC1
- GigaVUE-HC2
- GigaVUE-HC3
- GigaVUE-HC1-Plus



### Private Cloud (VMware)

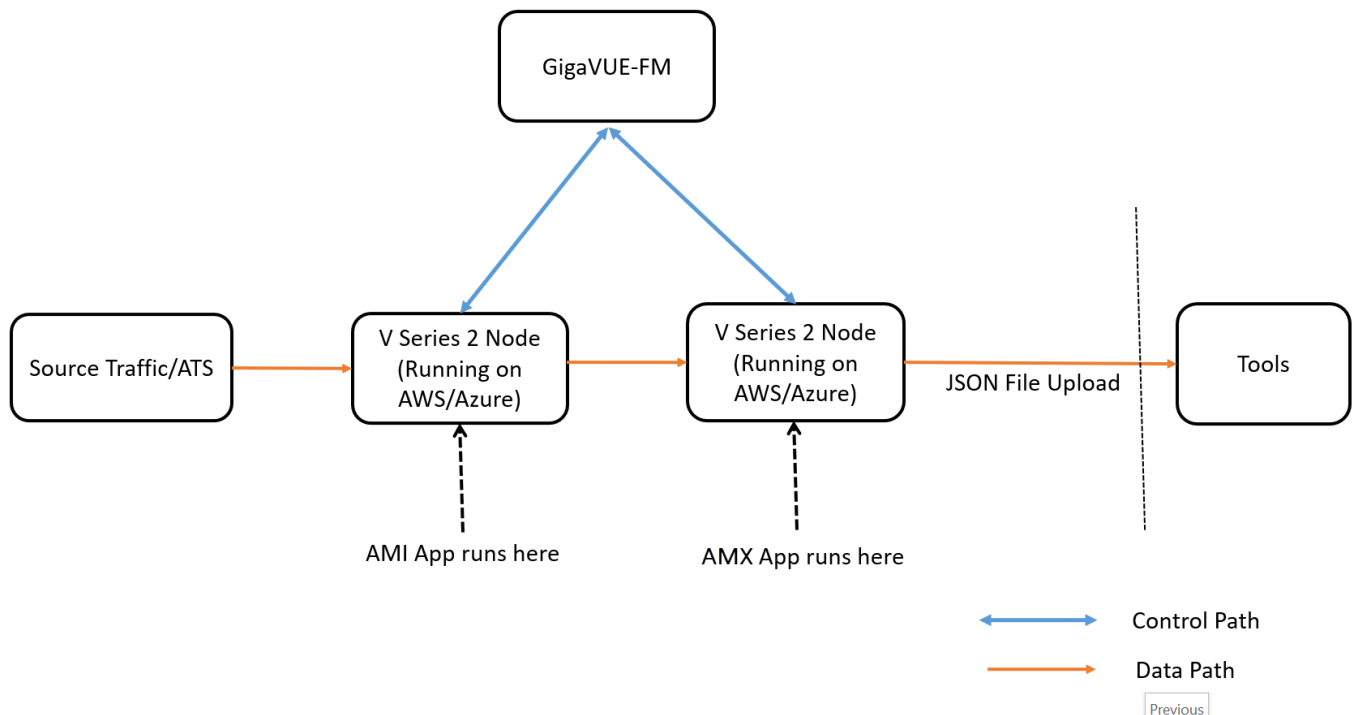
In the Private Cloud environment, the application is supported only on VMware and can be deployed in the VMware as shown in the diagram.





## Public Cloud

In the Public Cloud environment, the application is supported on AWS and Azure platforms, and can be deployed as shown in the diagram:



To configure an Application Metadata Exporter(AMX) application do the following:

Step No	Task	Refer the following topics
1	Create a Monitoring Domain	Create Monitoring Domain topic in the respective GigaVUE Cloud Suite Configuration Guides.
2	Deploying GigaVUE V Series Node <b>NOTE:</b> AMX application is deployed on this V Series node.	Configure GigaVUE Fabric Components in GigaVUE-FM topic in the respective GigaVUE Cloud Suite Configuration Guides.
3	<ul style="list-style-type: none"> <li>Creating Environment and Connections.</li> <li>Deploy V Series Nodes.</li> </ul> <b>NOTE:</b> This V Series Node is used for creating Application Intelligence Session.  <ul style="list-style-type: none"> <li>Create Application Intelligence Session.</li> </ul>	Configure Application Intelligence Solutions on GigaVUE V Series Nodes topic in the respective GigaVUE Cloud Suite Configuration Guides.
4	Add Application Metadata Intelligence Session	<a href="#">Create Metadata Intelligence by Editing Monitoring Session from Dashboard</a>
5	Create a Monitoring Session	Create Monitoring Session topic in the respective GigaVUE Cloud Suite Configuration Guides.
6	Add Applications to the Monitoring Session	Add Application to the Monitoring Session topic in the respective GigaVUE Cloud Suite Configuration Guides.
7	View Monitoring Session Statistics	View Monitoring Session Statistics topic in the respective GigaVUE Cloud Suite Configuration Guides.

## Prerequisites

### Prerequisites for AWS

Prerequisites to follow when creating a monitoring domain and deploying a V Series node in AWS:

- Select **Traffic Acquisition Method** as Customer Orchestrated Source. Refer [Create a Monitoring Domain](#) for more detailed information on how to create a monitoring domain.
- Select **Instance type** with three or more NICs. Refer [Configure GigaVUE Fabric Components in GigaVUE-FM](#) for more detailed information on how to deploy a GigaVUE V Series Node.

- When the **Traffic Acquisition Method** is selected as Customer Orchestrated Source, the Volume Size field appears on the **AWS Fabric Launch Configuration** page. Enter the Volume Size as 80GB.

**NOTE:** Check on the disk space run every 30 minutes and when the disk space reaches 50%, purge starts.

## Prerequisites for Azure

Prerequisites to follow when creating a monitoring domain and deploying V Series node in Azure:

- Select **Traffic Acquisition Method** as Customer Orchestrated Source. Refer [Create Monitoring Domain](#) for more detailed information on how to create a monitoring domain.
- Select **Size** with three or more NICs. Refer [Configure GigaVUE Fabric Components in GigaVUE-FM](#) for more detailed information on how to deploy a GigaVUE V Series Node.
- When the **Traffic Acquisition Method** is selected as Customer Orchestrated Source, the **Disk Size** field appears on the **Azure Fabric Launch Configuration** page. Enter the Disk Size as 80GB.

**NOTE:** Check on the disk space run every 30 minutes and when the disk space reaches 50%, purge starts.

## Prerequisites for VMware

Prerequisites to follow when creating a monitoring domain and deploying V Series node in VMware:

- Select **Traffic Acquisition Method** as Customer Orchestrated Source. Refer [Step 2: Deploy V Series nodes on VMware ESXi](#) for more detailed information on how to create a monitoring domain and deploy V Series nodes.
- .When deploying this application in VMware NSX-T, create a monitoring domain in the ESXi Monitoring domain. Even if your GigaVUE V Series Node is a part of VMware NSX-T host, you can still deploy it in VMware ESXi monitoring domain. Refer to the Same Host across Different Monitoring Domains topic in the *GigaVUE Cloud Suite Deployment Guide - VMware* for more detailed information.

## Rules

- After deploying the GigaVUE V Series Node in the monitoring domain, click on the GigaVUE V Series Node's Name, and the V Series Node quick view opens. Choose a data IP to which you wish to send CEF packets, then use the IP address of this data IP as the **Tool IP Address** when creating the Application Metadata Intelligence solution. Refer to Create Metadata Intelligence by Editing Monitoring Session from Dashboard topic in the *GigaVUE Fabric Management Guide* on how to configure AMI for AMX application.
- The GigaVUE V Series Node deployed must be entirely dedicated to the AMX application, it cannot have other applications in it.

- When multiple connections are configured under the same monitoring domain using third party orchestration, ensure to select the connection alias in which the AMX application is deployed, when deploying monitoring session.
- When multiple connections are configured under the same connection resource using third party orchestration, ensure to select the connection alias in which the Application Intelligence session is configured, when configuring Application Intelligence Session.
- When using this application for production usage, it is recommended to use large size Virtual Machines.

## Configure Application Metadata Exporter Application

Rules to follow when using the AMX application:

The monitoring session can only have Raw End Point (REP), it cannot have other applications, maps, or tunnels when using the AMX application. Refer [Create Raw Endpoint](#) for more detailed information on how to add a REP to the monitoring session and how to configure it.

To add AMX application:

1. Drag and drop **Application Metadata Exporter** from **APPLICATIONS** to the graphical workspace. The Application quick view appears.
2. Enter the Alias for the application. Enter a port number for the **Cloud Tool Ingestor Port**. Then, click the **Add** button for **Cloud Tool Exports** or **Kafka**.

The screenshot displays the configuration interface for the Application Metadata Exporter (AMX) application. The interface is split into two main sections: a graphical workspace on the left and a configuration panel on the right.

**Graphical Workspace:** Shows a flow from a 'RAW' icon to a gear icon, and then to another 'RAW' icon, representing the data flow through the application.



**Configuration Panel:**

- Application:** AMX exporter
- Alias\*:** ogw
- Cloud Tool Ingestor Port\*:** 514
- Cloud Tool Exports:** Add
- Kafka Exports:**
  - Alias\*:** Enter a unique alias
  - Topic\*:** amil
  - Brokers\*:** Enter URL
- MORE OPTIONS:**
  - Enable Export:**
  - Format:** JSON
  - Zip:**
  - Interval (sec):** 30
  - Parallel Writers:** 4
  - Export Retries:** 4
  - Max Entries:** 1000
  - Labels:** Add
  - Key:** Enter key...
  - Value:** Enter value...
- Producer Configurations:** Add

3. You can export your Application Metadata Intelligence output to either cloud tools or Kafka. Enter the following details for the Cloud tool export in the Application quick view:

Fields	Description
<b>Alias</b>	Enter the alias name for the cloud tool export.
<b>Cloud Tool</b>	Select the Cloud tool from the drop-down menu.
<b>Account ID</b>	Enter the account ID number of the selected Cloud Tool.
<b>API Key</b>	Enter the API key of the Cloud Tool.
<b>Enable Export</b>	Enable the box to export the Application Metadata Intelligence output in JSON format.
<b>Zip</b>	Enable the box to compress the output file.  <b>NOTE:</b> Enable this field when using New Relic as the cloud tool.
<b>Interval</b>	The time interval (in seconds) in which the data should be uploaded periodically. The recommended minimum time interval is 10 seconds and the maximum time interval is 30 minutes.
<b>Parallel Writer</b>	Specifies the number of simultaneous JSON exports done.
<b>Export Retries</b>	The number of times the application tries to export the entries to Cloud Tool. The recommended minimum value is 4 and the maximum is 10.
<b>Maximum Entries</b>	The number of JSON entries in a file. The maximum number of allowed entries is 5000 and the minimum is 10, however 1000 is the default value.
<b>Labels</b>	Click <b>Add</b> . Enter the following details: <ul style="list-style-type: none"> <li>o Enter the <b>Key</b> .</li> <li>o Enter the <b>Value</b>.</li> </ul> <b>NOTE:</b> When New Relic is selected as the cloud tool, the key is automatically set as is <b>eventType</b> and the Value can only have alphanumeric characters, colons (:), periods (.), and underscores (_).

Enter the following details for Kafka export in the Application quick view:

Fields	Description
<b>Alias</b>	Enter the alias name for the Kafka Export.
<b>Topic</b>	The topic name to push JSON streams to, which is generally given to users part of the Kafka administration
<b>Brokers</b>	The URL that contains the Kafka cluster endpoints. Click  to add another broker and click  to remove an existing broker.
<b>Enable Export</b>	Enable the box to export the Application Metadata Intelligence output in JSON format.
<b>Zip</b>	Enable the box to compress the output file.

Fields	Description
<b>Interval</b>	The time interval (in seconds) in which the data should be uploaded periodically. The recommended minimum time interval is 10 seconds and the maximum time interval is 30 minutes.
<b>Parallel Writer</b>	Specifies the number of simultaneous JSON exports done.
<b>Export Retries</b>	The number of times the application tries to export the entries to Kafka. The recommended minimum value is 4 and the maximum is 10.
<b>Maximum Entries</b>	The number of JSON entries in a file. The maximum number of allowed entries is 5000 and the minimum is 10, however 1000 is the default value.
<b>Labels</b>	Click <b>Add</b> . Enter the following details: <ul style="list-style-type: none"> <li>o Enter the <b>Key</b>.</li> <li>o Enter the <b>Value</b>.</li> </ul>
<b>Producer Configurations</b>	Click <b>Add</b> to enter the authentication details if a Kafka broker needs authentication.  For Example: <ul style="list-style-type: none"> <li>• security.protocol=SASL_SSL</li> <li>• sasl.mechanism=PLAIN</li> <li>• sasl.username=username</li> <li>• sasl.password=password</li> </ul>

4. Click **Deploy** to deploy the monitoring session. The **Select nodes to deploy the Monitoring Session** dialog box appears. Select the GigaVUE V Series Node for which you wish to deploy the monitoring session.
5. After selecting the V Series Node, select the interfaces for the REPs deployed in the monitoring session from the drop-down menu. Then, click **Deploy**.

The monitoring session configuration health can be viewed on the Monitoring Session page. Refer [Cloud Health Monitoring](#) for more detailed information on how to view cloud configuration health.

To view the application statistics on the Monitoring Session Statistics page, click **View Monitoring Session Diagram** and click on the AMX application. The Statistics appear as a quick view page. To view the exporter related statistics, select **Exporter** from the top navigation button on the quick view page.

## NetFlow

NetFlow Generation is a simple and effective way to increase visibility into traffic flows and usage patterns across systems. The flow-generated data can be used to build relationships and usage patterns between nodes on the network.

Refer to the following topics for step-by-step instructions on how to configure NetFlow:

- [Create Application Metadata Intelligence Session for Virtual Environment](#) - For SecureVUE Plus Base Bundle
- [NetFlow Session on Virtual Environment](#) - For NetVUE Base Bundle

# De-duplication

De-duplication application targets, identifies, and eliminates duplicate packets, blocking unnecessary duplication and sending optimized flows to your security and network monitoring tools. De-duplication lets you detect and choose the duplicate packets to count or drop in a network analysis environment.

Duplicate packets are common in network analysis environments where both the ingress and egress data paths are sent to a single output. They can also appear when packets are gathered from multiple collection points along a path. The de-duplication application lets you eliminate these packets, only forwarding a packet once and thus reducing the processing load on your tools.

## Feature Overview

There are two actions that can be specified for handling the duplicate packets detected:

- drop, which drops the duplicate packets
- count, which counts the duplicate packets, but does not drop them

A time interval can be configured within which an identical packet will be considered a duplicate. The greater the interval over which traffic can be checked for duplicates, the higher the accuracy of the de-duplication detection and subsequent elimination.

For example, if two of the same packets are seen in the specified time interval, the packets will be detected as duplicates. If one packet is seen in the time interval and another packet is seen in a later time interval, the packets will not be detected as duplicates.

For IPv4 and IPv6 packets, to determine if a packet is considered to be a duplicate, parts of the IP headers (Layer 3 and Layer 4), as well as part of the payload are compared.

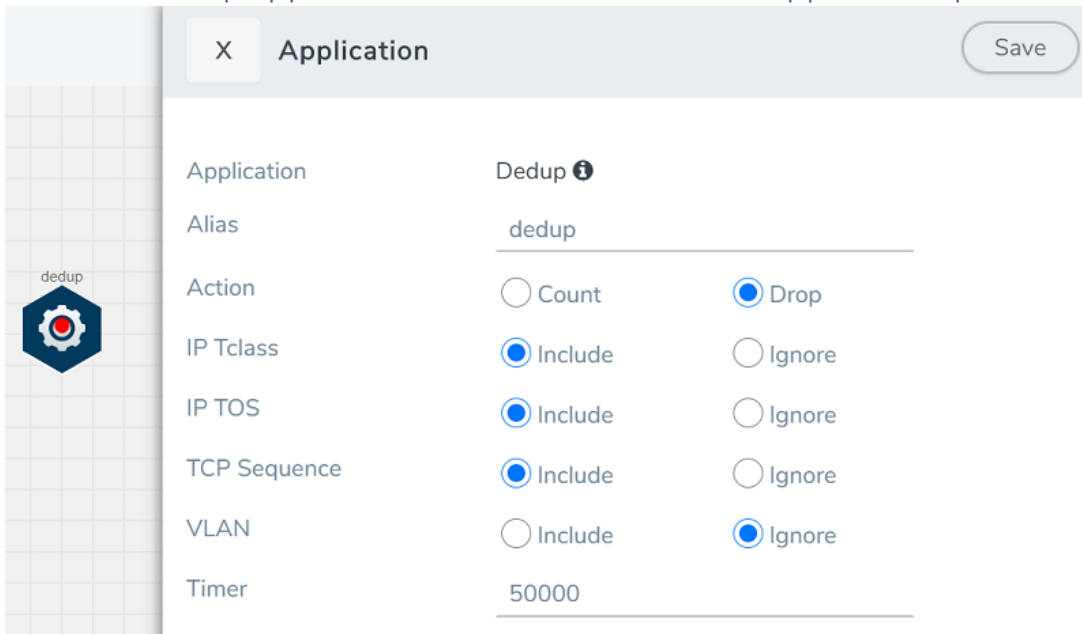
For non-IP packets, a packet is considered to be a duplicate if it is identical.

## Configure De-duplication Application

To add a de-duplication application:



1. Drag and drop **Dedup** from **APPLICATIONS** to the graphical workspace.
2. Click the Dedup application and select **Details**. The Application quick view appears.



3. In the Application quick view, enter the information as follows:

Parameter	Description
<b>Action</b>	<p>Specifies whether duplicate packets are to be counted or dropped as follows:</p> <ul style="list-style-type: none"> <li>o <b>Count</b>– The de-duplication application counts the duplicate packets, but does not drop them.</li> <li>o <b>Drop</b>– The de-duplication application drops the duplicate packets.</li> </ul> <p>The default is drop.</p>
<b>IP Tclass</b> <b>IP TOS</b> <b>TCP Sequence</b> <b>VLAN</b>	<p>These options are useful when applying de-duplication operations to packets in a NAT environment. Different NAT implementations can change certain packet header fields (for example, the TCP sequence number). If you want to be able to detect duplicates without requiring that these fields match (ToS field, TCP sequence number, VLAN ID), you can disable the corresponding option.</p> <ul style="list-style-type: none"> <li>o <b>IP Tclass</b> – Ignore or include IPv6 traffic class. Use for IPv6. The default is include.</li> <li>o <b>IP TOS</b> – Ignore or include the IP ToS bits when detecting duplicates. Use for IPv4. The default is include.</li> <li>o <b>TCP Sequence</b> – Ignore or include the TCP Sequence number when detecting duplicates. The default is include.</li> <li>o <b>VLAN</b> – Ignore or include the VLAN ID when detecting duplicates. The default is ignore.</li> </ul> <p>Include means the field will be included when the application compares packets.</p> <p>Ignore means the field will be ignored when the application compares packets.</p>
<b>Timer &lt;Value: 10-500000 μs&gt;</b>	<p>Configures the time interval within which an identical packet will be considered a duplicate. The greater the interval over which traffic can be checked for duplicates, the higher the accuracy of the de-duplication detection and subsequent elimination. The default is 50,000μs.</p> <p>For example, if two same packets are seen in the specified time interval, the packets will be detected as duplicates. If one packet is seen in the time interval and another packet is seen in a later time interval, the packets will not be detected as duplicates.</p> <p><b>NOTE:</b> Retransmissions are not counted as duplicates.</p>

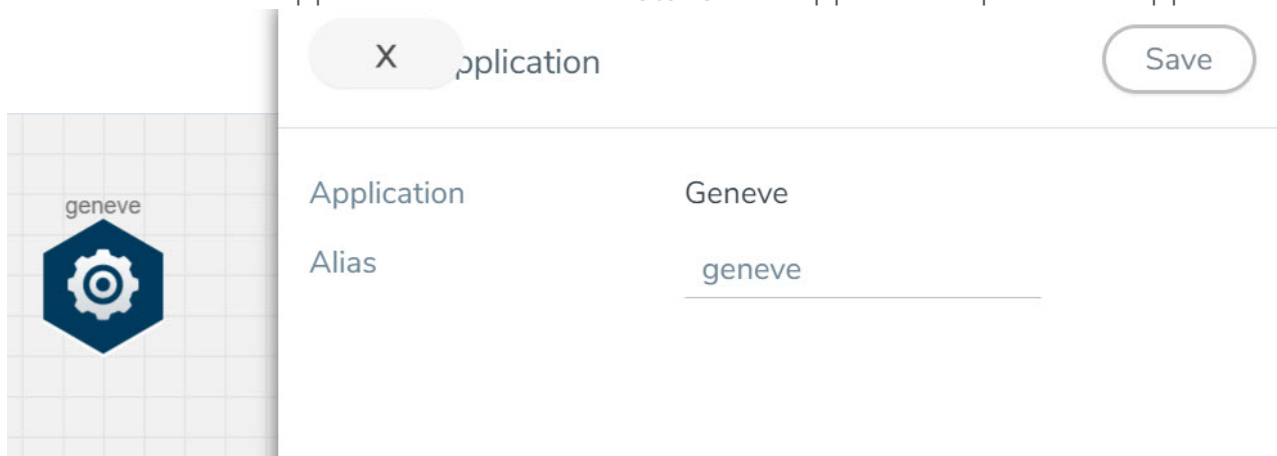
4. Click **Save**.

# GENEVE De-encapsulation

The GENEVE De-encapsulation application is used to acquire and strip GENEVE headers. To route the traffic through the third-party network appliances seamlessly, the AWS gateway load balancer with a VPC adds GENEVE header to packets as they are forwarded to a third-party network appliance. Each appliance is expected to terminate the GENEVE tunnel and process the GENEVE encapsulated traffic. When the GigaVUE-FM directs the acquisition of the customer traffic, the packets are encapsulated and forwarded as GENEVE tunnels that are terminated in GigaVUE V Series nodes.

To add a GENEVE application:

1. Drag and drop **GENEVE** from **APPLICATIONS** to the graphical workspace.
2. Click the GENEVE application and select **Details**. The Application quick view appears.



3. Enter an alias for the GENEVE application.
4. Click **Save**.

# Header Stripping

Header Stripping application efficiently examines the packets for specified headers like GTP, ISL, ERSPAN, MPLS, MPLS+VLAN, VLAN, VN-Tag, VXLAN, FM6000Ts, and generic and removes them before sending the packet to the appropriate security and analysis tools. Each packet is examined for the packet forwarding addition and it also ensured that the headers are removed from the packet before sending the packet to the tools. This application is useful when working with tools that either cannot recognize these headers or have to engage in additional processing to adjust for them.

Furthermore, the presence of the protocols like GTP, ISL, ERSPAN, MPLS, MPLS+VLAN, VLAN, VN-Tag, VXLAN, and FM6000Ts in the packet can restrict or limit the ability to apply filtering and flow-based load balancing to the traffic as it is forwarded to specific tools. To address each of these challenges, header stripping of these protocols is required.

List of Protocols that are supported for stripping:

- GTP
- ISL
- ESPRAN
- MPLS
- MPLS+VLAN
- VLAN
- VN-Tag
- VXLAN
- FM6000Ts,
- Generic

## Configure Header Stripping Application

To configure the header stripping application, follow the steps given below:

1. Drag and drop **Header Stripping** from **APPLICATIONS** to the graphical workspace.
2. Click the Header Stripping application and select **Details**. The Application quick view appears.

## 3. In the application quick view enter the following details:

Field	Description
Alias	Enter the alias name for the application
Protocol	Select the type protocol
<b>VLAN:</b> Use this option to strip VLAN header form the packets. You can strip only the outer VLAN header or the entire VLAN header. When choosing VLAN as your protocol for stripping, enter the following details	
VLAN Header	The VLAN Header that should be stripped. The supported minimum value is 0 and the maximum value is 16777215. The default value is 0.
<b>VXLAN:</b> Use this option to strip VXLAN (Virtual eXtensible Local Area Network) headers. You can strip either matching VXLAN headers or all VXLAN headers. When choosing VXLAN as your protocol for stripping, enter the following details	
VXLAN ID	The VXLAN ID that should be stripped. the default value is outer.
<b>FM6000Ts:</b> Use this option to strip FM6000Ts time stamp headers. Packets entering the application from other devices may contain FM6000 timestamps. FM6000 is an Intel chip used for timestamping. FM6000 has a hardware timestamp in the packet. When choosing FM6000Ts as your protocol for stripping, enter the following details.	
Time Stamp Format	The format of the time stamp you wish to be strip. Only the <b>None</b> format is supported.
<b>ESPRAN:</b> Use this option to strip ERSPAN Type II and Type III headers. When choosing ESPRAN as your protocol for stripping, enter the following details	
ESPRAN FlowID	Specify an ERSPAN flow ID, from 0 to 1023. A flow ID of zero is a wildcard value that matches all flow IDs.

<b>Generic:</b> Using this option to strip any header without having to worry about at which level header would occur. When choosing generic as your protocol for stripping, enter the following details	
Ah1	The anchor header (AH1) after which the header to be stripped is occurred.
Offset	<p>Based on the offset selected the enter the following details:</p> <ol style="list-style-type: none"> <li>1. <b>Offset Range:</b> If you wish to use offset range as your offset then enter the following details: <ol style="list-style-type: none"> <li>a. Offset Range Value: Offset of the header occurrence from the above anchor header. The minimum supported value is 1 and the maximum supported value is 1500.</li> <li>b. Header Count: Specifies how many headers from the offset, the application should remove. The minimum supported value is 1 and the maximum is 32.</li> <li>c. Custom Len: The length (in bytes) of the header that should be stripped.</li> <li>d. Ah2: The next possible standard header that occurs immediately after the header</li> </ol> </li> <li>2. <b>Start / End:</b> If you wish to use start or end as your offset then enter the following details: <ol style="list-style-type: none"> <li>a. Header Count: Specifies how many headers from the offset, the application should remove. The minimum supported value is 1 and the maximum is 32.</li> <li>b. Custom Len: The length (in bytes) of the header that should be stripped. The minimum supported value is 1 and the maximum supported value is 1500.</li> <li>c. Ah2: The next possible standard header that occurs immediately after the header</li> </ol> </li> </ol>

# Load Balancing

Load balancing application performs stateless distribution of the packets between different endpoints. Stateless load balancing distributes the processed traffic to multiple tool ports or tunnel endpoints based on hash values generated from predefined protocol fields in the packet.

To add a load balancing application:

1. Drag and drop **Load Balancing** from **APPLICATIONS** to the graphical workspace.
2. Click the load balancing application and select **Details**. The Application quick view appears.

3. In the Application quick view, enter the information as follows:

Metric	Description
<b>Alias</b>	Enter a name for the load balancing application
<b>Hash Field</b>	<ul style="list-style-type: none"> <li><b>ipOnly</b> : The source IP and destination IP addresses.</li> <li><b>ipAndPort</b>: The source IP and destination IP addresses, and Layer 4 source port and destination port numbers.</li> <li><b>fiveTuple</b>: The source IP and destination IP addresses, source port and destination port numbers, and protocol field in the IP header.</li> <li><b>gtpuTeid</b>: The GTP-u tunnel identifier (ID).</li> </ul> <p><b>NOTE:</b> There is no inner or outer field location for <b>GTPU-TEID</b>.</p>
<b>Field Location</b>	<ul style="list-style-type: none"> <li><b>Outer</b>: The first occurrence of header or field. For example, <b>IP Only outer</b> is the first IP header in the packet, which could be IPv4 or IPv6.</li> <li><b>Inner</b>: The second occurrence of header or field.</li> </ul> <p>The supported IP encapsulation types are: IP-in-IP, VXLAN, GTP, GRE, and ERSPAN.</p>
<b>Load balancing groups</b>	Add or remove an application with the Endpoint ID and Weight value (1-100). A load balancing group can have minimum of two endpoints.

4. Click **Save**.

**NOTE:** When you configure the Load Balancing Application in enhanced mode, you can associate it with only a single enhanced load balancing profile. However, you have the flexibility of changing the association to different profile as needed.

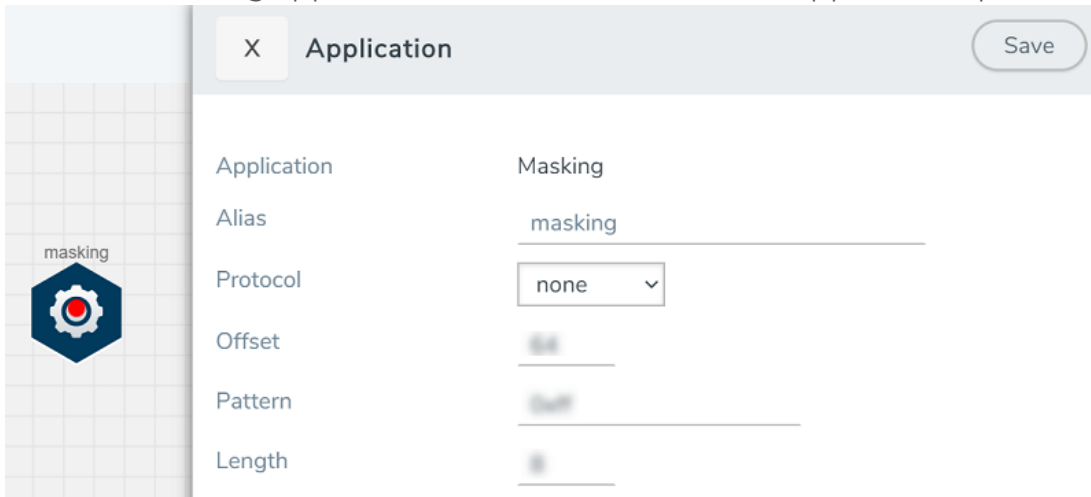


# Masking

Masking lets you overwrite specific packet fields with a specified pattern so that sensitive information is protected during network analysis. Masking operations consist of an **offset**, **length**, and **pattern**.

To add a masking application:

1. Drag and drop **Masking** from **APPLICATIONS** to the graphical workspace.
2. Click the Masking application and select **Details**. The Application quick view appears.



3. In the Application quick view, enter the information as follows:

Component	Description
Alias	Enter a name for the masking application.
Protocol	<p>The following are the protocols that you can select from the protocol drop-down list:</p> <ul style="list-style-type: none"> <li>o <b>None</b> – Mask starting a specified number of bytes from the start of the packet.</li> <li>o <b>IPv4</b> – Mask starting a specified number of bytes after the IPv4 header.</li> <li>o <b>IPv6</b> – Mask starting a specified number of bytes after the IPv6 header.</li> <li>o <b>UDP</b> – Mask starting a specified number of bytes after the UDP header.</li> <li>o <b>TCP</b> – Mask starting a specified number of bytes after the TCP header.</li> <li>o <b>ftp-data</b> – Identify using TCP port 20. Mask payloads using offset from the TCP header.</li> <li>o <b>HTTPS</b> – Identify using TCP port 443. Mask payloads using offset from the TCP header.</li> <li>o <b>SSH</b> – Identify using TCP port 22. Mask payloads using offset from the TCP header.</li> <li>o <b>GTP</b> – Mask starting a specified number of bytes after the outer GTP header.</li> <li>o <b>GTP-IPv4</b> – Mask starting a specified number of bytes after the IPv4 header inside the encapsulating GTP packet.</li> <li>o <b>GTP-UDP</b> – Mask starting a specified number of bytes after the UDP header inside the encapsulating GTP packet.</li> <li>o <b>GTP-TCP</b> – Mask starting a specified number of bytes after the TCP header inside the encapsulating GTP packet.</li> </ul>
Offset	Specifies <b>where</b> the application should start masking data with the supplied pattern. You can specify this in terms of either a static offset from the start of the packet or a relative offset from a particular protocol layer. This lets you automatically compensate for variable length headers, specifying a mask target in terms of a particular packet header.
Length	Specifies <b>how much</b> of the packet should be masked. The specified one-byte pattern can be repeated to mask from 1-9600 bytes.
Pattern	Specifies <b>what</b> pattern the application should use to mask the specified portion of the packet. You can specify a one-byte hex pattern (for example, 0xFF).

4. Click **Save**.

# SSL Decrypt

**License:** For information on licensing, refer to the [Volume Based License \(VBL\)](#) section.

SSL Decrypt application delivers decrypted traffic to out-of-band tools that can then detect threats entering the network. Secure Socket Layer (SSL) is a cryptographic protocol that adds security to TCP/IP communications such as Web browsing and email. The protocol allows the transmission of secure data between a server and client who both have the keys to decode the transmission and the certificates to verify trust between them.

**IMPORTANT:** To use SSL Decrypt application in GigaVUE-FM 6.3.00, install new GigaVUE-FM 6.3.00 image. Refer to *GigaVUE-FM Installation and Upgrade Guide* for step-by-step instructions on how to install GigaVUE-FM. SSL Decrypt application does not work if you upgrade from any previous GigaVUE-FM version to GigaVUE-FM 6.3.00.

## Upload SSL Keys

To upload an SSL private key, do the following:

1. Go to **Inventory > Resources > Security > SSL Keys**.
2. Click **Add**. The **Create SSL Key** page appears.
3. Enter the following details:

Field	Description
<b>Key Alias</b>	Enter a name for the key.
<b>Comment</b>	Enter a description
<b>Key Type</b>	Select the either of the key type:
<b>PEM</b>	
<b>PassPhrase</b> (optional)	SSH passphrases allows you to protect your private key from being used with out the passphrase. Enter the passphrase created with the private key.
<b>SSL Key Store</b>	Enter the SSL Key Store in which the Key is stored.
<b>Private key</b>	Enter the Private Key using any of the following options: <ul style="list-style-type: none"> <li>• Copy and Paste</li> <li>• Install from URL</li> <li>• Install from Local Directory</li> </ul>
<b>Certificate</b>	Enter the Certificate using any of the following options: <ul style="list-style-type: none"> <li>• Copy and Paste</li> <li>• Install from URL</li> <li>• Install from Local Directory</li> </ul>
<b>PKCS12</b>	
<b>PassPhrase</b>	SSH passphrases allows you to protect your private key from being used with out the passphrase. Enter the passphrase created with the private key.
<b>SSL Key Store</b>	Enter the SSL Key Store in which the Key is stored.

4. Click **Save**.

**NOTE:** SSL Decrypt application does not support HSM.

The following actions can also be performed from the SSL Keys Page:

Field	Description
<b>Edit</b>	To edit a SSL Key, select the key from the list in the SSL Keys page and click the <b>Edit</b> button.
<b>Delete</b>	To delete a SSL Key, select the key from the list in the SSL Keys page and click the <b>Delete</b> button.
<b>Delete all</b>	Use this button to delete all the SSL Keys in the SSL Keys page.
<b>View certificate</b>	To view the certificate associated with the particular SSL Key, select the key from the list in the SSL Keys page and click the <b>View Certificate</b> button.

## Create SSL Service

After uploading a private key, you can add a service. A service maps to a physical server, such as an HTTP server. One server can run multiple services. A service is a combination of an IP address and a server port number.

### Prerequisite

Before creating a service, upload a private key as described in [Upload SSL Keys](#)

To create a SSL service, do the following:

1. Go to **Inventory > Resources > Security > SSL Service**. The SSL Services page appears.
2. Click **Add**. The **Create SSL Service** page appears.
3. On the Create SSL Service page, enter the following details:

Field	Description
<b>Alias</b>	Enter a name for the SSL Service.
<b>Default Service</b>	Enable this to use default service.
<b>Server IP Address</b>	Enter the IP address of the server in which the service runs.
<b>Server Port</b>	Enter the port number of the server.

4. Click **Save**.

The following actions can also be performed from the SSL Service Page:

Field	Description
<b>Edit</b>	To edit a SSL Service, select the service from the list in the SSL Service page and click the <b>Edit</b> button.
<b>Delete</b>	To delete a SSL Service, select the service from the list in the SSL Service page and click the <b>Delete</b> button.
<b>Delete all</b>	Use this button to delete all the SSL Service in the SSL Service page.

## Key Mapping

After adding the SSL Service, now you map the private key with the service using Key Mapping.

To map a key with the service, follow the steps given below,

1. Go to **Inventory > Resources > Security > SSL Key Mapping**. The SSL Key Mapping page appears.
2. Click **Add**.

3. Enter the Key Mapping Alias.
4. Select the SSL Service and Key Alias from the drop-down.
5. Click **Save**.

The following actions can also be performed from the SSL Keys Page:

Field	Description
<b>Edit</b>	To edit a SSL Service, select the service from the list in the SSL Service page and click the <b>Edit</b> button.
<b>Delete</b>	To delete a SSL Service, select the service from the list in the SSL Service page and click the <b>Delete</b> button.
<b>Delete all</b>	Use this button to delete all the SSL Service in the SSL Service page.

## SSL Key Store

SSL Key Store is a repository, that allows you to save all the key under a single location. You can create multiple key stores and in each key store you can store multiple keys.

1. Go to **Inventory > Resources > Security > SSL Key Store**. The SSL Key Store page appears.
2. Click **Add**.
3. Enter the **Key Store Alias** and **Comment**.
4. Click **Save**.

The following actions can also be performed from the SSL Key Store Page:

Field	Description
<b>Edit</b>	To edit a SSL Key Store, select the Key Store from the list in the SSL Key Store page and click the <b>Edit</b> button.
<b>Delete</b>	To delete a SSL Key Store, select the SSL Key Store from the list in the SSL Key Store page and click the <b>Delete</b> button.
<b>Delete all</b>	Use this button to delete all the SSL Key Store in the SSL Key Store page.

## Add SSL Decrypt to Monitoring Session

After mapping your keys with service, to add GigaSMART applications to GigaVUE V Series Node, follow the steps given below,

1. Drag and drop **SSL Decrypt** from APPLICATIONS to the graphical workspace.
2. Click the SSL Decrypt application and select **Details**.

The screenshot shows the configuration window for the 'SSL Decrypt' application. The window title is 'X application' and it has a 'Save' button in the top right corner. On the left side, there is a vertical panel with a grid background and a blue gear icon labeled 'ssl-decrypt'. The main area of the window is a configuration table with the following settings:

Application	SSL Decrypt
Alias	ssl-decrypt
Enable	<input checked="" type="checkbox"/>
Key Map	<input type="text" value="v"/>
In Port ⓘ	0
Out Port ⓘ	0
Session Timeout (sec)	300
Pending Session Timeout (sec)	60
Tcp Syn Timeout (sec)	20
Decrypt Fail Action	<input type="radio"/> Pass <input checked="" type="radio"/> Drop
Key Cache Timeout (sec)	10800
Ticket Cache Timeout (sec)	10800
Non-ssl Traffic	<input type="radio"/> Pass <input checked="" type="radio"/> Drop

- Enter the following details in the Application quick view:

Fields	Description
<b>Alias</b>	Enter the alias name for the application.
<b>Enable</b>	Enable the box to enable SSL Decryption.
<b>Key Map</b>	Select the Key Map from the list of available Key Maps. Refer to <a href="#">Key Mapping</a> for more details on how to map the key to SSL Service.
<b>In Port</b>	Enter the source port number from which the traffic should be fetched.
<b>Out Port</b>	Enter the destination port number to which the decrypted traffic should be delivered.
<b>Session Timeout</b>	Enter the value in seconds after which the session should be timeout. The default value is 300 seconds.
<b>Pending Session Timeout</b>	Enter the value in seconds after which the session must timeout if the session is in pending state
<b>Tcp Syn Timeout</b>	Enter the value in seconds after which the session must timeout when the session does not synchronize TCP.
<b>Decrypt Fail Action</b>	Select <b>Pass</b> to allow the traffic to pass through the application when the decryption fails and select <b>Drop</b> to drop the traffic before passing through the application when the decryption fails.
<b>Key Cache Timeout (sec)</b>	Enter the value in seconds until which the key cache information can be reused for resumption.
<b>Ticket Cache Timeout (sec)</b>	Enter the value in seconds until which the ticket cache information can be reused for resumption.
<b>Non-ssl Traffic</b>	Select <b>Pass</b> to allow the non-SSL traffic to pass through the application and select <b>Drop</b> to drop the non- SSL traffic before passing through the application.

- Click **Save**.
- Click **Deploy**. The Select nodes to deploy the monitoring session page appears.
- Select the GigaVUE V Series Nodes you want to deploy and select an interface for each GigaVUE V Series Node. Then, click **Deploy**.

## View Application Statistics

After adding SSL Decrypt application to the monitoring session, to view the application statistics, open the **Monitoring Session Statistics** page. Refer to [View Statistics](#) for more detailed information.

- Click **View Monitoring Session Diagram**. The monitoring session diagram appears, click the SSL Decrypt application.
- The ssl-decrypt application statistics page appears.



3. You can view the following in the SSL application statistics page:
  - **Application:** The application statistics are displayed here.
  - **Sessions:** To view the session summary and session details of the SSL Decryption application, select the V Series Node IP and enter the Server Name and Client/Server IP address. Then click **Apply**.
  - **Server Certificates:** To view the server certificate statistics, select the V Series Node IP from the drop-down and enter the Key Alias. Then, click **Apply**.
  - **Services:** All the service related statistics are displayed here. To view the statistics, select the V Series Node IP and the Service Alias from the drop-down and click **Apply**.
  - **Error Codes:** The error messages are displayed here.

Server Certificates, Services and Error Codes pages has **Refresh** and **Reset** button, which helps you to refresh and reset the statistics.

Keep in mind the following when using SSL Decrypt application:

1. On updating the keys, service, or key maps which are already used in a monitoring session, the monitoring session is dynamically updated, and you need not re-deploy the monitoring session. You can also see if the updated keys, services, or key maps were successfully updated to the monitoring session and the respective GigaVUE V Series Nodes on the **All Events** page. Refer to Overview of Events section in the *GigaVUE Administration Guide* for detailed information on Events.
2. When deleting a key that is part of a Key Map and that Key Map is used in a monitoring session which is already deployed, then the key will be removed from the Key Map. If that key is the only available entry in the Key Map, then it will not be removed.
3. When deleting a key that is part of a Key Map and that Key Map is used in a monitoring session that is not deployed, then the key will be removed from the Key Map and if that key is the only available entry in the Key Map, the whole key map will be removed from the monitoring session.
4. When deleting a service that is part of a Key Map and that Key Map is used in a monitoring session which is already deployed, then the service will be removed from the Key Map. If that service is the only available entry in the Key Map, then it will not be removed.
5. When deleting a service that is part of a Key Map and that Key Map is used in a monitoring session which is not deployed, then the service will be removed from the Key Map and if that service is the only available entry in the Key Map, the whole key map will be removed from the monitoring session.

# PCAPng Application

The PCAPng application reads the various blocks in the received PCAPng files and validates the blocks to be sent to the destination application or to the tools. The PCAPng file contains the following blocks:

- Mandatory Blocks
  - Section Header Block (SHB)
- Optional Blocks
  - Interface Description Block (IDB)
  - Enhanced Packet Block (EPB)
  - Simple Packet Block
  - Name Resolution Block
  - Interface Statistics Block

**NOTE:** The PCAPng application is only applicable for the Ericsson 5G Core vTAP architecture. for detailed information.

The actual packets are present in the Enhanced Packet Block. The block data is parsed to find the start and end offset of the valid packets and the packet is sent out to the next application.

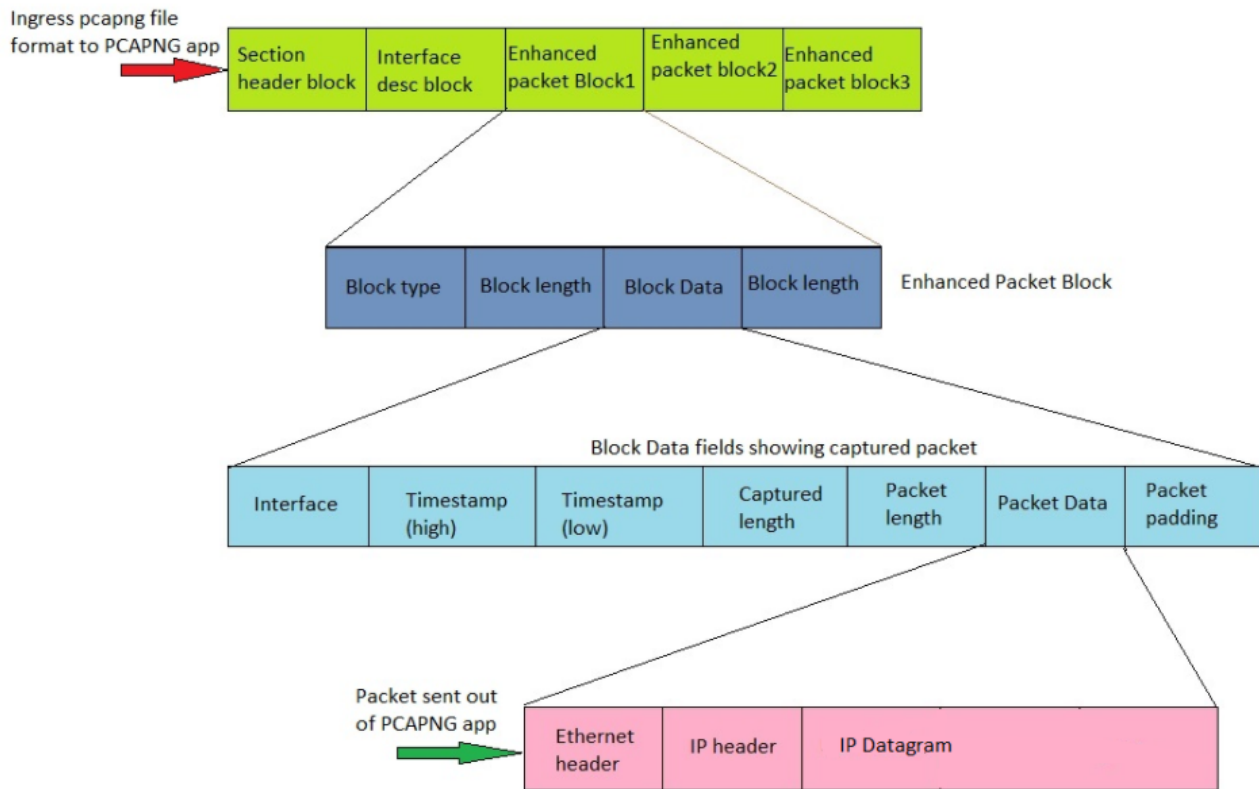
**NOTE:** Only one EPB in a PCAPng file is supported.

The PCAPng application processes the data depending on the packet type that contains a combination of the blocks mentioned above:

Block Combination	Process
SHB+IDB+EPB+data	Packets are parsed, validated, and the data packet is sent out.
SHB+IDB	Packets are dropped.
EPB+Data	Packets are parsed, validated, and the data packet is sent out.

The PCAPng application validates if the incoming data matches any of the above three formats in the same order, and processes the packets accordingly.

The following figure shows a sample PCAPng file format that contains one section header block:



## Create Link Between UDP-in-GRE Tunnel and PCAPng Application

To create a link with source as UDP-in-GRE tunnel and destination as PCAPng application:

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

Field	Description
Alias	The name of the tunnel endpoint <div style="border: 1px solid #ccc; padding: 5px; margin-top: 5px;"> <b>NOTE:</b> Do not enter spaces in the alias name. </div>
Description	The description of the tunnel endpoint
Type	Select <b>UDPGRE</b> as the tunnel type
Traffic Direction	The direction of the traffic flowing through the V Series node <ul style="list-style-type: none"> <li>• Choose <b>In</b> (Decapsulation) for creating an Ingress tunnel, traffic from the source to the V Series node</li> </ul>
IP Version	The version of the Internet Protocol. Select IPv4 or IPv6
Remote Tunnel IP	The IP address of the tunnel source
Key	GRE key value
Source L4 Port	Layer 4 source port number
Destination L4 Port	Layer 4 destination port number. You can configure only 4754 or 4755 as the destination UDP ports

3. Click **Save**.
4. Click and drag the PCAPng application into the canvas. Configure the alias for the application.
5. Establish a link between the UDP-GRE TEP configured above and the PCAPng application.

## Create Link Between PCAPng Application and Other Destinations

Create a link with source as PCAPng application and destination as one of the following:

- Other GigaSMART applications such as Slicing, Masking, etc.
- Other encapsulation TEPs.
- REP/MAP

Refer to the following image for a sample configuration.

### Monitoring Session

Show Targets OK Deploy

The interface displays a monitoring session configuration. On the left is a sidebar with categories: NEW (New Map, New Tunnel), MAP LIBRARY (MS1-Maps), APPLICATIONS (Slicing, Masking), and TUNNELS (H38-T1-In..., H38-T1-E..., H38-T2-E..., H38-T3-E..., H38-T4-E...). The main workspace shows a flow diagram with four components: vTap-In-IPv6, PCAPng, slicing, and H38-T1-Egress. Link 1 connects vTap-In-IPv6 to PCAPng, and Link 2 connects PCAPng to H38-T1-Egress. On the right, the 'MONITORING SESSION INFO' panel shows Name: udpgre, Monitoring Domain: Tunnel-MD, and Connection: Select All. Below it, the 'TARGETS' panel shows Tunnel-MD with two sub-targets: 10.0.0.0/24 to 30.0.0.0/24 and 2001::64 to 3001::64.

# 5G-Service Based Interface Application

5G-Core is a service-based architecture, in which many control plane network functions are available and communication across these network functions happens through HTTP2 protocol. These HTTP2 transactions are mirrored using some specific network functions, which are in JSON encoded format.

5G-Service Based Interface (SBI) Application synthesizes the HTTP2 transactions with proper L2, L3, and L4 headers from the JSON encoded data that it receives from the UDP-GRE or VXLAN ingress TEPs (Tunnel End Point). Once the headers are synthesized and a complete HTTP2 transaction is formed, the packets are sent to the egress TEP and then sent to the physical or virtual probes.

In Nokia 5G core network, the traffic is mirrored between control functions using HTTP2 protocol, which is mirrored from a service called SCP (Service Control Proxy) a centralised point through which all the communications between all the control plane functions pass. Hence, it becomes the right place to mirror the traffic.

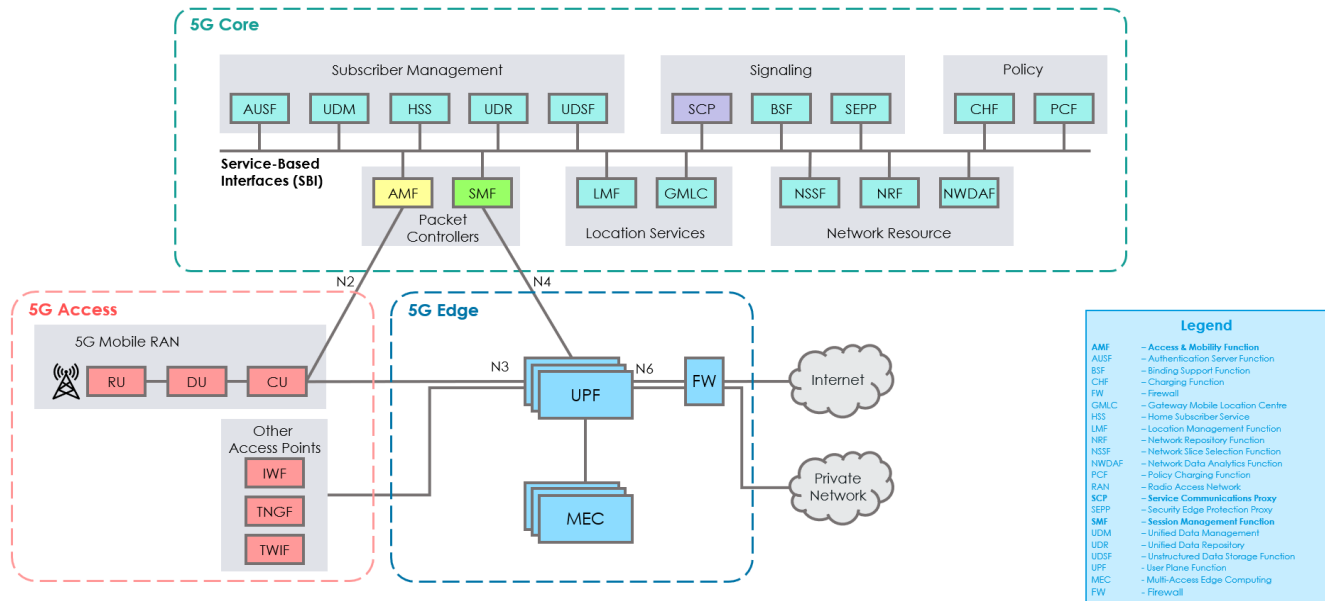
Traffic mirrored here doesn't have enough information about the entire TCP flow information between them. It only has information about request and response details between the control functions. Since the tools cannot infer much with this request and response information alone, it is required to have the entire flow information from TCP handshake to TCP connection close to form a complete TCP flow information that can be sent to the tools.

In Ericsson 5G core, there is a software probe that is used for monitoring the traffic. It captures the traffic, encapsulates it in UDP-GRE, and forwards it to V Series nodes. Here it converts the HTTP2 transactions into JSON data and a set of TCP messages are captured as PCAPng file, which is encapsulated into UDP-GRE with proto ID 0x8047 and is sent to V Series.

In either case, these are not raw packets that any tools can understand. In the case of Nokia, it doesn't have TCP session information, whereas Ericsson has the session information, but they are in a JSON encoded format. In both cases, it can't be forwarded to tools directly. Hence, we need to synthesize those packets, by adding additional information, such as TCP 3-way handshake, L2 headers and form a TCP flow information that could be forwarded to the tools.

In some versions of Nokia or Ericsson 5G Cores, the IP addresses present in the encoded message is not reliable and the SBI application converts the strings in the form of instance ID (in case of Ericsson) or producer ID (in case of Nokia) to an IP address from the string-IP mapping table.

The instance ID or producer ID must be provided in the form of CSV file. You can upload the CSV file through GigaVUE-FM.



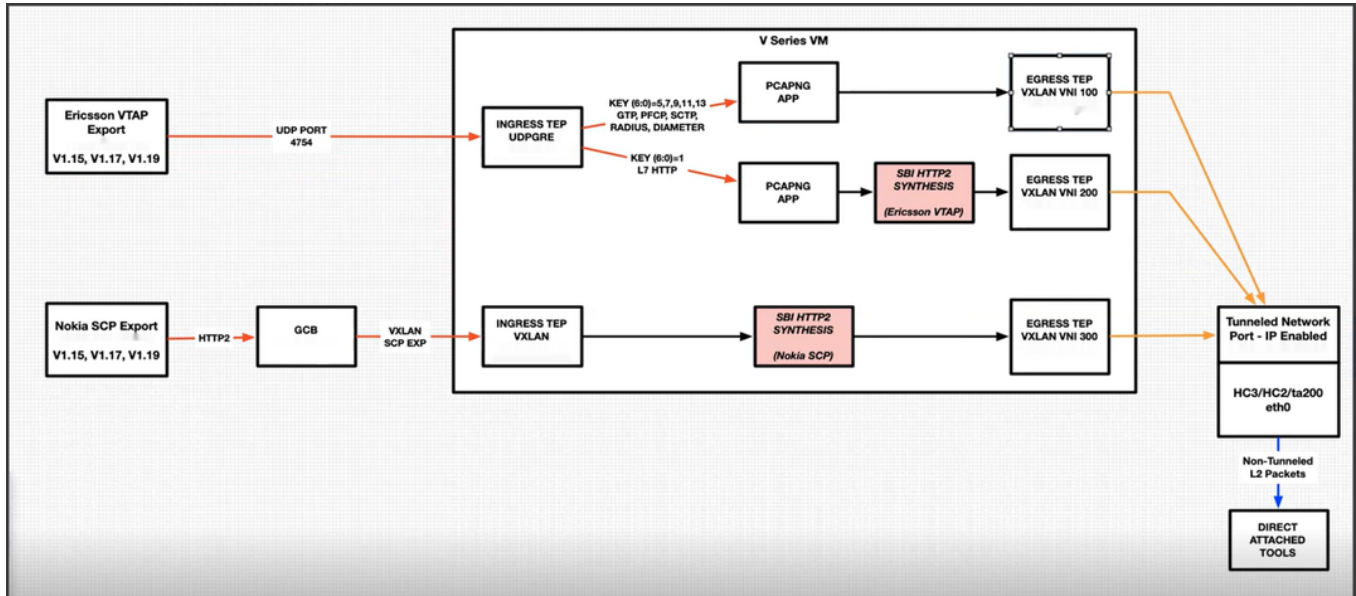
## How SBI Application works

In the V series, the SBI application receives the HTTP2 transaction messages as JSON encoded data from any of the following sources:

- VxLAN TEP – In 5G-Nokia, the application receives the JSON encoded data from the VXLAN ingress TEPs
- PCAPng application - In 5G-Ericson, the application receives the JSON encoded data from the PCAPng application, whereas the PCAPng application receives the data from the UDP-GRE TEP.

In the SBI application, JSON encoded data traffic is further parsed to extract the source-destination information and is used to synthesize the complete HTTP2 transaction with proper L2, L3, and L4 headers and HTTP2 headers and HTTP2 body of the original HTTP2 transactions. Once the headers are synthesized and a complete HTTP2 transaction is formed, the packets are then given to the egress TEP to send it to the physical/virtual probes.

The following figure shows the block diagram of the data flow in the V Series containing the SBI application.



In 5G-SBI application, the V Series node can log the following details to CSV files:

- **Transaction details** - Represents the transaction or flow of request and response packets into the application. The details of the flow or transaction are recorded in the CSV file for 5 minutes or 60 minutes based on the configuration.
- **Flow statistics details** - Represents the packet and flow statistics in 60 seconds time interval.

These files help you to understand the records or traffic efficiently. The files are named as per the date and time in which the files were created. When the number of files and its size grows, the application automatically detects the old files and delete them.

## Supported Platforms:

The application is supported on the following platforms:

- VMware
- OpenStack

## Rules and Notes

- The maximum number of HTTP2 headers (in the synthesized HTTP2 transactions) that is supported is 64.



- The PCAPng application that is linked to 5G-SBI application (on the right side) should only be linked to UDP-GRE TEP with key value 1 on the left side. If it is linked to other UDP-GRE TEPs(key values other than 1), then the behavior cannot be defined and leads to unexpected result.
- The maximum number of NF entries supported is 4K.

## Configuration of 5G-SBI Application

In V Series, 5G-SBI application receives all the mirrored traffic from any of the following sources:

- 5G-Nokia SCP
- 5G-Ericsson

In GigaVUE-FM, the application has a field **type**, which determines whether the data is collected from 5G-Nokia or 5G-Ericsson. Based on the **type** configured, the packets received are processed.

For example, in the case of 5G-Nokia this application reads the headers (source ip/port, destination ip/port), packet type (request or response) information from the HTTP2 message. Based on the retrieved information it synthesises a TCP flow.

In the case of 5G-Ericsson, after receiving the packets from the TEP, the packets are forwarded to PCAPng application for parsing. After parsing, the JSON type data from PCAPng has the information such as source ip/port, destination ip/port, message type. Using this information HTTP2 transaction can be synthesised.

In GigaVUE-FM, to configure the 5G-SBI application refer to any of the following sections based on the source type:

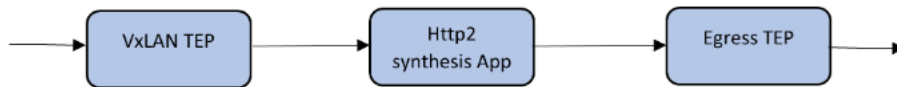
- [Configuration of 5G-SBI Application for 5G-Nokia](#)
- [Configuration of 5G-SBI Application for 5G-Ericsson](#)

### Configuration of 5G-SBI Application for 5G-Nokia

In GigaVUE-FM, for 5G-Nokia, you must do the following to add the 5G-SBI application in the monitoring session of a monitoring domain in the V Series:

S.No	Steps	Refer to
1	Create VXLAN Ingress TEP to receive the HTTP2 post messages from GCB/UCT in a monitoring session.	<a href="#">Create Tunnel Endpoints</a>
2	Add 5G-SBI Application (HTTP2 header synthesis) in the monitoring session.	

3	Create a link between VXLAN ingress TEP and 5G-SBI Application.	
4	Create egress TEP.	Create Tunnel Endpoints
5	Create a link between 5G-SBI Application (HTTP2 header synthesis) and Egress TEP.	



## Adding 5G-SBI Application in 5G-Nokia

### Prerequisites

The pre-requisite to add a 5G-SBI application in 5G-Nokia is:

- You must upload CSV file containing a valid FQDN name and a valid IPv4/IPv6 address. To upload the CSV file refer [Adding CSV file for IP Mapping](#).

You can add a 5G-SBI application for:

- New monitoring session - You can add the 5G-SBI application after creating a new monitoring session and when the canvas appears.
- Existing session - Click **Edit** on existing monitoring session, the GigaVUE-FM canvas appears.

To add a 5G-SBI application:

- In the canvas, Drag and drop 5G-SBI application and select **Details**. The Application quick view appears.
- On the Application quick view, enter or select the required information as described in the following table:

Field	Description
Application	The name <b>5g-sbi</b> appears by default.
Alias	The name <b>sbi5gAppTemplate</b> appears by default.
Transaction log	Enable the check box to collect the log of transaction or flow of request and response packets into the application.
Transaction log interval	Specify the time to collect the transaction log. You can collect the transaction log for 5 minutes or 60 minutes.
Stats log	Enable the check box to collect packet and flow statistics.
Log Folder Size	Specify the folder size to save the CSV files.
Log Folder Location	Specify the location of the folder in which the CSV files are saved.
Type	Select the option <b>SCPviaGCB</b> from the drop-down list.
Indexed Headers	Enable the check box to index the headers.
Compressed Headers	Enable the check box to compress the headers.
Ip Mapping	Select the required CSV file from the drop-down list with FQDN name. Refer to <a href="#">Adding CSV file for IP Mapping</a> to get the required CSV file in the drop-down list. In case of inadequate information (i.e., NF lookup failure), the appropriate counter is incremented and the synthesized packet is sent out with inappropriate IP address.
Mode	Nokia SCP is selected by default
Number of SCP Flows	Specify the range of SCP flow (The request ID and producer ID forms a SCP flow). The minimum value is 128. The maximum value is 16000. The default value is 2000.
Request Timeout	Specify the time for the request packet to wait for the response packet in the flow. The minimum value is 1 second and the maximum value is 300 seconds. The default value is 10 seconds.
Response Timeout	Specify the time for the response packet to wait for the request packet in a stream.

	The minimum value is 1 second and the maximum value is 300 seconds. The default value is 10 seconds.
Nokia Use 3Gpp Target API Root	When detecting Producer IP/FQDN, treat the 3GPP Target API Root to be predictive of the Producer IP if the value is non-zero. The default value is 1.
Thresholds	Specify the threshold value to configure the packet-drop settings.
Threshold Templates	Select the threshold template.
Time Interval	Select the time interval in seconds.

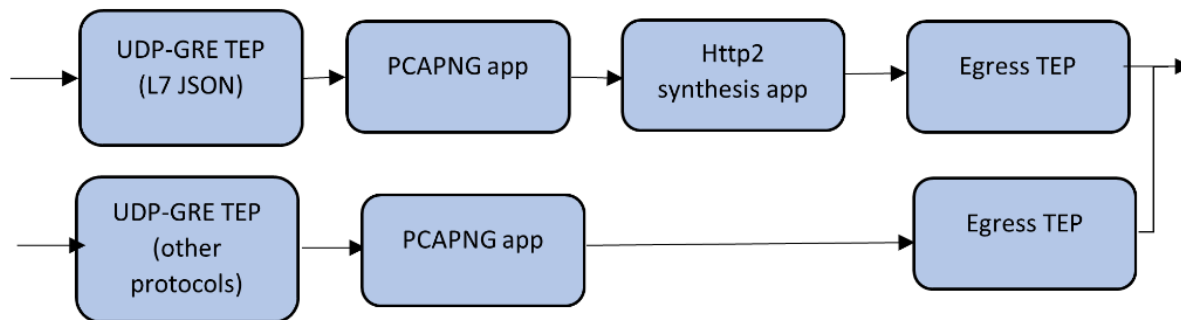
## Rules and Notes

- The following configuration parameters are non-editable and it can be configured only during the initial configuration:
  - type
  - mode
  - eevtapVersion
  - numTCPFlows
  - numStreamsPerFlow
  - numSCPFlows

## Configuration of 5G-SBI Application for 5G-Ericsson

In GigaVUE-FM, for 5G-Ericsson, you must do the following to configure the 5G-SBI application in the monitoring session of a monitoring domain in the V Series:

S.No	Steps	Refer to
1	Configure UDP-GRE Ingress TEP to receive the HTTP2/L7-JSON messages.	<a href="#">Create Tunnel Endpoints</a>
2	Configure multiple other TEPs for other control protocol PDUs.	
3	Configure two instances of PCAPng application and link ingress TEPs and PCAPng application instances.	
4	Add 5G-SBI Application (HTTP2 header synthesis) in the monitoring session.	
5	Create a link between TEP and 5G-SBI Application.	
6	Create egress TEP.	<a href="#">Create Tunnel Endpoints</a>
7	Create a link between PCAPng and egress TEPs or SBI and egress TEPs.	



## Adding 5G-SBI Application in 5G-Ericsson

### Prerequisites

The pre-requisite to add a 5G-SBI application in Ericsson is:

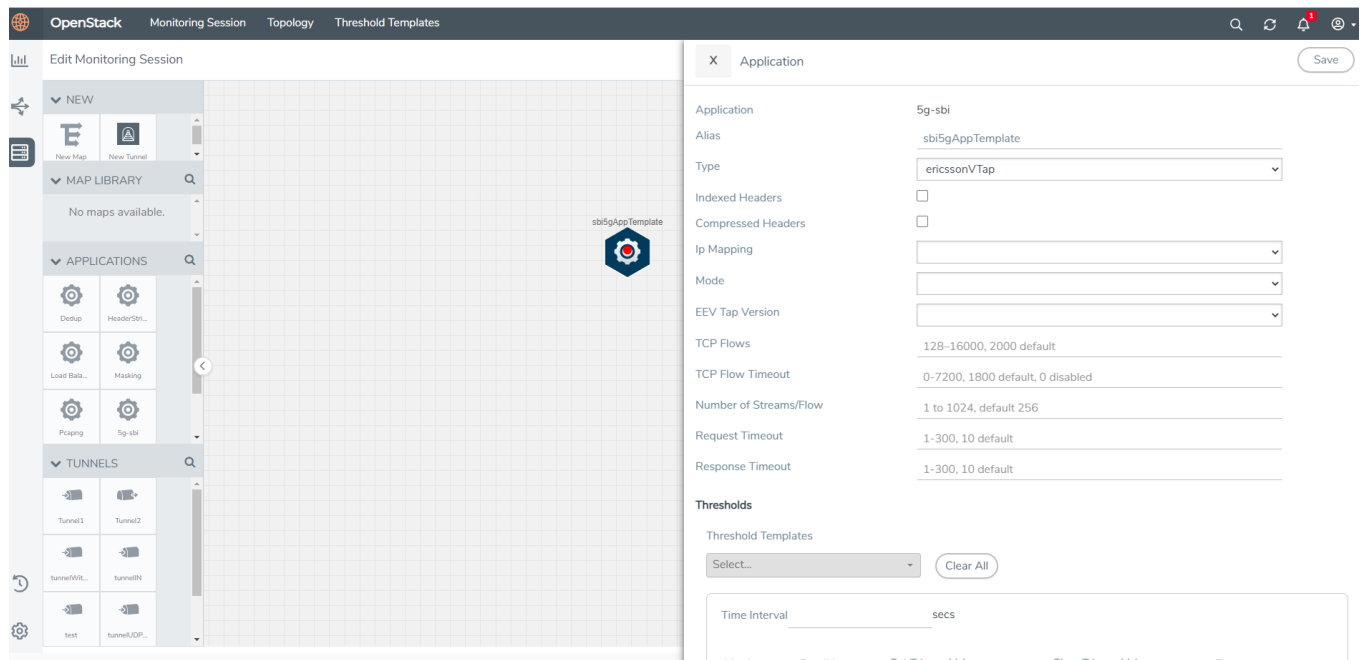
- You must upload a CSV file containing a valid Network Function Instance ID (NFID) and a valid IPv4/IPv6 address. To upload the CSV file.

You can add a 5G-SBI application for:

- New monitoring session - You can add the 5G-SBI application after creating a new monitoring session and when the canvas appears.
- Existing session - Click **Edit** on existing monitoring session, the GigaVUE-FM canvas appears.

To add a 5G-SBI application:

1. In the canvas, Drag and drop 5G-SBI application and select **Details**. The Application quick view appears.



- On the Application quick view, enter or select the required information as described in the following table:

Field	Description
Application	The name <b>5g-sbi</b> appears by default.
Alias	The name <b>sbi5gAppTemplate</b> appears by default.
Type	Select the option <b>ericssonVTap</b> from the drop-down list.
Indexed Headers	Enable the checkbox to index the HTTP2 headers in the 5G-SBI application.
Compressed Headers	Enable the checkbox to compress the HTTP2 headers in the 5G-SBI application.
Ip Mapping	Select the required CSV file from the drop-down list with required Network Function Instance ID (NFID) instance mapping. Refer to <a href="#">Adding CSV file for IP Mapping</a> to get the required CSV file in the drop-down list.
Mode	L7json is selected by default. L7native is not supported in 6.1
EEV Tap Version	Select 1 or 2 from the drop-down list box.
TCP Flows	Specify the concurrent TCP flow range. The minimum value is 128 seconds, and the maximum value is 16000 seconds. The default value is 1000 seconds.
TCP Flow Timeout	Specify the flow range for which the TCP flow should remain valid in the application. The minimum value is 0 and the maximum value is 7200 seconds. The default value is 1800 seconds
Number of Streams per Flow	Specify the Number of Streams per flow. The minimum value is 1. The maximum value is 1024. The default value is 256.
Request Timeout	Specify the time for the request packet to wait for the response packet

	in a stream. The minimum value is 1 second and the maximum value is 300 seconds. The default value is 10 seconds.
Response Timeout	Specify the time for the response packet to wait for the request packet in a stream. The minimum value is 1 second and the maximum value is 300 seconds. The default value is 10 seconds.
Threshold Templates	Select the threshold template.
Time Interval	Select the time interval in seconds.

## Adding CSV file for IP Mapping

To add the CSV file for IP mapping:

1. Go to **Inventory > VIRTUAL >** select your cloud platform, and then click **Settings > 5G-SBI**. The Proxy Server Configuration page appears.
2. Select any of the following from the **Type** as per the requirement:
  - o **SCPviaGCP** - Adding the CSV file containing a valid FQDN name and a valid IPv4/IPv6 address for IP mapping in 5G-Nokia.
  - o **ericssonVTap** - Adding the CSV file containing a valid NF-instance ID and a valid IPv4/IPv6 address for IP mapping in 5G-Ericsson.
3. Enter the name for the CSV file in the **Alias** field.
4. Click **Choose File** in **FileName** field to upload the CSV file into GigaVUE-FM.
5. Click **Save** to add the CSV file.

# Slicing

Packet slicing allows you to truncate packets after a specified header and slice length, preserving the portion of the packet required for monitoring purposes. Slicing operations are typically configured to preserve specific packet header information, allowing effective network analysis without the overhead of storing full packet data.

Packets can have multiple variable-length headers, depending on where they are captured, the different devices that have attached their own headers along the way, and the protocols in use (for example, IPv4 versus IPv6). Because of this, slicing operations with a hard-coded offset will not typically provide consistent results.

To address this, the slicing application lets you configure packet slicing using protocols that allow you to start slicing from a particular number of bytes after a specific packet header (IPv4, IPv6, UDP, and so on). The slicing application parses through Layer 4 (TCP/UDP) to identify the headers in use, slicing based on the variable offset identified for a particular header instead of a hard-coded number of bytes.

To add a slicing application:

1. Drag and drop **Slicing** from **APPLICATIONS** to the graphical workspace.
2. Click the Slicing application and select **Details**. The Application quick view appears.

Field	Value
Application	Slicing
Alias	slicing
Protocol	none
Offset	64
Enhanced Name	none



3. In the Application quick view, enter the information as follows:

Component	Description
<b>Alias</b>	Enter a name for the application.
<b>Protocol</b>	<p>The following are the protocols that you can select for from the protocol drop-down list:</p> <ul style="list-style-type: none"> <li>o <b>None</b> – Slice starting a specific number of bytes from the start of the packet.</li> <li>o <b>IPV4</b> – Slice starting a specified number of bytes after the IPv4 header.</li> <li>o <b>IPV6</b> – Slice starting a specified number of bytes after the IPv6 header.</li> <li>o <b>UDP</b> – Slice starting a specified number of bytes after the UDP header.</li> <li>o <b>TCP</b> – Slice starting a specified number of bytes after the TCP header.</li> <li>o <b>FTP</b> – Identify using TCP port 20 and slice payloads using offset from the TCP header.</li> <li>o <b>HTTPS</b> – Identify using TCP port 443. Slice encrypted payloads using offset from the TCP header.</li> <li>o <b>SSH</b> – Identify using TCP port 22. Slice encrypted payloads using offset from the TCP header.</li> </ul> <p>The slicing application can provide slicing for GTP tunnels, provided the user payloads are unencrypted. Both GTPv1 and GTPv2 are supported – GTP' (GTP prime) is not supported. Keep in mind that only GTP-u (user plane packets) are sliced. Control plane packets (GTP-c) are left unmodified because of their importance for analysis.</p> <ul style="list-style-type: none"> <li>o <b>GTP</b> – Slice starting a specified number of bytes after the outer GTP header.</li> <li>o <b>GTP-IPV4</b> – Slice starting a specified number of bytes after the IPv4 header inside the encapsulating GTP packet.</li> <li>o <b>GTP-UDP</b> – Slice starting a specified number of bytes after the UDP header inside the encapsulating GTP packet.</li> <li>o <b>GTP-TCP</b> – Slice starting a specified number of bytes after the TCP header inside the encapsulating GTP packet.</li> </ul>
<b>Offset</b>	Specify the length of the packet that must be sliced.

4. Click **Save**.

# Additional Sources of Information

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

- [Documentation](#)
- [Documentation Feedback](#)
- [Contact Technical Support](#)
- [Contact Sales](#)
- [The VUE Community](#)

## Documentation

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

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

Table 1: Documentation Set for Gigamon Products

GigaVUE Cloud Suite 6.4 Hardware and Software Guides	
<b>DID YOU KNOW?</b>	If you keep all PDFs for a release in common folder, you can easily search across the doc set by opening one of the files in Acrobat and choosing <b>Edit &gt; Advanced Search</b> from the menu. This opens an interface that allows you to select a directory and search across all PDFs in a folder.
<b>Hardware</b>	how to unpack, assemble, rack-mount, connect, and initially configure ports the respective GigaVUE Cloud Suite devices; reference information and specifications for the respective GigaVUE Cloud Suite devices
	<b>GigaVUE-HC1 Hardware Installation Guide</b>
	<b>GigaVUE-HC2 Hardware Installation Guide</b>
	<b>GigaVUE-HC3 Hardware Installation Guide</b>
	<b>GigaVUE-HC1-Plus Hardware Installation Guide</b>
	<b>GigaVUE-TA25 Hardware Installation Guide</b>
	<b>GigaVUE-TA25E Hardware Installation Guide</b>
	<b>GigaVUE-TA100 Hardware Installation Guide</b>

## GigaVUE Cloud Suite 6.4 Hardware and Software Guides

**GigaVUE-TA200 Hardware Installation Guide**

**GigaVUE-TA200E Hardware Installation Guide**

**GigaVUE-TA400 Hardware Installation Guide**

**GigaVUE-OS Installation Guide for DELL S4112F-ON**

**G-TAP A Series 2 Installation Guide**

**GigaVUE M Series Hardware Installation Guide**

**GigaVUE-FM Hardware Appliance Guide for GFM-HW1-FM010 and and GFM-HW1-FM001-HW**

### Software Installation and Upgrade Guides

**GigaVUE-FM Installation, Migration, and Upgrade Guide**

**GigaVUE-OS Upgrade Guide**

**GigaVUE V Series Migration Guide**

### Fabric Management and Administration Guides

**GigaVUE Administration Guide**

covers both GigaVUE-OS and GigaVUE-FM

**GigaVUE Fabric Management Guide**

how to install, deploy, and operate GigaVUE-FM; how to configure GigaSMART operations; covers both GigaVUE-FM and GigaVUE-OS features

### Cloud Guides

how to configure the GigaVUE Cloud Suite components and set up traffic monitoring sessions for the cloud platforms

**\*GigaVUE V Series Applications Guide**

**GigaVUE V Series Quick Start Guide**

**GigaVUE Cloud Suite Deployment Guide - AWS**

**GigaVUE Cloud Suite Deployment Guide - Azure**

**GigaVUE Cloud Suite Deployment Guide - OpenStack**

**\*GigaVUE Cloud Suite Deployment Guide - Nutanix**

**GigaVUE Cloud Suite Deployment Guide - VMware**

**\*GigaVUE Cloud Suite Deployment Guide - Third Party Orchestration**

**GigaVUE Cloud Suite for AnyCloud Guide**

**Universal Cloud Tap - Container Guide**

## GigaVUE Cloud Suite 6.4 Hardware and Software Guides

**Gigamon Containerized Broker Deployment Guide**

**GigaVUE Cloud Suite for AWS—GigaVUE V Series 1 Guide**

**GigaVUE Cloud Suite for Azure—GigaVUE V Series 1 Guide**

**GigaVUE Cloud Suite for OpenStack—GigaVUE V Series 1 Guide**

**GigaVUE Cloud Suite for Nutanix Guide—GigaVUE-VM Guide**

**GigaVUE Cloud Suite for VMware—GigaVUE-VM Guide**

GigaVUE Cloud Suite Deployment Guide - AWS Secret Regions

### Reference Guides

**GigaVUE-OS CLI Reference Guide**

library of GigaVUE-OS CLI (Command Line Interface) commands used to configure and operate GigaVUE HC Series and TA Series devices

**GigaVUE-OS Security Hardening Guide**

**GigaVUE Firewall and Security Guide**

**GigaVUE Licensing Guide**

**GigaVUE-OS Cabling Quick Reference Guide**

guidelines for the different types of cables used to connect Gigamon devices

**GigaVUE-OS Compatibility and Interoperability Matrix**

compatibility information and interoperability requirements for Gigamon devices

**GigaVUE-FM REST API Reference in GigaVUE-FM User's Guide**

samples uses of the GigaVUE-FM Application Program Interfaces (APIs)

### Release Notes

**GigaVUE-OS, GigaVUE-FM, GigaVUE-VM, G-TAP A Series, and GigaVUE Cloud Suite Release Notes**

new features, resolved issues, and known issues in this release ;  
important notes regarding installing and upgrading to this release

**NOTE:** Release Notes are not included in the online documentation.

**NOTE:** Registered Customers can log in to [My Gigamon](#) to download the Software and Release Notes from the Software & Docs page on to [My Gigamon](#). Refer to [How to Download Software and Release Notes from My Gigamon](#).

### In-Product Help

**GigaVUE-FM Online Help**

how to install, deploy, and operate GigaVUE-FM.

## How to Download Software and Release Notes from My Gigamon

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

- Gigamon Software installation and upgrade images,
- Release Notes for Gigamon Software, or
- Older versions of PDFs (pre-v5.7).

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

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

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

## Documentation Feedback

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

[documentationfeedback@gigamon.com](mailto:documentationfeedback@gigamon.com)

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

Documentation Feedback Form		
<b>About You</b>	<b>Your Name</b>	
	<b>Your Role</b>	
	<b>Your Company</b>	

<b>For Online Topics</b>	<b>Online doc link</b>	<i>(URL for where the issue is)</i>
	<b>Topic Heading</b>	<i>(if it's a long topic, please provide the heading of the section where the issue is)</i>
<b>For PDF Topics</b>	<b>Document Title</b>	<i>(shown on the cover page or in page header )</i>
	<b>Product Version</b>	<i>(shown on the cover page)</i>
	<b>Document Version</b>	<i>(shown on the cover page)</i>
	<b>Chapter Heading</b>	<i>(shown in footer)</i>
	<b>PDF page #</b>	<i>(shown in footer)</i>
<b>How can we improve?</b>	<b>Describe the issue</b>	<i>Describe the error or issue in the documentation. (If it helps, attach an image to show the issue.)</i>
	<b>How can we improve the content?</b> <b>Be as specific as possible.</b>	
	<b>Any other comments?</b>	

## Contact Technical Support

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

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

Email Technical Support at [support@gigamon.com](mailto: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](mailto:inside.sales@gigamon.com)

**Partners:** [www.gigamon.com/partners.html](http://www.gigamon.com/partners.html)

## Premium Support

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

## The VÜE Community

The **VÜE Community** is a technical site where Gigamon users, partners, security and network professionals and Gigamon employees come together to share knowledge and expertise, ask questions, build their network and learn about best practices for Gigamon products.

Visit the VÜE site to:

- Find knowledge base articles and documentation
- Ask and answer questions and learn best practices from other members.
- Join special-interest groups to have focused collaboration around a technology, use-case, vertical market or beta release
- Take online learning lessons and tutorials to broaden your knowledge of Gigamon products.
- Open support tickets (Customers only)
- Download the latest product updates and documentation (Customers only)

The VÜE Community is a great way to get answers fast, learn from experts and collaborate directly with other members around your areas of interest.

**Register today at** [community.gigamon.com](http://community.gigamon.com)

**Questions?** Contact our Community team at [community@gigamon.com](mailto:community@gigamon.com).

# Glossary

## D

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### decrypt list

need to decrypt (formerly blacklist)

### decryptlist

need to decrypt - CLI Command (formerly blacklist)

### drop list

selective forwarding - drop (formerly blacklist)

## F

---

### forward list

selective forwarding - forward (formerly whitelist)

## L

---

### leader

leader in clustering node relationship (formerly master)

## M

---

### member node

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

## N

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### no-decrypt list

no need to decrypt (formerly whitelist)



**nodecryptlist**

no need to decrypt- CLI Command (formerly whitelist)

**P**

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**primary source**

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

**R**

---

**receiver**

follower in a bidirectional clock relationship (formerly slave)

**S**

---

**source**

leader in a bidirectional clock relationship (formerly master)