



Pinpoint.



Playback.



Protect.

# *Myricom nVoy Series*

## *Packet Broker*

## User Manual

Version 1.0



March 13, 2017

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# 1 Introduction - Myricom nVoy Series Packet Broker

This chapter provides an introduction to the Myricom nVoy Series Packet Broker and its major user interfaces in the following sections:

- nVoy Series Packet Broker - Overview
- nVoy Packet Broker Features and Benefits
- nVoy Packet Broker User Interface
- nVoy Packet Broker APIs
- Chapter Summaries



Figure 1: Myricom nVoy Series Packet Broker

## 1.1 nVoy Packet Broker - Overview

The nVoy Series Packet Broker is purposefully designed to help network administrators to build next-generation fabric visibility networks. The nVoy Packet Broker makes it easy to tap, aggregate, replicate, tag, strip, filter, and load balance traffic from the traffic feed to customers' visibility networks. It also empowers network administrators to deploy monitoring devices on the fly without the need for SPAN ports.

The nVoy Packet Broker leverages state-of-the-art technology to provide:

- 48, SFP+/SFP28 ports that operate at 1G, 10G and 25G.
- 6, 40Gbps/100Gbps QSFP+/QSFP28 ports that operate at 40G and/or 100G.
- Line-rate up to 3.6Tbps forwarding capabilities over all interfaces, even for the smallest packet size.
- An integrated Web-based user interface (Web UI).

The nVoy Packet Broker processes data in terms of domains. A domain is a collection of user-selected ingress and egress ports, interconnected with packet-processing building blocks. A packet-processing element can be a filter, load balancer, packet replicator, packet aggregator, or L2 switch.

## 1.2 nVoy Packet Broker Features and Benefits

<b>Features</b>	<b>Benefits</b>
<p>Up to 3.6Tbps line-rate packet operation. 48, 1G/10G/25G SFP+/SFP28 ports. 6, 40G/100G QSFP+/QSFP28 ports.</p>	<p>Provides superior line-rate packet filtering capabilities over a wide range of fields.</p>
<p>Flow Domains provide best flow manipulation with functional isolation for inline and/or offline tap, traffic aggregation, traffic replication, filter, tag, and load-balance applications.</p>	<p>Improves operating efficiency and team collaboration by providing Virtual Wire connectivity to isolated, point-to-point, lossless connectivity between two arbitrary ports.</p>
<p>Integrated lossless connection matrix for mix-and-match over 1G, 10G, 25G, and 100G interfaces. nVoy Packet Broker offers a Virtual Wire constructor backed by drag-and-drop user interface. Virtual Wire can be used to connect one port to another with complete isolation and lossless forwarding.</p>	<p>Virtual Wire is ideal when implementing and managing remote connections without physical re-wiring. Virtual Wire's flexibility also enables a traffic source to easily connect to tools within an inline or offline application.</p>
<p>nVoy Packet Broker has native state-of-the-art HTML 5 Web-based user interface (Web UI) that can be accessed from any standard-based web browser.</p>	<p>The Web UI is compatible with: Chrome version 56 or later (recommended) Firefox version 51 or later Internet Explorer version 11 or later Safari version 10 or later</p>
<p>Leveraging the latest generation processor and switch technologies, nVoy Packet Broker is power efficient and equipped with two redundant power supplies and four hot serviceable fans.</p>	<p>Reduce customers' CAPEX and OPEX. High Availability by Design. Built for robust and reliable 24x7 operation.</p>

Table 1: nVoy packet broker features and benefits.



## 1.3 nVoy Packet Broker Hardware

### Front Panel and interfaces

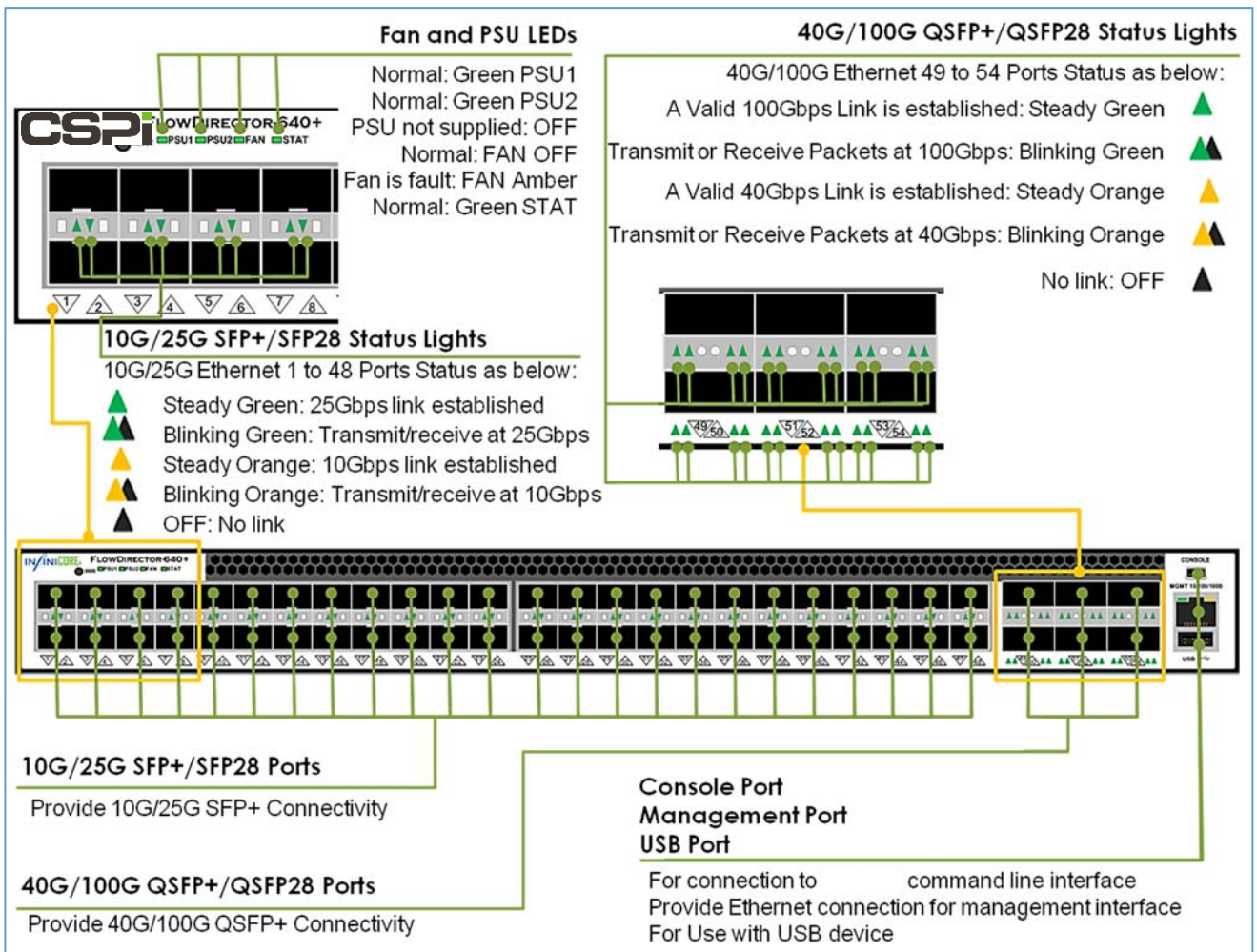


Figure 2. nVoy Packet Broker front panel and main interfaces.

## Back panel with power modules and fans

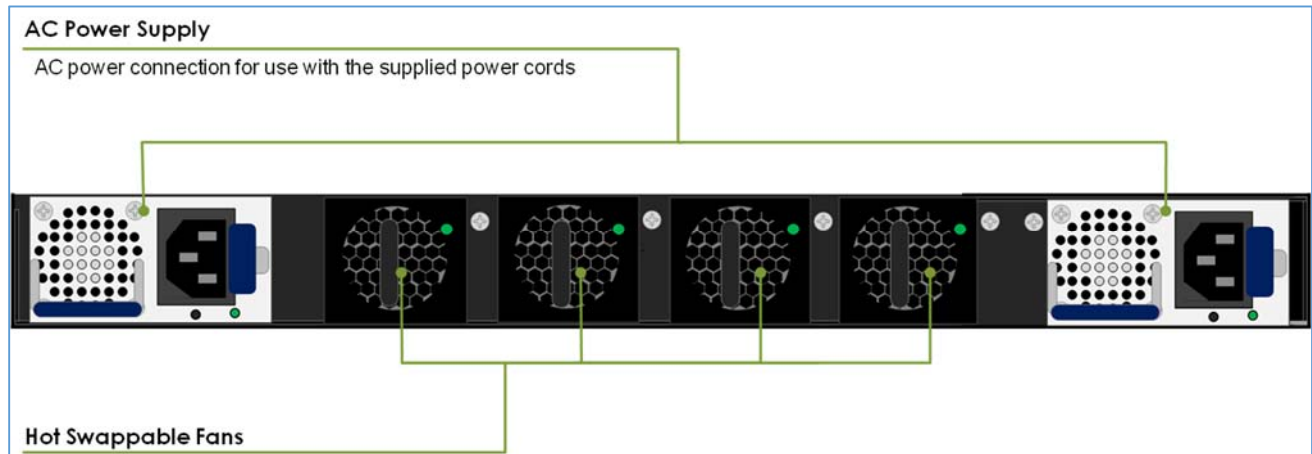


Figure 3. nVoy Packet Broker back panel with redundant power modules and replaceable fans.

## 1.4 nVoy Packet Broker User Interface

The nVoy Packet Broker is shipped with a default IP address and logon information to connect to the nVoy Packet Broker Web UI.

### 1.4.1 Default logon information

Default IP address	192.168.0.240
Default administrative username	admin
Default administrative account password	no default password
Default console port setting	Baud rate of 115200, 8 data bit, no parity, and a 1 stop bit.

Table 2: Default login information.

A successful logon displays, as shown below.

```

nVoy Packet Broker
exit          - exit shell
config       - configuration
exec        - execute operation
show        - display system information
help       - display help information
tree       - display command line tree
history    - display command history

nVoy Packet Broker      running

Hardware Platform      : nVoy Packet Broker
InfiniOS Version      :

Control Plane CPU      : Intel(R) Core(TM) i3- CPU @ 2.00GHz
Control Plane Version: 1.0.4
CP Memory Max/Free    : 4139147264/3389046784
CP Core Temp          : 40.0 (C)
  
```

Figure 4: Successful logon display.

Once connectivity is established, you can manage the nVoy Packet Broker through the Web UI user interface.

## 1.4.2 nVoy Packet Broker command line interface and Web UI

The nVoy Packet Broker offers an easy-to-use command line interface (CLI) as well as a Web UI interface.

### Command line interface (CLI)

The command line interface enables the user to set up various connectivity protocols and related diagnostic information such as name, location, descriptions, and so on.

For more information, go to [Chapter 2: Command Line Interface](#)

### Web UI

The Web UI enables users to gain full control over the design, management, and monitoring of the nVoy Packet Broker data path. The multi-user Web UI platform also enables users to run multiple sessions concurrently.

For more information, go to [Chapter 3: Web User Interface \(Web UI\)](#)

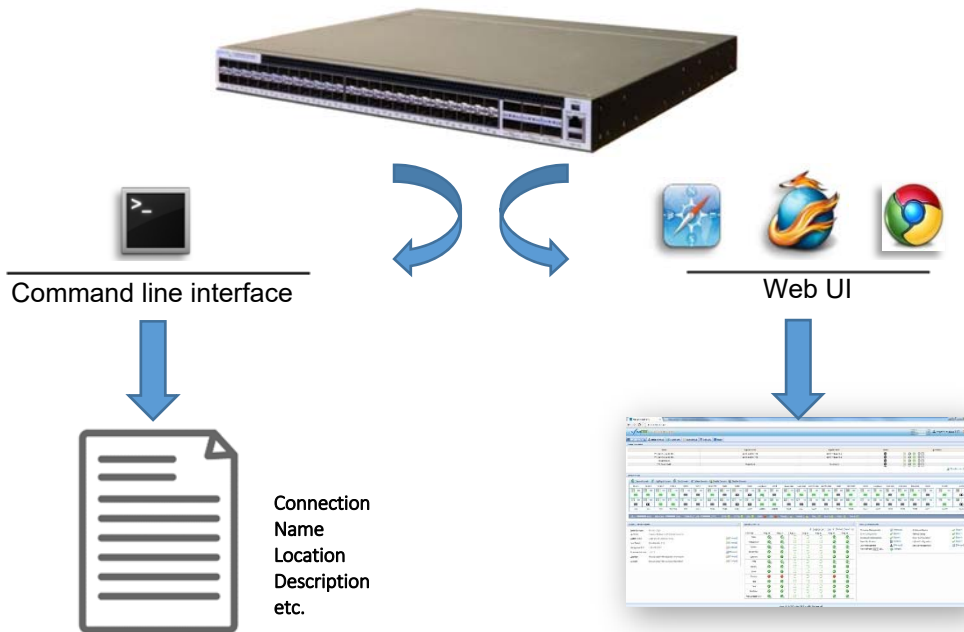


Figure 5: Command line interface and Web UI functionality with nVoy Packet Broker.

## 1.5 nVoy Packet Broker APIs

nVoy Packet Broker users can leverage the scripting API to automate tasks such as user, port, and domain management. The scripting APIs are created in Ruby open source programming language and installed as a Gem file. The APIs are cross-platform and OS neutral.

The nVoy Packet Broker APIs are compatible with the following operating systems:

- Windows
- Linux
- FreeBSD
- Mac OS
- NetBSD.



Figure 6: nVoy Packet Broker – operating system compatibility.

## 1.6 Chapter Summaries

The nVoy Packet Broker user manual contains the following chapter summaries:

<b>Chapter</b>	<b>Description</b>
Chapter 1	<i>Introduction to the nVoy Packet Broker</i>
Chapter 2	<i>Command Line Interface</i> Describes the features of the FlowDirect-640 command line user interface along with commonly used interface and domain commands.
Chapter 3	<i>Web User Interface (Web UI)</i> Describes the functional details of the Web UI. The Web UI is the recommended method to interact with the nVoy Packet Broker appliance.
Chapter 4	<i>Dashboard Tab</i> Describes the features of the Web UI Dashboard tab. The Dashboard tab is the nVoy Packet Broker appliance's central information hub. With a simple point and click, users can oversee almost all device management tasks without switching to different tabs.
Chapter 5	<i>Interfaces Tab</i> This chapter describes the Interfaces tab important features and operations associated with interface ports.
Chapter 6	<i>Flow Operations Tab</i> The Flow Operations or "Flow OPS" tab offers a comprehensive view of the nVoy Packet Broker flow domains attributes and associated user tasks.
Chapter 7	<i>Resource Tab</i> The Resource tab displays all available filter and flow domain information on the Web UI.
Chapter 8	<i>Syslog Tab</i> The System Log tab or "Syslog" tab provides a centralized view of all nVoy Packet Broker events and logs, including search and filter capabilities.
Chapter 9	<i>Help Tab</i> The Help tab enables the user to access all pertinent nVoy Packet Broker online help documents in the form of user guides and user manuals
Chapter 10	<i>Managing Flow Domains</i> Provides samples of nVoy packet broker flow domain modes, describing use cases, traffic flow, and settings.

## 2 Command Line Interface

This chapter further describes the features of the nVoy Packet Broker command line user interface along with commonly used interface and domain commands.

The chapter includes the following sections:

- The Command Line User Interface (CLI)
- List of Interface Commands
- List of Domain Commands

### 2.1 The Command Line User Interface (CLI)

The command line user interface serves as the first contact between user and the newly installed system. The nVoy Packet Broker supports Cisco-style CLI access through the serial port and SSH access through the management port.

#### Access through the serial port

The console port default setting has a baud rate of 115200, 8 data bit, no parity, and a 1 stop bit.

#### Access through the SSH or Telnet connection

Once you have set the IP address through the console port and the device is accessible through Ethernet connection, you can access CLI using SSH or through the Telnet connection.

#### Default administrator account

The nVoy Packet Broker is shipped with a default IP address to establish TCP/IP connectivity.

For more information on the admin account, go to the *Default logon information* section of the *Introduction to the nVoy Packet Broker* chapter.

## 2.2 List of Configuration Commands

Once you have logged into your account, refer to the **config** command to configure the nVoy Packet Broker appliance. Table 3. highlights the most commonly used configuration commands.

<b>Command root</b>	<b>Command (example)</b>	<b>Description</b>
<code>config interface mgmt ip</code>	<code>config interface mgmt ip 192.168.0.240 255.255.255.0</code>	Sets the device IP address.
<code>config interface mgmt gateway</code>	<code>config interface mgmt gateway 192.168.0.1</code>	Sets the device gateway.
<code>config system hostname</code>	<code>config system hostname qa_tester_01</code>	Sets the host name as qa_tester_01.
<code>config system description</code>	<code>config system description QA Regression Tester 01</code>	Sets the tester description so that everyone knows its intended usage.
<code>config system location</code>	<code>config system location EngLab01-Rack13-Slot3</code>	Sets the appliance location.
<code>config system contact</code>	<code>config system contact support@cspi.com</code>	Sets the administrator contact information.
<code>show running</code>	<code>show running</code>	Displays system runtime information.
<code>exit</code>	<code>exit</code>	Exits CLI

Table 3: Commonly used nVoy packet broker configuration commands and their description.

For more information on configuration commands, go to [Appendix 3: Supplemental Interface Commands](#)



## 2.3 List of Domain Commands

The domain command offers an alternative method to configure simple domains such as a virtual wire, as shown in Table 4.

<b>Command root</b>	<b>Command (example)</b>	<b>Description</b>
<pre>config domain create virtualwire [domain_name] port [port X] [port Y]</pre>	<pre>#config domain create virtualwire testdomain port XG1 XG2</pre>	Creates a virtual wire between port XG1 and XG2. The port name can be changed using the interface name command.
<pre>config domain create virtualwire [domain_name] sysport [portname1] [portname2]</pre>	<pre>#config domain create virtualwire testdomain sysport myport1 myport2</pre>	Creates a virtual wire between myport1 and myport2 using a system port name. The system port name cannot be changed.
<pre>Config domain delete [domain_name]</pre>	<pre>#config domain delete testdomain</pre>	The command removes the domain identified by domain name.

Table 4. Examples of domain commands and their description.

For more complex domain commands, go to [Web User Interface \(Web UI\)](#)

### 3 Web User Interface (Web UI)

Once you have configured the nVoy Packet Broker IP address and linked to your network, you can now access the device through the Web User Interface (Web UI). The Web UI is the recommended method to interact with the nVoy Packet Broker (Figure 7).

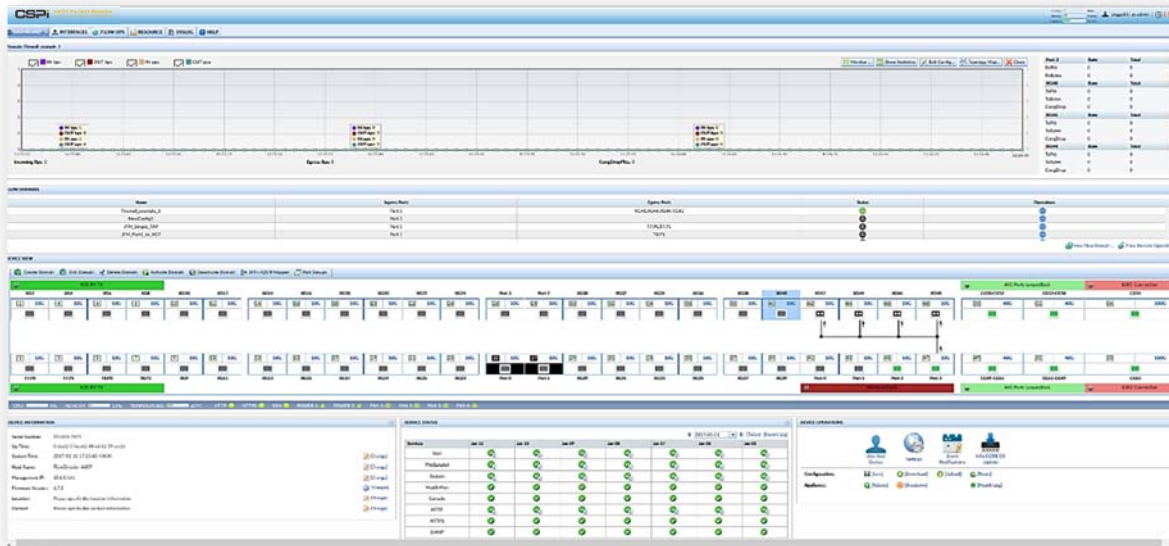


Figure 7: nVoy Packet Broker Web UI homepage

#### 3.1 Web UI features

The Web UI allows the user to easily perform the following tasks on the device:

- Port management tasks such as port allocation, reservation, and state management.
- Domain management tasks such as domain creation, deletion, enabling, and disabling.
- User management tasks such as user creation, deletion and edition.
- Device diagnostic information, including serial number, firmware version, location, and administrator contact information.
- Device operations, including the ability to update device firmware, saving configurations, rebooting the appliance, and so on.

### 3.2 Web GUI Homepage

Familiarize yourself with the layout of the nVoy Packet Broker Web UI homepage. Figure 8 displays a typical Web UI layout and its six essential tabs.

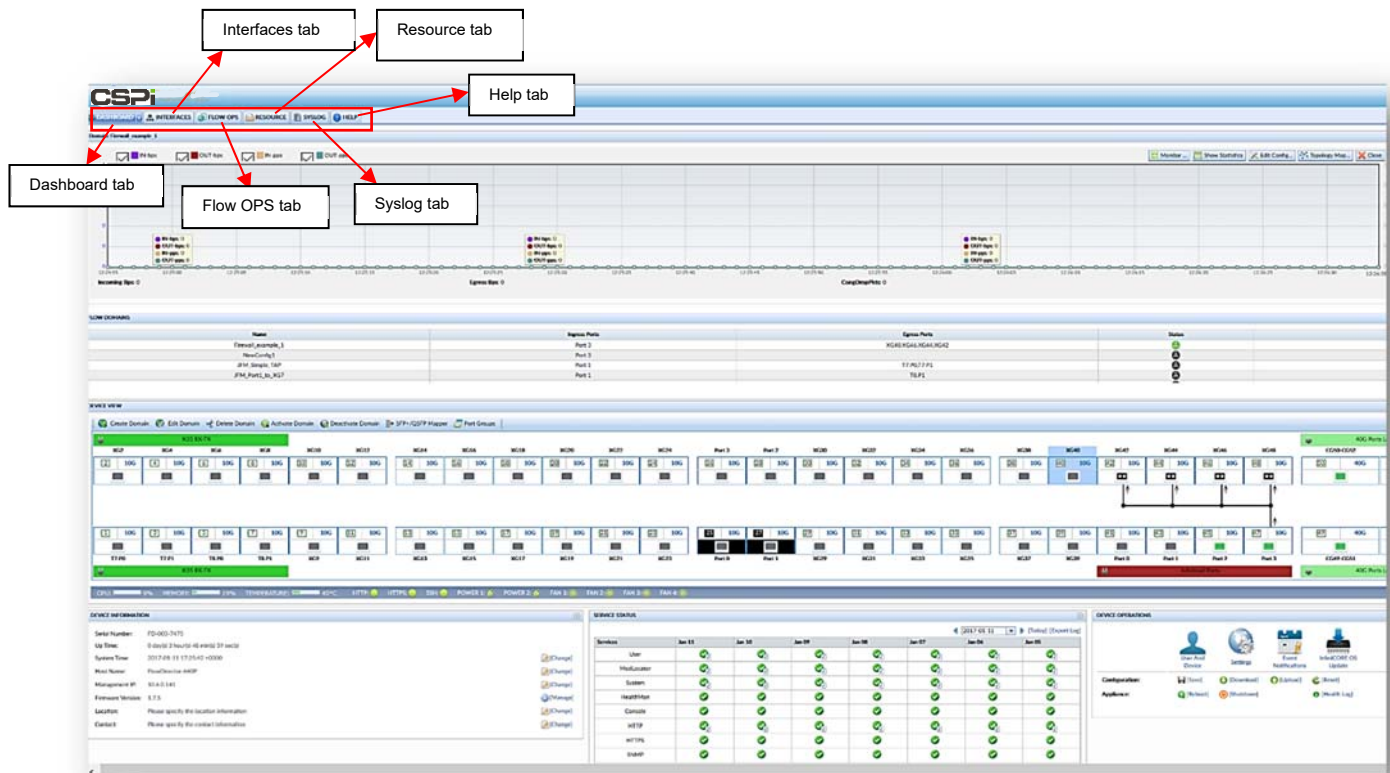


Figure 8: Web UI homepage with highlighted tabs.

### 3.2.1 Web UI tabs

The nVoy Packet Broker Web UI has six tabs:

#### ***Dashboard tab***

The Dashboard tab offers a bird's eye view to the device. It groups the most frequently used device management operations. We recommend users familiarize themselves with the contents of the Dashboard tab.

For more detailed information, go to [Dashboard Tab](#)

#### ***Interfaces tab***

The Interface tab provides detailed settings and statistics of each interface, including port name, port ID, link attributes, traffic statistics, interface module information, and available operations.

For more detailed information, go to [Interface Tab](#)

#### ***Flow OPS tab***

The Flow OPS tab offers a comprehensive view of all flow domain operations information such as name, type, admin status, ingress port, egress port, data path, date, description, statistics, and operations.

For more detailed information, go to [Flow OPS Tab](#)

#### ***Resource tab***

The Resource tab displays all saved resources such as filters and flow domain templates. Users can also create and manage IP black lists, pattern lists, and filters.

For more detailed information, go to [Resource Tab](#)

### ***Syslog tab***

The Syslog tab enables the user to view, search, and filter log events.

For more detailed information, go to [SyslogTab](#)

### ***Help tab***

The Help tab displays all technical documentation pertaining to the nVoy Packet Broker appliance.

For more detailed information, go to [Help Tab](#)

## 4 Dashboard Tab

The Web UI Dashboard tab is the nVoy Packet Broker appliance's central information hub. With a simple point and click, users can oversee almost all device management tasks without switching to different tabs.

The Dashboard is by far the most complex of the six tabs (Figure 9). Users should take the time to thoroughly familiarize themselves with its functions before operating the appliance.

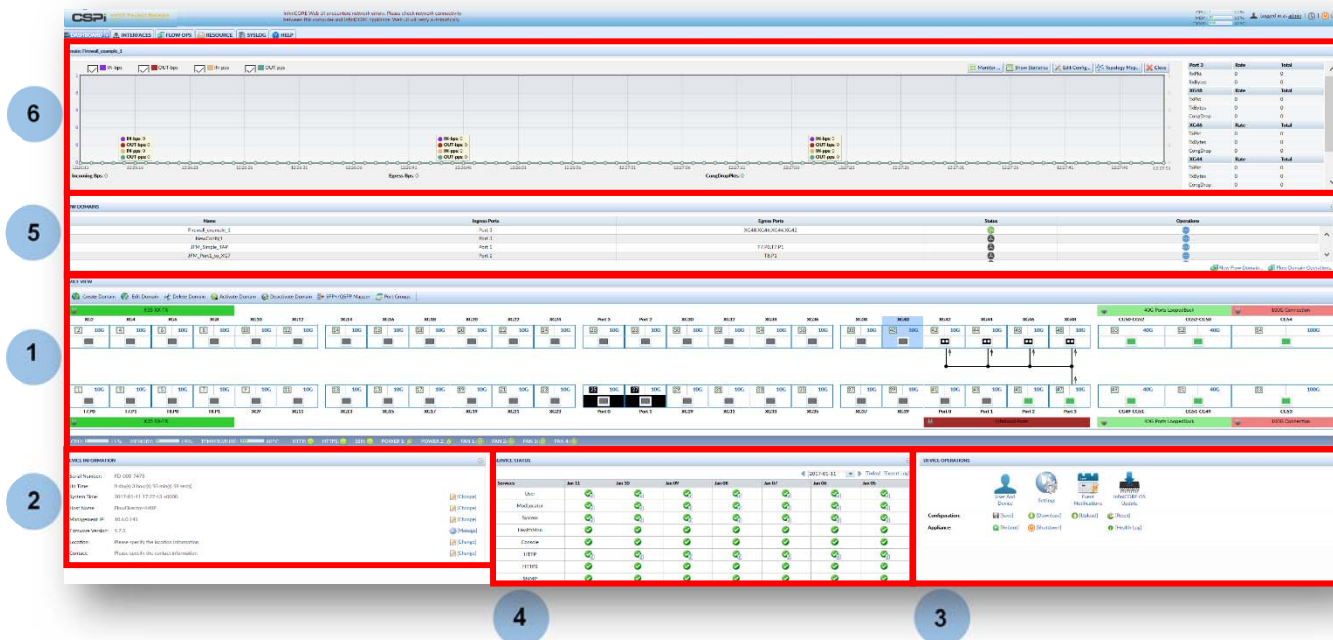


Figure 9: Web UI Dashboard tab panels

### 4.1 Dashboard tab panels

Six panels highlight the dashboard's important features.

#### 1. Device View

The Device View panel displays the status of all device ports, domains, and topologies. Such device information includes CPU usage, memory consumption, temperature, service levels, power modules, and fan status.

For more detailed information on the Device View panel, go to the *Device View* section in this chapter.

## 2. Device Information

The Device Information panel displays device identification and tracking information such as software version, serial number, and IP address.

For more detailed information on the Device Information panel, go to the [Device Information](#) section in this chapter.

## 3. Device Operation

The Device Operation panel displays the various operational, management, and configurational settings required for routine device operation. Such operations include download configuration, reboot device, user management, service management, and so on.

For more detailed information on the Device Operation panel, go to the [Device Operation](#) section in this chapter.

## 4. Service Status

The Service Status panel displays critical log information by port, domain, task, user, appliance, and so on.

For more detailed information on the Service Status panel, go to the [Service Status](#) section in this chapter.

## 5. Flow Domains

The Flow Domains panel lists domains created through flow operations. The user can edit, activate/deactivate, monitor, and delete domains in this panel.

For more detailed information on the Flow Domains panel, go to the [Flow Domains](#) section in this chapter.

## 6. Real Time Domain Display

The Real Time Domain Display panel displays real-time plots and traffic statistics of active running domains.

For more detailed information on the Real Time Domain Display panel, go to the [Real Time Domain Display](#) section in this chapter.

## 4.2 Device View

Device View is the center of the nVoy Packet Broker’s day-to-day operations. It offers you direct access to the device in the following ways:

- Change port name
- Change port attributes
- Set cable identifier
- Open port monitor window
- Enable or disable ports
- Change port link attributes
- Create loopback
- Create flow domain operations

### Up close and personal

The Device View displays an array of 54 traffic ports with status and operations tightly integrated, as shown in Figure 10.

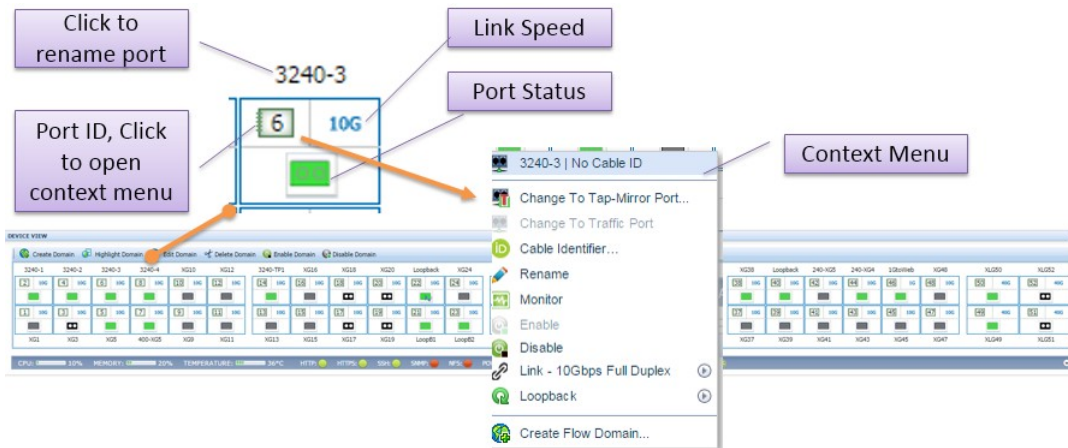


Figure 10: Device View



## At a glance

To display port settings and traffic statistics at a glance, hover your pointer over any of the port icons in Device View. A Tool Tip automatically appears, displaying that port's information in real-time, as shown in Figure 11.



Figure 11: Device View tool tip.

## Device View Toolbar



The Device View Toolbar tabs are described as follows:

- Create Domain
- Edit Domain
- Delete Domain
- Activate Domain
- Deactivate Domain
- Port Groups
- Port Groups Speed

## 4.2.1 Create Domain tab

The Create Domain tab allows you to create a domain by assembling individual components or by employing templates.

There are two ways to create a Virtual Wire domain:

- Creating a Virtual Wire with “Drag and Drop” (Recommended)
- Creating a Virtual Wire from the Toolbar



### Creating a Virtual Wire with “Drag and Drop”

To create a virtual wire domain using the “drag and drop” method, follow these steps:

#### Example

In this example, port 50 is **XLG50** and port 49 is **XLG49**, as shown in Figure 12a.

1. Click the Dashboard tab and scroll to the Device View panel.
2. Drag and drop port XLG50 to the destination port XLG49, as shown in Figure 12a.

A virtual wire is created between both ports, as shown in Figure 12b.

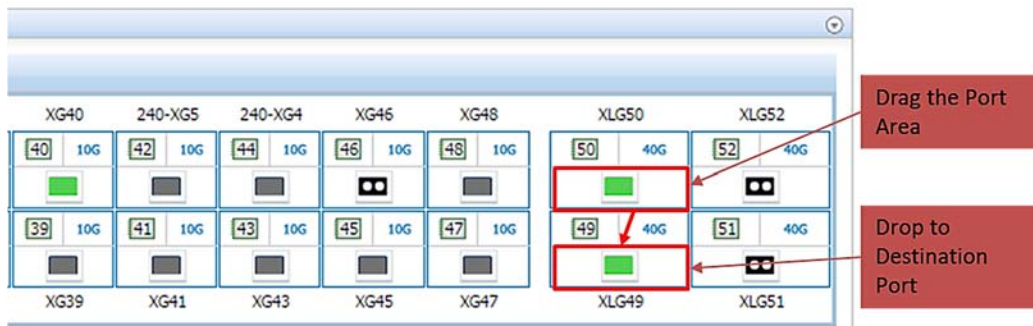


Figure 12a: Dragging and dropping a port.

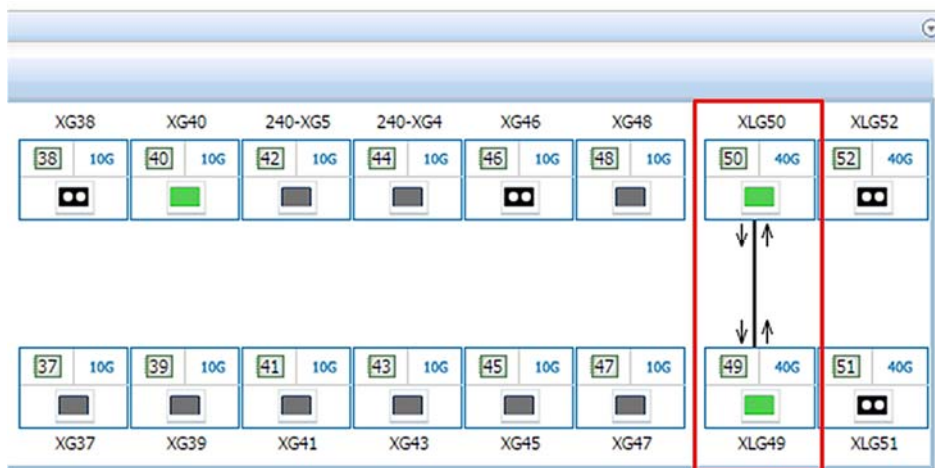


Figure 12b. Creating a virtual wire between two ports.



### Creating a Virtual Wire from the Toolbar

The Create Domain tab allows you to create a domain by assembling individual components or by employing templates.

**NOTE:** In this example, we will select a template to create a bi-directional virtual wire domain. The bi-directional virtual wire cross-connects two ports.

1. Click **Create Domain** from the Device View toolbar.

The Input Domain name window appears, as shown in Figure 12c.

2. Enter the domain name in the text box and click **OK**.

The Configuration Editor window appears with the domain name in the Data Path Components panel, as shown in Figure 12c.

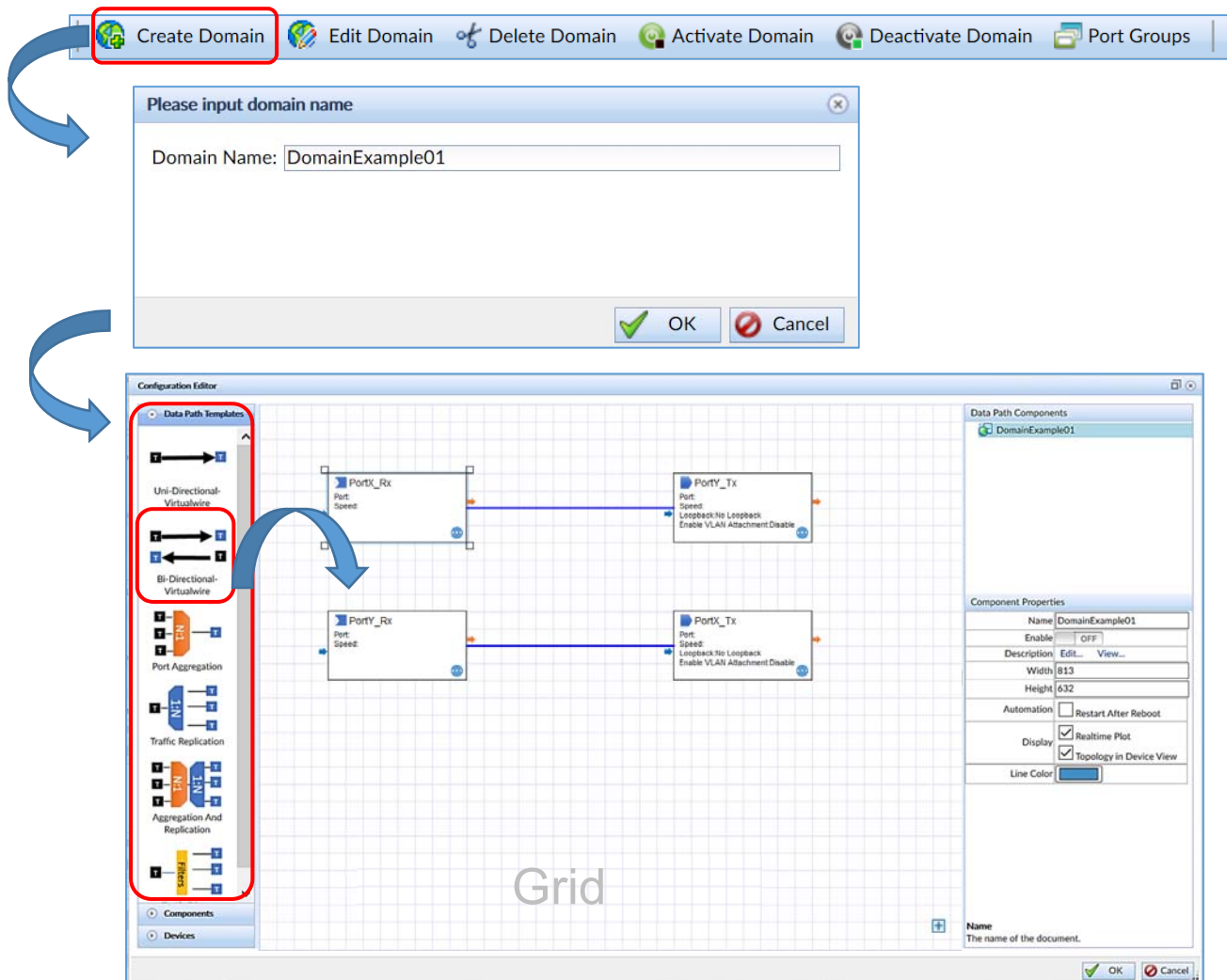


Figure 12c: Configuration Editor window

- Click and drag the bi-directional domain template from the Data Path Templates panel to the grid.

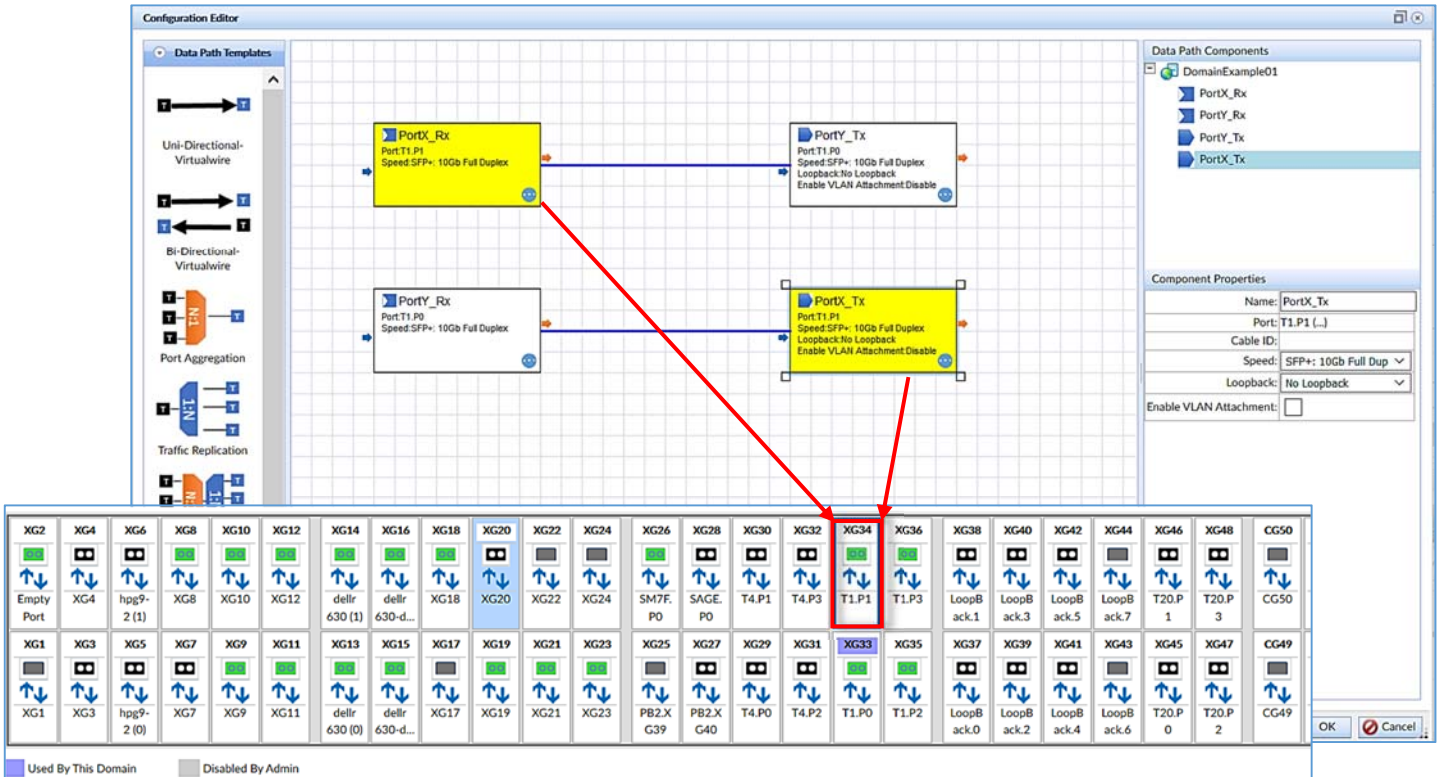


Figure 12d: Assigning port XG34 to the bi-directional virtual wire template.

- Double-click the blocks **PortX\_Rx** and **PortX\_Tx** to assign the same port (Figure 12d). In this example **PortX\_Rx** and **PortX\_Tx** are assigned to port **XG34**.

The Device View window appears, displaying the available ports (Figure 12d inset).

- Select port **XG34** and click **OK**.

The Device View window closes.

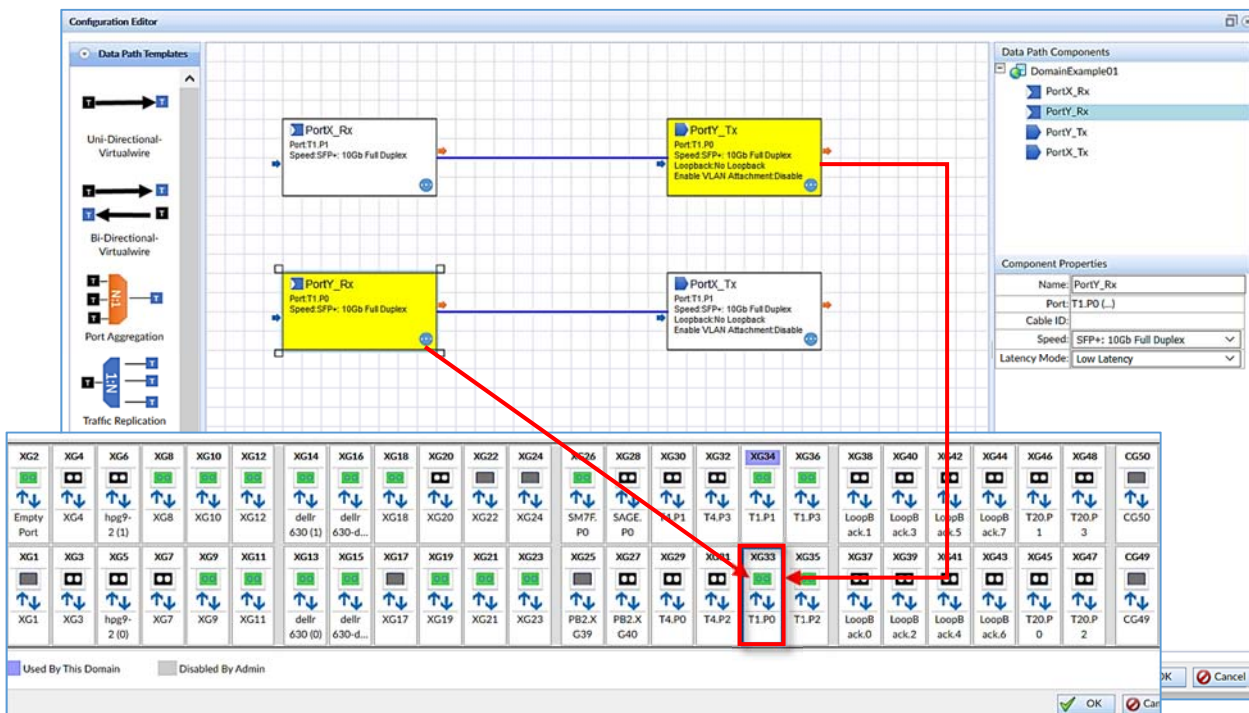


Figure 12e: Assigning port XG33 to the bi-directional virtual wire template.

6. Likewise, double-click the blocks **PortY\_Rx** and **PortY\_Tx** to assign the same port as in Figure 12e. In this example **PortY\_Rx** and **PortY\_Tx** are assigned to port **XG33**.

The Device View window appears, displaying the available ports (Figure 12e inset).

7. Select port **XG33** and click **OK**.  
The Device View window closes.
8. Click **OK** in the Configuration Editor Window.

The Start Domain in Progress Window appears. The window closes once the domain has been configured.

9. To activate the domain, click **Activate Domain** from the Device View toolbar, as shown in Figure 12f.



The Domain drop-down combo box appears, as shown in Figure 12f.

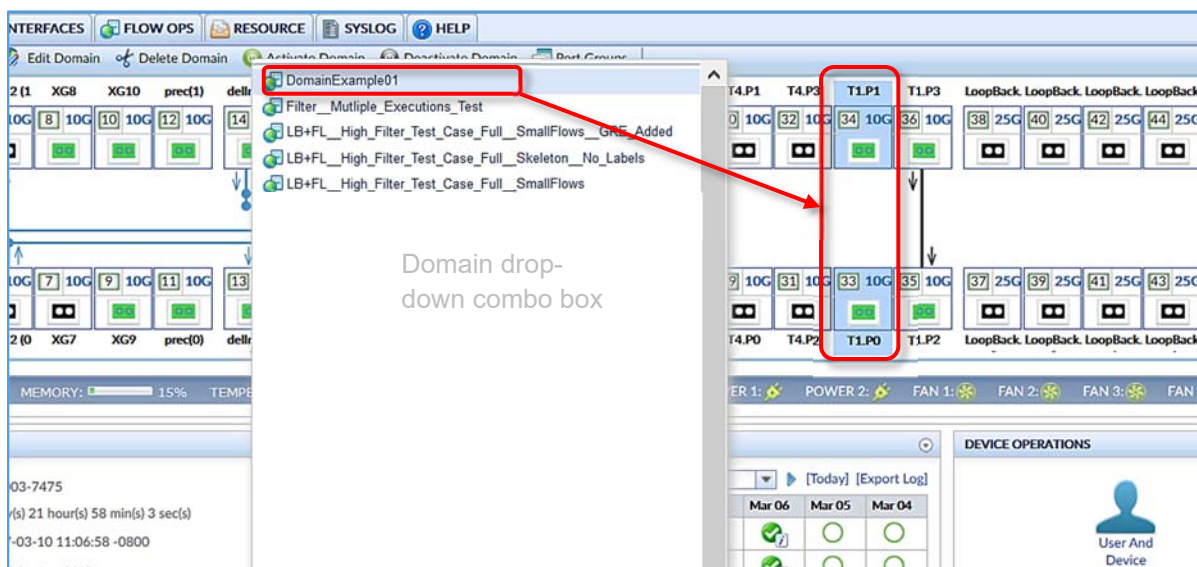


Figure 12f: Selecting the domain to activate.

10. Click the Domain entry (**DomainExample01**) from the drop-down combo box.

The Start Domain in Progress window appears. The window closes once the domain has been activated (Figure 12g).

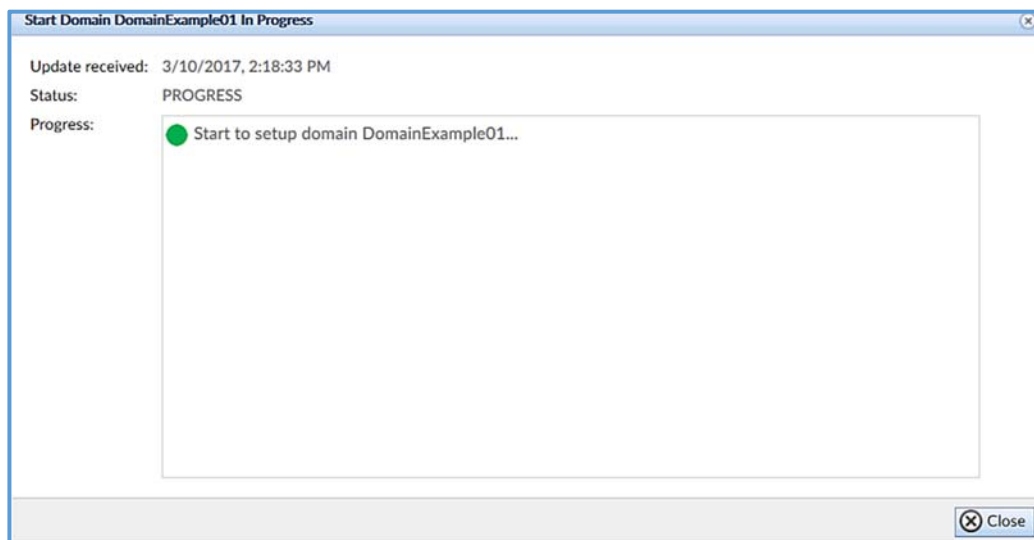


Figure 12g. Start Domain in Progress window.

The activated bi-directional domain appears in the Device View window with the virtual wire cross-connecting ports **33** and **34**, as shown in Figure 12h.

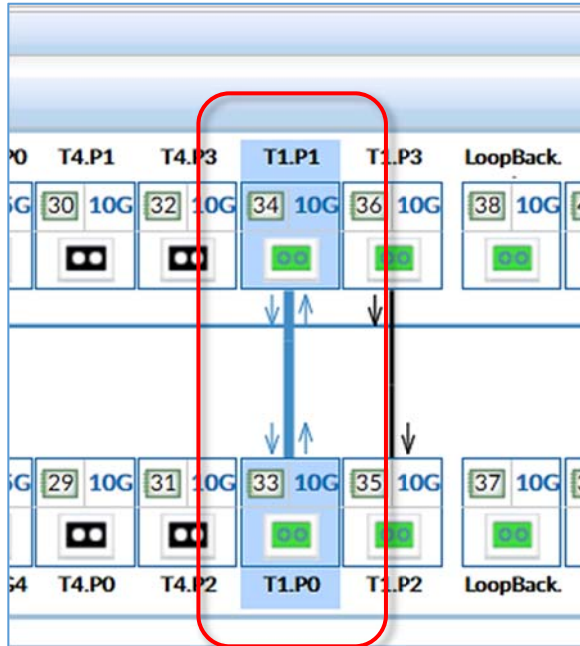


Figure 12h. A bi-directional virtual wire between ports 33 and 34.

For more information on bi-directional domains, go to Chapter 10: *Managing Flow Domains*

### Domain Compiler Warning

The current version of the nVoy Packet Broker contains a domain compiler that is particularly sensitive to filter behaviors. Therefore, if your domain contains filter components, you may encounter a domain compiler warning like the one shown in Figure 12i.

The options available to you are as follows:

- CONTINUE – exit the editor and start running the domain.
- OK – exit the domain editor and leave domain disabled.
- CANCEL – return to editing the domain to verify your flow's logic.

If you believe that your domain's filters conform to best practices, then you may select **CONTINUE** to activate the domain.

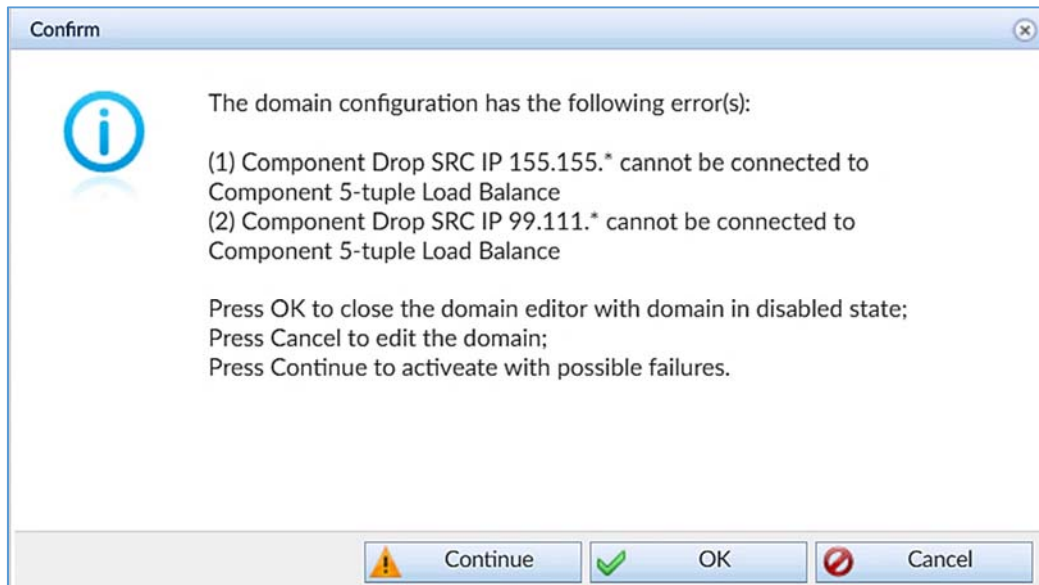


Figure 12i: Domain compiler warning window.

For more information on filter behavior, go to Appendix 5: *nVoy Packet Broker – Filter User Guide*



## 4.2.2 Edit Domain tab

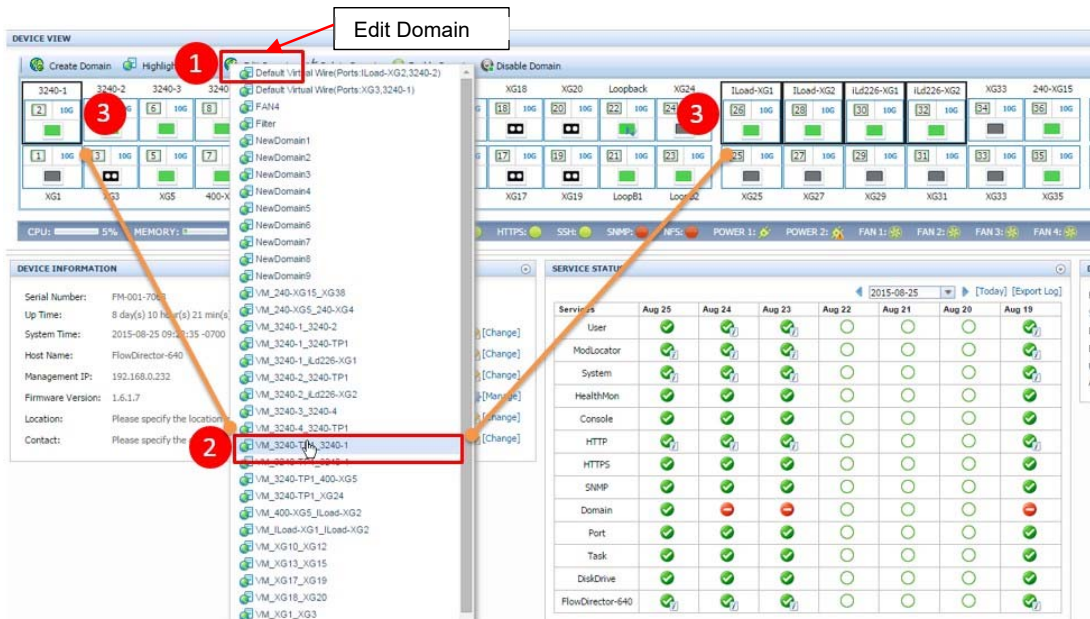


Figure 13: Edit Domain with combo box.



### Editing a domain

1. Click **Edit Domain**.

A combo box displays all domains as shown in Figure 13.

2. Select the desired domain from the combo box.

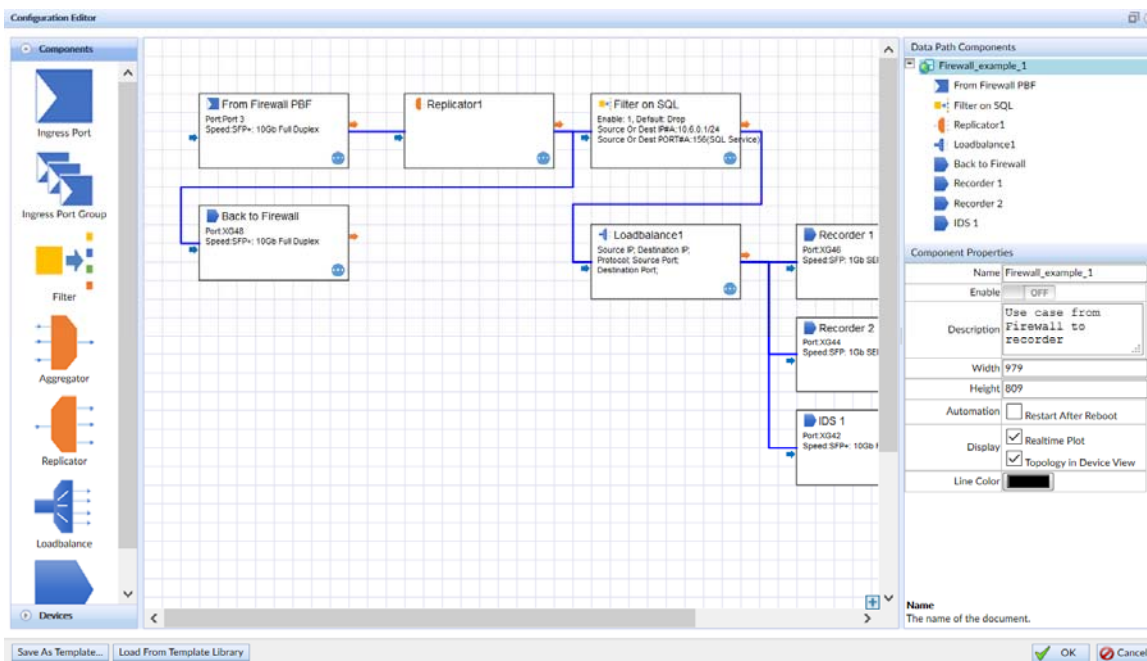


Figure 14: Edit Domain - Configuration Editor window.

3. The Configuration Editor window appears, as shown in Figure 14.
4. Make the necessary changes to the domain.

5. There are two ways to save the new domain.
  - a. Click **OK** to save the edited domain, OR
  - b. Click **Save as Template** to save as a template.

### 4.2.3 Delete Domain tab

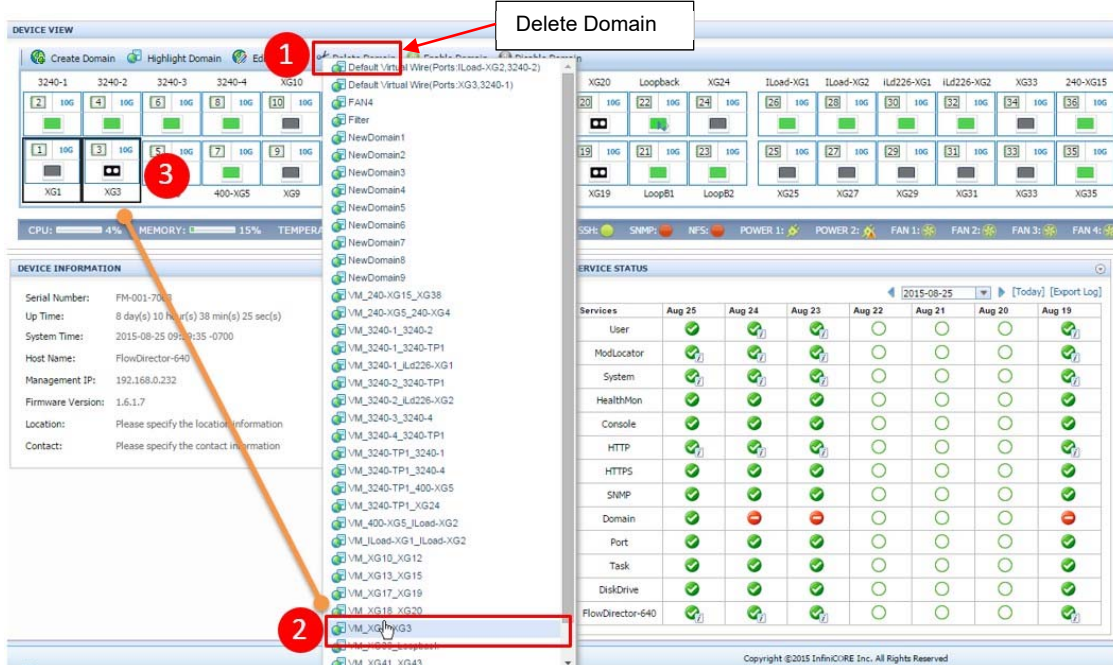


Figure 15: Delete Domain display.



#### Deleting a domain

1. Click **Delete Domain**.

A combo box displays all domains as shown in Figure 15.

2. Select the desired domain.

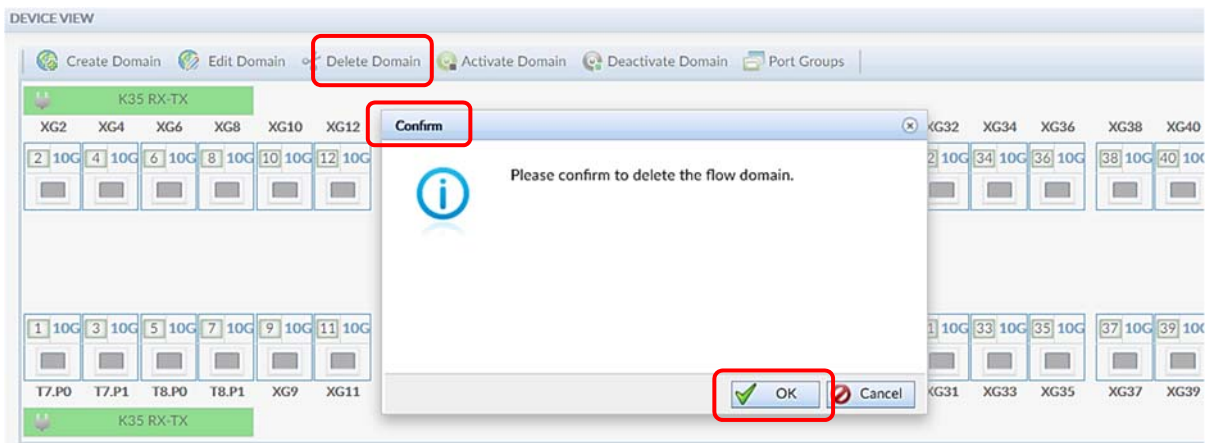


Figure 16: Confirm Delete Domain.

A Confirm window appears, as shown in Figure 16.

3. Click **OK** to delete the domain.

## 4.2.4 Activate Domain tab

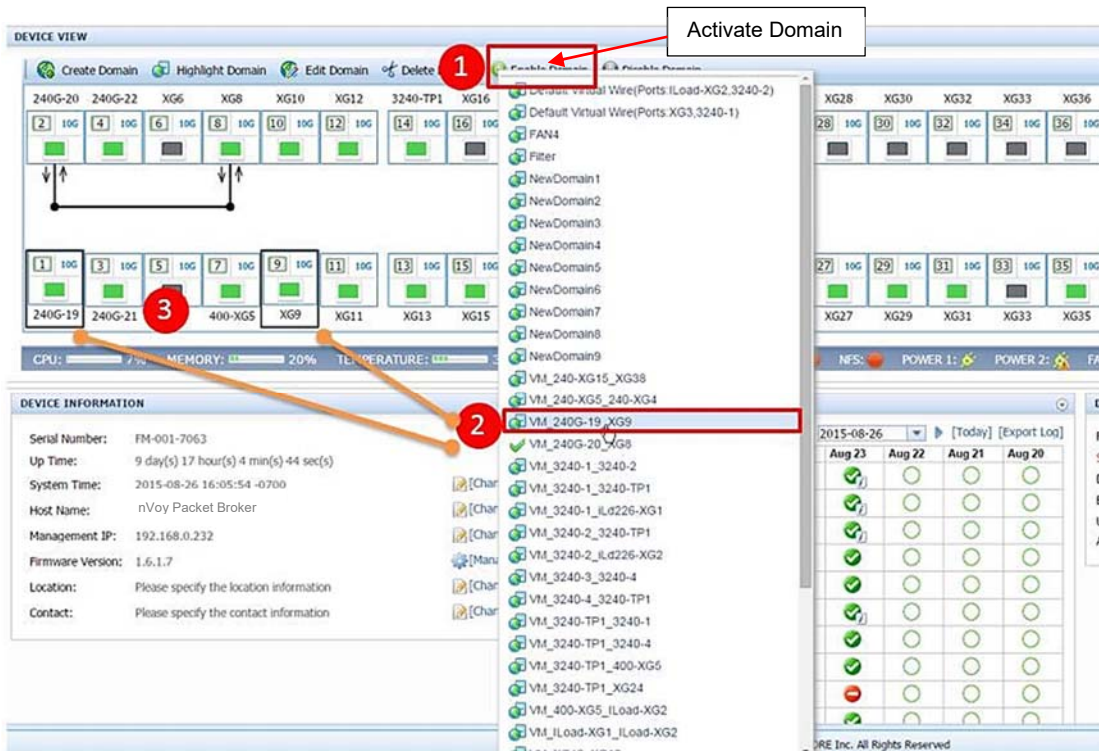


Figure 17: Activate Domain operation.



### Activating a domain

1. Click **Activate Domain**.

A combo box displays all domains as shown in Figure 17 and 18.

2. Select the domain to be activated.

The domain(s) are highlighted.

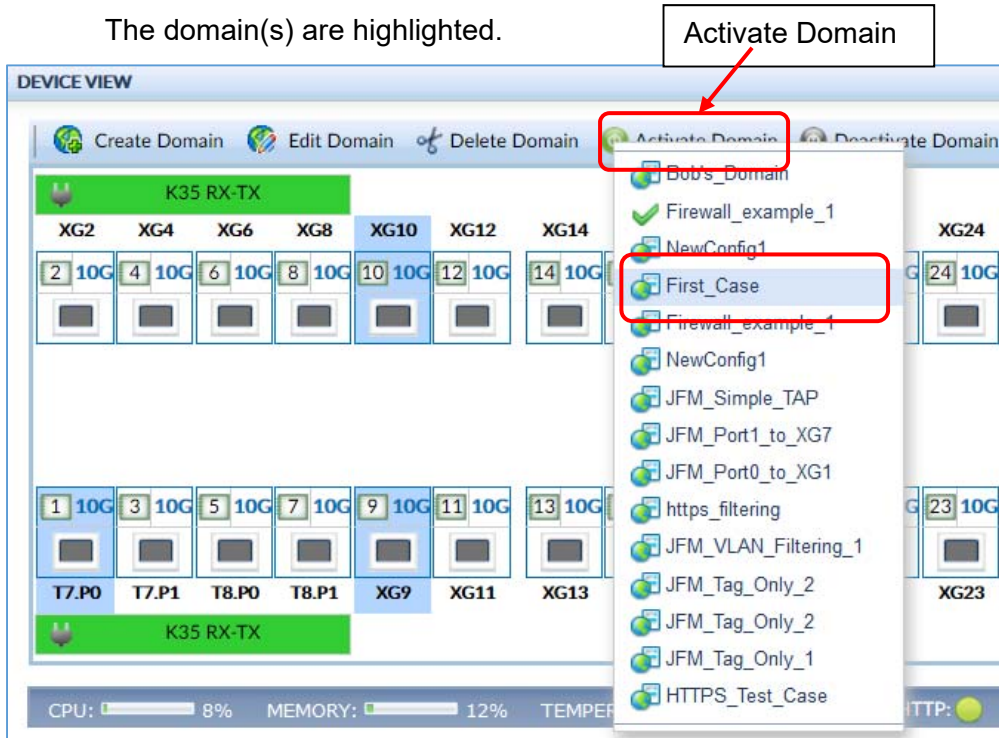


Figure 18: Activate Domain combo box.

3. A Start Domain In Progress window appears, as shown in Figure 19. The window disappears once the domain has been successfully enabled.

The domain is activated.

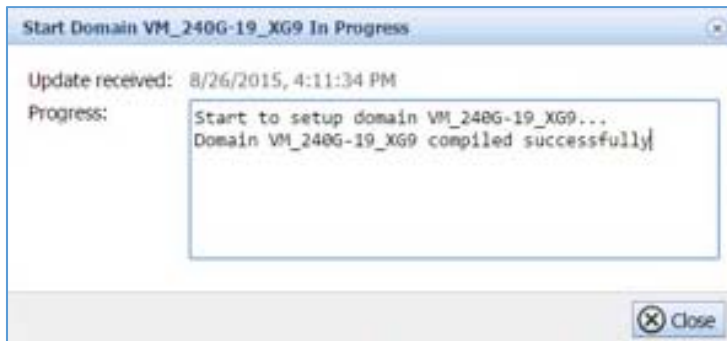


Figure 19: Start Domain in Progress window.



## 4.2.5 Deactivate Domain tab

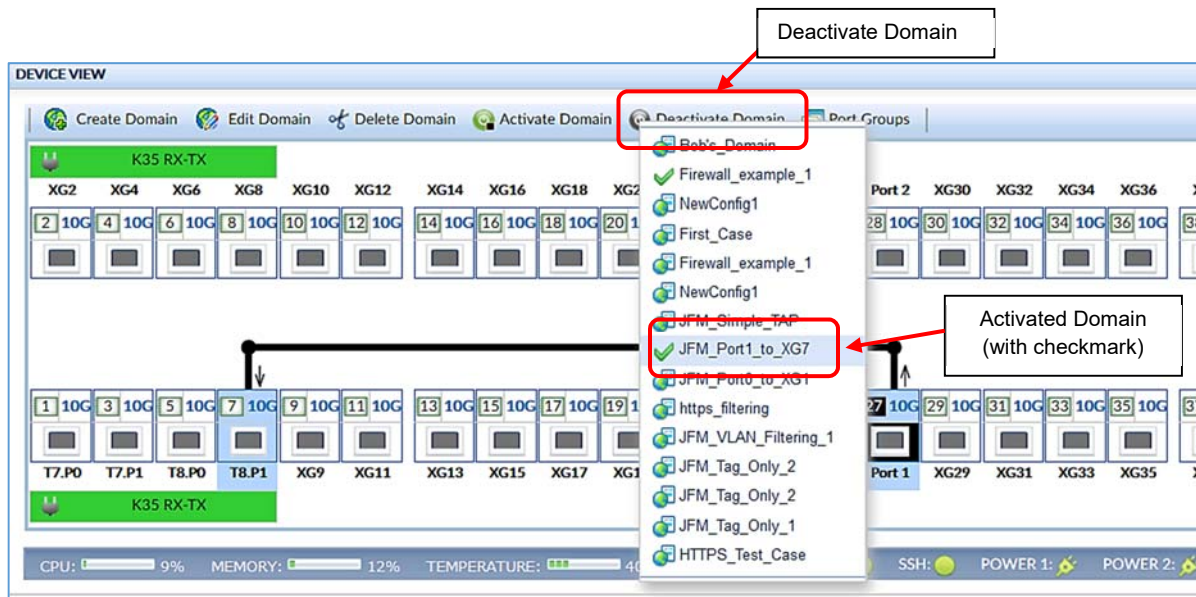


Figure 20: Deactivate Domain operation.



### Deactivating a domain

1. Click **Deactivate Domain**.

A combo box displays all domains as shown in Figure 20.

2. Select any domain with a checkmark ✓ (activated).

The domain(s) are highlighted and a Confirm window appears, as shown in Figure 21.

3. Click **OK** to deactivate the domain operation.

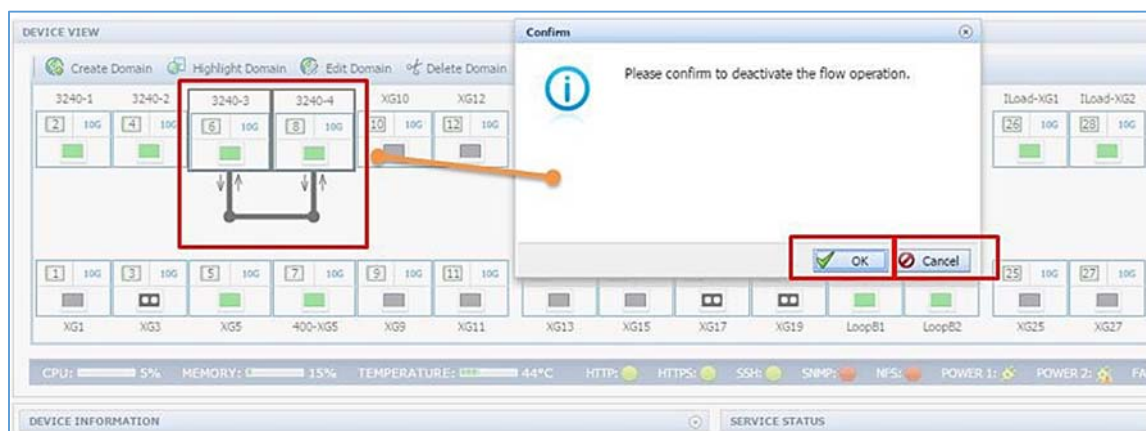


Figure 21: Deactivated domain confirmation.

## 4.2.6 Port Groups

Users can place several ports into a group by clicking the ports in question and assigning an arbitrary group name for identification purposes, as shown in Figure 22. Similarly, the port groups can be broken down, updated, or cleared altogether in the same way

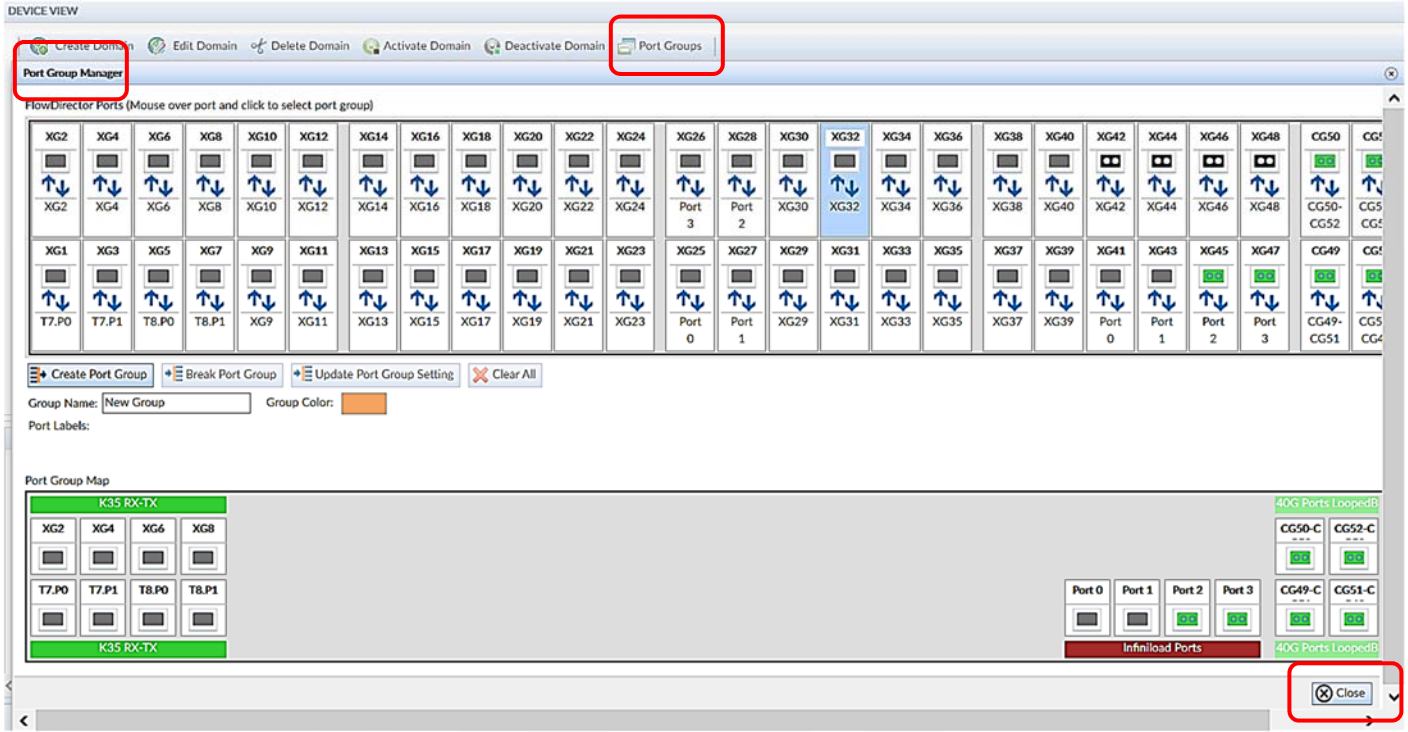


Figure 22: Port groups.

### ***Port Groups Speed***

The nVoy Packet Broker organizes its ports into quads, with each quad including four ports. For all ports in a quad to share one PLL (phase-locked loop), they need to stay in the same speed categories of 1G, 10G or 25G.

#### **Example: 1G/10G**

1. User sets port quad XG13, XG14, XG15, and XG16 in 10G mode, as shown in Figure 22a.

Figure 22a: Port group XG14 – XG16.

2. User modifies XG16 port speed from 10G to 25G. This action displays the following prompt, as shown in Figure 22b.

Figure 22b: Confirming port speed change from 10G to 25G.

To change XG16 to 25G, the other ports need to be changed to 25G as well.

3. User confirms and all ports switch to 25G.



### Port description

Each port contains the following information:

- Port Name
- Port ID
- Link Speed
- Port Status

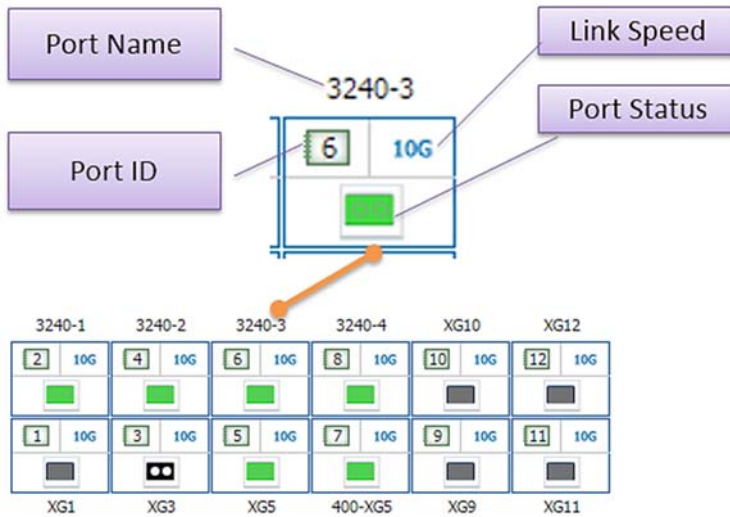


Figure 22: Port description.

### Port Name

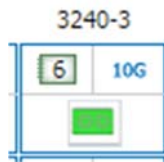


Figure 22a: Port name.

In this example, “3240-3” is the port name. Port names can be changed at any time.

### Port ID

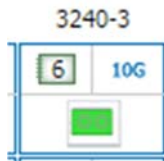


Figure 22b: Port ID.

In this example, the port ID is “6”. You cannot change the port ID.

## Link Speed

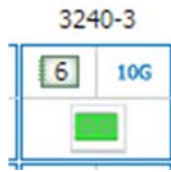


Figure 22c: Link speed.

The “10G” is the port’s link speed indicator.

## Link speed settings

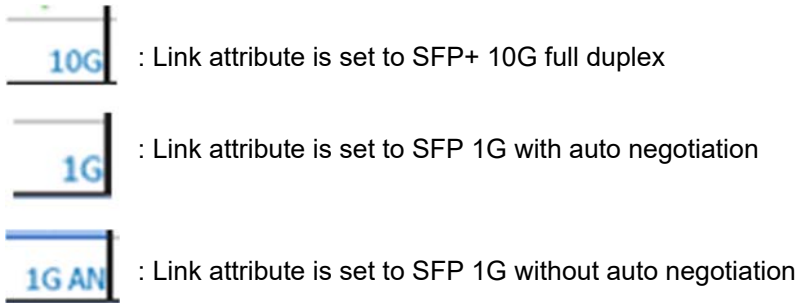


Figure 23: Link speed settings.

## Port Status

The icon at the bottom of each port indicates the port’s module and link status. The port status icon has three modes:

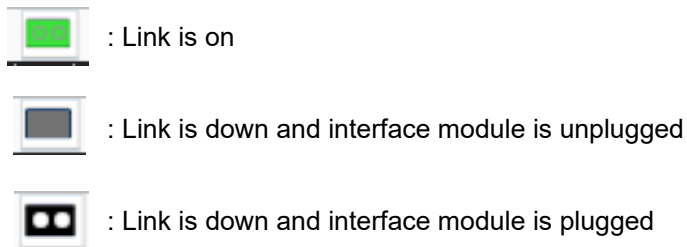


Figure 24: Port status.

### Domain and TAP/Mirror topology area

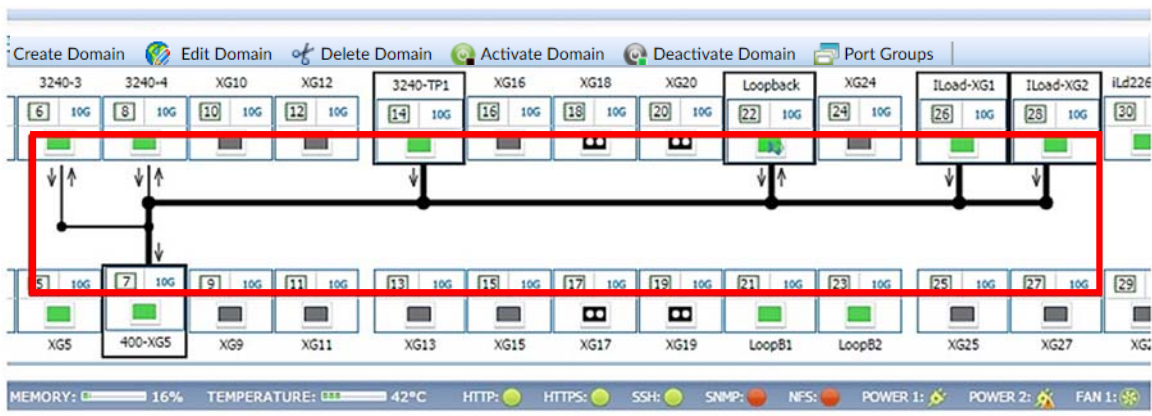


Figure 25: Domain topology (highlighted in red).

The highlighted area displays the topology of each domain, as shown in Figure 25. The topology is updated in real time after domains are configured and activated.

### Device Status Bar

The Device Status Bar captures the device status in real-time, as shown in Figure 26.

<p><b>CPU:</b>  7%</p> <p><b>MEMORY:</b>  15%</p> <p><b>TEMPERATURE:</b>  42°C</p> <p><b>HTTP:</b> </p> <p><b>HTTPS:</b> </p> <p><b>SSH:</b> </p> <p><b>NFS:</b> </p> <p><b>SNMP:</b> </p> <p><b>POWER 1:</b> </p> <p><b>POWER 2:</b> </p> <p><b>FAN 1:</b> </p> <p><b>FAN 2:</b> </p> <p><b>FAN 3:</b> </p> <p><b>FAN 4:</b> </p>	<p>Indicates CPU usage information.</p> <p>Indicates system memory usage information.</p> <p>Displays system temperature degree in Celsius.</p> <p>Displays HTTP service status.  normal and  abnormal.</p> <p>Displays HTTPS service status.  normal and  abnormal.</p> <p>Displays SSH service status.  normal and  abnormal.</p> <p>Displays SNMP service status.  normal and  abnormal.</p> <p>Displays NFS service status  normal and  abnormal.</p> <p>Displays power module 1 status.  normal and  abnormal.</p> <p>Displays power module 2 status.  normal and  abnormal.</p> <p>Displays Fan 1 status.  normal and  abnormal.</p> <p>Displays Fan 2 status.  normal and  abnormal.</p> <p>Displays Fan 3 status.  normal and  abnormal.</p> <p>Displays Fan 4 status.  normal and  abnormal.</p>

Figure 26: Device Status bar device descriptions.

## 4.3 Device Information

The Device Information panel posts a snapshot of the device's ID and current status, as shown in Figure 27.

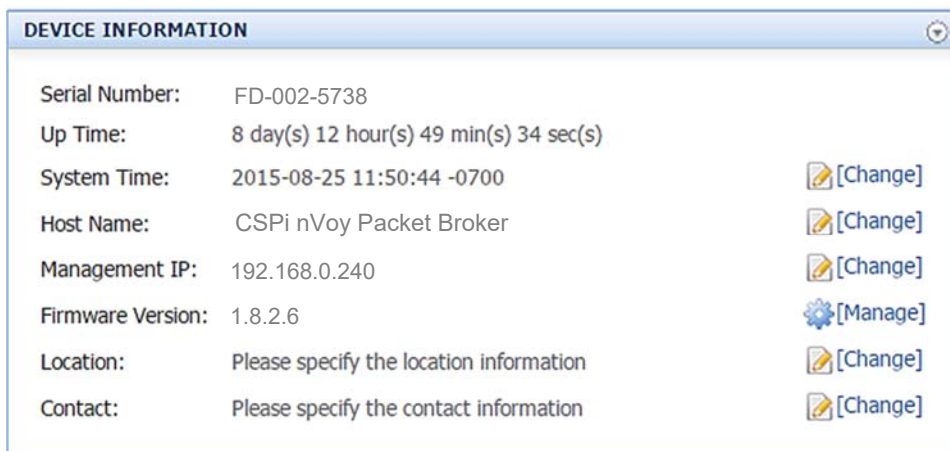


Figure 27: Device information panel.

### Serial Number

Displays the nVoy Packet Broker ID. It is a read-only field.

### Up Time

Displays how long the device has been running since its last reboot.

### System Time

Displays the system time. You can change the system time as described in Figure 28.



### Changing the system time

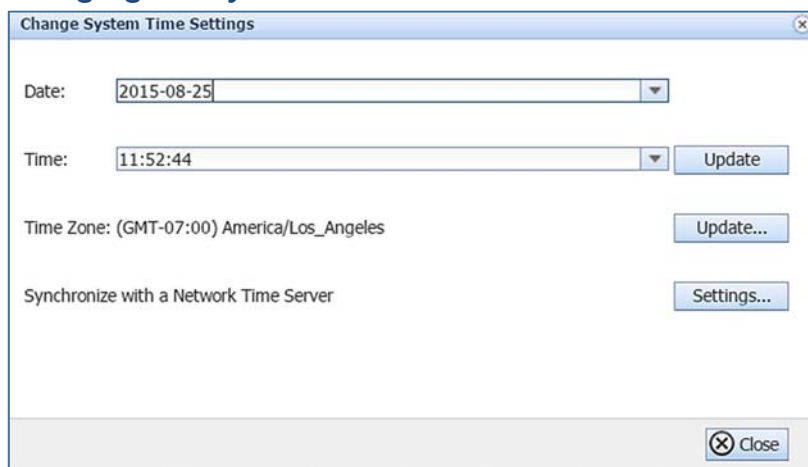


Figure 28: Change System Time Settings window.

1. Click **[Change]** beside the System Time entry, as shown in Figure 27.  
A Change System Time Settings window appears, as shown in Figure 28.
2. Update the **Date**, **Time**, **Time Zone**, and/or **Synchronize with a Network Time Server** entries as required.

## Host Name

Displays the host name of the nVoy Packet Broker. You can change the host name as follows.



### Changing the host name

Figure 29: Change System Name window.

1. Click **[Change]** beside the Host Name entry, as shown in Figure 27.  
A Change System Name window appears, as shown in Figure 29.
2. Change the device name, as required.

## Management IP

Displays the management IP address assigned to the nVoy Packet Broker. You can modify the management IP address as shown in Figure 30.

Figure 30: System IP Settings window.



### Changing the management IP Address

1. Click **[Change]** beside the Management IP entry, as shown in Figure 27.  
A System IP Settings window appears, as shown in Figure 30.
2. Update the **IP address, Netmask, Gateway, Primary** and **Secondary DNS** entries as required.
3. Click **OK**.

**NOTE:** Changing the IP settings may interrupt the configuration and views. **Restart the Web user interface to redirect to the new address.**

### Firmware Version

Displays the current firmware version running the nVoy Packet Broker as shown in Figure 31. We recommend upgrading to the latest nVoy Packet Broker firmware version whenever possible. To upgrade your firmware to the latest version or roll it back to an earlier version, follow the procedure below.

Version	Activation Status	Size (Byte)	Md5Sum	Operations
1.6.1.7		140883960	[Calculate]	
1.5.9.0		185198712	[Calculate]	[Activate]  [Delete]
1.6.1.6		140885944	[Calculate]	[Activate]  [Delete]
1.6.1.4		140875144	[Calculate]	[Activate]  [Delete]
1.6.1.3		136130040	[Calculate]	[Activate]  [Delete]
1.6.1.2		136130952	[Calculate]	[Activate]  [Delete]
1.6.1		136121320	[Calculate]	[Activate]  [Delete]
1.6.0.5		136120984	[Calculate]	[Activate]  [Delete]
1.6.0.4		130329528	[Calculate]	[Activate]  [Delete]
1.6.0.3.4		134752088	[Calculate]	[Activate]  [Delete]

Figure 31: Device Firmware Management window.



### Managing your firmware

1. Click **[Manage]** beside the Firmware Version entry, as shown in Figure 27.  
A Device Firmware Management window appears, displaying a table of available firmware versions with activation status, file size, and operations, as shown in Figure 31.
2. Select the firmware to be installed and click **[Activate]** in the Operations column.

A Confirm window appears, as shown in Figure 32.

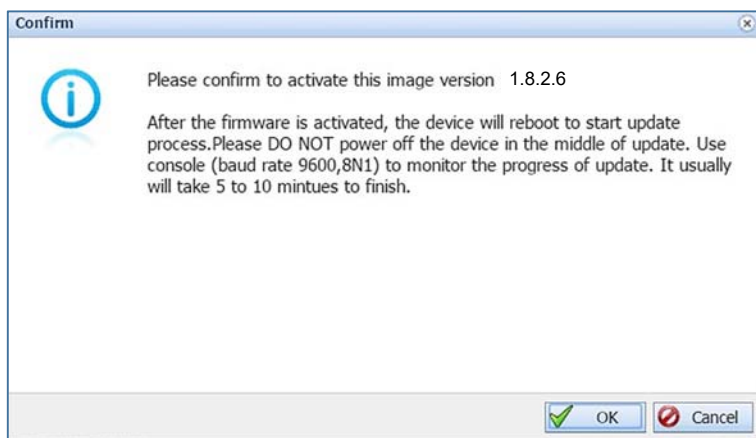


Figure 32: Confirm firmware change/update.

3. Click **OK** to confirm that you are activating your required firmware version.  
The system automatically reboots to activate the new firmware version.

### Location

Displays the location of the device.

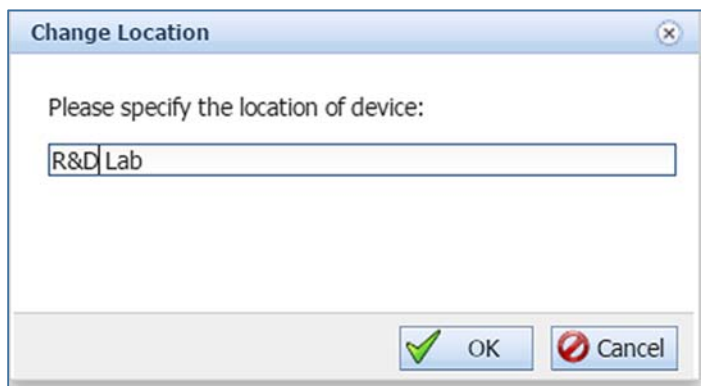


Figure 33: Change Location window.



### Changing the device location

1. Click **[Change]** beside the Location entry, as shown in Figure 27.  
A Change Location window appears, as shown in Figure 33.
2. Enter the desired location and click **OK** to confirm.

## Contact

Displays the device contact information.

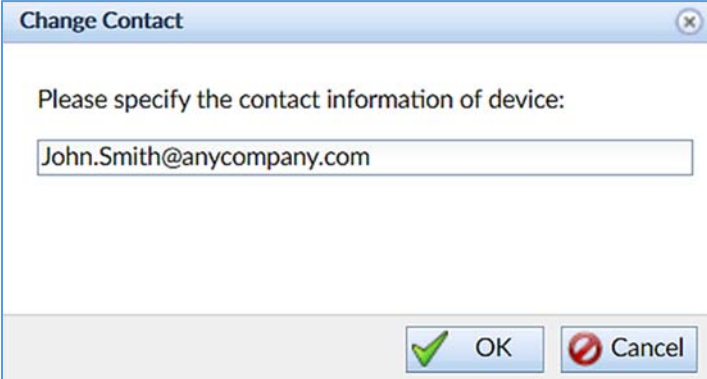
A screenshot of a 'Change Contact' dialog box. The title bar reads 'Change Contact' with a close button (X) on the right. The main area contains the text 'Please specify the contact information of device:' followed by a text input field containing 'John.Smith@anycompany.com'. At the bottom right, there are two buttons: 'OK' with a green checkmark icon and 'Cancel' with a red 'X' icon.

Figure 34: Change Contact window.



### *Changing the contact information*

1. Click **[Change]** beside the Contact entry, as shown in Figure 27.  
A Change Contact window appears, as shown in Figure 34.
2. Enter the desired contact information and click **OK** to confirm.



## 4.4 Device Operation

The Device Operation panel displays the various device operation and management settings available to the user, as shown in Figure 35.

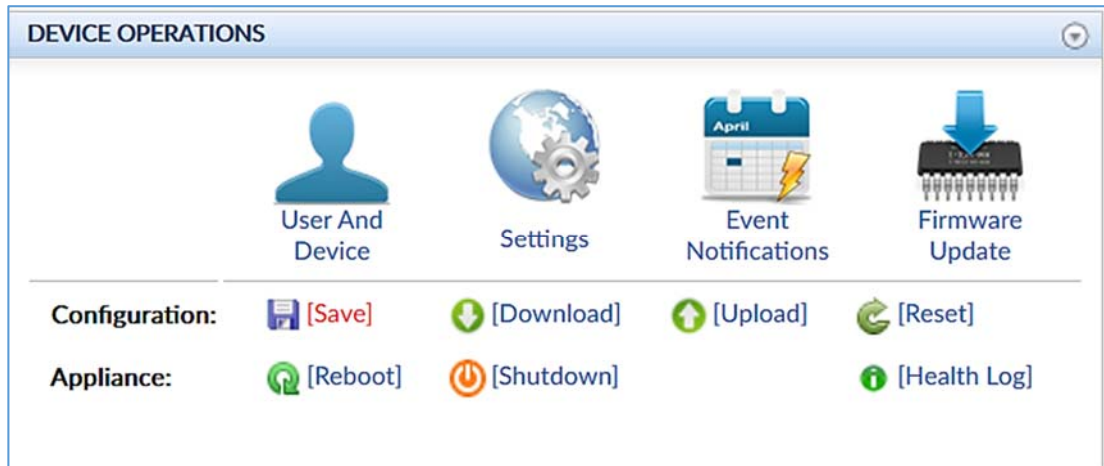


Figure 35: Device Operations panel.



### 4.4.1 Device and User Management

The nVoy Packet Broker multiple-user functionality enables network administrators, operators, and users to setup and manage the following tasks:

- LDAP Servers
- TACACS+ Servers (not supported in this release)
- RADIUS Servers (not supported in this release)
- Groups
- Users
- Debug Account
- Port Classes

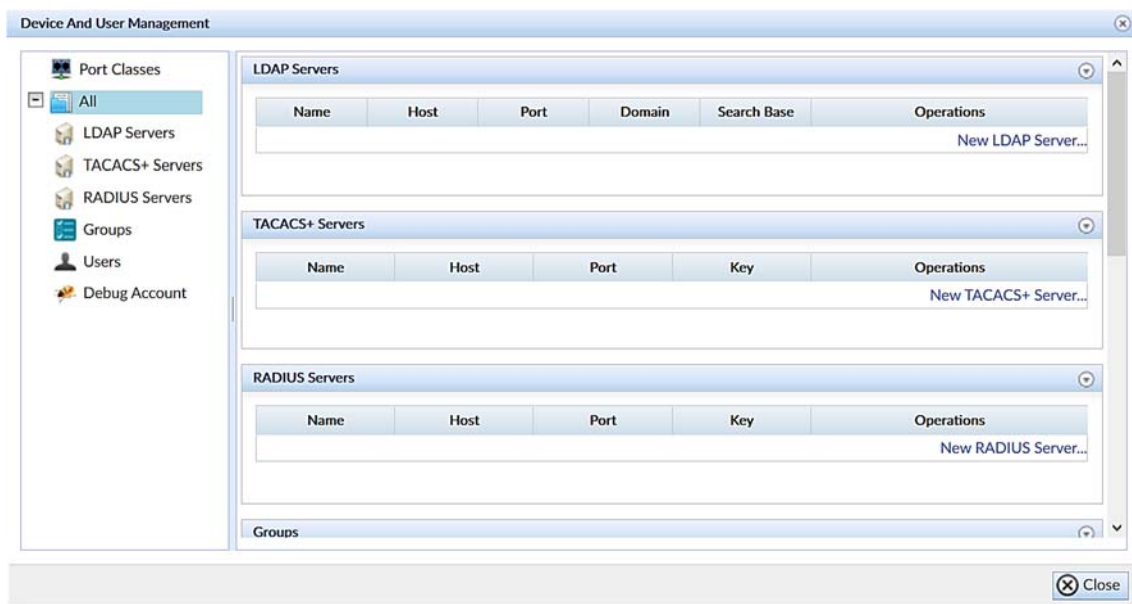


Figure 36: Device and User Management window.



### Accessing Device and User Management settings

1. Click **User and Device** in the Device Operation panel of the NVoy Packet Broker Web UI Dashboard tab.

The Device and User Management window appears, as shown in Figure 36.

### LDAP Servers

LDAP (Lightweight Directory Access Protocol) is an Internet protocol that email and other programs use to look up information from a server. LDAP servers look up entries in a variety of ways. LDAP servers index all the data in their entries, with "filters" that select and return information on the user or group you want.

An example of a filter is one in which all users are sorted by a last name that begins with the letter "C", their email address, title, and description. LDAP filters all user accounts and returns only those accounts fitting the search criteria.

LDAP is not limited to contact information, or even information about people. LDAP is used to look up encryption certificates, pointers to printers, and other services on a network, and provides "single sign-on" permissions where one user password is shared between many services.

LDAP is appropriate for any kind of directory-like information, where fast lookups and less-frequent updates are the norm.



### Adding an LDAP Server

1. Click **LDAP Servers** in the left column of the Device and User Management window, as described in Figure 36.

The LDAP Servers window appears.

2. Click **New LDAP Server...**

The Add/Edit LDAP Server window appears, as shown in Figure 37.

Figure 37: Add/Edit LDAP Server window.

3. Enter the **Server Name**, **Server IP**, and **Port**.

The LDAP Server IP and Port are the most important parameters in the LDAP server profile. The user may choose to leave the **Bind DN** and **Search Base** dialog boxes.

4. Click **OK**.

The Login DN dialog box appears, as shown in Figure 38.

Figure 38: Login DN dialog box.

5. Enter the **Login DN**, **Password**, and **Domain**.
6. Click **Login**.

## TACACS+ Servers

**NOTE:** TACACS+ servers are not supported in the nVoy Packet Broker version 1.0 release.

## Groups

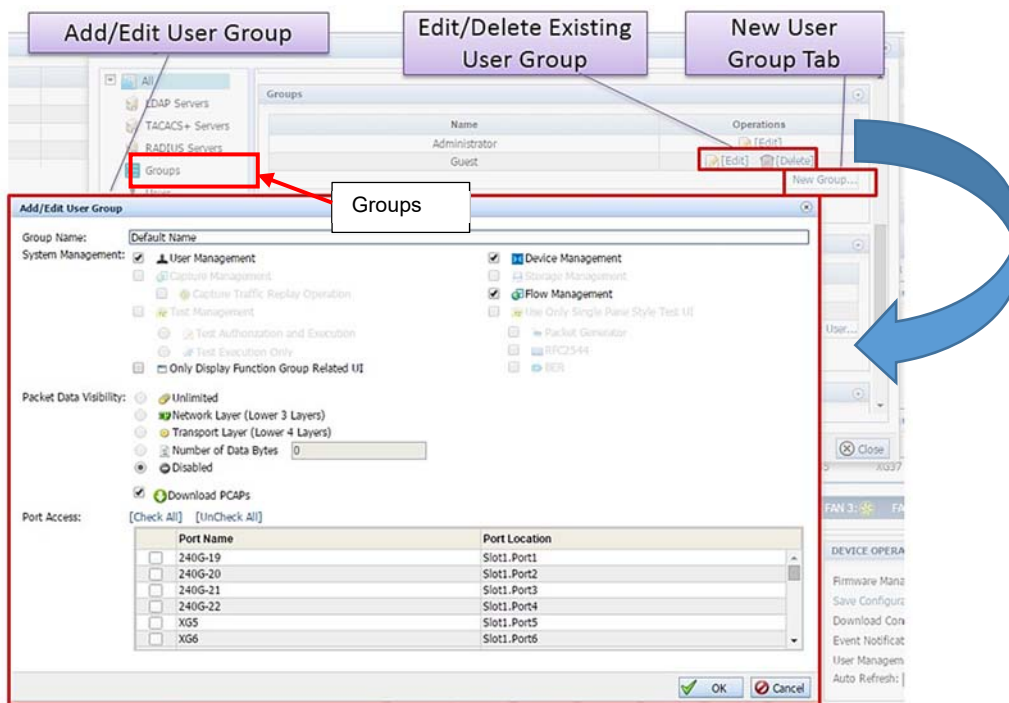


Figure 39: Add/Edit User Group window.



### Adding a new user group

1. Click **Groups** in the left column of the Device and User Management window, as described in Figure 39.

The Groups window appears.

2. Click **New Group...**

The Add/Edit User Group window appears, as shown in Figure 39.

3. Enter the group attributes, as follows:

- **Group Name** Input the user group name in this field.
- **System Management** User groups can be set up with one or more management roles and with assigned port access authority. There are three management roles available to the nVoy Packet Broker appliance:
  - **User Management:** Controls the accounts setup and assigns user access and privileges.
  - **Device Management:** Assigns access privileges to the device ports, storage devices, and other resources.

- Flow Management: Performs flow operation settings and operations.
- **Packet Data Visibility** Sets the data access authorization level:
  - Unlimited: User group has unlimited visibility to the packet data, for the purpose of data analysis, manipulation, and so on.
  - Network Layer (lower three layers): User group has limited visibility to the lower three layers of the packet data, where they can perform further operations.
  - Transport Layer (lower four layers): User group has limited visibility to lower four layers of the packet data, where they can perform further operations.
  - Number of Data Bytes: User group has limited visibility to the predefined number of packet data, where they can perform further operations.
  - Disabled: This setting does not apply to the nVoy Packet Broker appliance.
- **Port Access** Lists only those ports that a user group can access and manage. A user group can be assigned one, more than one, or all ports.

## Users

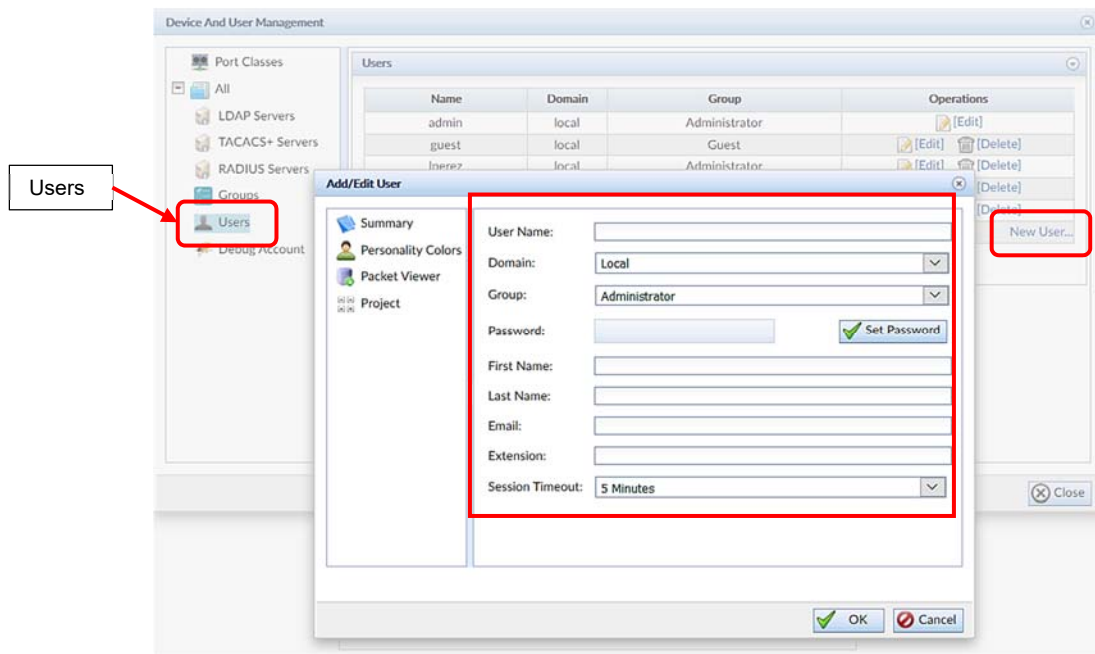


Figure 40: Add/Edit User window.



### Adding a new user

1. Click **Users** in the left column of the Device and User Management window. The Add/Edit User window appears, as shown in Figure 40.
2. Enter the following user attributes:

**User Name**

**Domain** Default set to **Local**.

**Group** Select **Administrator** or **Guest**

**Set Password** To create a new user password, click **Set Password** and enter the new password twice. Click **OK**.

**Password** Encrypted password appears as dots.

**First/Last Name** Self-explanatory

**Email** Self-explanatory

**Extension** Self-explanatory

**Session Timeout** Select from 5 min, 10, 15, 30, or 1 hour.

### User Personality Colors

You can assign different colors to user profiles for role management purposes (Figure 41).

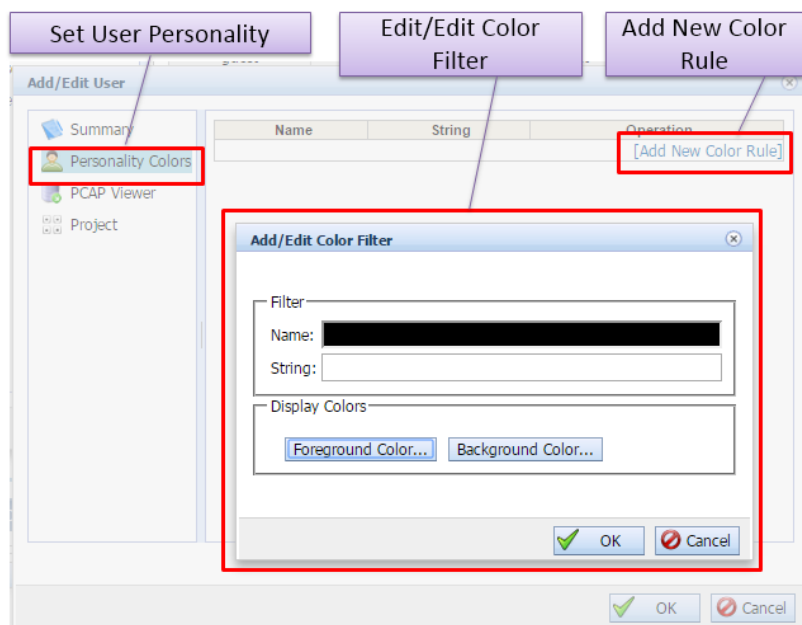


Figure 41: Assigning different colors to user profiles.

### User PCAP Viewer

You can assign a variety of pcap viewer timestamps to the user profile (Figure 42).

The default time stamp format is **hh:mm:ss.mmm (millisec)**.

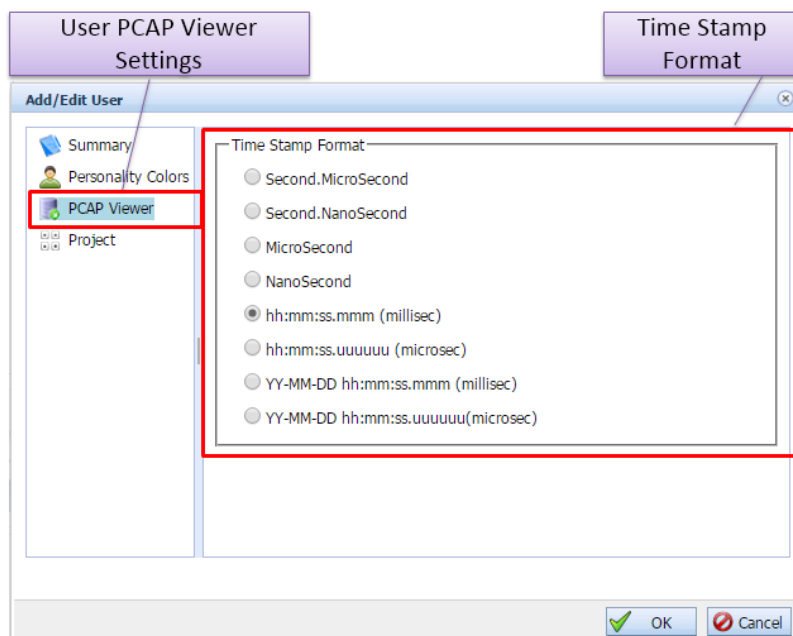


Figure 42: Assigning pcap viewer timestamps.

### User Project Description

You can assign a project descriptor such as project name, system under test, description, test ID format, and a report icon, as shown in Figure 43.

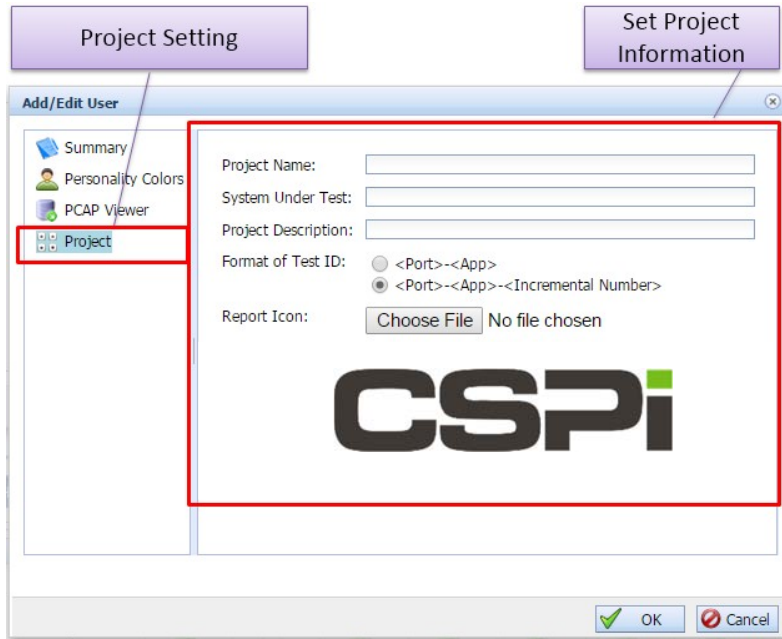


Figure 43: Assigning a project descriptor.

3. Click **OK** to add the new user.



## Debug Account

The Debug Account setting enables users to login through an account password to perform routine or diagnostic operations. Account access depends on the network connectivity. There is no additional tunnel or port opened in the network.

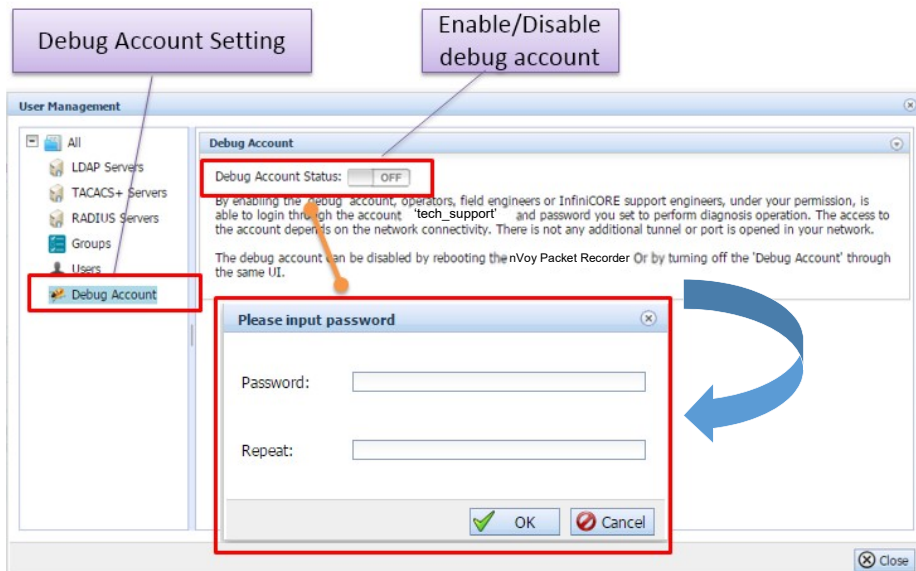


Figure 44: Debug Account window with a password request.



### Enabling the debug account status

1. Click **Debug Account** in the left-hand column of the User Management window, as described in Figure 44.

The Debug Account window appears.

2. Set the Debug Account Status slider from  OFF to  ON .

The “please input password” prompt appears.

3. Enter your password twice.

The debug account status is enabled.

**NOTE:** You can disable the debug account by rebooting the nVoy Packet Broker Appliance, or by setting the Debug Account Status slider from  ON to  OFF and entering your password.

## Port Classes

Port classes allow you to set individual ports to SPAN, Tool, or Bidirectional port classes, as shown in Figure 45. By default, all ports are bidirectional and traffic direction is determined by the domain connection.

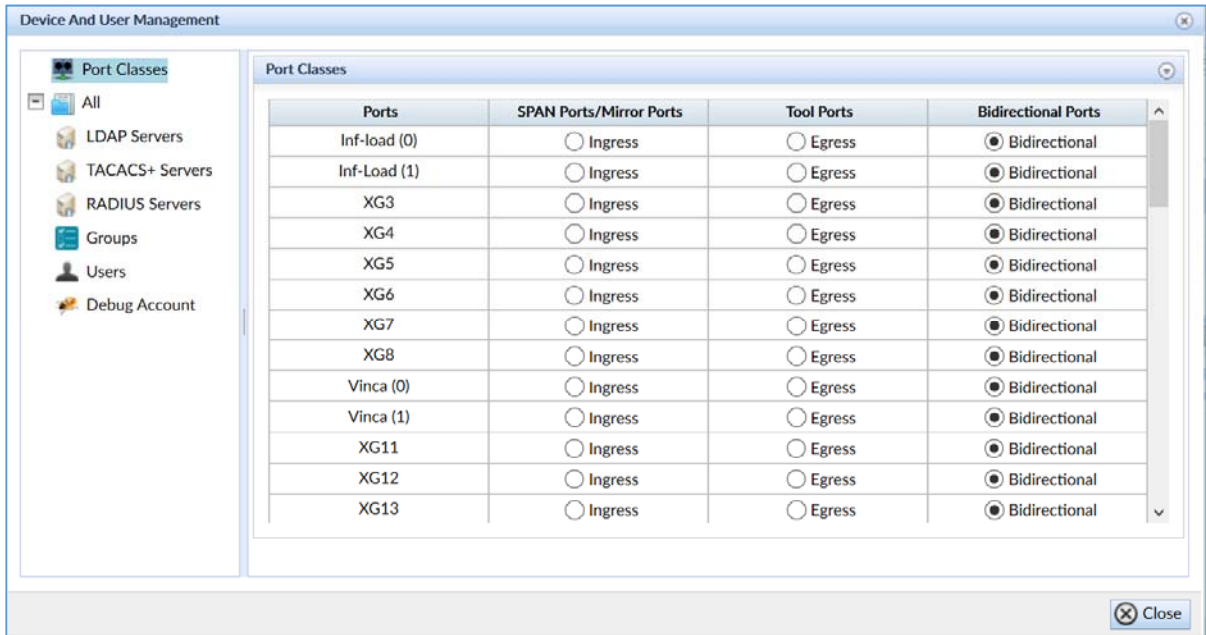


Figure 45: Port classes.

## RADIUS Servers

**NOTE:** RADIUS servers are not supported in the nVoy Packet Broker version 1.0 release.



### 4.4.2 Service Management

The Service Management utility sets up the HTTP/HTTPS web user interfaces, secure shell, SNMP access and auto refresh settings.

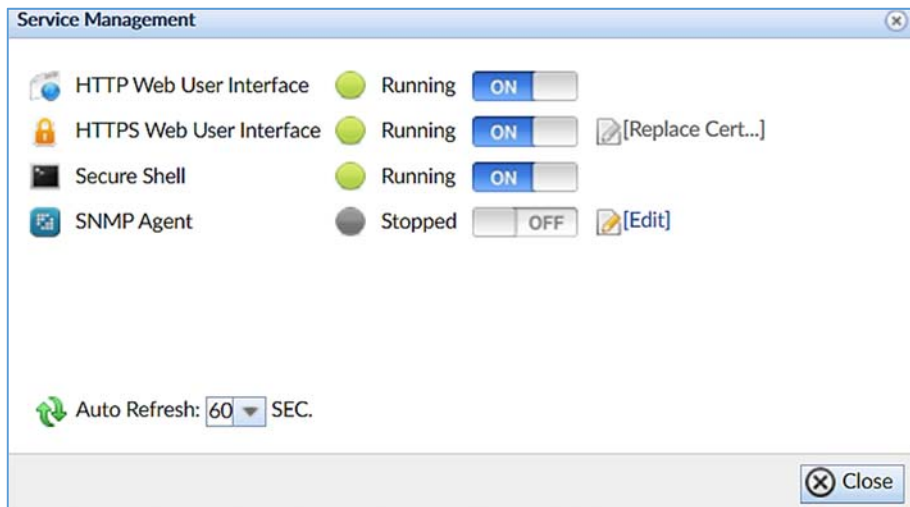




Figure 46: Service Management window.



#### Enabling Service Management settings

1. Click **Settings** in the Device Operation panel of the Web UI, as described in Figure 27.

The Service Management window appears, as shown in Figure 46.

2. Set any or all of the following Service Management sliders from  to  .

- a. HTTP Web User Interface
- b. HTTPS Web User Interface
- c. Secure Shell
- d. SNMP Agent (Click **Edit** to modify agent, if required)

3. Click the **Auto Refresh** drop-down combo box and select the desired auto

refresh rate (Figure 47).

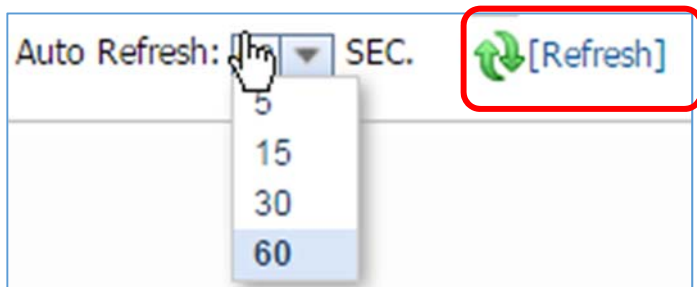


Figure 47: Auto Refresh

4. Click **[Refresh]** to refresh the Web UI internal data.
5. Click **Close** to exit.



### 4.4.3 Event Notifications

The Event Notifications setting enables the user to send special event notifications.

The nVoy Packet Broker supports the following messaging formats:

- **General** Every generated event moves to local storage first to prevent loss, after which a notification mechanism pushes the event out of the corresponding pipeline, as follows:
  - Option 1:**  
**Keep events for:** Displays how long the event should be stored.
  - Option 2:**  
**Clear events:** Describes an immediate action, which triggers an immediate removal of the events from the storage system. For example, when you select “Keep the past day” from the drop-down combo box, all the events older than the past day are removed.
- **SNMP Trap** The most widely used messaging format; designed to alert and monitor device activities across a network. Messages are sent to the manager by an agent when an issue needs to be reported (Figure 48).
- **Email** Event information is sent via email (Figure 48).
- **SysLog** Displays device system information and logs stored on a server. Users can filter events by Informative, Warning, and Error category (Figure 49).



## Setting up an event notification

### 1. Click **Event Notifications**.

The Event Notification windows appear, as shown in Figures 48 and 49.

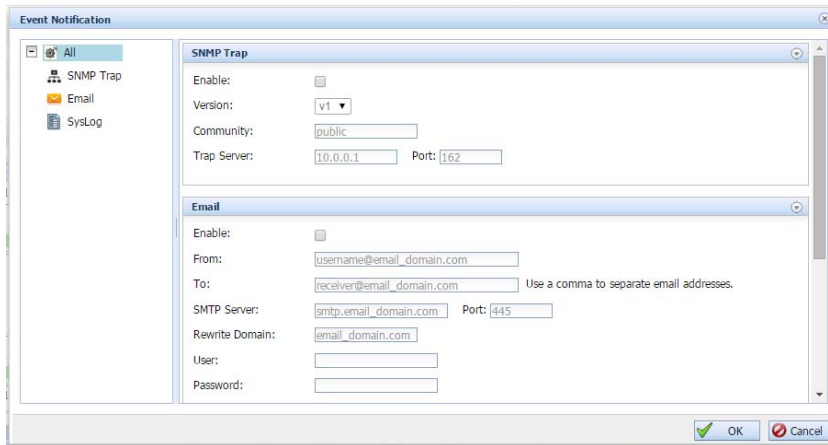


Figure 48: Event Notification window – SNMP Trap and Email.

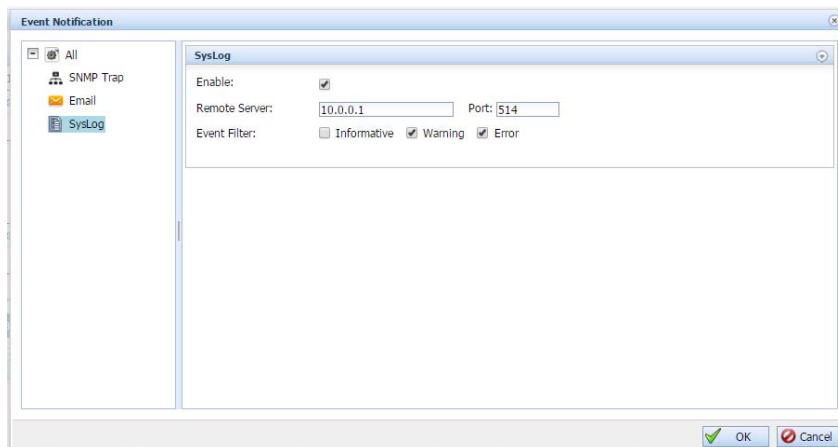


Figure 49: Event Notification window – SysLog

2. Select the appropriate messaging format in the left column.
3. Click the **Enable** check box in the right column and enter the required information in the dialog boxes.
4. Click **OK** to send the event notification.



### 4.4.4 Device Firmware Management

The Firmware Management setting enables the user to view the device activation status, file size and operations.

To manage device firmware, go to the *Device Information* section of this chapter.



#### Viewing device firmware status

**1. Click Firmware Update.**

The Device Firmware Management window appears, displaying firmware Version, Activation Status, Size, Md5Sum, and Operations, as shown in Figure 50.

Version	Activation Status	Size (Byte)	Md5Sum	Operations
nvoy-1.8.2.14		152187704	[Calculate]	
1.8.2.9		152223720	[Calculate]	[Activate]  [Delete]
1.8.2.8		152060088	[Calculate]	[Activate]  [Delete]
1.8.2.7		152010584	[Calculate]	[Activate]  [Delete]
1.8.2.6		151994024	[Calculate]	[Activate]  [Delete]
1.8.2.11		152228456	[Calculate]	[Activate]  [Delete]
1.8.2.10		152236584	[Calculate]	[Activate]  [Delete]
nvoy-1.8.2.13		152183880	[Calculate]	[Activate]  [Delete]
nvoy-1.8.2.12		152182248	[Calculate]	[Activate]  [Delete]

Figure 50: Device Firmware Management window.

**2. Click [Calculate] to calculate Md5Sum.**

The window refreshes to display the Md5Sum, as shown in Figure 51.

Version	Activation Status	Size (Byte)	Md5Sum	Operations
1.8.2.1		149708920	2653027f2038ce57e24e96105f09cc60	

Figure 51: Window displaying refreshed Md5Sum value.

3. Click **Upload New firmware...** to upload new firmware to the Web UI (optional)  
The Update Firmware window appears, as described in Figure 52.

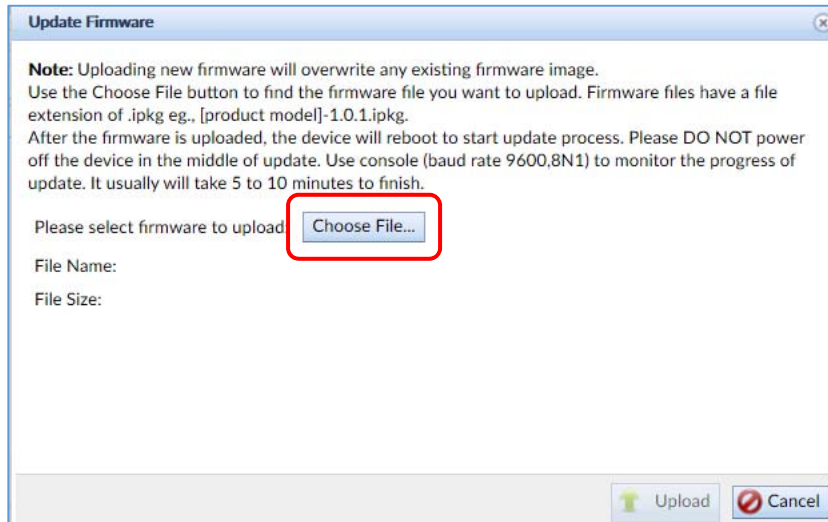


Figure 52: Update Firmware window.

**NOTE:** Once the firmware uploads, the device will reboot to start the update process.  
DO NOT power off the device in the middle of an update.  
Use console (baud rate 9600,8N1) to monitor the update progress.

4. Click **Choose File...** and select the firmware file with an `.ipkg` file extension
5. Click **Upload** to upload the firmware.  
The new firmware posts to the Device Firmware Management window.  
Uploading new firmware will overwrite any existing firmware image.
6. Click **OK** to exit.

## 4.4.5 Save Configuration

The Save Configuration setting allows you to preserve changes that have been made to the device configuration.



### Confirming a device configuration

1. Configure the device, as described further in the *Device Operation* section.

Once a device has been configured, the **Save Configuration** script changes from blue to red, indicating that the changes have been made.

2. Click **[Apply]** to save the configuration.

The Confirm window appears confirming that the configuration has been saved, as shown in Figure 53.

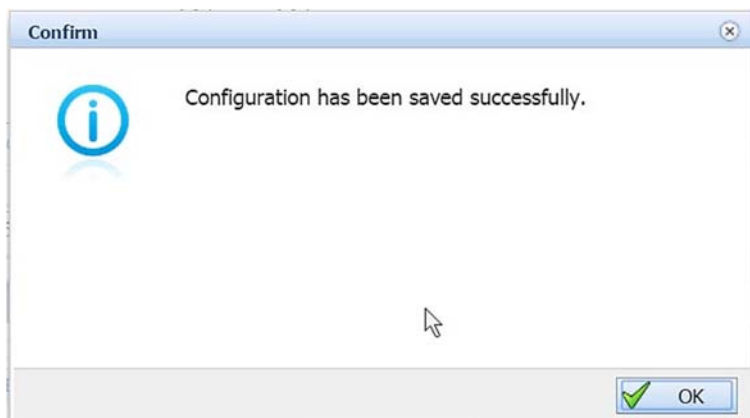


Figure 53: Configuration Save confirmation.

3. Click **OK**

Once the configuration is saved, the **Save Configuration** script changes from red to blue.



## 4.4.6 Download Configuration

The Download Configuration setting prompts the user to download and export system configurations.



### *Downloading a system configuration (from Firefox web browser)*

1. Click **[Download]** in the Devices Operation panel.

A text file prompt appears in the lower right corner of Web UI, saving the file as `Opening <Packet_Broker_Name>-Config-File.txt` as shown in Figure 54.

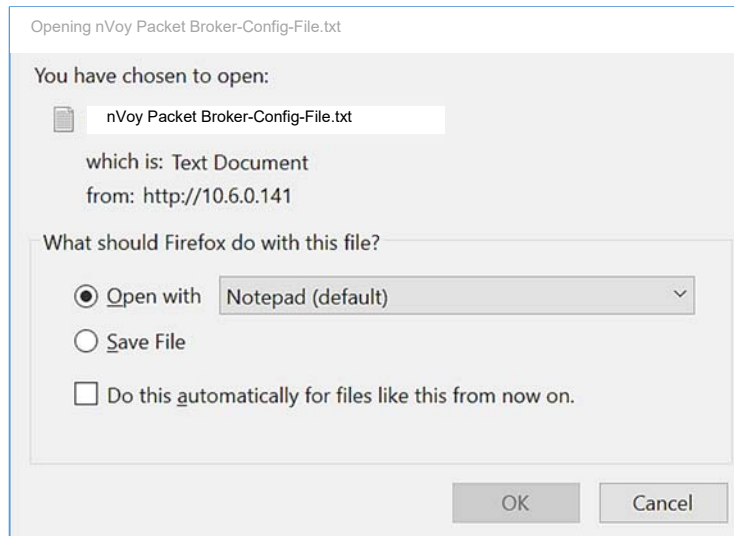


Figure 54: Text file prompt

2. Click **Save File** to save the text file to your hard drive.

**OR**

3. Click **Open with** to open the text file in an editor.
4. Click **File > Save** to save the text file.

The configuration file is saved to the hard drive.

## 4.4.7 Upload Configuration

The Upload Configuration setting prompts the user to upload a configuration file to the server.

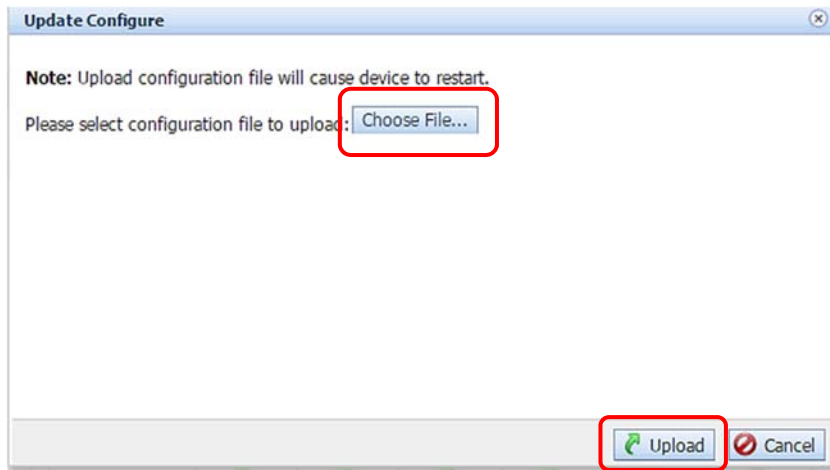


Figure 55: Update Configure window.



### *Uploading a configuration file*

1. Click **[Upload]** in the Devices Operation panel.

The Update Configure window appears, as shown in Figure 55.

2. Click **Choose File...** and select the configuration file.
3. Click **Upload** to upload the configuration file.

**NOTE:** The device restarts after the configuration file has uploaded.

## 4.4.8 Reset Configuration

The Reset Configuration setting enables you to reset the device configuration to factory default.

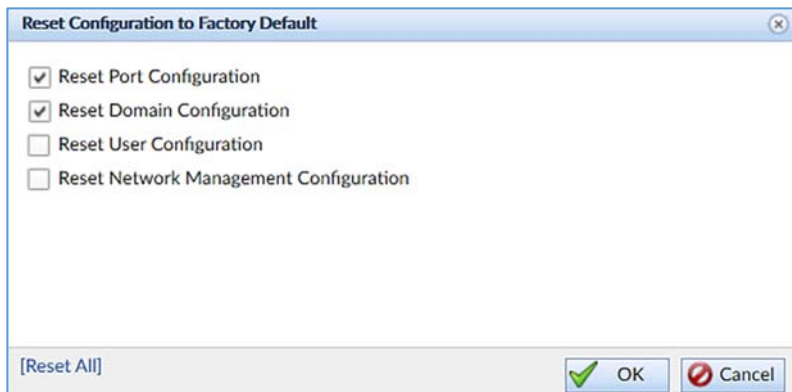


Figure 55a: Resetting the device configuration to factory default.



### Resetting the configuration

1. Click **Reset** in the Devices Operation panel.

The Reset Configuration to Factory Default window appears, as shown in Figure 55a.

2. Check all four check boxes.

The window refreshes to display the default IP, netmask, and gateway addresses, as shown in Figure 55b.

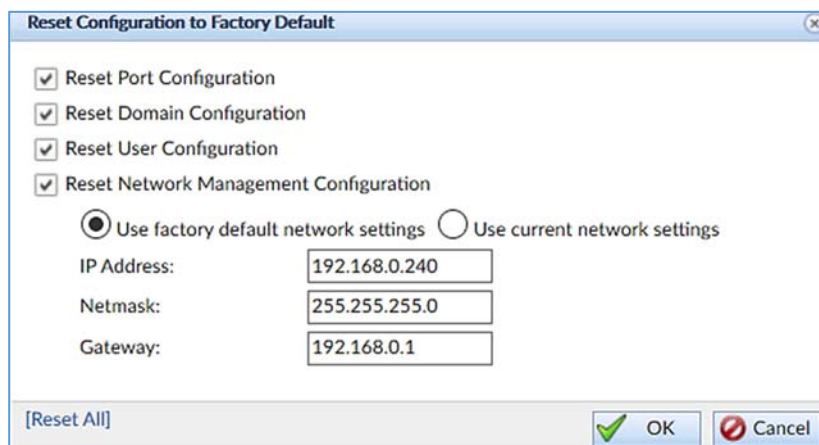


Figure 55b: Displaying default IP, netmask, and gateway addresses.

3. Click **OK**.

The device configuration is reset to factory default.

## 4.4.9 Reboot Device

The Reboot Device setting prompts the user to reboot the device.

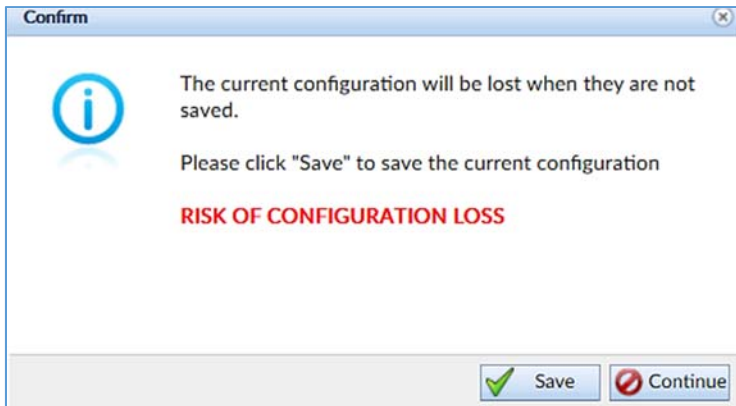


Figure 56: Reboot confirmation window.



### *Rebooting the device*

**CAUTION:** Save your current configuration before you reboot the device. You run the risk of losing all your information without first saving it.

1. Click **[Reboot]** in the Devices Operation panel.  
The Confirm window appears, as shown in Figure 56.
2. Click **Save** to save your current configuration.
3. Click **Continue** to reboot the device.

## 4.4.10 Shutdown Device

The Shutdown Device setting enables the user to shut down the device operation.



Figure 57: Confirm Shutdown System window.



### *Shutting down the device*

1. Click **[Shutdown]** in the Devices Operation panel.

A Confirm Shutdown System window appears, as shown in Figure 57.

2. Click **OK** to confirm shutting down the device operation.

### 4.4.11 Health log

The Health logfile records the following real-time device statistics in one-minute intervals:

- Number of runtime crash files in the system
- Logfile creation date and time
- Logfile category (INFO)
- CPU temperature (degrees Celsius)
- CPU usage (percentage)
- Available memory (MB)
- System Health File Size in bytes.

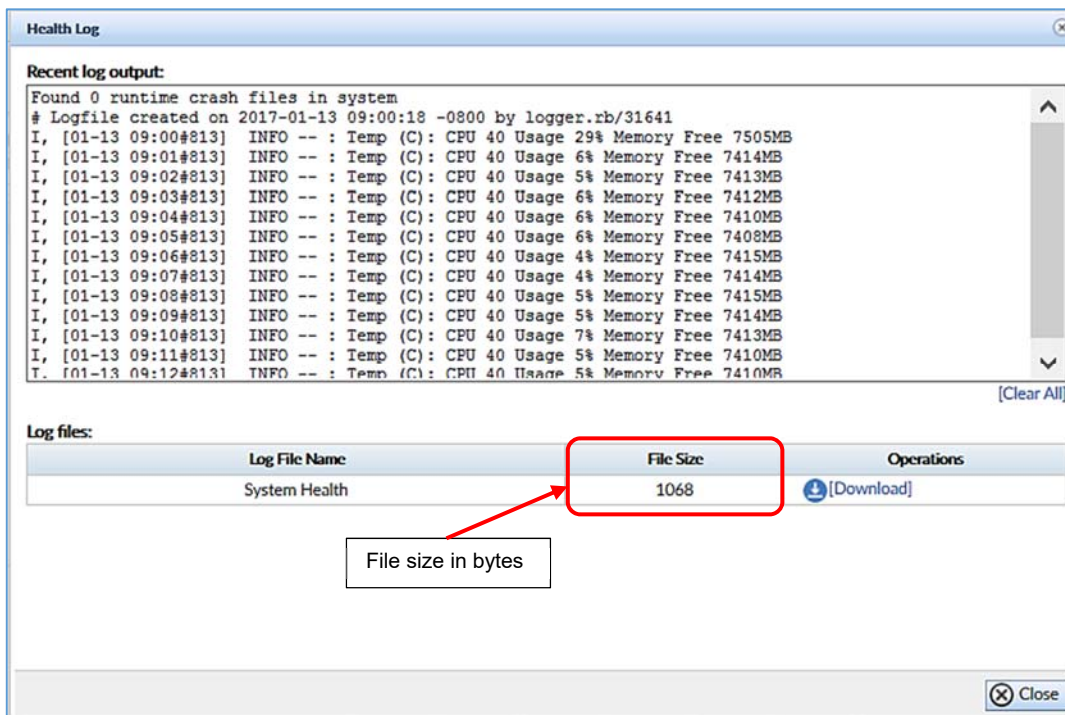


Figure 58: Health Log window.



### Creating a health logfile.

1. Click **[Health Log]** in the Devices Operation panel.  
A Health Log window appears, as shown in Figure 58.
2. Click **[Download]** to save the health log (optional).

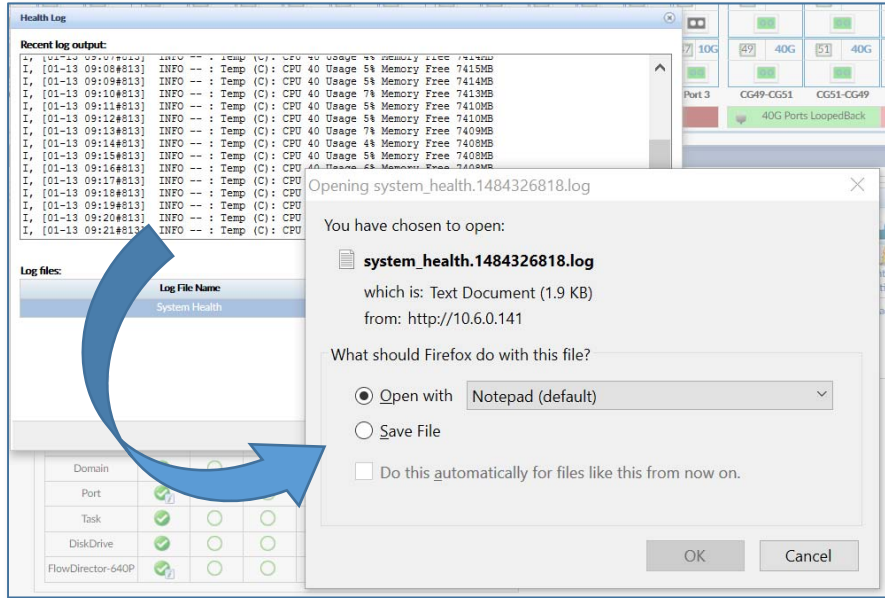


Figure 59: Health logfile prompt

A logfile prompt appears in the lower right corner of Web UI, saving the file as `system_health.<Logfile_Number>.log` as shown in Figure 59.

3. Click **Save File** to save the log file to a text file editor.
- OR**
4. Click **Open with** to open the logfile in a text file editor.
  5. Click **File > Save** to save the logfile to a text file editor.

The health logfile is saved to the editor.

## 4.5 Service Status

The Service Status panel displays the real-time device status by user, system, domain, port, task, and so on, as shown in Figure 60.

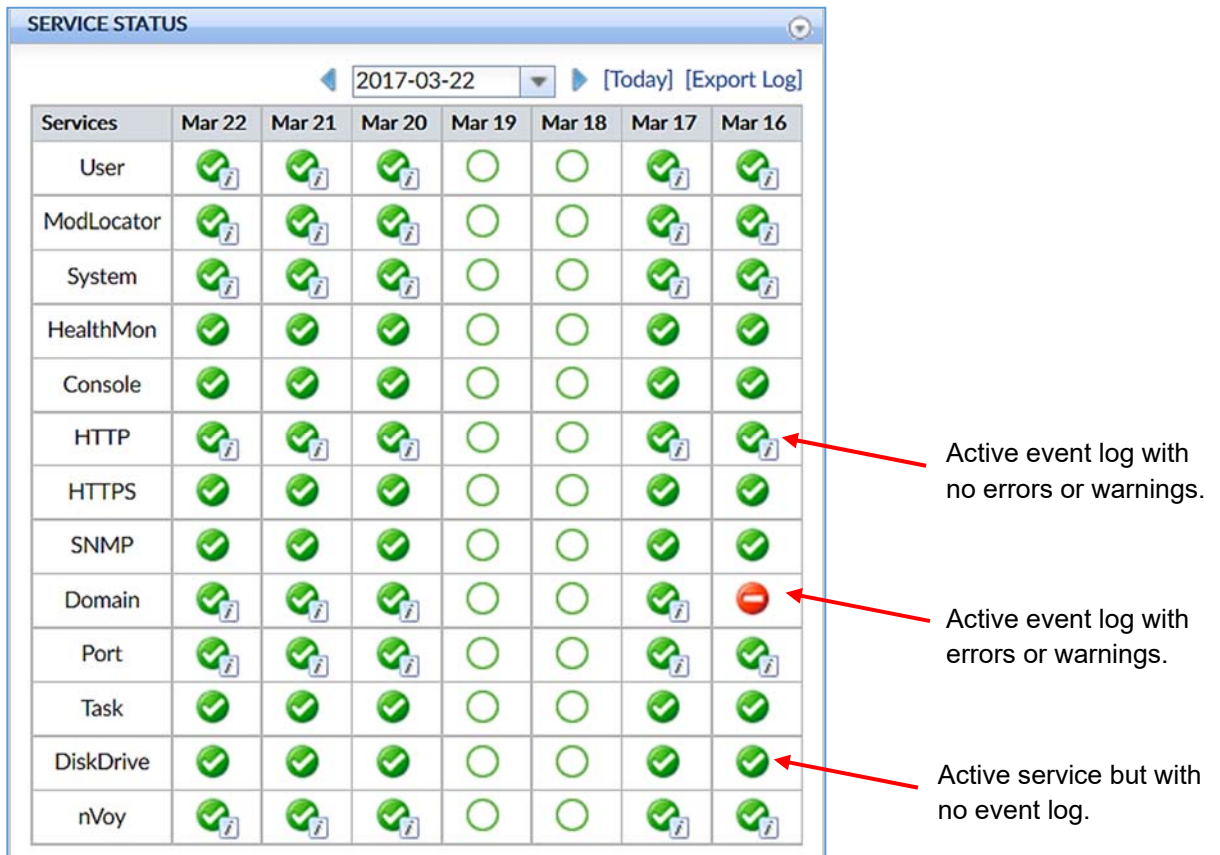



Figure 60: Service Status panel.



### 4.5.1 Services Category

The Service Status lists log events into 13 categories. Clicking any tagged active  event log opens an Event Log Detail window, where event details can be reviewed.

#### User

The User Event Log Detail window displays events related to user ID, time, warning severity, and description, as shown in Figure 61.

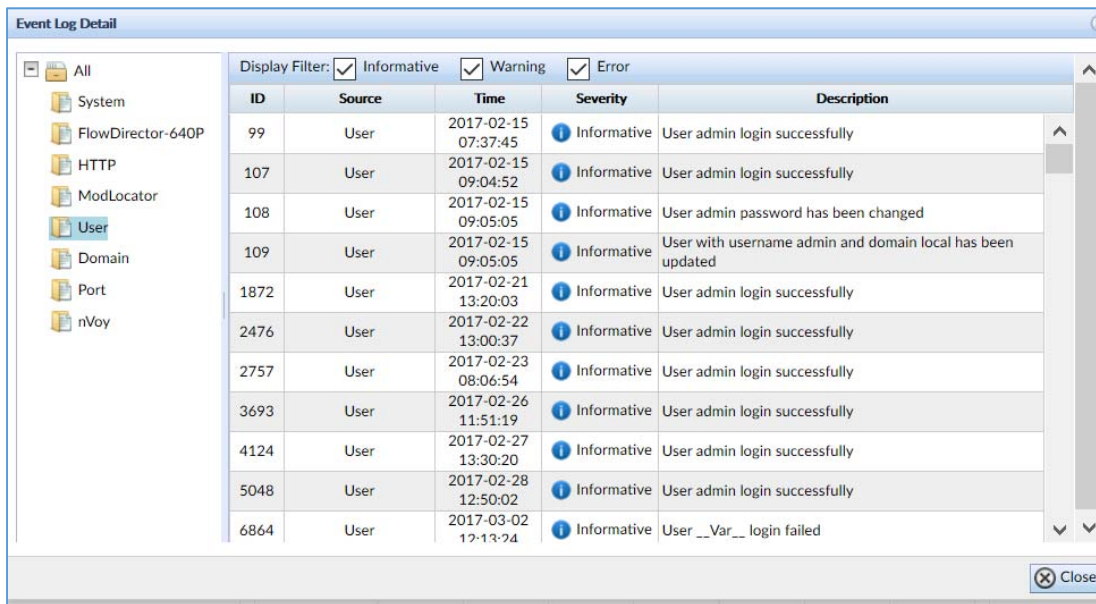


Figure 61: User Event Log Detail window.

#### ModLocator

The ModLocator Event Log Detail window displays events related to traffic modules device ID assignment, time, warning severity and description, as shown in Figure 62.

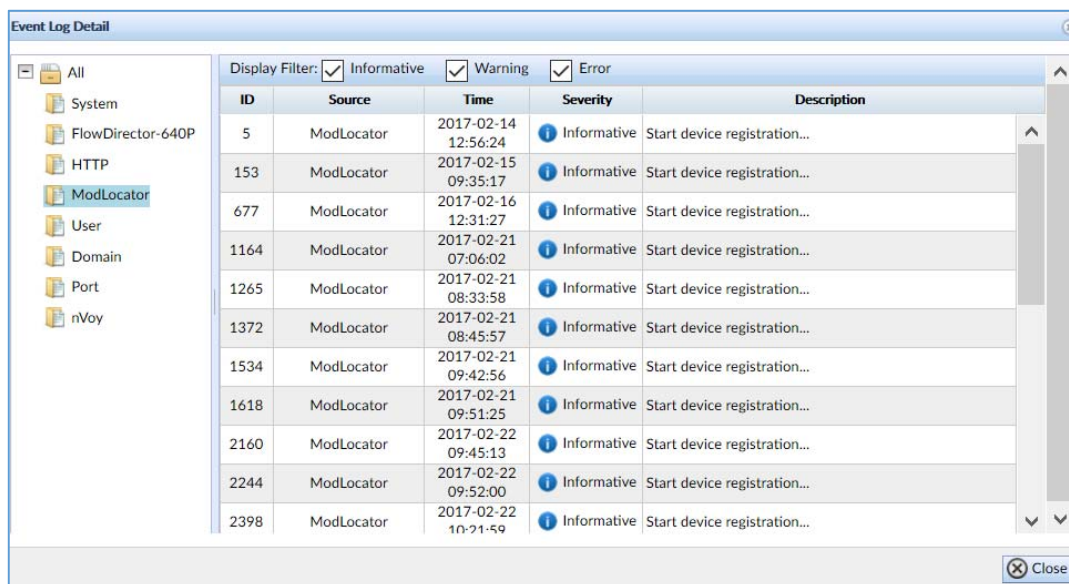


Figure 62: ModLocator Event Log Detail window.

## System

The System Event Log Detail window displays events related to system booting, running status, shutdown, and reboot, as shown in Figure 63.

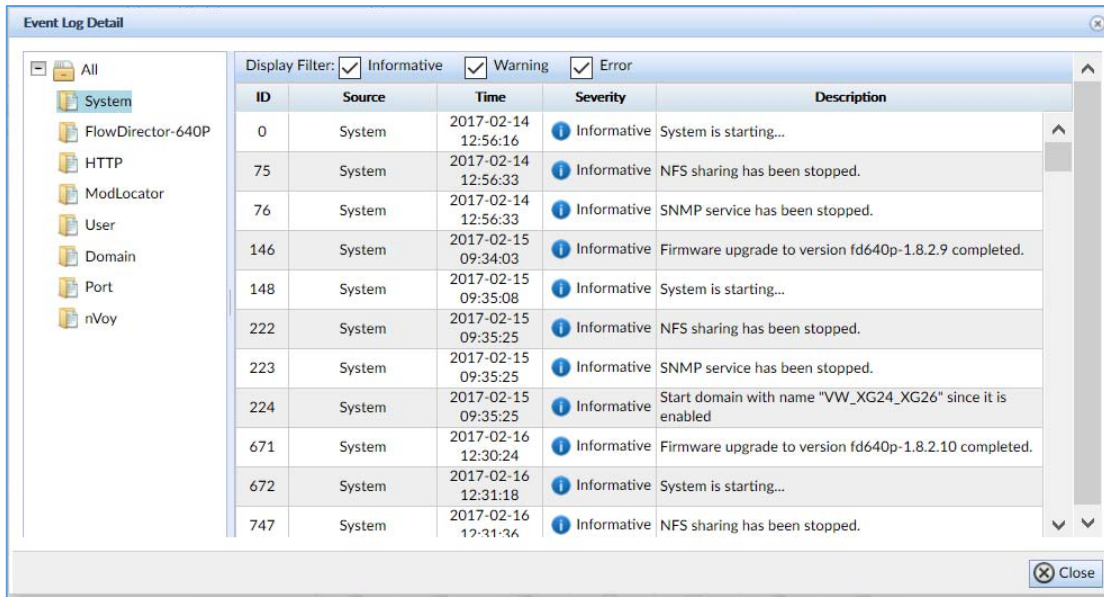


Figure 63: System Event Log Detail window.

## HealthMon

The HealthMon category displays the device running status. There is no Event Log Detail window associated with the HealthMon category.

For more information on health logs, go to Section 4.4.11 [Health Log](#).

## Console

The Console category displays the system console interface status. There is no Event Log Detail window associated with the Console category.

For more information on consoles, go to Appendix 3: [Hardware Specifications](#).

## HTTP

The HTTP Event Log Detail window displays events related to HTTP traffic and service, as shown in figure 64.

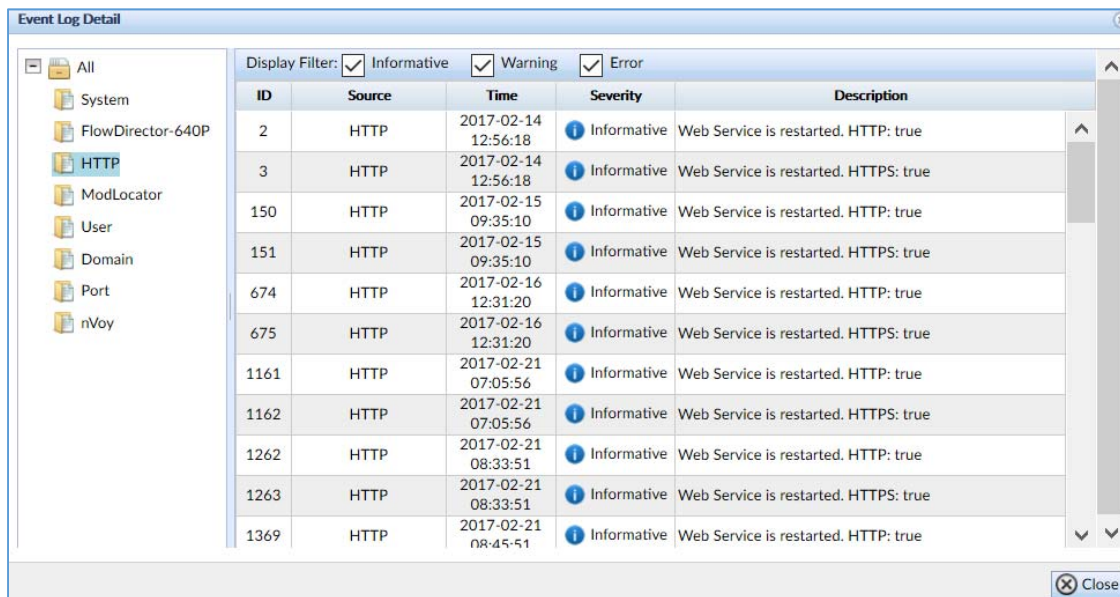


Figure 64: HTTP Event Log Detail window.

## HTTPS

The HTTPS category displays events related to HTTPS traffic and service. There is no Event Log Detail window associated with the HTTPS category.

For more information on HTTPS, go to Section 4.4.2 [Service Management](#).

## SNMP

The SNMP category displays the network management status. There is no Event Log Detail window associated with this category.

For more information on SNMP, go to Section 4.4.3 [Event Notifications](#).

## Domain

The Domain Event Log Detail window displays events related to creating, initializing, running, and executing a capture domain, as shown in Figure 66.

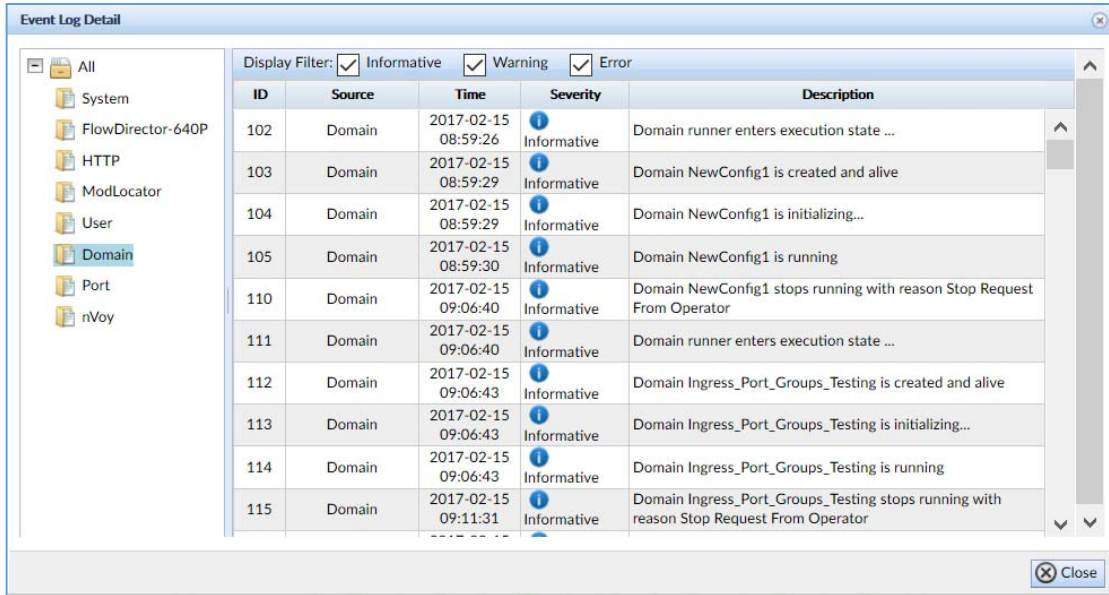


Figure 66: Domain Event Log Detail window

## Port

The Port Event Log Detail window displays events related to traffic port assignment, reservation, name changes, and running status, as shown in Figure 67.

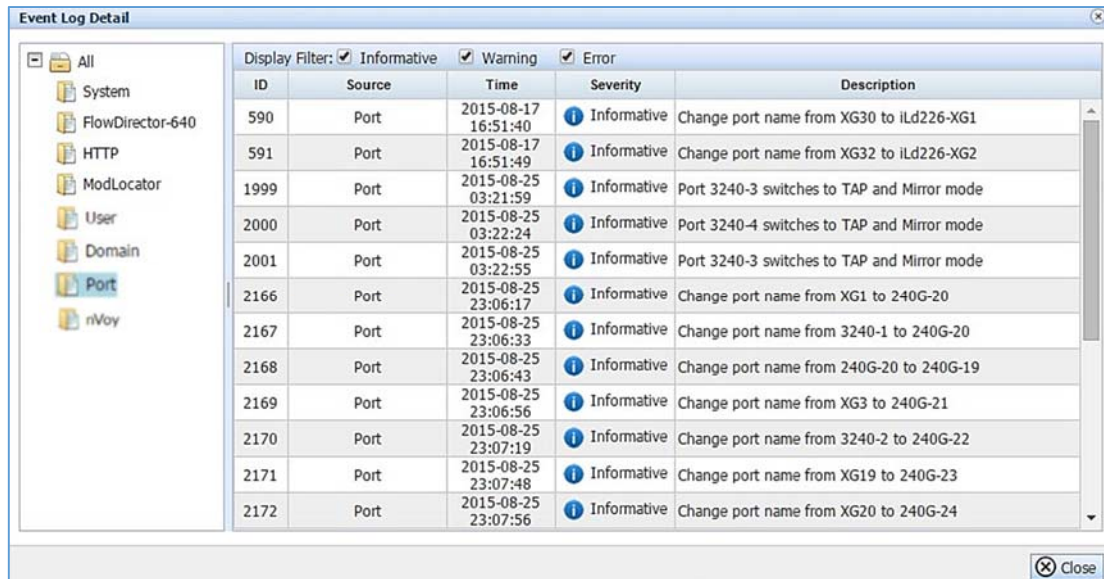


Figure 67: Port Event Log Detail window.



### Task

The Task category displays events related to task status and management. There is no Event Log Detail window associated with the Task category.

There are many task categories to choose from. Go to Section 3.2.1 *Web UI tabs* and select the appropriate tab for more detailed task information.

### DiskDrive

The DiskDrive category displays events related to hard disk drive storage. There is no Event Log Detail window associated with the DiskDrive category.

For more information on disk drive storage, go to Section 4.3 *Device Information*, or Chapter 8: *Syslog Tab*.

### nVoy

The nVoy Packet Broker Event Log Detail window displays events related to device configuration, activation, initializing, loading, power supply status, fan status, and so on, as shown in Figure 70.

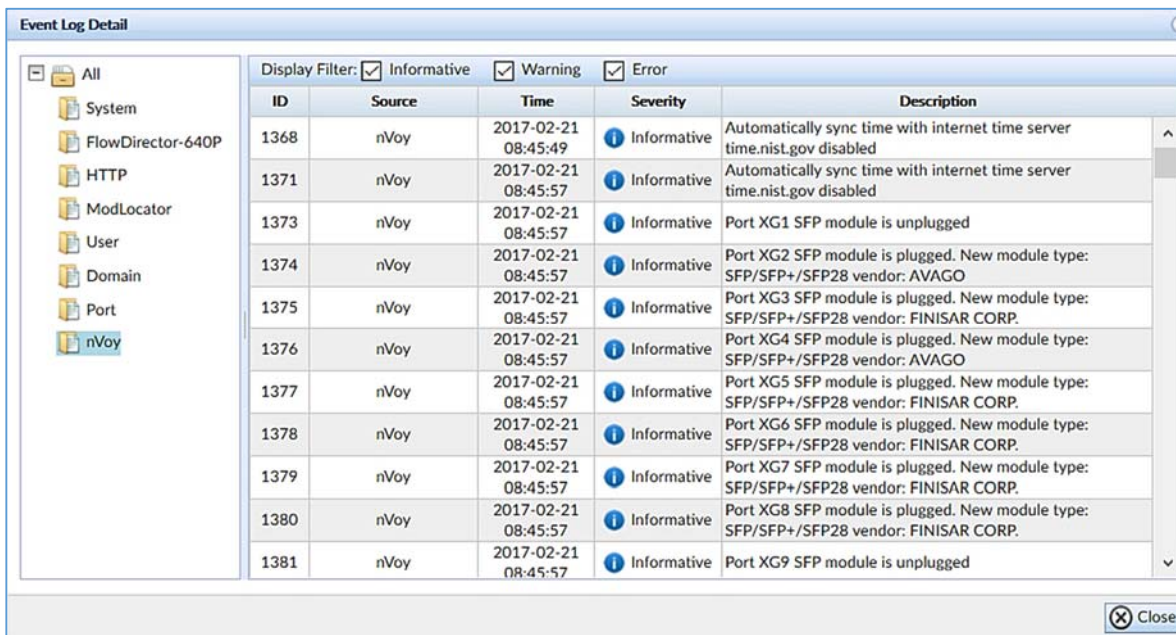


Figure 70: nVoy Packet Broker Event Log Detail window.

## 4.5.2 Export Log

Event logs can be exported to an external file through the [Export Log] link.

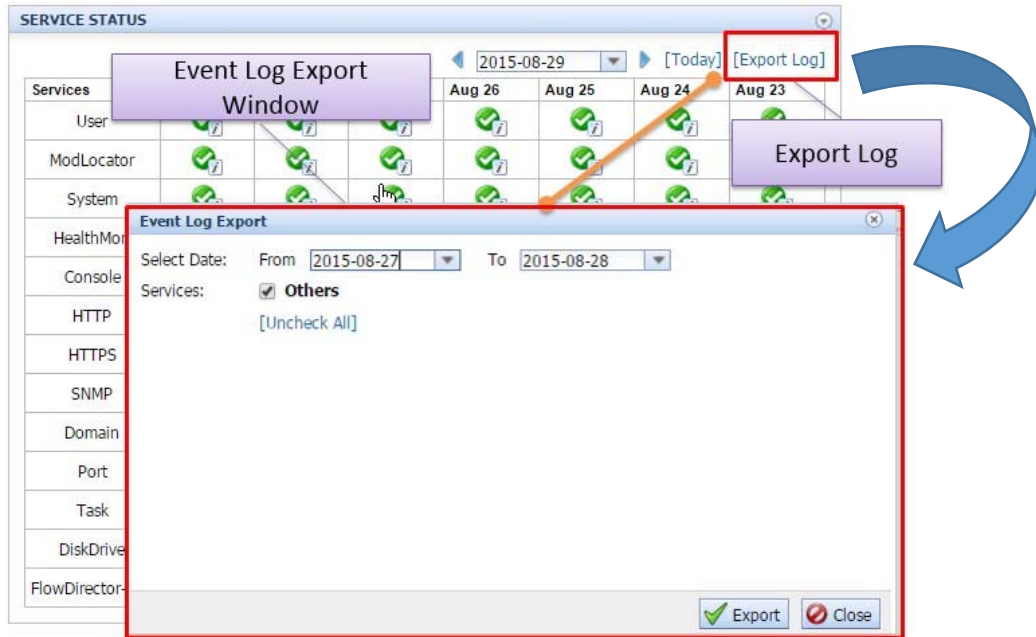


Figure 71: Event Log Export window.



### Exporting an event log

1. Click **[Export Log]** in the upper-right hand corner of the Service Status panel, as shown in Figure 60.

An Event Log Export window appears, as shown in Figure 71.

2. Enter the event log export date range.  
Check **Others** for services, otherwise leave unchecked.
3. Click **Export**.

The event log is exported.

### 4.5.3 Event Severity

The service status log events in every Event Log Detail window are categorized into three severity levels according to the nature of the events, shown in Table 4.

<b>Severity</b>	<b>Description</b>
Informative Message	An informative message is just that - information about execution. It is never used to indicate problems. Only general information, such as system is starting, storage configuration loaded, disk mount successfully, is found in informative messages.
Warning Message	Warning messages are generated when a task or operation experiences a situation that may cause a problem during its execution or when the result may not be what you expect. You can take action when a warning is returned, such as canceling the task or by creating another configuration setting.
Error Message	Error messages indicate a critical event, which may prevent a task or operation from executing. Errors are generated when one or more parameters have invalid values or when a critical execution process or routine has failed.

Table 4: Event log severity categories.

## 4.6 Flow Domains

The Flow Domains panel lists all domains created through flow operations by domain name, ingress ports, egress ports, status, and available operations, as shown in Figure 72. Other domain operations include edit, activate/deactivate, monitor, display, and delete.

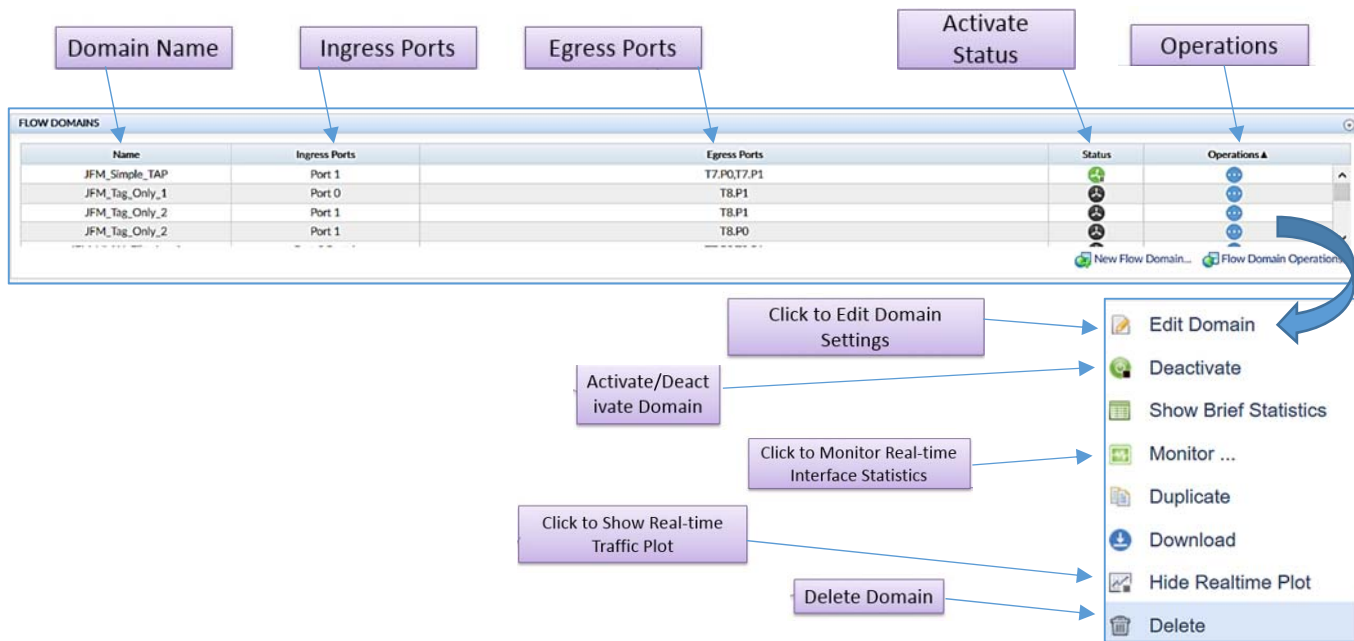


Figure 72: Flow Domains panel.

### Domain Name

Displays the name applied to the new domain.

### Ingress Ports

Shows ingress ports associated with the domain, which can be edited through the Edit Domain operation.

### Egress Ports

Shows egress ports associated with the domain, which can be edited through the Edit Domain operation.

### Domain Status

There are two icons that indicates the domain current activate status.

/ : Show domain running status. : is activated; : is inactivated.



## Domain Operations

Lists all available domain operations such as edit domain, monitor statistics, real-time traffic plot, activate/deactivate, delete domain (Figure 73). The available domain operations are described in detail in this section.

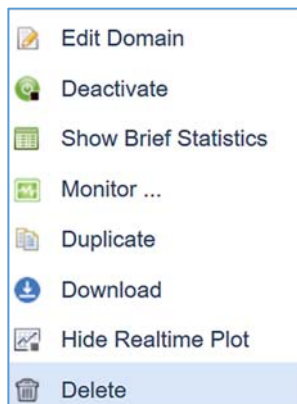


Figure 73: Available domain operations.

### 4.6.1 Edit Domain

The Edit Domain operation edits domain ingress ports, domain egress ports, and domain operation and topology, as shown in Figure 74. It can also edit interface and domain properties.

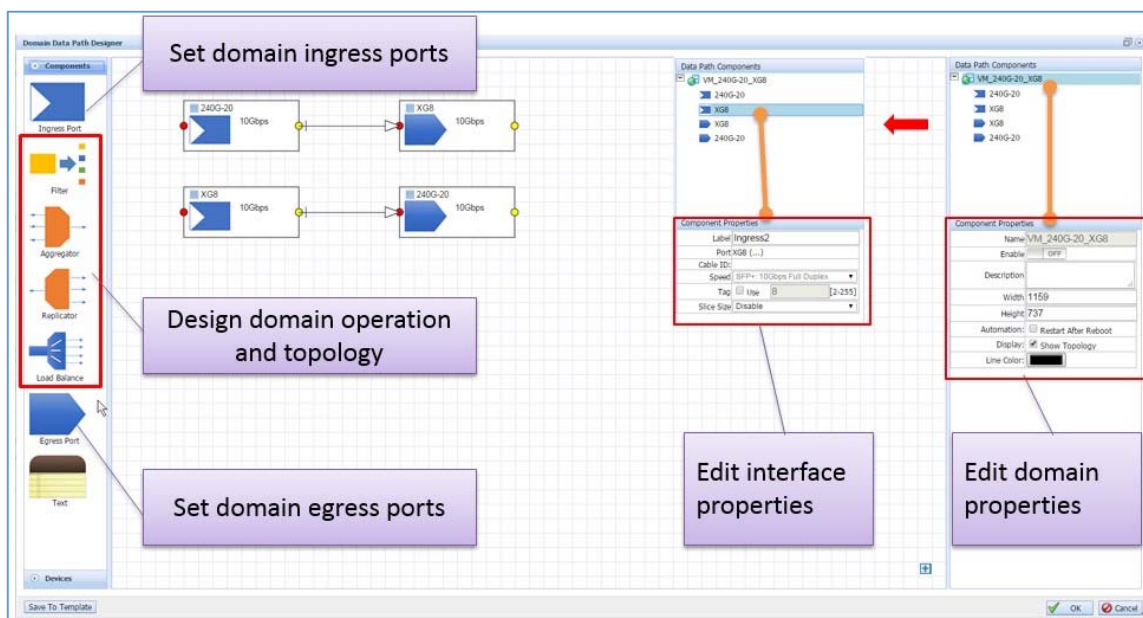


Figure 74: Edit Domain operation.

### 4.6.2 Activate/Deactivate Domain

The domain exists in two states, represented by two distinct command buttons:

- : the domain is INACTIVE, click to ACTIVATE the domain.
- : the domain is ACTIVE, click to DEACTIVATE the domain.

### 4.6.3 Show Brief Statistics

The Show Brief Statistics operation displays the real-time Rx/Tx packets, bytes per second, bytes, and Rx errors for a given domain, as shown in Figure 75.

Ports	Receive Packets		Receive Bps		Receive Bytes		Receive Errors		Transmit Packets		Transmit Bps		Transmit Bytes	
	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total
Port 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T7.P0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T7.P1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 75: Domain Show Brief Statistics operation.

#### Update Status

Displays a statistics progress bar at a given refresh rate. To pause, check the **Pause Update** check box.

#### Select Ports

Allows you to select a subset of ports that you want to monitor.

#### Monitor Real-time Interface Statistics

For more information on monitoring statistics, proceed to the following section, *Monitoring real-time interface statistics*

### 4.6.4 Monitor Real-time interface statistics

The Monitor Real-time Interface Statistics operation displays and updates (per the set refresh rate) the domain interface module and status, real-time packet statistics, and configuration status, as shown in Figure 76.

**Toolbar**

Refresh Frequency: 5 Sec | Pause Update | Hide Counters With Value Zero | Hide Interface Module | Hide Interface Status | Hide Interface Statistics | Hide Domain Config | Reset Counters To Zero | Add/Edit Port

**Interface Module and Status**

<b>Interface Module</b>		Present	true	true
Type	SFP+	SFP	1000Base-CX	
Vendor	Amphenol		Amphenol	
Serial	APF11200022P22		APF124800130GB	
PN	571540002		610540001	
<b>Interface Status</b>		Admin	true	true
Link	On	Link	On	
Speed	10Gb	Speed	10Gb	

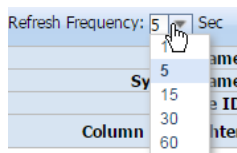
**Real-time packet statistics by types**

RxUcstPkts	932,034	607,009,649	932,063	607,009,266
RxUcstPktsNonIP	0	0	0	0
RxUcstPktsIPv4	932,034	607,009,649	932,063	607,009,266

Figure 76: Monitor Real-time Interface Statistics operation window.

## Toolbar Settings

**Refresh Frequency: 5 Sec** : Sets the refresh frequency in 1, 5, 15, 30 or 60-second intervals, as show below.



**Pause Update** : Click the **Pause Update** check box to temporarily stop interface statistics from updating; uncheck the check box to resume updating interface statistics.

**Hide Counters With Value Zero** : Click the **Hide Counters with Zero Value** check box to hide interface statistics with a zero value; uncheck the check box to display all interface statistics types.

**Hide Interface Module** : Click the **Hide Interface Module** check box to hide interface module information such as presence, type, vendor, serial number and part number; uncheck the check box to display interface module information, as shown below.

Interface Module		
<b>Present</b>	true	true
<b>Type</b>	SFP+	SFP 1000Base-CX
<b>Vendor</b>	Amphenol	Amphenol
<b>Serial</b>	APF11200022PJ2	APF124800130GB
<b>PN</b>	571540002	610540001

**Hide Interface Status** : Click the **Hide Interface Status** check box to hide interface status information such as admin status, link status, and speed; uncheck the check box to display interface status information, as shown below.

Interface Status		
<b>Admin</b>	true	true
<b>Link</b>	On	On
<b>Speed</b>	10Gb	10Gb

**Hide Interface Statistics** : Click the **Hide Interface Statistics** check box to hide interface statistics; uncheck the check box to display interface statistics.

**Hide Domain Config** : Click the **Hide Domain Config** check box to hide the domain configuration; uncheck the check box to display the Domain Configuration window, as shown in Figure 77.

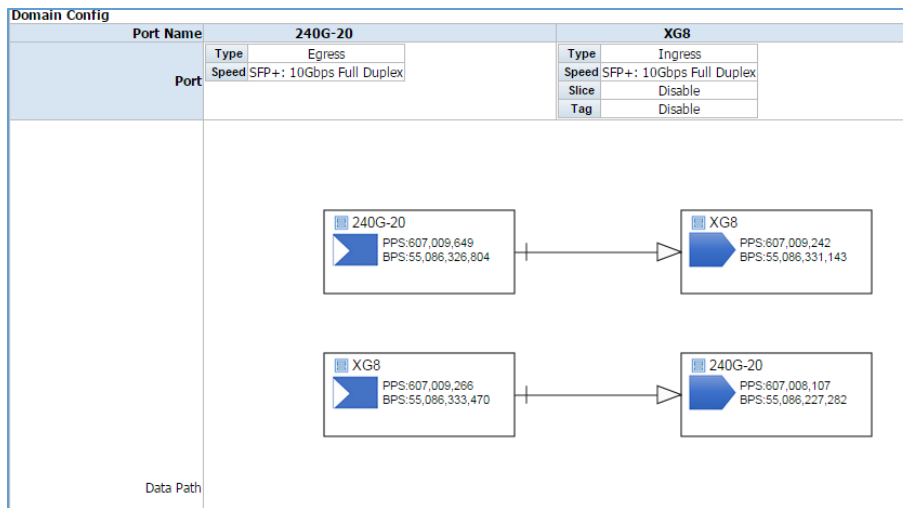


Figure 77: Domain Configuration window.

**Reset Counters To Zero** : The **Reset Counters to Zero** command button resets all interface statistics counters to zero.

**Add/Edit Port** : The **Add/Edit/Delete** command button adds, edits, and deletes ports.



### Adding a port

1. Click the **Add/Edit/Delete** command button.  
The **Select Port** window appears, displaying a map of all ports.
2. Click the port to be added.  
The port is highlighted, as shown in Figure 78.



Figure 78: Select Port window.

3. Click **OK**.  
The port is added and displayed, as shown in Figure 79.

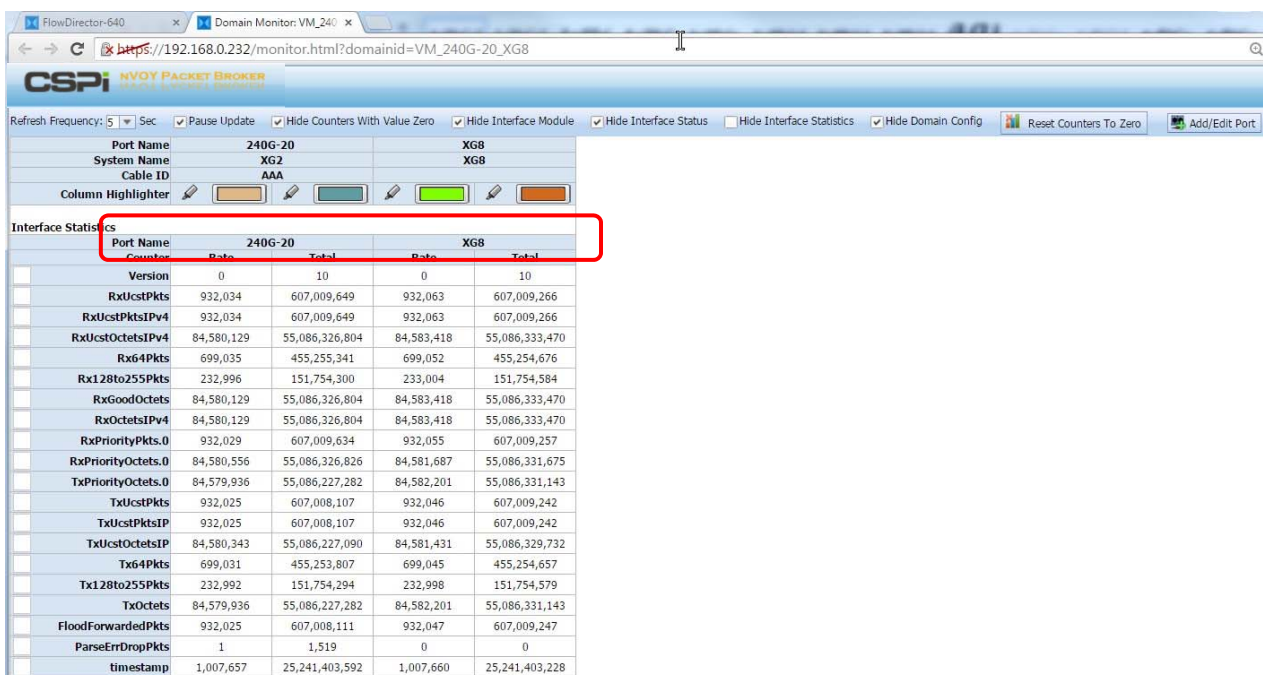
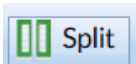


Figure 79: Port interface statistics.



The **Split** command button enables the user to run several real-time simulation tests on different interfaces the same time, as shown in Figure 80.

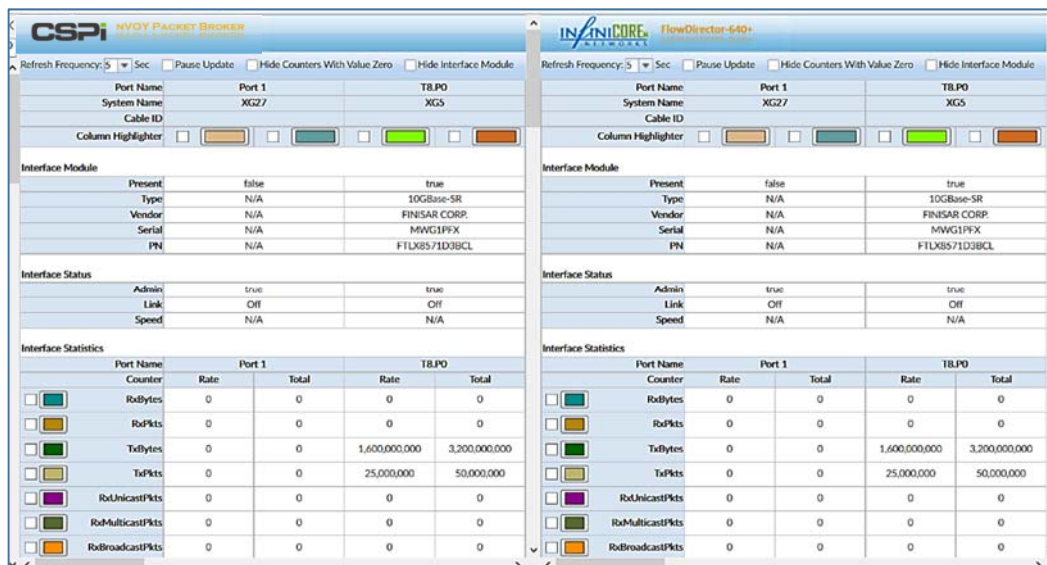


Figure 80: Split-screen representation of two interfaces in real-time.



### Multiple operations example:

The toolbar can also group operations together. In the is example we have selected **Pause Update**, **Hide Counters with Value Zero**, **Hide Interface Module**, **Hide Interface Status**, and **Hide Domain Config** to demonstrate NVoy Packet Broker Web UI flexibility (Figure 81).

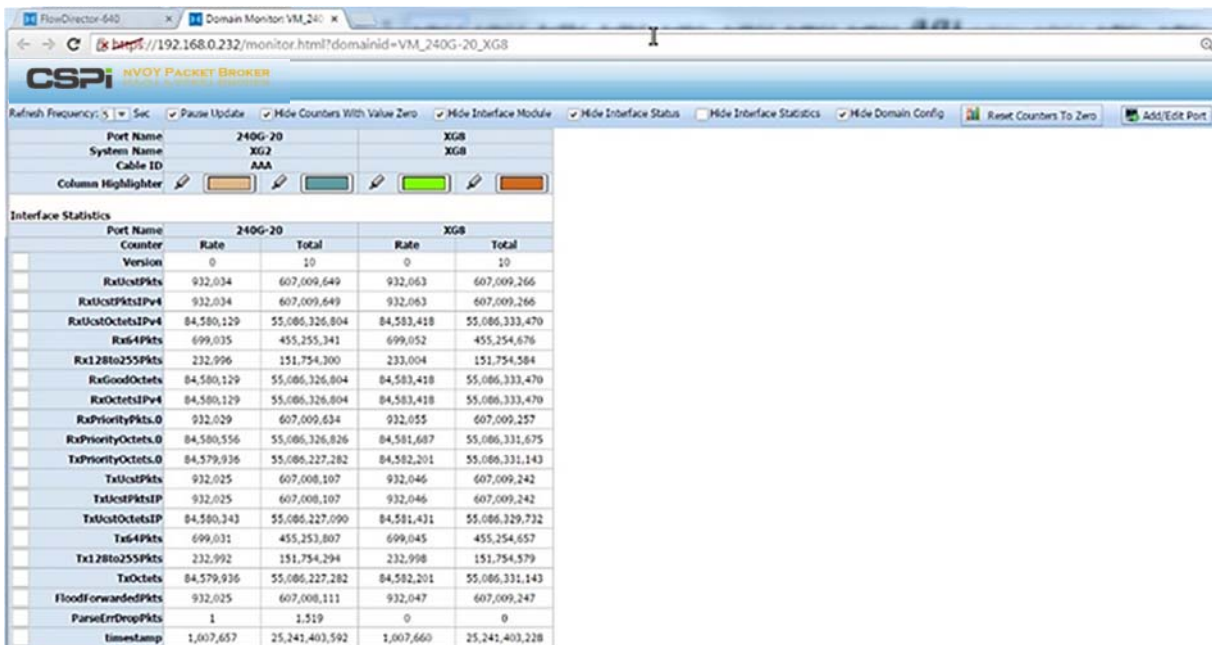


Figure 81: Interface group operations example.

### 4.6.5 Display Real-time Plot

The **Real-Time Plot** command button displays the real-time traffic plot and port statistics, as shown in Figure 82.

Figure 82: Real-time traffic plot and port statistics.

## 4.6.6 Delete Domain

The Delete Domain operation deletes the flow domain.



### *Deleting a domain*

1. Click the **Operations** pull-down menu in the Flow Domain panel and select **Delete Domain**.

A Confirm window appears, as shown in Figure 83.

2. Click **OK** to delete the flow domain.

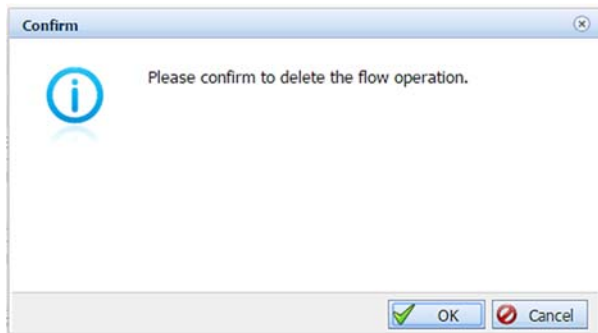


Figure 83: Confirming domain deletion.

## 4.7 Real-Time Domain

The Real-time Domain panel displays real-time plots and traffic statistics of active running domains, as shown in Figure 84.

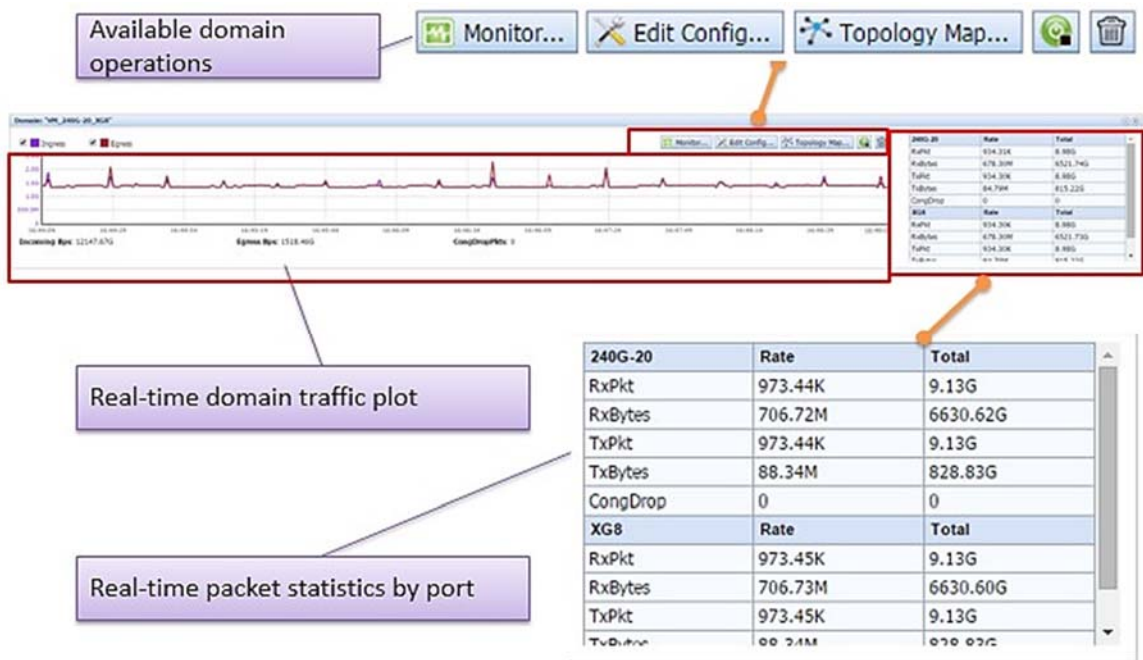


Figure 84: Real-time Domain panel.

### 4.7.1 Real-time Plot Area

The real-time domain traffic plot displays Ingress and Egress plots in bit-per-second format (Bps) with congestion packets in packet per second format (CongDropPkts), as shown in Figure 85.

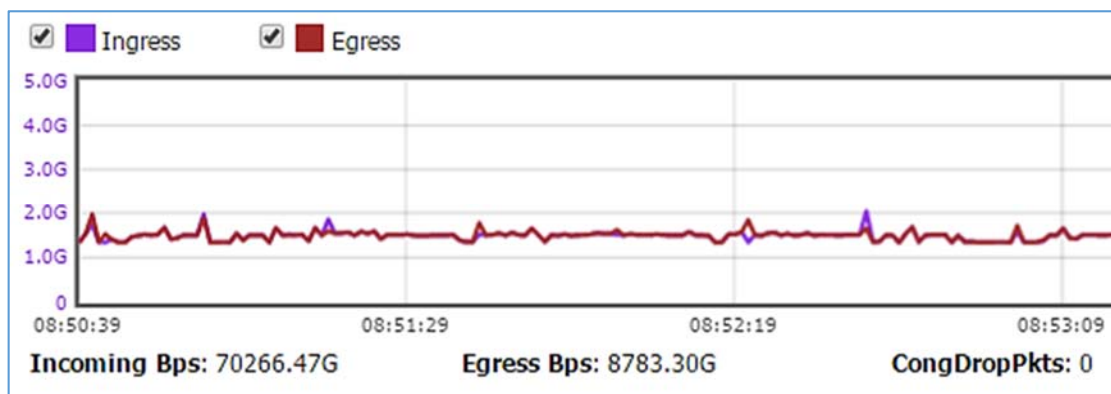


Figure 85: Real-time domain traffic plot displays.



### 4.7.2 Real-time Port Statistics

The real-time statistics of ports are displayed below. In this example, the table lists the following real-time port statistics from port **240G-20**, as shown in Figure 86.

#### RxPkt

The port receive packet rate in packet per second and total packets.

#### RxBytes

The port receive bytes rate in bytes per second and total bytes.

#### TxPkt

The port transmit packet rate in packet per second and total packets.

#### TxBytes

The port transmit bytes rate in bytes per second and total bytes.

#### CongDrop

The port congestion packet rate in packet per second and total packets.

240G-20	Rate	Total
RxPkt	973.44K	9.13G
RxBytes	706.72M	6630.62G
TxPkt	973.44K	9.13G
TxBytes	706.72M	6630.62G
CongDrop	0	0
XG8	Rate	Total
RxPkt	973.45K	9.13G
RxBytes	706.73M	6630.60G
TxPkt	973.45K	9.13G
TxBytes	706.73M	6630.60G

Figure 86: Real-time port statistics display (example).

### 4.7.3 Domain Operations

The Real Time Domain Display panel, enables the user to monitor, edit domain configurations, check domain topology maps, deactivate, and delete operations, all from the Operations toolbar, as shown below.

#### Operations Toolbar



**Monitor...**: The **Monitor...** command button launches the Domain Monitor window, displaying the domain's interface modules, status, interface statistics, and domain configuration in real-time at a set refresh rate.

**Edit Config...**: The **Edit Config...** command button launches the Domain Data Path Designer window, displaying domain ingress ports, egress ports, and domain topologies, all of which can be edited.

**Topology Map...**: The **Topology Map...** command button displays the selected domain data path topology, as shown in Figure 87.

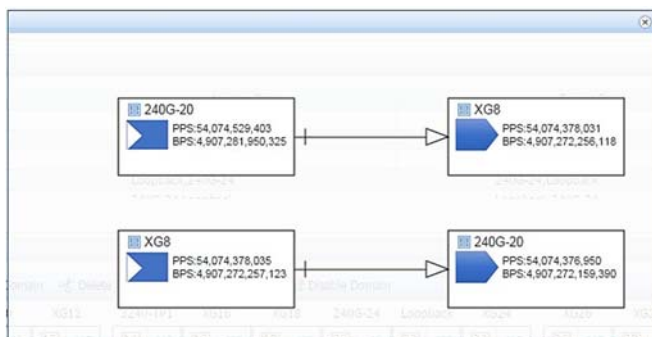


Figure 87: Selected domain data path topology.

**Activate Domain** **Deactivate Domain**: The domain exists in two states, represented by two distinct command buttons:

: the domain is INACTIVE, click to ACTIVATE the domain.

: the domain is ACTIVE, click to DEACTIVATE the domain.

: Deletes the flow domain.

## 5 Interfaces Tab

The Interfaces tab presents detailed information about interfaces ports, as shown in Figure 88.

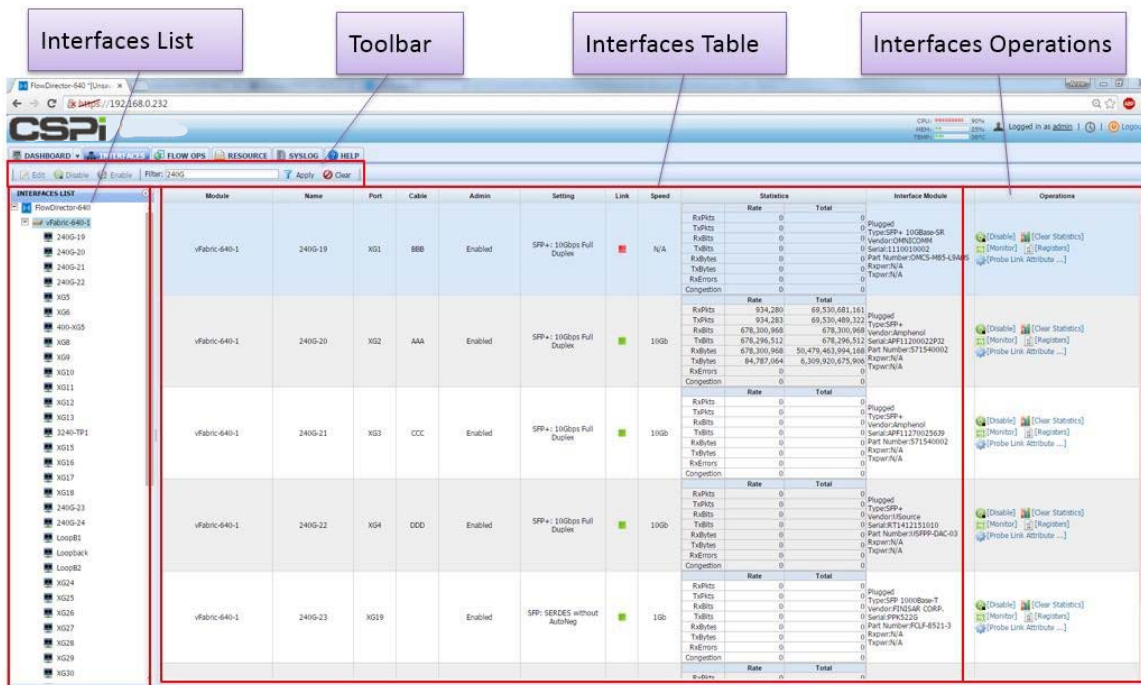


Figure 88: Interfaces tab displaying detailed port information.

### 5.1 Interface tab panels

Four panels highlight the interface tab's important features.

#### 1. Interfaces List

The Interfaces List panel displays a record of all the nVoy Packet Broker devices ports.

For more detailed information on the Interfaces List panel, go to the *Interfaces List* section in this chapter.

#### 2. Interfaces Information Table

The Interface Information table displays device information and attributes such as, name, port, cable, admin status, statistics, and so on.

For more detailed information on the Interfaces Information panel, go to the *Interfaces Information Table* section in this chapter.

### 3. Operations

The Operations panel displays the various device operation and management settings available to the user.

The operator can invoke operations such as:

- Renaming ports
- Enabling or disabling ports
- Filtering ports
- Viewing interface module information and port status
- Viewing port statistic counters
- Probing port link attributes
- Clearing port statistic counters

For more detailed information on the Operations panel, go to the [Operations](#) section in this chapter

### 4. Interfaces Toolbar

The Interfaces Toolbar enables the user to quickly detect, edit, disable, or enable a specific port.

For more detailed information on the Interfaces Toolbar, go to the [Interfaces Toolbar](#) section in this chapter

## 5.2 Interfaces List

The Interfaces List panel lists all nVoy Packet Broker devices ports by device and port ID sequence, as shown in Figure 89.

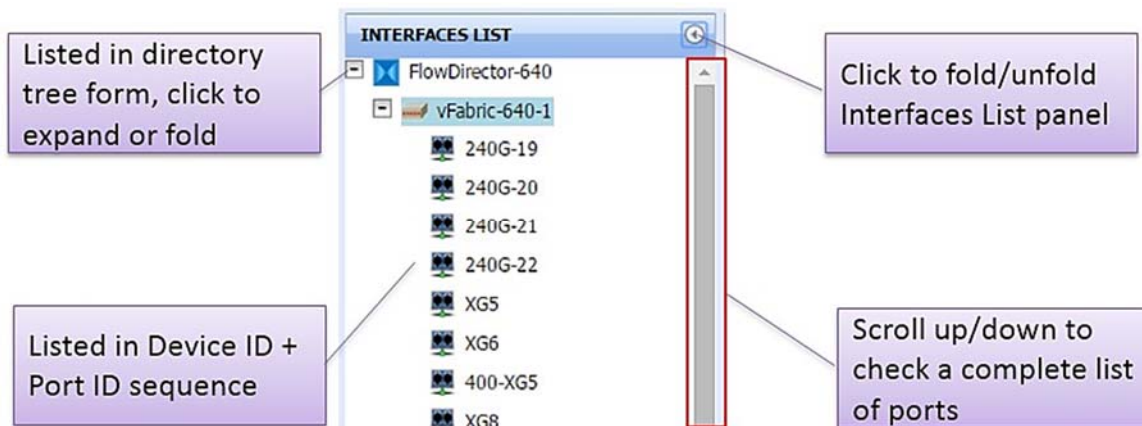


Figure 89: Interfaces List panel.

### Up close and personal

To view the details of a specific interface port or to perform further operations, click on the port name, as show in Figure 90.

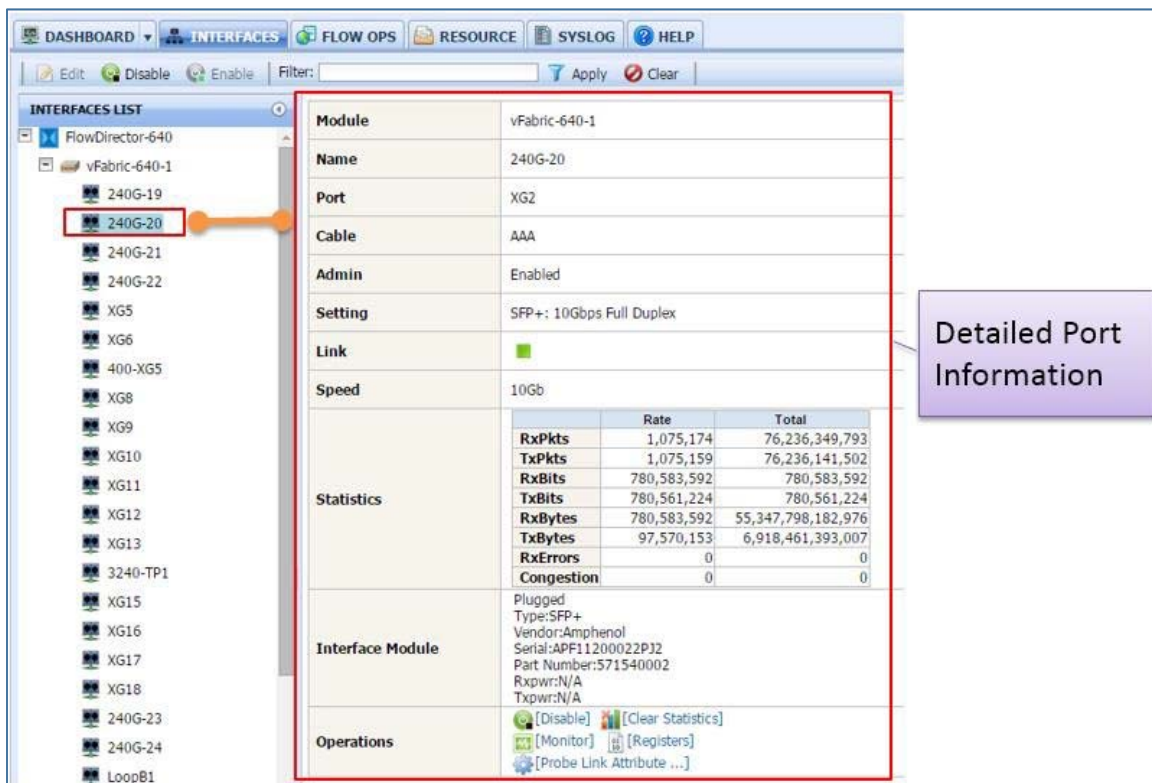


Figure 90: Specific interface port details.

## 5.3 Interfaces Information Table

The Interfaces Information table displays pertinent interface information and operations, as shown in Figure 91.

Module	Name	Port	Cable	Admin	Setting	Link	Speed	Statistics		Interface Module	Operations
								Rate	Total		
vFabric-640-1	240G-19	XG1	BBB	Enabled	SFP+: 10Gbps Full Duplex	■	N/A	RxPkts: 0 TxPkts: 0 RxBytes: 0 TxBytes: 0 RxErrors: 0 TxErrors: 0 Congestion: 0	0	Plugged Type:SFP+ 10GBase-SR Vendor:OMNICOHM Serial:11101010002 Part Number:OMCS-M85-L94H5 Rxpwr:N/A Txpwr:N/A	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-20	XG2	AAA	Enabled	SFP+: 10Gbps Full Duplex	■	10Gb	RxPkts: 951,211 TxPkts: 951,204 RxBytes: 690,575,120 TxBytes: 690,575,800 RxErrors: 0 TxErrors: 0 Congestion: 0	76,705,539,944 76,705,330,442 690,575,120 690,575,800 55,688,431,563,560 6,961,040,488,480	Plugged Type:SFP+ Vendor:Amphenol Serial:APP11200022P32 Part Number:371540002 Rxpwr:N/A Txpwr:N/A	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-21	XG3	CCC	Enabled	SFP+: 10Gbps Full Duplex	■	10Gb	RxPkts: 0 TxPkts: 0 RxBytes: 0 TxBytes: 0 RxErrors: 0 TxErrors: 0 Congestion: 0	0	Plugged Type:SFP+ Vendor:Amphenol Serial:APP11270025639 Part Number:371540002 Rxpwr:N/A Txpwr:N/A	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-22	XG4	DDD	Enabled	SFP+: 10Gbps Full Duplex	■	10Gb	RxPkts: 0 TxPkts: 0 RxBytes: 0 TxBytes: 0 RxErrors: 0 TxErrors: 0 Congestion: 0	0	Plugged Type:SFP+ Vendor:Source Serial:RT412151010 Part Number:1SFP-DC-03 Rxpwr:N/A Txpwr:N/A	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	XG5	XG5		Enabled	SFP+: 10Gbps Full Duplex	■	N/A	RxPkts: 0 TxPkts: 0 RxBytes: 0 TxBytes: 0 RxErrors: 0 TxErrors: 0 Congestion: 0	0	Unplugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]

Figure 91: Interfaces Information table.

Ten fields highlight the Interfaces Information table’s important features.

### Module

The nVoy Packet Broker device ID, as defined by the user.

### Name

The port name.

### Port

The system port ID of a specific nVoy Packet Broker device. It is a read only field and cannot be changed.

### Cable

The connecting cable identifier.

### Admin

Port administrative status.

### Setting

Port link attribute.

### Link

Port link status.

### Speed

Port link speed.

### **Statistics**

Displays port counters statistics:

- Receive/transmit packet rate and total
- Receive/transmit byte rate and total
- Receive error rate and total
- Congestion packet rate and total

### **Interface Module**

Displays interface module status and ID:

- Type
- Vendor
- Serial number
- Part number
- Receive and transmit power

## 5.4 Interfaces Operations

The Interfaces Operations panel displays the most commonly used port operations, as shown in Figure 92.

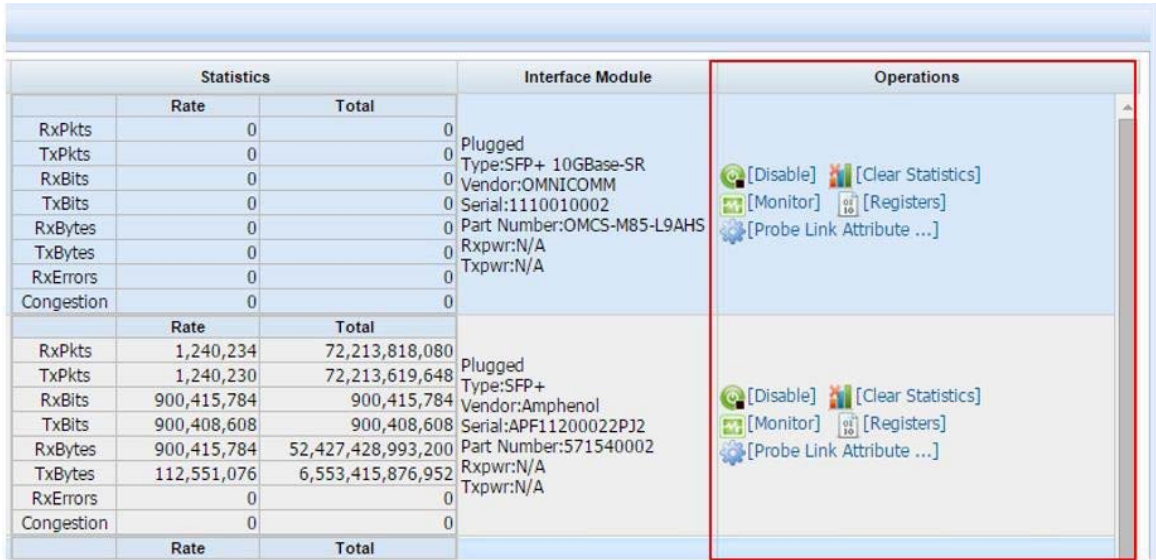


Figure 92: Interfaces Operations panel.

### Description



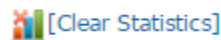
Enables or disables the port.



The port is enabled; click to disable the port.



The port is disabled; click to enable the port.



Clears the port statistics counters and resets them to zero.



Displays statistic counters for a selected port, as shown in Figure 93. This operation is identical to the Flow Domains panel **[Monitor]** operation.



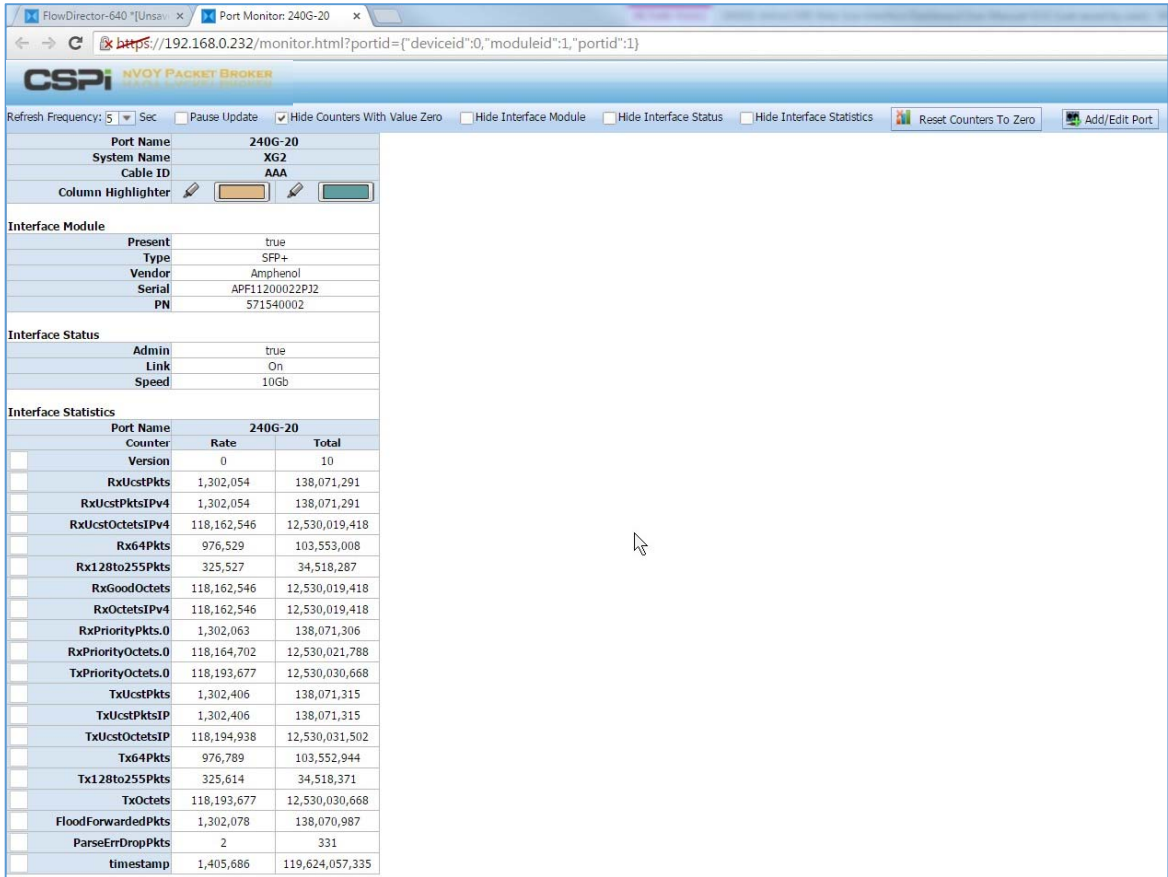


Figure 93: Displaying statistic counters for a selected port.



Displays port registers values in the Port Registers window to be copied and pasted to a clipboard, as shown in Figure 94.

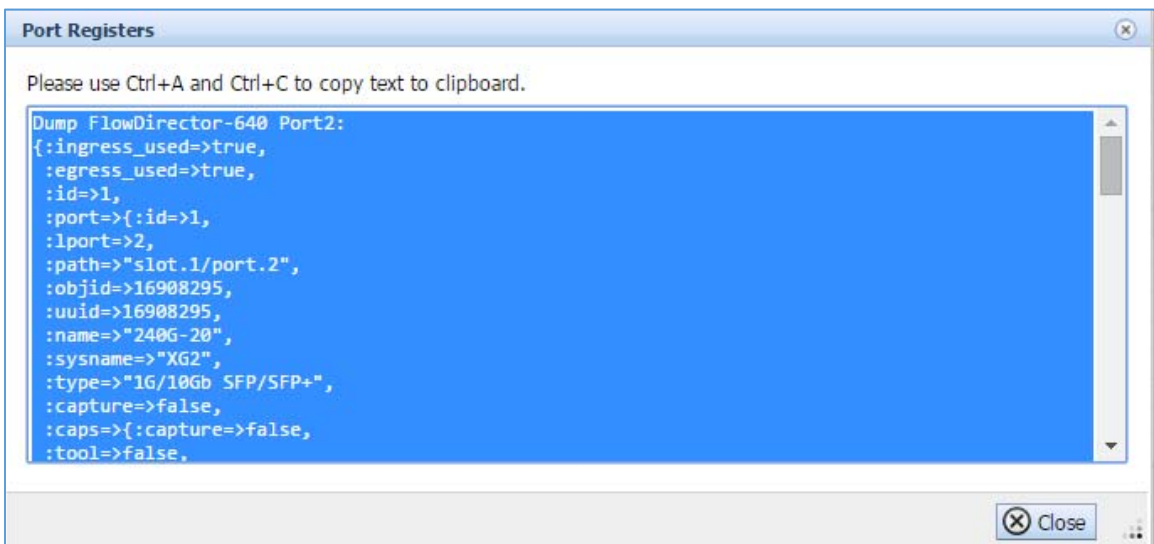


Figure 94: Port Registers window.



Tests and confirms port link attributes, in the Probe Port Link Attributes window, as shown in Figure 95.

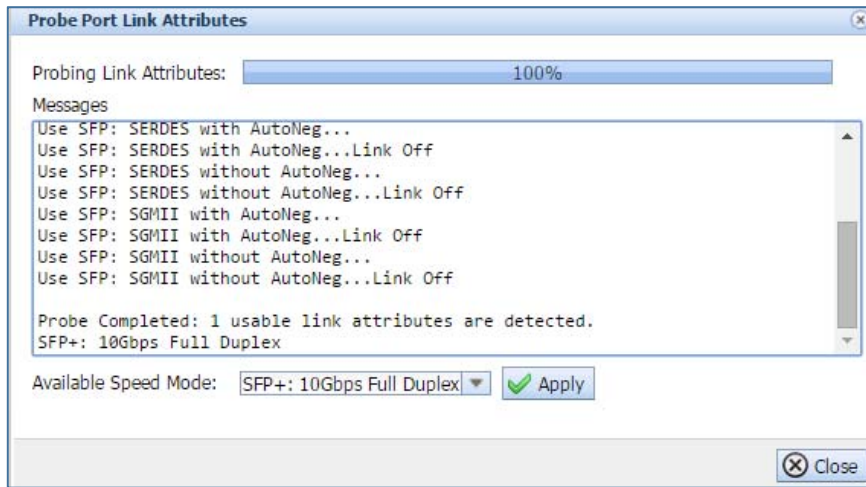


Figure 95: Probe Port Link Attributes window.

## 5.5 Interfaces Toolbar

The Interfaces Toolbar enables the user to quickly detect, edit, disable, or enable a specific port, as shown in Figure 96.

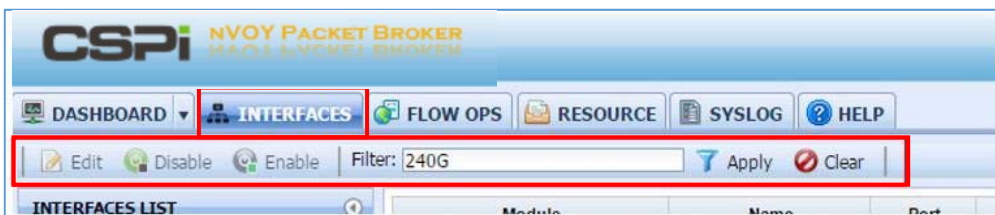


Figure 96: Interfaces Toolbar.



### Editing a port

1. Select the port on the Interfaces List, as shown in Figure 97.
2. Click **[Edit]** on the toolbar.  
The Edit port window appears.
3. Make the necessary changes to port name, admin status, speed, or mode.
4. Click **OK**.

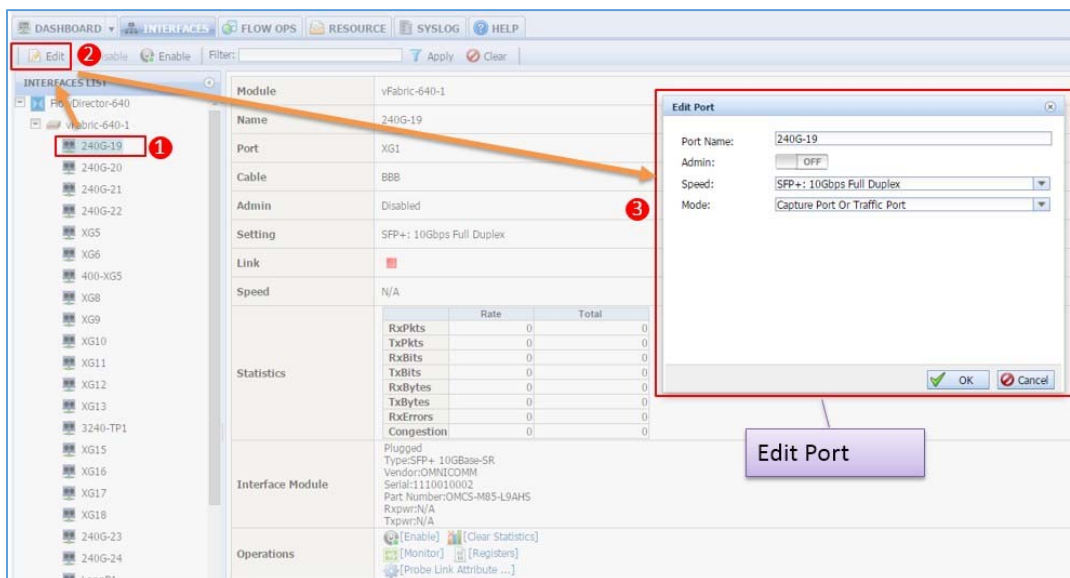


Figure 97: Edit port operation with Edit port window.



### Enabling a port

1. Select the port on the Interfaces List, as shown in Figure 98.
1. Click **[Enable]** on the toolbar.

The port is enabled.



### Disabling a port

1. Select the port on the Interfaces List, as shown in Figure 98.
2. Click **[Disable]** on the toolbar.

The port is disabled.

The screenshot shows the CSPI web interface. At the top, there are navigation tabs: DASHBOARD, INTERFACES, FLOW OPS, RESOURCE, SYSLOG, and HELP. Below the tabs is a toolbar with a 'Filter' input, 'Apply', and 'Clear' buttons. The main content area is divided into two parts. On the left is the 'INTERFACES LIST' tree view, showing a hierarchy: FlowDirector-640 > vFabric-640-1 > 240G-19, 240G-20, 240G-21, 240G-22, XG5, XG6, 400-XG5, XG8, XG9, XG10, XG11, XG12, XG13, 3240-TP1, XG15, XG16, XG17, XG18, 240G-23, 240G-24, and LoopR1. The '240G-21' port is selected and highlighted with a red box and a red circle containing the number '1'. On the right is a detailed view of the selected port. It includes fields for Module (vFabric-640-1), Name (240G-21), Port (XG3), Cable (CCC), Admin (Enabled), Setting (SFP+: 10Gbps Full Duplex), Link (green indicator), and Speed (10Gb). Below these fields is a 'Statistics' table with columns for Rate and Total, and rows for RxPkts, TxPkts, RxBits, TxBits, RxBytes, TxBytes, RxErrors, and Congestion. The 'Interface Module' section provides details like Plugged, Type:SFP+, Vendor:Amphenol, Serial:APF112700256J9, Part Number:571540002, Rxpwr:N/A, and Txpwr:N/A. The 'Operations' section contains buttons for [Disable], [Clear Statistics], [Monitor], [Registers], and [Probe Link Attribute ...].

Figure 98: Enabling and disabling a port.



### Port filtering

The filter offers a string-based match capability, enabling the user to drill down to specific port quickly and easily.

#### Example 1: Port “XG35”

1. Enter **XG35** in the **Filter:** dialog box.
2. Click **Apply**.

All ports containing the string Port XG35 are displayed, as shown in Figure 99.

Module	Name	Port	Cable	Admin	Setting	Link	Speed	Statistics		Interface Module	Operations
								Rate	Total		
vFabric-640-1	XG35	XG35		Enabled	SFP+ 10Gbps Full Duplex		N/A	RxPkts: 0	0	Unplugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]

Figure 99: Port filtering example 1.

#### Example 2: Port “240G-2”

1. Enter **240G-2** in the **Filter:** dialog box.
2. Click **Apply**.

All ports containing the string Port 240G-2 are displayed, as shown in Figure 100.

Filter: 240G-2 [Apply] [Clear]											
Module	Name	Port	Cable	Admin	Setting	Link	Speed	Statistics		Interface Module	Operations
								Rate	Total		
vFabric-640-1	240G-20	XG2	AAA	Enabled	SFP+ 10Gbps Full Duplex		10Gb	RxPkts: 1,117,082	3,072,012,928	Plugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-21	XG3	CCC	Enabled	SFP+ 10Gbps Full Duplex		10Gb	RxPkts: 0	0	Plugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-22	XG4	DDD	Enabled	SFP+ 10Gbps Full Duplex		10Gb	RxPkts: 0	0	Plugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-23	XG19		Enabled	SFP: SERDES without Autolag		1Gb	RxPkts: 0	0	Plugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]
vFabric-640-1	240G-24	XG20		Enabled	SFP: SGMII without Autolag		1Gb	RxPkts: 0	0	Plugged	[Disable] [Clear Statistics] [Monitor] [Registers] [Probe Link Attribute ...]

Figure 100: Port filtering example 2.

## 6 Flow Operations Tab

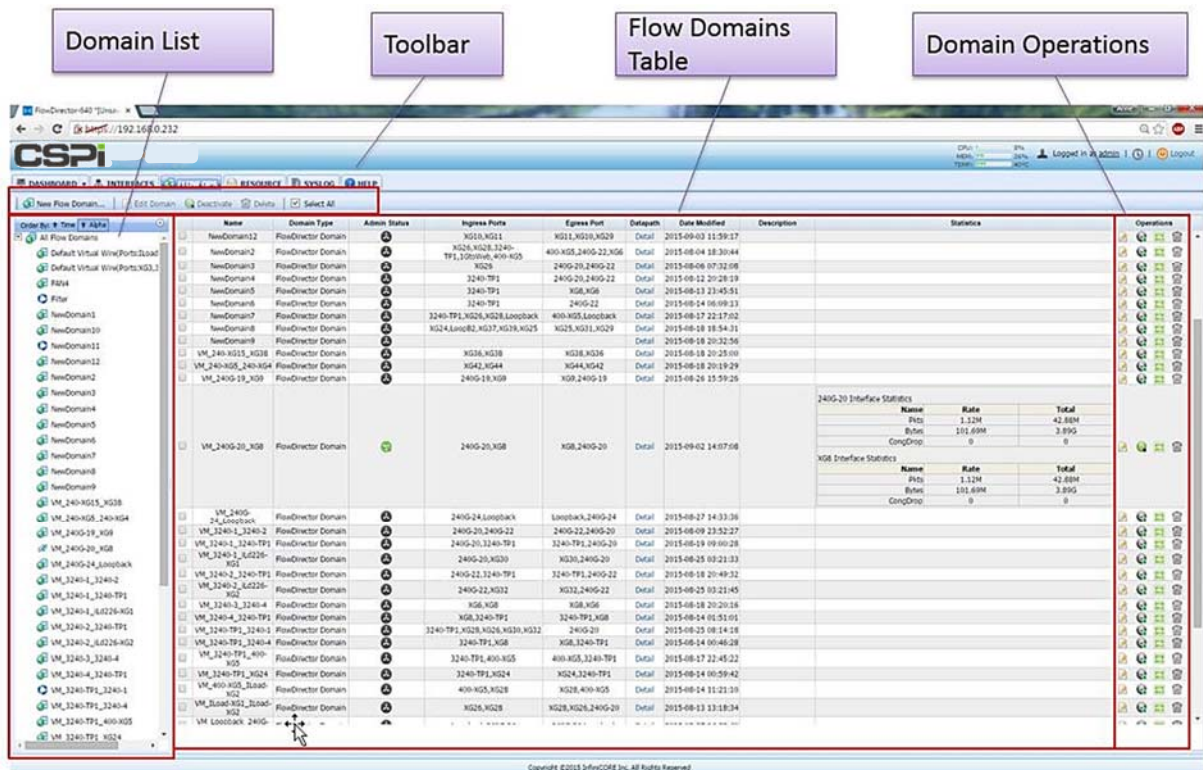


Figure 101: Flow Operations or “Flow OPS” tab.

### Attributes

The Flow Operations or “Flow OPS” tab offers a comprehensive view of The nVoy Packet Broker flow domains with the following attributes (Figure 101).

- The domain name
- The type of domain
- Domain admin status
- Domain ports and their roles
- Domain data path
- Domain date, descriptions, and statistics
- Domain operations

## Tasks

The Flow Operations tab enables users to perform the following tasks quickly and easily, as shown in Figure 102.

- Creating a new domain
- Uploading a domain
- Editing a domain
- Enabling or disabling a domain
- Deleting a domain
- Downloading a domain
- Selecting all or unselecting all domains for a specific task



## 6.1 Flow Operations tab panels

Four panels highlight the Flow Operations tab's important features.

### 1. Flow Domains List

The Flow Domains List panel displays a record of all flow domains in alphabetical order.

For more detailed information on the Flow Domains panel, go to the [Flow Domains list](#) section in this chapter.

### 2. Flow Domains Information Table

The Flow Domains Information table displays flow domain information and attributes such as, name, domain type, admin status, ingress ports, egress ports, statistics, and so on.

For more detailed information on the Flow Operations Information table panel, go to the [Flow Domains Information Table](#) section in this chapter.

### 3. Operations

The Operations panel displays the various flow domains operation and management settings available to the user.

For more detailed information on the Operations panel, go to the [Operations](#) section in this chapter

### 4. Flow Operations Toolbar

The Flow Operations Toolbar enables the user to quickly detect, edit, disable, or enable a specific flow domain.

For more detailed information on the Flow Operations Toolbar, go to the [Flow Operations Toolbar](#) section in this chapter



## 6.2 Flow Domains List

The Flow Domains List panel lists all The nVoy Packet Broker domains by time or alphabetical order, as shown in Figure 102.

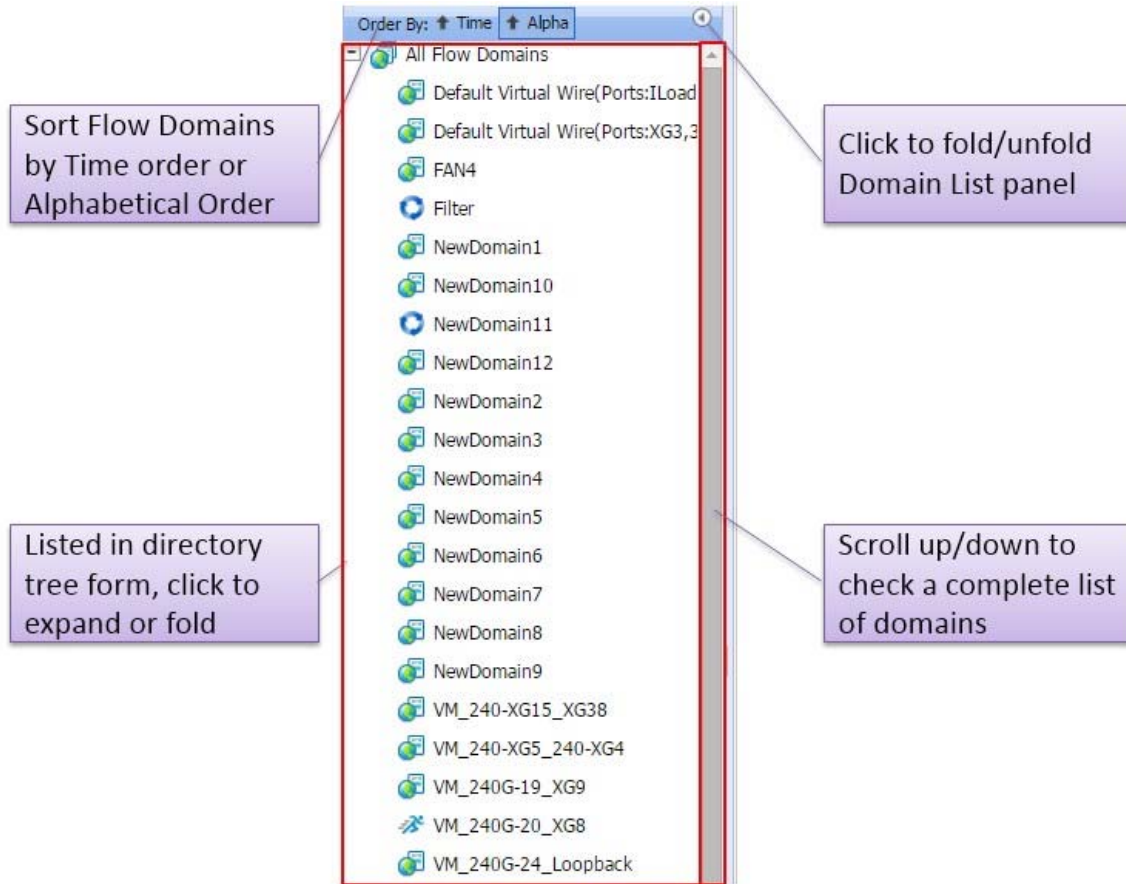


Figure 102: Flow Domains List panel.



## Viewing flow domain details

To view the details of a specific flow domain, follow these steps:

1. Select the domain from the Flow Domains List, as shown in Figure 103.

The Configuration Editor window appears with detailed flow domain information.

The screenshot shows the Configuration Editor window for a flow domain named 'NewDomain1'. The interface includes a sidebar on the left with a list of flow domains, where 'NewDomain1' is selected. The main area is divided into several sections:

- Name:** NewDomain1
- Domain Type:** FlowDirector Domain
- Admin Status:** Enabled
- Ingress Ports:** A table listing ports:
 

Name	SPF	Speed	Disable	Size	Enable	Tag	AAA	Cable Identifier
2400-20	SPF = 100Gbps Full Duplex	Speed						
- Egress Port:** A table listing ports:
 

Name	SPF	Speed	Disable	Size	Enable	Tag	AAA	Cable Identifier
400-805	SPF = 100Gbps Full Duplex	Speed						
- Outpath:** A flow diagram showing traffic flow from the 2400-20 interface (100Gbps) through a 'Filter1' (Filters: 1 Enabled) to the 400-805 interface (100Gbps).
- Date Modified:** 2015-09-02 07:12:18
- Description:**

2400-20 Interface Statistics		
Name	Rate	Total
Pkts	926 176	727 489
Bytes	672 419	528 150

Figure 103: Configuration Editor window with detailed flow domain information.

## 6.3 Flow Domains Information Table

Important flow domains information and operations are organized and displayed in table format as shown in Figure 104.

Name	Domain Type	Admin Status	Ingress Ports	Egress Port	Datapath	Date Modified	Description	Statistics	Operations																										
NewDomain12	FlowDirector Domain		XG10,XG11	XG11,XG10,XG29	Detail	2015-09-03 11:59:17																													
NewDomain2	FlowDirector Domain		XG26,XG28,3240-TP1,1G6oWeb,400-XG5	400-XG5,240G-22,XG6	Detail	2015-08-04 18:30:44																													
NewDomain3	FlowDirector Domain		XG26	240G-20,240G-22	Detail	2015-08-06 07:32:08																													
NewDomain4	FlowDirector Domain		3240-TP1	240G-20,240G-22	Detail	2015-08-12 20:28:19																													
NewDomain5	FlowDirector Domain		3240-TP1	XG8,XG6	Detail	2015-08-13 23:45:51																													
NewDomain6	FlowDirector Domain		3240-TP1	240G-22	Detail	2015-08-14 06:09:13																													
NewDomain7	FlowDirector Domain		3240-TP1,XG26,XG28,Loopback	400-XG5,Loopback	Detail	2015-08-17 22:17:02																													
NewDomain8	FlowDirector Domain		XG24,LoopB2,XG37,XG39,XG25	XG25,XG31,XG29	Detail	2015-08-18 18:54:31																													
NewDomain9	FlowDirector Domain				Detail	2015-08-18 20:32:56																													
VM_240-XG15_XG38	FlowDirector Domain		XG36,XG38	XG38,XG36	Detail	2015-08-18 20:25:00																													
VM_240-XG5_240-XG4	FlowDirector Domain		XG42,XG44	XG44,XG42	Detail	2015-08-18 20:19:29																													
VM_240G-19_XG9	FlowDirector Domain		240G-19,XG9	XG9,240G-19	Detail	2015-08-26 15:59:26																													
VM_240G-20_XG8	FlowDirector Domain		240G-20,XG8	XG8,240G-20	Detail	2015-09-02 14:07:08	<table border="1"> <tr> <th colspan="3">240G-20 Interface Statistics</th> </tr> <tr> <th>Name</th> <th>Rate</th> <th>Total</th> </tr> <tr> <td>Pkts</td> <td>959.47K</td> <td>51.26M</td> </tr> <tr> <td>Bytes</td> <td>696.59M</td> <td>37.21G</td> </tr> </table> <table border="1"> <tr> <th colspan="3">XG8 Interface Statistics</th> </tr> <tr> <th>Name</th> <th>Rate</th> <th>Total</th> </tr> <tr> <td>Pkts</td> <td>1.09M</td> <td>49.36M</td> </tr> <tr> <td>Bytes</td> <td>99.23M</td> <td>4.48G</td> </tr> <tr> <td>CongDrop</td> <td>0</td> <td>0</td> </tr> </table>	240G-20 Interface Statistics			Name	Rate	Total	Pkts	959.47K	51.26M	Bytes	696.59M	37.21G	XG8 Interface Statistics			Name	Rate	Total	Pkts	1.09M	49.36M	Bytes	99.23M	4.48G	CongDrop	0	0	
240G-20 Interface Statistics																																			
Name	Rate	Total																																	
Pkts	959.47K	51.26M																																	
Bytes	696.59M	37.21G																																	
XG8 Interface Statistics																																			
Name	Rate	Total																																	
Pkts	1.09M	49.36M																																	
Bytes	99.23M	4.48G																																	
CongDrop	0	0																																	
VM_240G-24_Loopback	FlowDirector Domain		240G-24,Loopback	Loopback,240G-24	Detail	2015-08-27 14:33:36																													
VM_3240-1_3240-2	FlowDirector Domain		240G-20,240G-22	240G-22,240G-20	Detail	2015-08-09 23:52:27																													
VM_3240-1_3240-TP1	FlowDirector Domain		240G-20,3240-TP1	3240-TP1,240G-20	Detail	2015-08-19 09:00:28																													
VM_3240-1_ILd226-XG1	FlowDirector Domain		240G-20,XG30	XG30,240G-20	Detail	2015-08-25 03:21:33																													
VM_3240-2_3240-TP1	FlowDirector Domain		240G-22,3240-TP1	3240-TP1,240G-22	Detail	2015-08-18 20:49:32																													
VM_3240-2_ILd226-XG2	FlowDirector Domain		240G-22,XG32	XG32,240G-22	Detail	2015-08-25 03:21:45																													
VM_3240-3_3240-4	FlowDirector Domain		XG6,XG8	XG8,XG6	Detail	2015-08-18 20:20:16																													
VM_3240-4_3240-TP1	FlowDirector Domain		XG8,3240-TP1	3240-TP1,XG8	Detail	2015-08-14 01:51:01																													
VM_3240-TP1_3240-1	FlowDirector Domain		3240-TP1,XG28,XG26,XG30,XG32	240G-20	Detail	2015-08-25 08:14:18																													
VM_3240-TP1_3240-4	FlowDirector Domain		3240-TP1,XG8	XG8,3240-TP1	Detail	2015-08-14 00:46:28																													
VM_3240-TP1_400-XG5	FlowDirector Domain		3240-TP1,400-XG5	400-XG5,3240-TP1	Detail	2015-08-17 22:45:22																													
VM_3240-TP1_XG24	FlowDirector Domain		3240-TP1,XG24	XG24,3240-TP1	Detail	2015-08-14 00:59:42																													
VM_400-XG5_Load-XG1	FlowDirector Domain		400-XG5,XG28	XG28,400-XG5	Detail	2015-08-14 11:21:10																													
VM_Load-XG1_Load-XG2	FlowDirector Domain		XG26,XG28	XG28,XG26,240G-20	Detail	2015-08-13 13:18:34																													
VM_Loopback_240G-24	FlowDirector Domain		Loopback,240G-24	240G-24,Loopback	Detail	2015-08-27 14:33:40																													

Figure 104: Flow Domains Information table.

Flow Domain information table features:

### Name

The Flow domain name.

### Domain Type

The flow domain attribute and type.

### Admin Status

The flow domain administrative status.

The flow domain is INACTIVE. Click to ACTIVATE the domain.

The flow domain is ACTIVE. Click to DEACTIVATE the domain.

### Ingress Ports

The flow domain ingress ports.

### Egress Ports

The flow domain egress ports.

### Data Path

Displays the flow domain’s data path configuration, as described below.

Click **Details** in the Data Path column to launch the Data Path Configuration window, as shown in Figure 105.

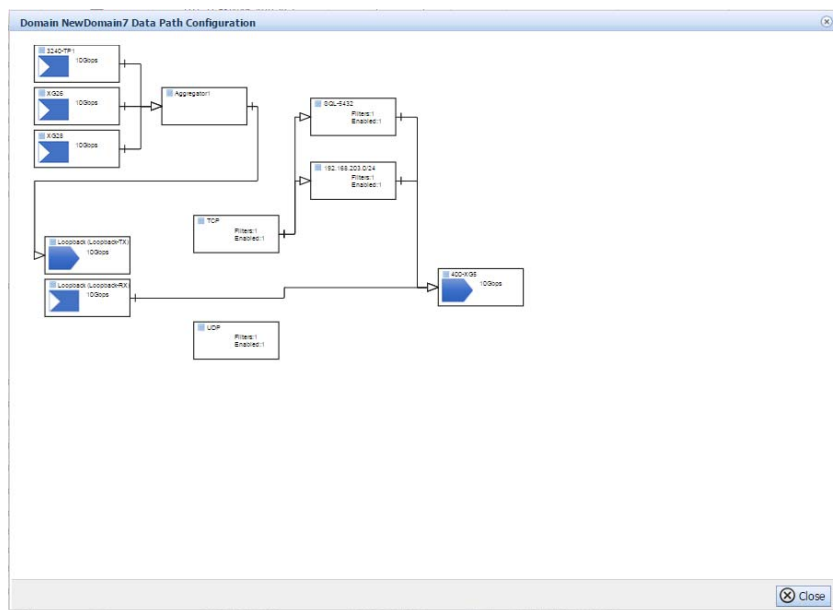


Figure 105: Data Path Configuration window.

### Date Modified

The last date and time the flow domain was modified.

### Description

The flow domain description.

### Statistics

Displays the activating flow domain port statistics counters:

- Receive/transmit packet rate and total
- Receive/transmit byte rate and total
- Receive error rate and total
- Congestion packet rate and total

An example of activating flow domain port statistics counters is shown in Figure 106.

240G-20 Interface Statistics		
Name	Rate	Total
Pkts	959.47K	51.26M
Bytes	696.59M	37.21G
XG8 Interface Statistics		
Name	Rate	Total
Pkts	1.09M	49.36M
Bytes	99.22M	4.48G
CongDrop	0	0

Figure 106: Example of flow domain port statistics counters.

## 6.4 Flow OPS Operations

The Flow OPS Operations panel displays the most commonly used flow domain operations, as shown in Figure 107.

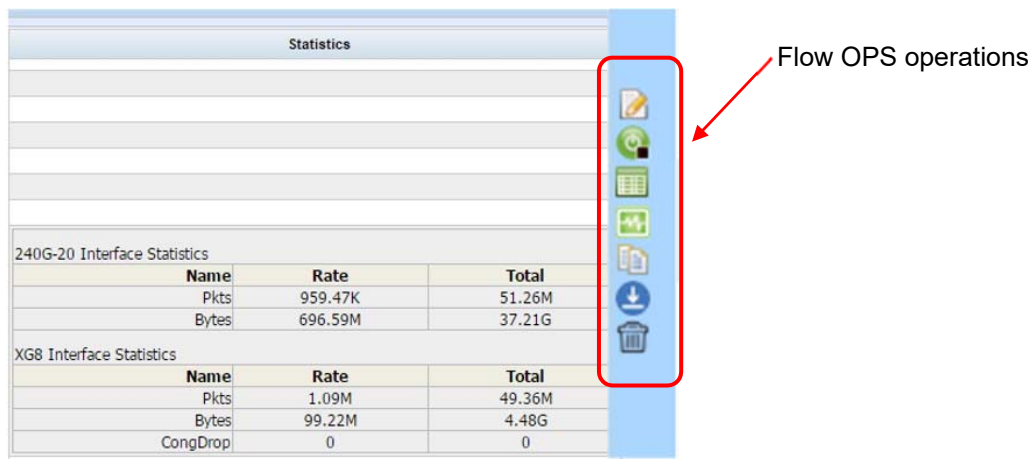











Figure 107: Flow OPS Operations panel.

### Description

-  [Edit]
 Edits the flow domain settings.
-  [Enable] / [Disable]
 Enables or disables the flow domain.
-  [Enable]
 The flow domain is enabled; click to disable the flow domain.
-  [Disable]
 The flow domain is disabled; click to enable the flow domain.
-  [Show Statistics]
 Displays statistic counters for a selected flow domain. This operation is identical to the Flow Domains panel **[Monitor]** operation.
-  Monitor ...
 Displays the flow domain's interface modules, status, interface statistics, and domain configuration in real-time at a set refresh rate.
-  Duplicate
 Duplicates a flow domain entry.
-  Download
 Downloads a flow domain file to the Web UI.
-  [Delete]
 Deletes the flow domain from Web UI.



### Editing a flow domain

1. Select the flow domain from the Flow Domains Information table.
2. Click **[Edit]** in the Operations panel.

The Domain Data Path Designer window appears, as shown in Figure 108.

3. Modify the flow domain settings as required.
4. Click **OK**.

The flow domain settings have been edited.

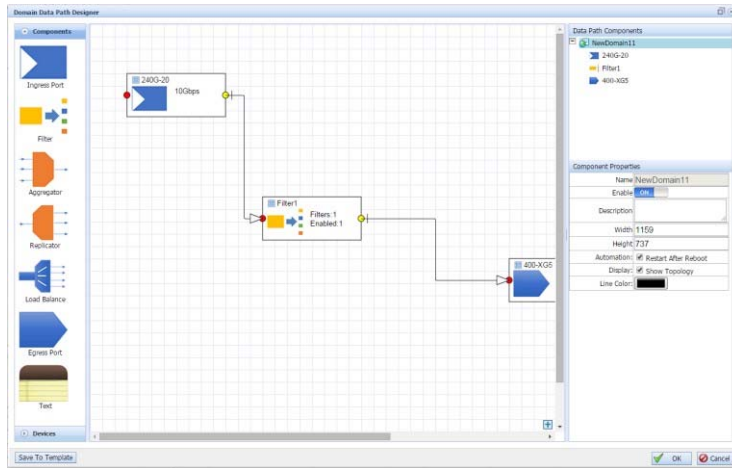


Figure 108: Domain Data Path Designer.



### Enabling a flow domain

1. Select a flow domain from the Flow Domains Information table.
2. Click **[Enable]** in the Operations panel.  
The flow operation is enabled.



### Disabling a flow domain

1. Select a flow domain from the Flow Domains Information table.
2. Click **[Disable]** in the Operations panel.  
A Confirm window appears to confirm disabling the flow operation (Figure 109).

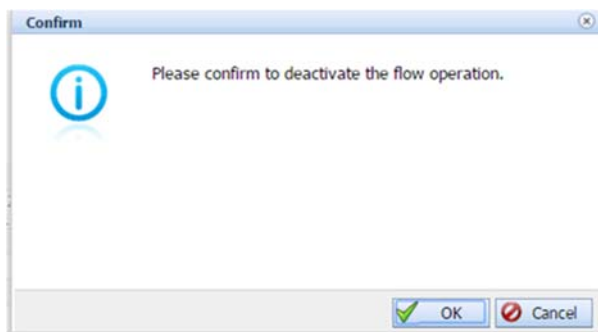


Figure 109: Confirm window for disabling a flow operation.

3. Click **OK** to confirm.  
The flow operation is disabled.



### Displaying flow domain statistic counters

1. Select a flow domain from the Flow Domains Information table.
2. Click **[Show Statistics]** in the Operations panel.

The flow domain's Statistics window appears, as shown in Figure 110.

Ports	Receive Packets		Receive Bps		Receive Bytes		Receive Errors		Transmit Packets		Transmit Bps		Transmit Bytes	
	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total	Rate	Total
Port 0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Port 1	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T7.P0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
T8.P1	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Figure 110: Flow domain's Statistics window.



### Deleting a flow domain

1. Select a flow domain from the Flow Domains Information table.
2. Click **[Delete]** in the Operations panel.

A Confirm window appears, as shown in Figure 111.

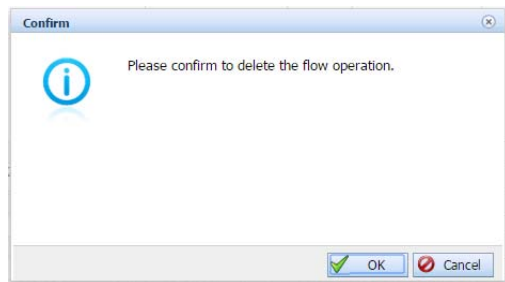


Figure 111: Flow domain delete confirmation.

3. Click **OK** to confirm.

The flow domain has been deleted from the Web UI.



## 6.5 Flow Operations Toolbar

The Flow OPS Toolbar enables the user to create, edit, disable and enable, or delete flow domains quickly and easily.

**NOTE:** To ensure that *all* active toolbar operations at your disposal for a specific flow domain, click the **Select** check box of the corresponding domain (Figure 113). Unchecked flow domain entries are limited to the **Create Domain** and **Upload Domain** operations, as shown in Figure 112.

### Unchecked flow domain entry

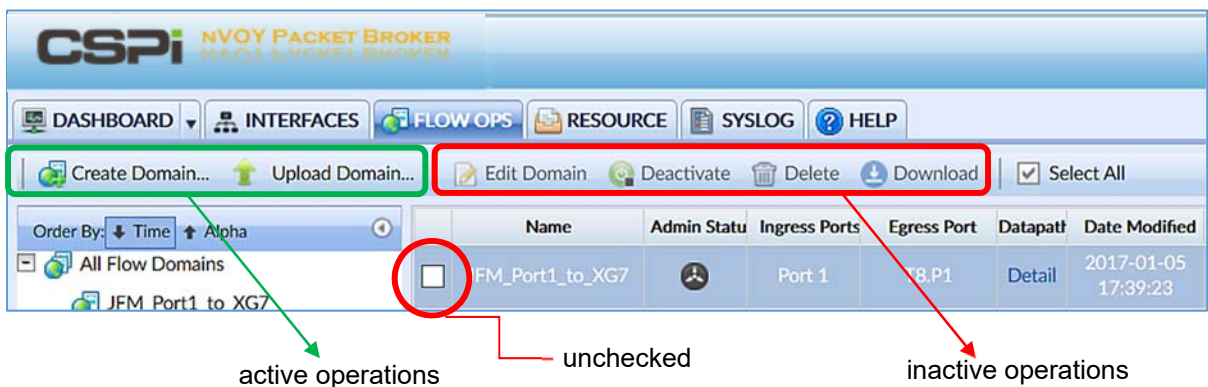


Figure 112: Unchecked flow domain entry.

### Checked flow domain entry

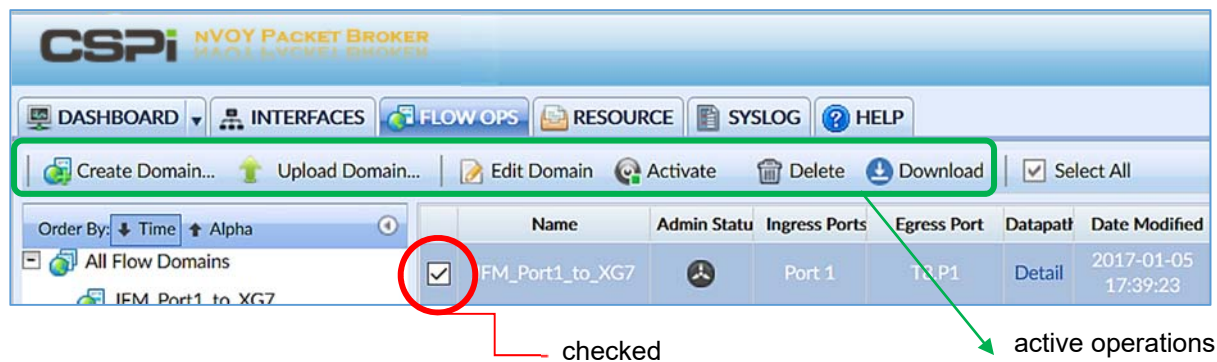


Figure 113: Checked flow domain entry.



### Creating a new flow domain

1. Click **[Create Domain...]** from the Flow OPS toolbar.
2. The Configuration Editor window appears, as shown in Figure 114.

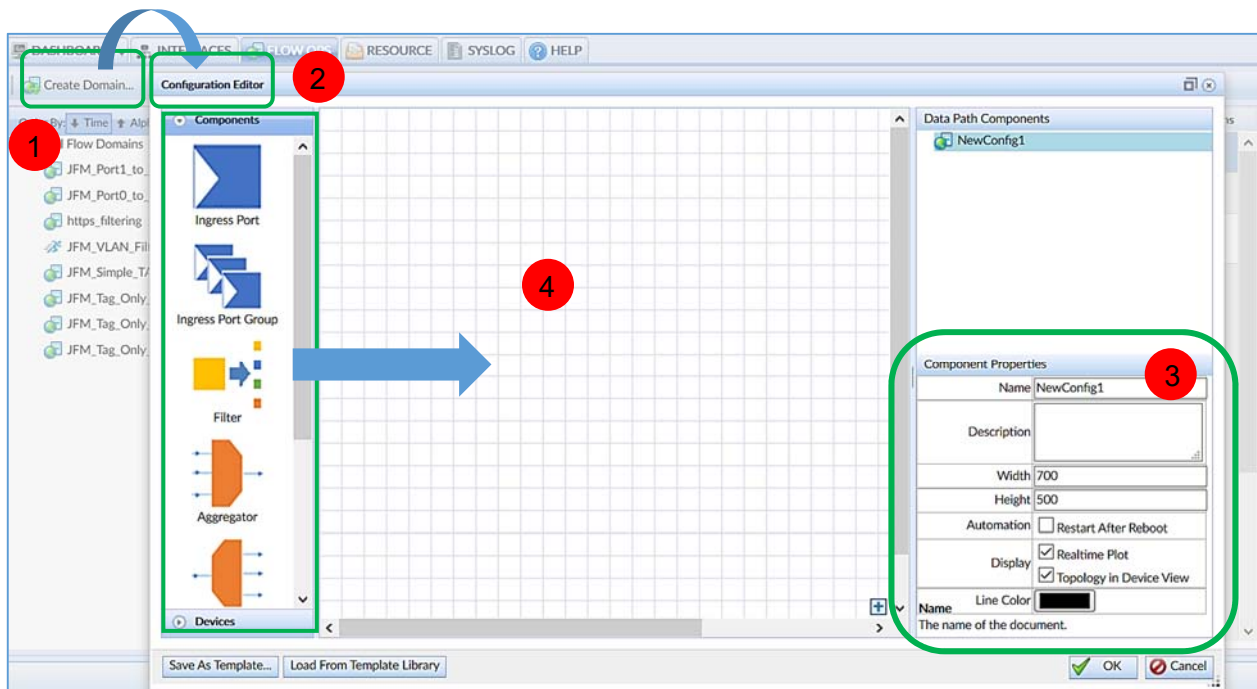


Figure 114: Configuration Editor window.

3. Enter the domain name and description in the Component Properties panel. You may choose to change the remaining default settings.
4. Click, drag, and place the required component and device icons from the left-hand panel to the grid.
5. Click **OK**.  
The Start Domain <NewDomainName> In Progress window appears.
6. Click **Close**.  
The new domain entry appears in the Flow Domains Information table panel.

**NOTE:** Once the domain name is created, it cannot be changed.



### Uploading a specific domain

1. Click **Upload Domain...** from the Flow OPS toolbar.

The Upload File window appears, as shown in Figure 115.

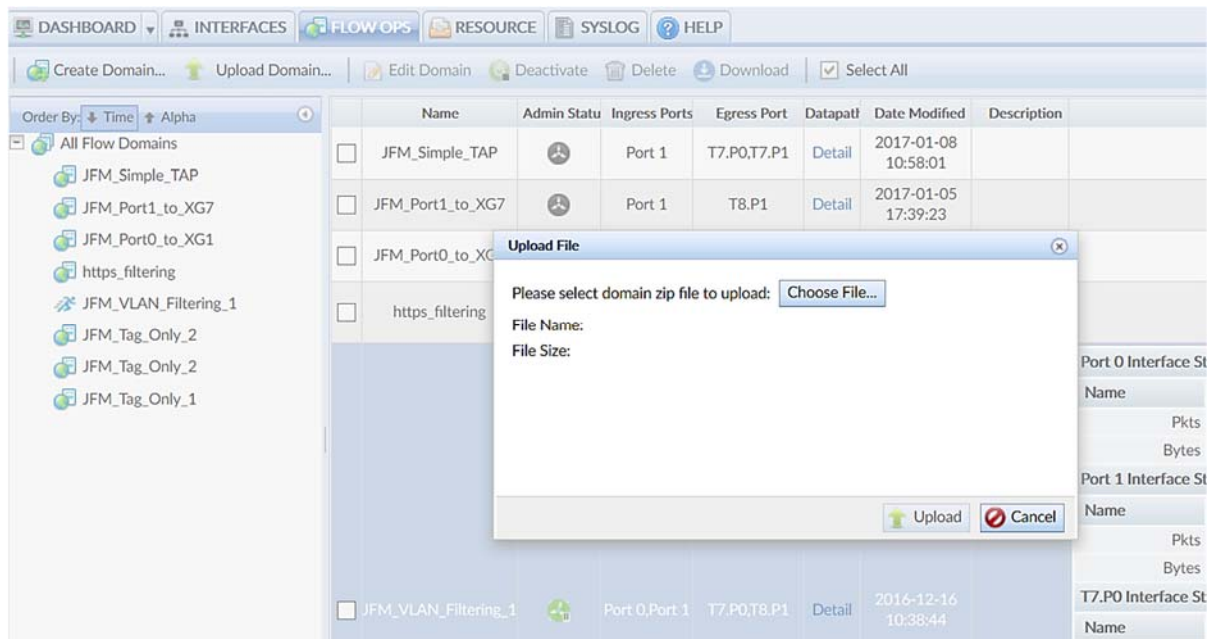


Figure 115: Upload File window.

2. Click **Choose File...**

The File Upload window appears.

3. Select a domain zip file to upload.

4. Click **Upload**.

The domain zip file uploads to the server.



### Editing a specific domain

1. Click the specific domain check box from the Flow Domains Information table.

The Edit Domain button becomes active.

2. Click **Edit Domain**.

The Configuration Editor window appears, as shown in Figure 116.

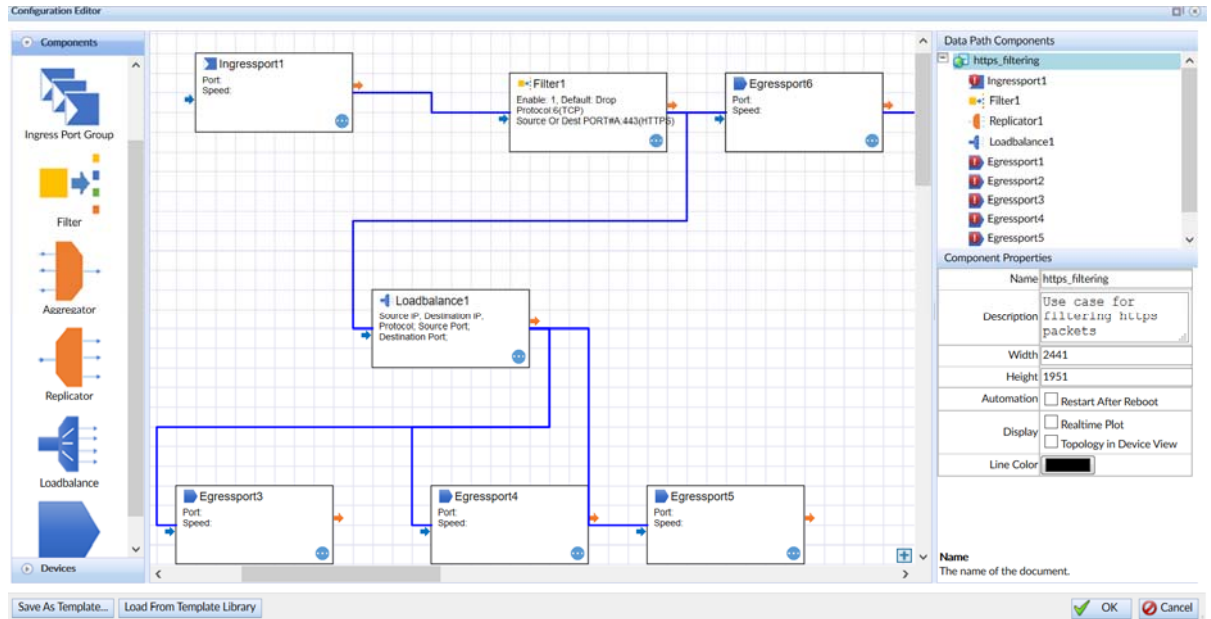


Figure 116: Configuration Editor window.

3. Edit the component and device icons, as required.
4. Click **OK**.

The flow domain has been edited.



### Deactivating an active domain

1. Click the active domain check box from the Flow Domains Information Table.  
The Deactivate button becomes active in the Flow OPS toolbar.
2. Click **Deactivate**.  
A Confirm window appears, as shown in Figure 117.

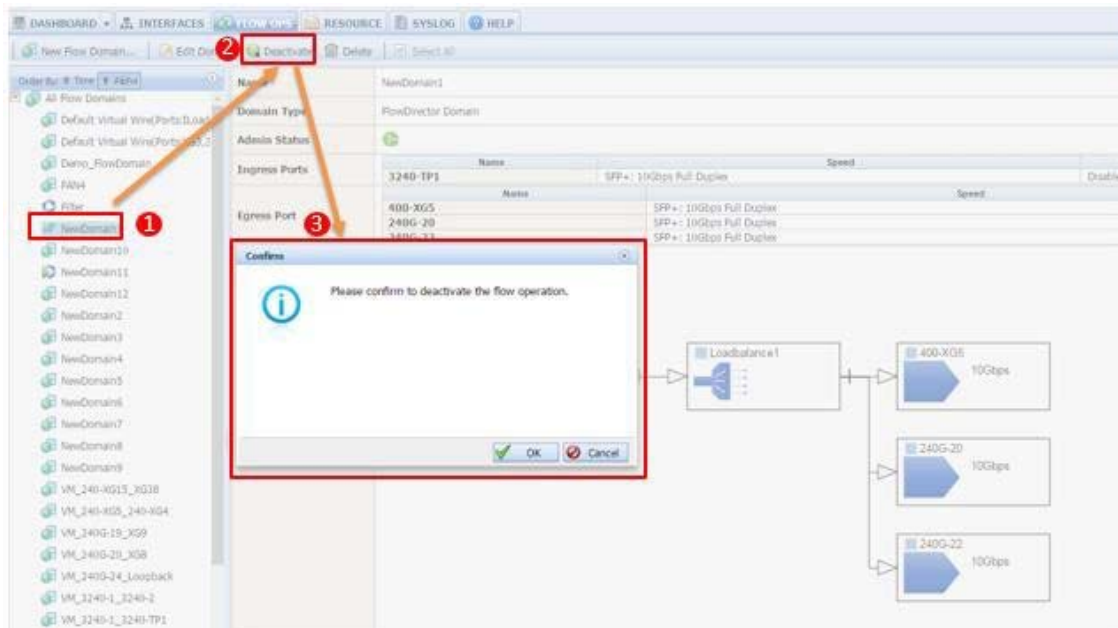


Figure 117: Confirming domain deactivation.

3. Click **OK** to confirm domain deactivation.  
The domain is deactivated.



### Activating an inactive domain

1. Click an inactive domain check box from the Flow Domains Information Table.  
The Activate button becomes active in the Flow OPS toolbar.
2. Click **Activate**.  
A Confirm window appears.
3. Click **OK** to confirm domain activation.  
The domain is activated.



### Deleting a specific domain

1. Click the specific domain check box from the Flow Domains Information table, as shown in Figure 118.

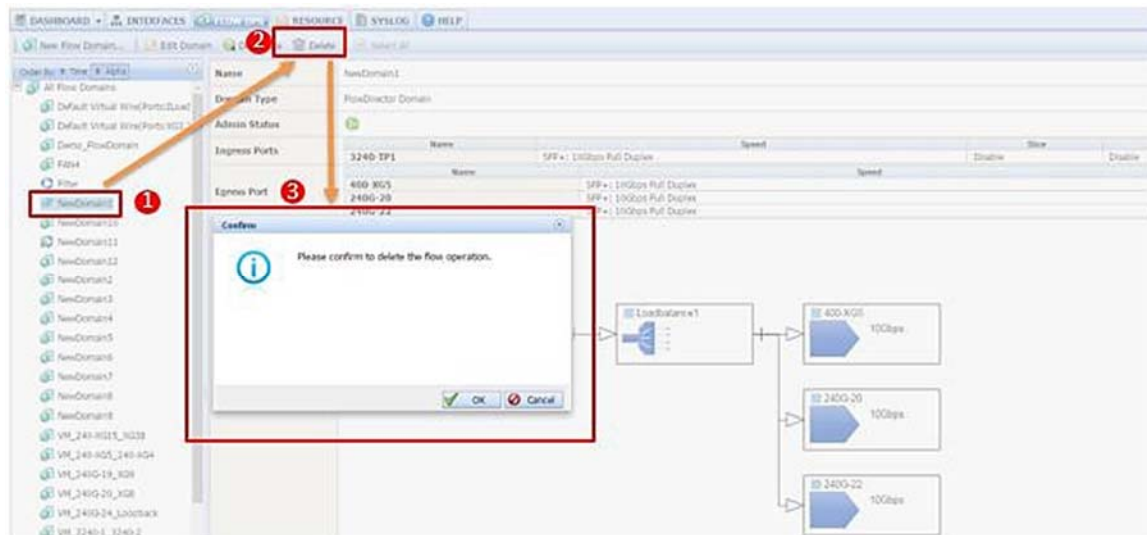


Figure 118: Confirming specific domain deletion.

The Delete Domain button becomes active.

2. Click **Delete**.  
A Confirm window appears.
3. Click **OK** to confirm domain deletion.  
The domain is deleted.



### Downloading a domain

1. Click the specific domain check box from the Flow Domains Information table.
2. Click **Download** from the Flow OPS toolbar.
3. The Zipping files window appears. The domain zip files are created.
4. Click **OK**.



### Selecting or unselecting all domains

The  **Select All** and  **Unselect All** check boxes are an effective way to batch select or unselect all domains for a specific task.

#### Example 1:

To select all domains for deletion, follow these steps:

1. Click the **Select All** check box.

All domains are checked, as shown in Figure 119.

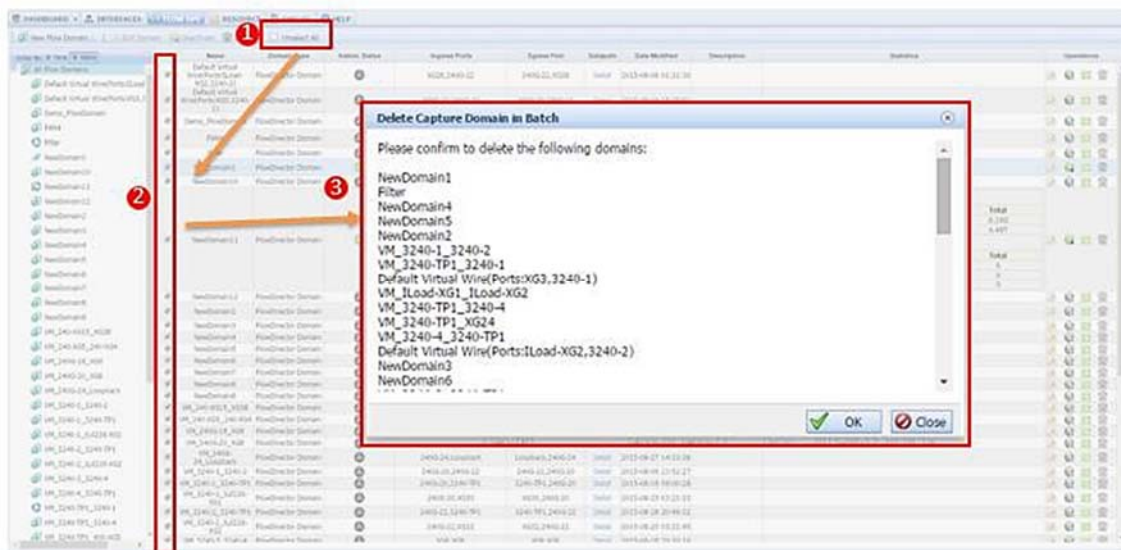


Figure 119: Checking all domains operation.

2. Click **Delete**.  
A Delete Domain in Batch window appears.
3. Click **OK** to confirm domain deletion.  
All domains are deleted.

**Example 2:**

1. To deselect all selected domains, click the **Unselect All** check box from the Flow OPS toolbar  
All selected domains are deselected.



## 7 Resource Tab

The Resource tab displays all available filter and flow domain information (Figure 120). Users can also create and manage filters and filter folders.

**NOTE:** We suggest that you follow the directions in the *Envoy Packet Broker Filter User Guide* in Appendix 5. to acquaint yourself with the basics of creating a filter domain first before moving on to the more detailed procedures in the *nVoy Packet Broker User Guide*.

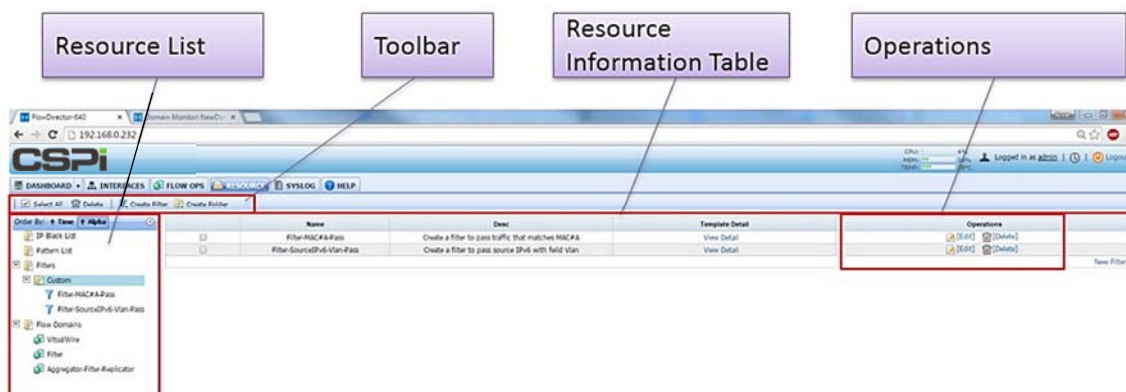


Figure 120: Resource tab.

Users can run the following operations from the Resource tab:

- Creating and deleting filters
- Editing filters
- Creating filter folders
- Deleting flow domain templates

### 7.1 Resource tab panels

Four panels highlight the Resource tab’s important features.

#### 1. Resource List

The Resource List panel displays all available filter and flow domain resources by time and alphabetical order.

For more detailed information on the Resource panel, go to the *Resource List* section in this chapter.

#### 2. Resource Information Table

The Resource Information table displays flow domain resource information and attributes such as, name, name, description, filter template detail,



operation, and so on.

For more detailed information on the Resource Information table panel, go to the [Resource Information Table](#) section in this chapter.

### 3. Operations

The Operations panel displays flow domain filter operation and management settings available to the user.

For more detailed information on the Operations panel, go to the [Operations](#) section in this chapter

### 4. Resource Toolbar

The Resource Toolbar enables the user to quickly detect, edit, disable, or enable filters.

For more detailed information on the Resource Toolbar, go to the [Resource Toolbar](#) section in this chapter

## 7.2 Resource List

The Resource List panel lists all The nVoy Packet Broker resources, such as filters and flow domains, by time or alphabetical order, as shown in Figure 121.

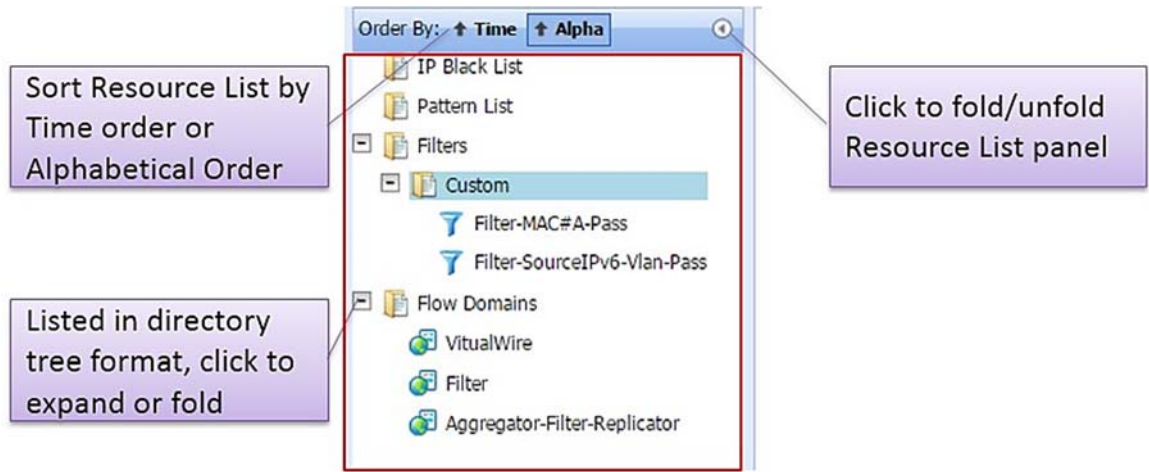


Figure 121: Resource List panel.

To view the details of a specific resource category or to perform further operations, click on the resource category, as show in Figure 122.

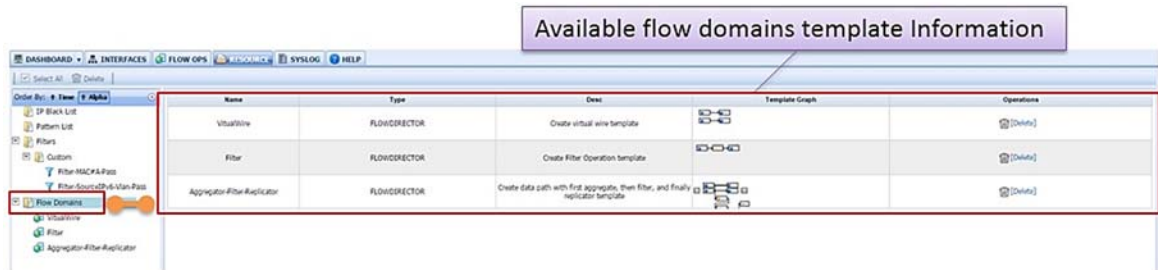


Figure 122: Details of a specific resource category.

## 7.3 Resource Information Table

The Resource Information table displays important resource information and operations, organized and displayed by category. For example, the Filters information tables is displayed, as shown in Figure 123.

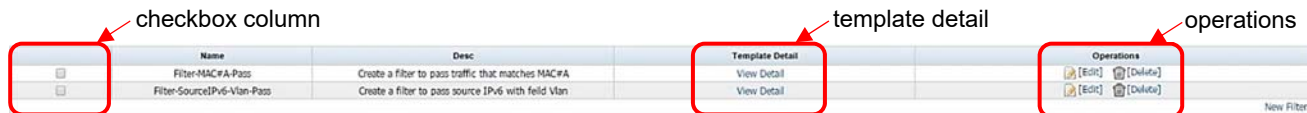


Figure 123: Resource Information table.

Five fields highlight the Resource (Filter) Information table’s important features.

### Checkbox column

Click the checkbox  to check  or uncheck  the filter template for further operations.

### Name

The name of the filter.

### Description

The description of the filter template.

### Template Detail

Click **View Detail** to view filter template details, as shown in Figure 124.

### Operations

The **[Edit]** and **[Delete]** operations of the filter template.

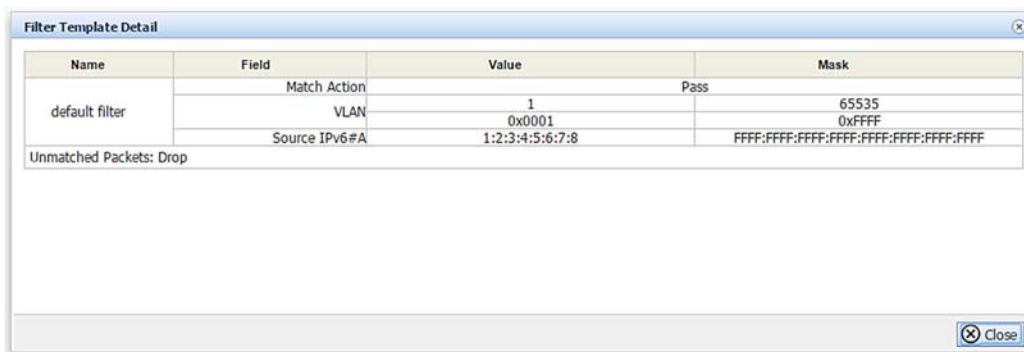


Figure 124: Filter Template Detail window.

## 7.4 Resource Operations

The Resource Information table displays the most commonly used filter and flow domain configuration operations, as shown in Figure 125.

	Name ▲	Desc	Template Detail	Operations
<input type="checkbox"/>	Bob's Filter		<a href="#">View Detail</a>	[Edit]  [Delete]
<input type="checkbox"/>	Source MAC and Destination IP address filter	custom filter	<a href="#">View Detail</a>	[Edit]  [Delete]

[New Filter...](#)

Figure 125: Resource Information table.

### Operations

<a href="#">View Detail</a>	Displays the filter template detail.
[New Filter]	Creates a new filter.
[Edit]	Edits a filter setting.
[Delete]	Deletes a filter entry.
[Export to CSV]	Exports a filter to the server in CSV format.
[Import from CSV]	Imports a filter to the Web UI in CSV format.
[Load from Templates]	Loads a filter from a template.
	Duplicates a filter entry.

## Creating a new filter

**NOTE:** We suggest that you follow the directions in the *Envoy Packet Broker Filter User Guide* in Appendix 5. to acquaint yourself with the basics of creating a filter domain first before moving on to the more detailed procedures in the nVoy Packet Broker User Guide.



1. Click **[New Filter...]** in the lower left-hand corner of the Resource Operations panel.
2. The Add Filter window appears, as shown in Figure 126.

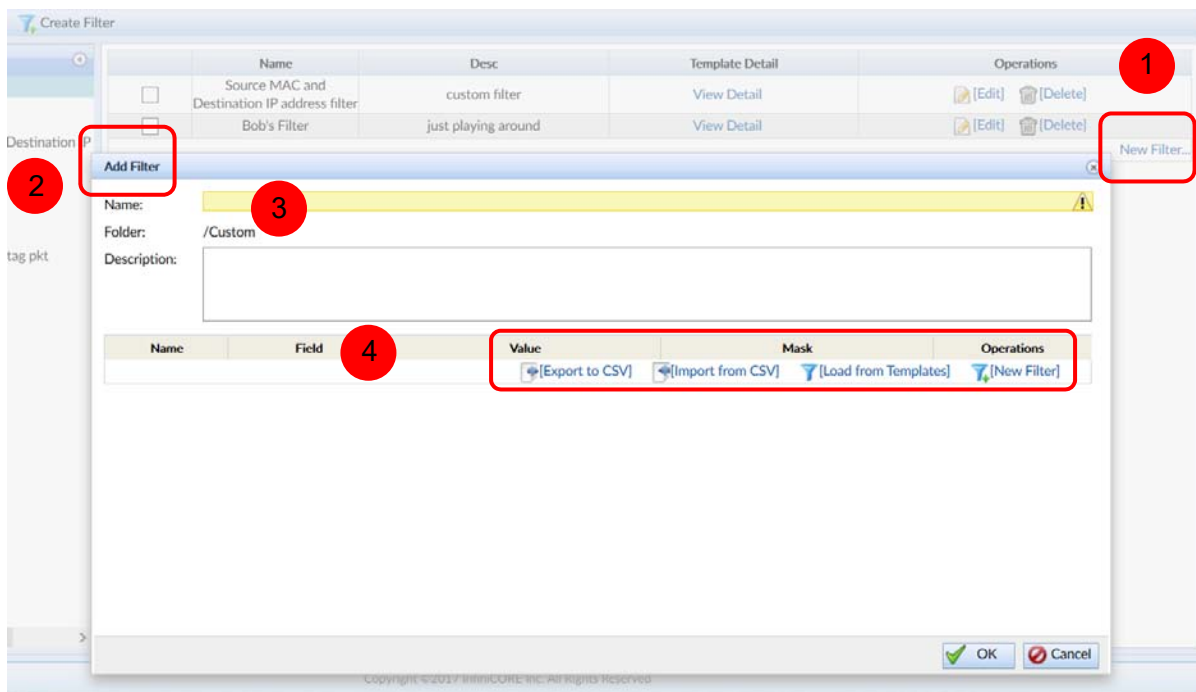


Figure 126: Add Filter window.

3. Enter a filter name and description
4. Create the filter in one of the following ways, as shown below:

- [Export to CSV] Exports a filter to the server in CSV format.
- [Import from CSV] Imports a filter to the Web UI in CSV format.
- [Load from Templates] Loads a filter from a template.
- [New Filter] Adds filter detail at the link, network, and transport layer field level.

5. Click **OK** to create the new filter.



### Editing a filter

1. Select a filter entry from the Resource Information table and click **[Edit]** in the corresponding Operations column.
2. The Edit Filter window appears, as shown in Figure 127.

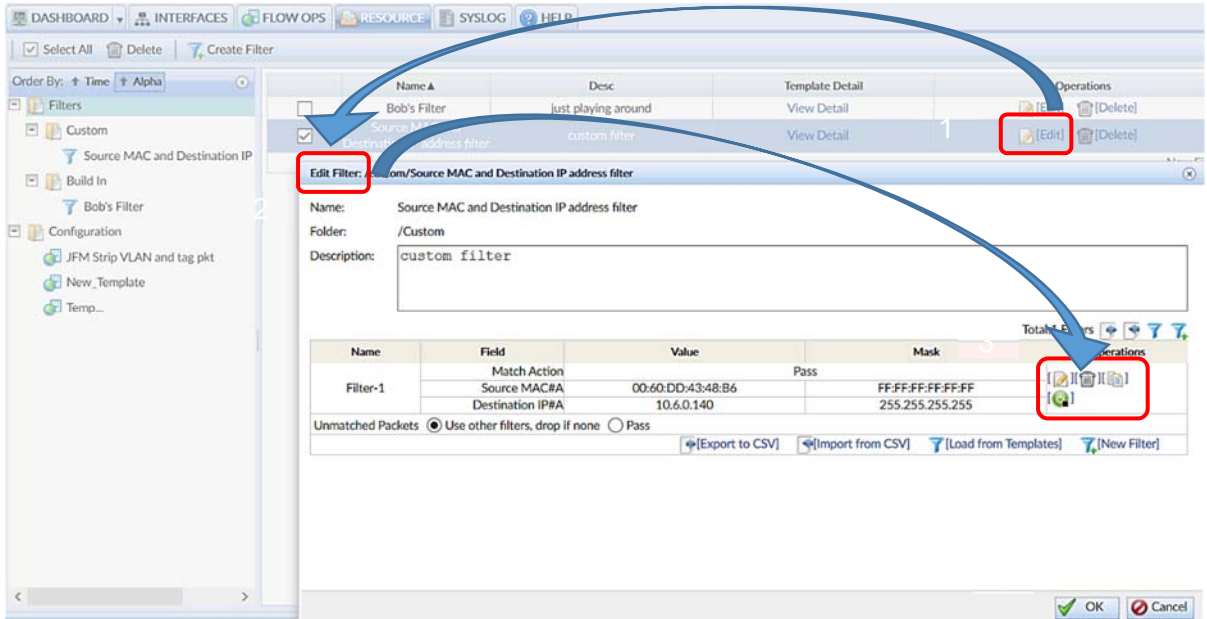


Figure 127: Edit Filter window.

3. Modify the filter in one of the following ways, as shown in Figure 128.

- [Edit] Edits a filter setting.
- Deletes a filter entry.
- Duplicates a filter entry.
- Deactivates a filter entry.
- Activates a filter entry.
- Moves filter entry up (when there is more than one filter entry).
- Moves filter entry down (when there is more than one filter entry).

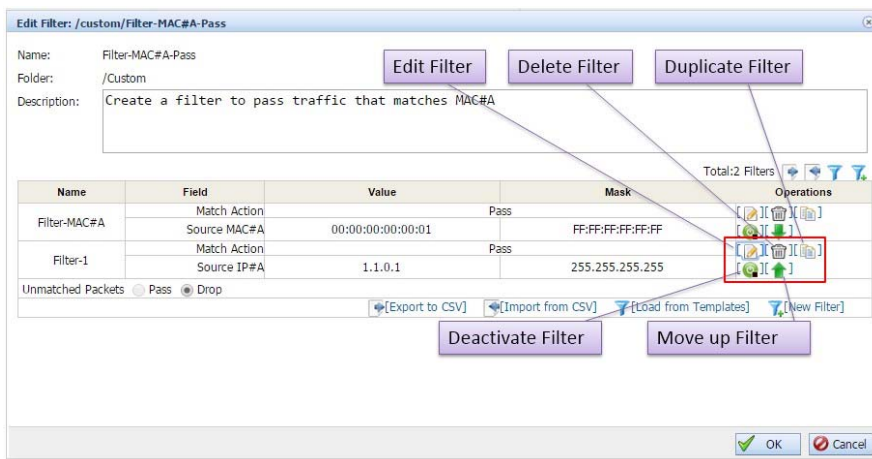


Figure 128: Filter modification methods.



### Importing a filter from a CSV file

1. Open an Edit Filter window.
2. Click **[Import from CSV]** from the Edit Filter window.

The Import From CSV File window appears, as shown in Figure 129.

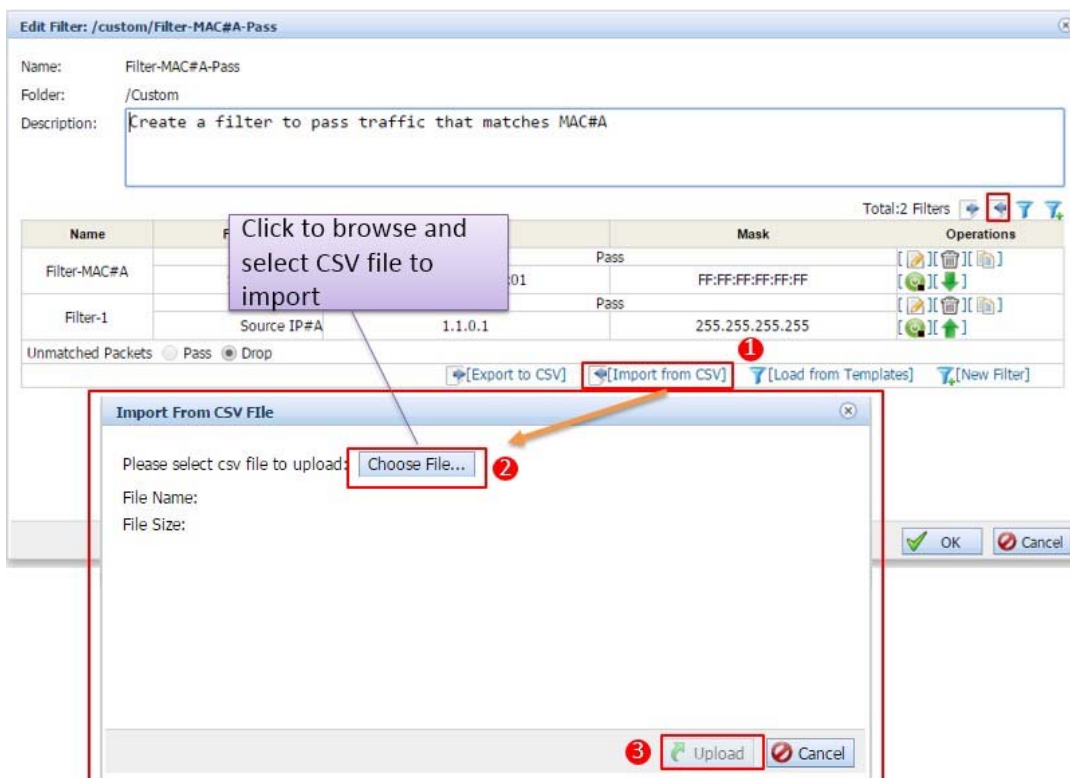


Figure 129: Import from CSV File window.

3. Click **Choose File...** to select a CSV file to import.  
The File Upload window appears.
4. Select the CSV file and click **Open**.  
The Import From CSV File window displays the file.
5. Click **Upload** to import the filter from a CSV file.



### Exporting a filter to a CSV file

1. Open an Edit Filter window.
  2. Click **[Import from CSV]** from the Edit Filter window.
  3. Save the file as a `template_export.csv` text file
- OR**
4. Open the file in an application of your choice.
  5. Click **OK** to export the filter to a CSV file.



### Loading a filter from a template

1. Open an Edit Filter window.
2. Click **[Load from Templates]** from the Edit Filter window.
3. The Load Filter Template window appears, as shown in Figure 130.

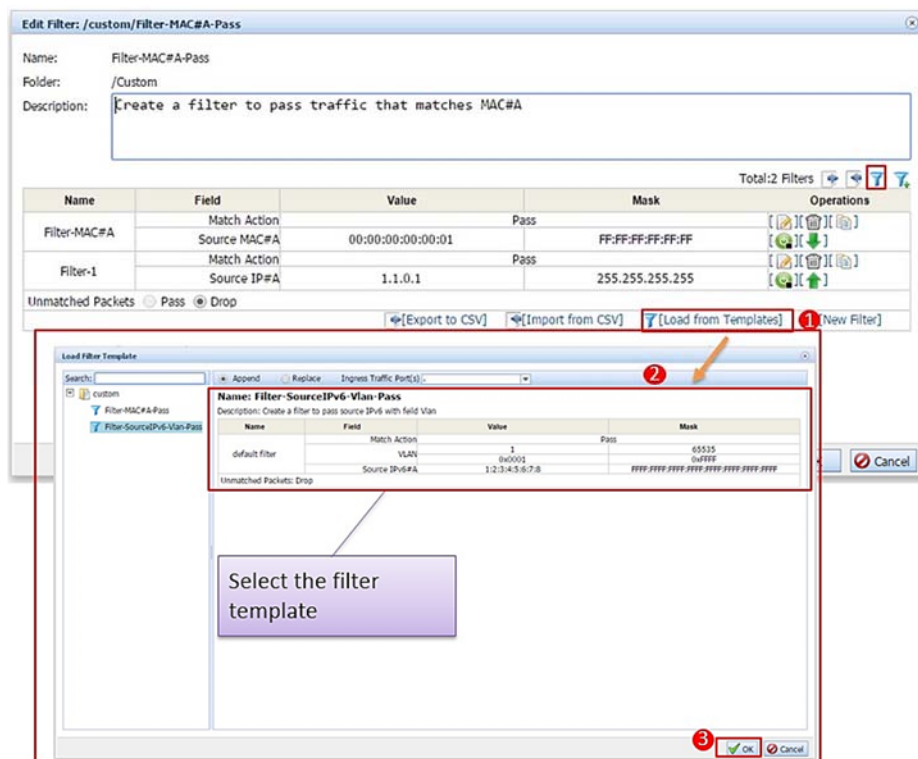


Figure 130: Load Filter Template window.



4. Select a template and click **OK**.

The template creates a filter in the Web UI.



### Duplicating filter detail

1. Open an Edit Filter window, as shown in Figure 131.

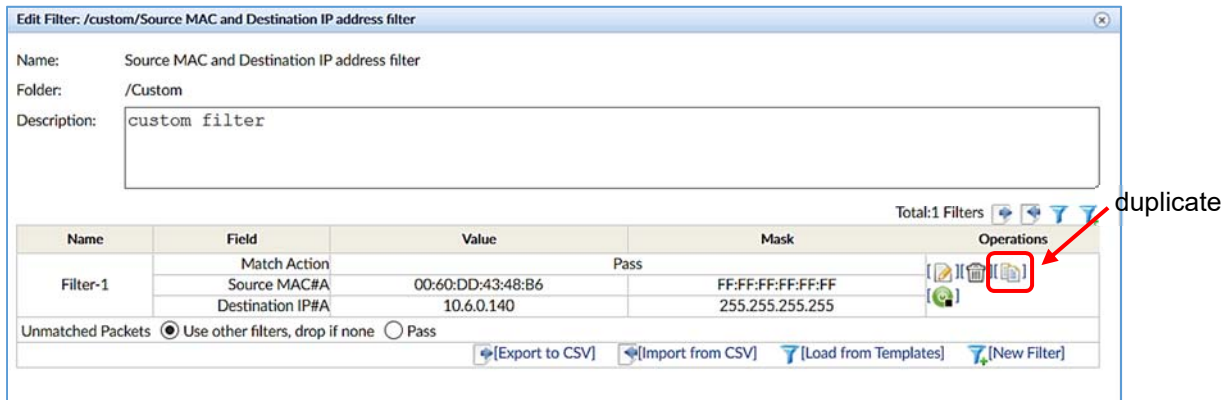


Figure 131: Edit Filter window for filter duplication.

2. Click **Duplicate** in the Operations Column.
3. A duplicate filter entry appears below the original, as shown in Figure 132.

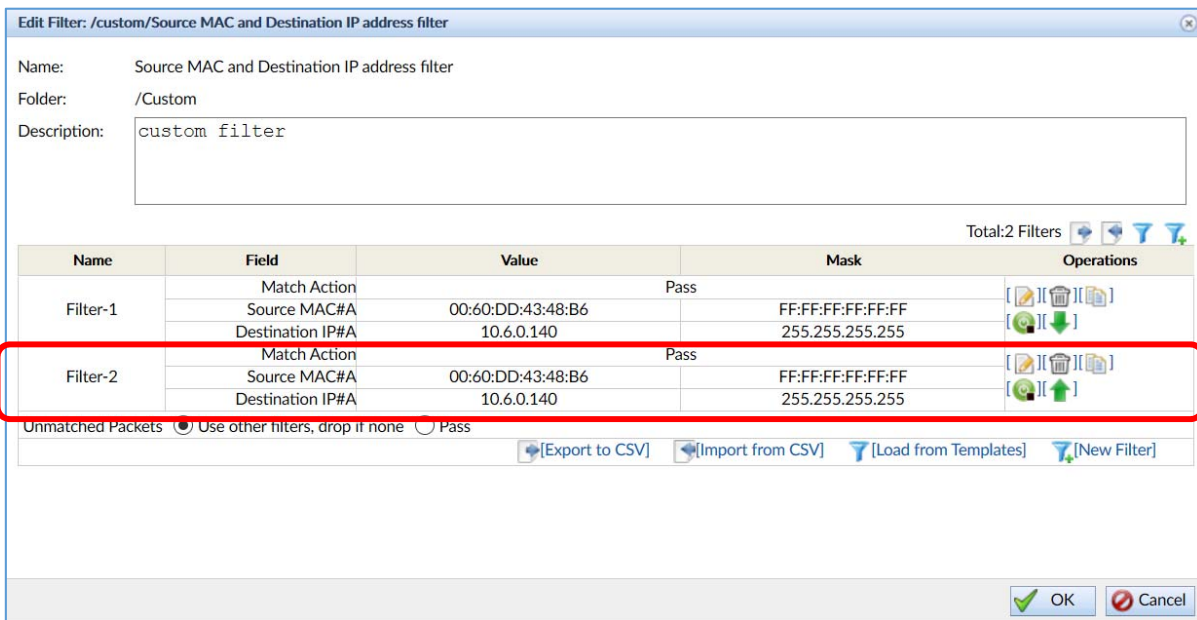


Figure 132: Duplicate filter entry.

4. Click **OK**.



### Viewing filter detail

1. Select **Filters** category in the Resource list.  
The Resource Information table appears.
2. Click a filter **View Detail** link in the Template Detail column.
3. The Filter Details Template window appears, as shown in Figure 133.

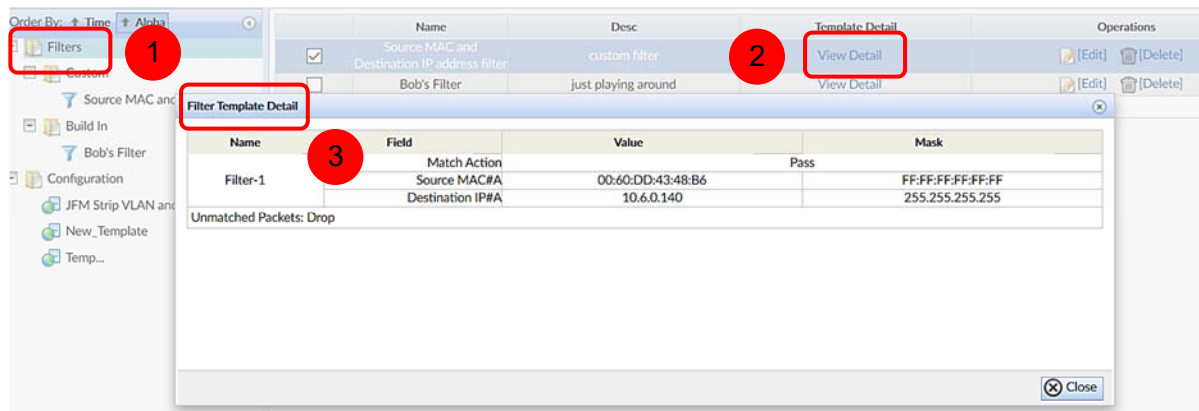


Figure 133: Filter Details Template window.



### Viewing configuration detail

1. Select **Configuration** category in the Resource list.  
The Resource Information table appears.
2. Click a Configuration **View Detail** link from the Data Path Topology column.
3. The Template <ConfigurationName> Data Path Configuration window appears, as shown in Figure 134.

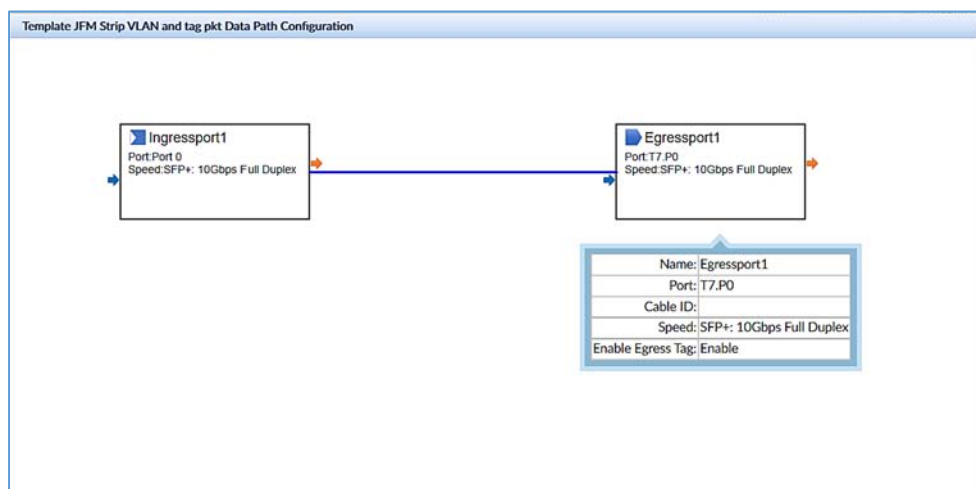


Figure 134: Template <ConfigurationName> Data Path Configuration window.



### Deleting a filter entry

1. Select **Filters** category in the Resource list.  
The Resource Information table appears.
2. Click **[Delete]** from the Operations column.  
A Confirm window appears, as shown in Figure 135.

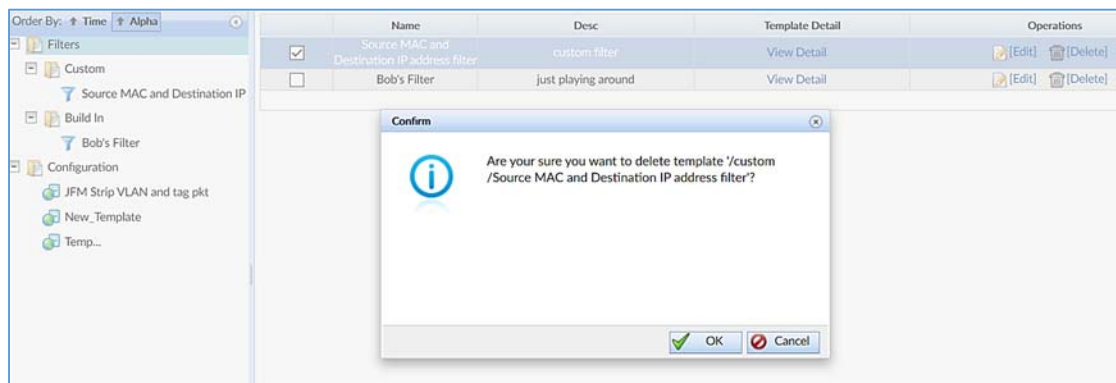


Figure 134: Confirming a filter entry deletion.

3. Click **OK**.  
The filter is deleted from the Web UI.



### Deleting a configuration entry

1. Select **Configuration** category in the Resource list.  
The Resource Information table appears.
2. Click **[Delete]** from the Operations column.  
A Confirm window appears, as shown in Figure 136.

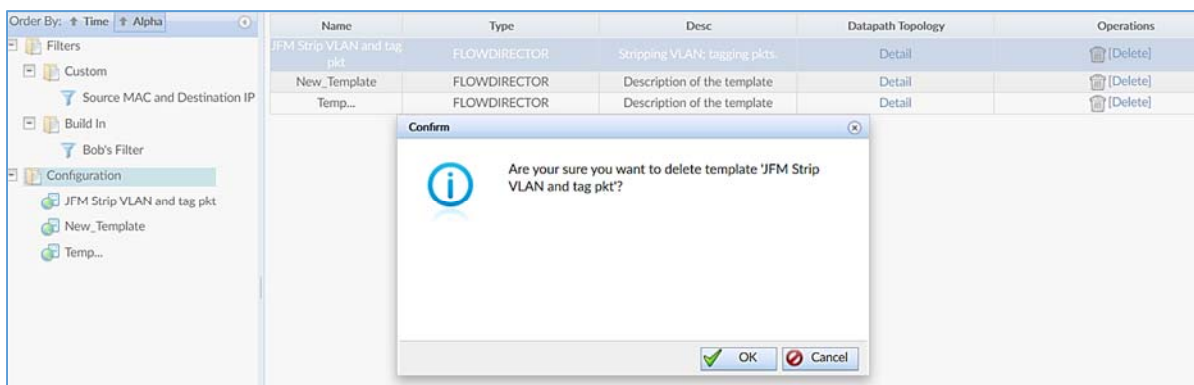


Figure 136: Confirming a configuration entry deletion.

3. Click **OK**.  
The configuration is deleted from the Web UI.

## 7.5 Resource Toolbar

The Resource Toolbar enables the user to perform commonly-used tasks on filters quickly and easily.

### Filters Category

The Filters category enables the user to select, create, and delete filter and folder operations, as shown in Figure 137.

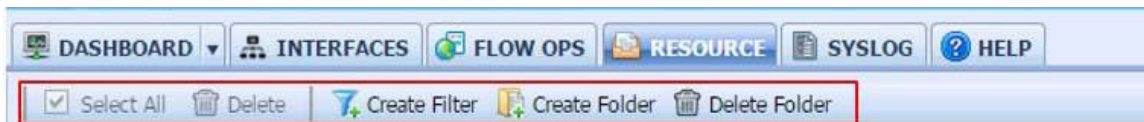


Figure 137: Filters category menu.



### Batch deleting all filter templates

You can easily batch delete all filter operations as follows:

1. Click **Select All** from the filters toolbar, as shown in Figure 138.
2. All available filter templates are selected.
3. Click **Delete**.

All filter templates are deleted.

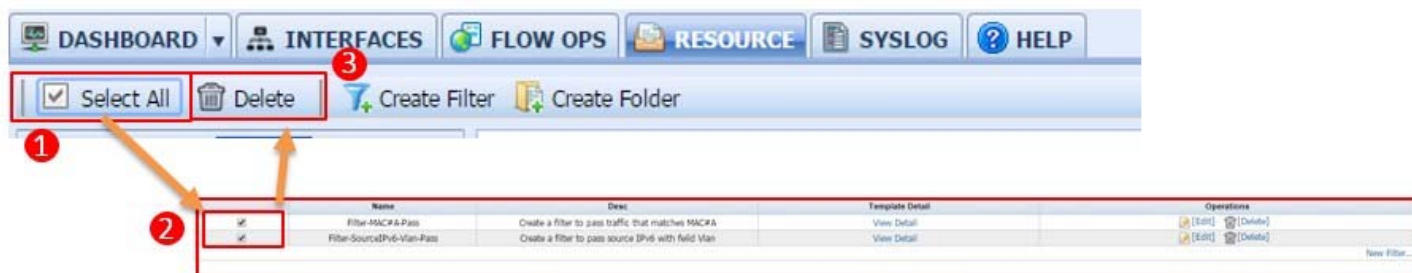


Figure 138: Deleting all filter templates.



## Creating a new filter

1. Click **Create Filter** from the filter toolbar.

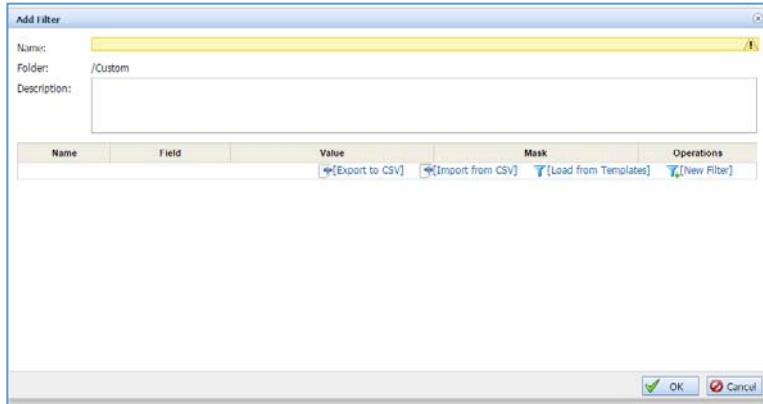


Figure 139: Add Filter window.

The Add Filter window appears, as shown in Figure 139.

2. Enter a filter name and description
3. Create the filter in one of the following ways, as shown below:

[Export to CSV]	Exports a filter to the server in CSV format.
[Import from CSV]	Imports a filter to the Web UI in CSV format.
[Load from Templates]	Loads a filter from a template.
[New Filter]	Adds filter detail at the link, network, and transport layer field level.

4. Click **OK** to create the new filter.



### ***Creating a filter folder***

To create a folder for a specific filter type, follow these steps:

1. Click **Create Folder** from the toolbar.

An Add Folder window appears, as shown in Figure 140.

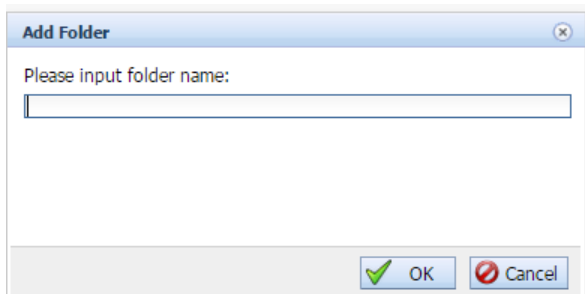


Figure 140: Add Filter Folder window.

2. Enter a folder name and click **OK**.

A filter folder has been created.



### ***Deleting a filter folder***

To delete a filter folder, follow these steps:

1. Select a filter folder and delete all filter templates from the folder.
2. Click **Delete Folder** from the toolbar.  
A Confirm window appears.
3. Click **OK** to delete the filter folder.

## 8 Syslog Tab

The System Log or “Syslog” tab consolidates all nVoy Packet Broker events by log list category, with search and filter capabilities, as shown in Figure 141.

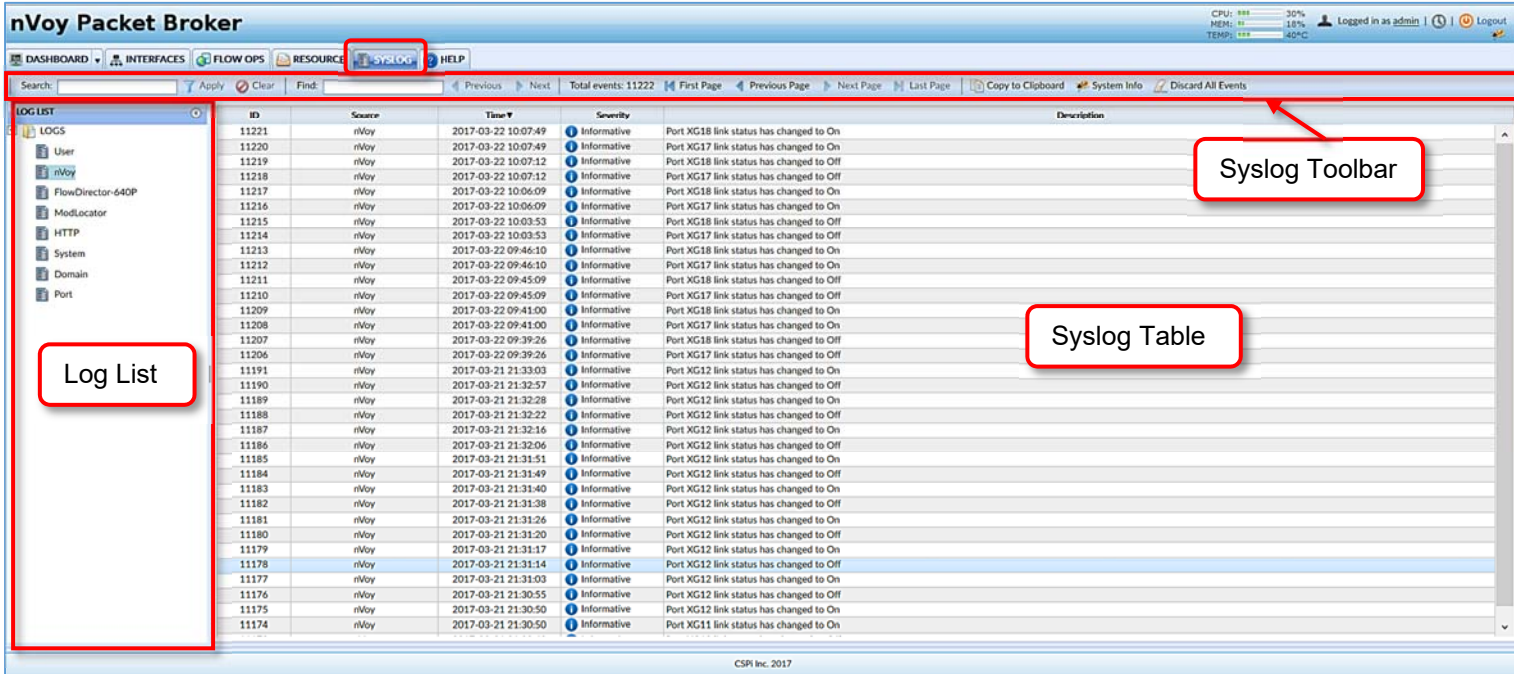


Figure 141: System Log or “Syslog” tab.

Three panels highlight the Syslog tab’s important features.

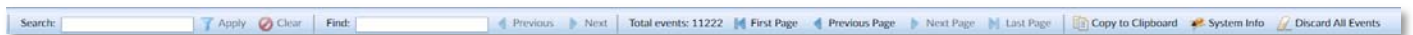
### 1. Log List

The Log List displays all available log categories.

### 2. Syslog Table

The Syslog table lists all available event logs by ID, event source, time, severity, and detailed description.

### 3. Syslog Toolbar



The Syslog toolbar provides quick access to event log search and filter capabilities.



## 8.1 Log List

The Log List displays all Syslogs by category, as shown in Figure 142.

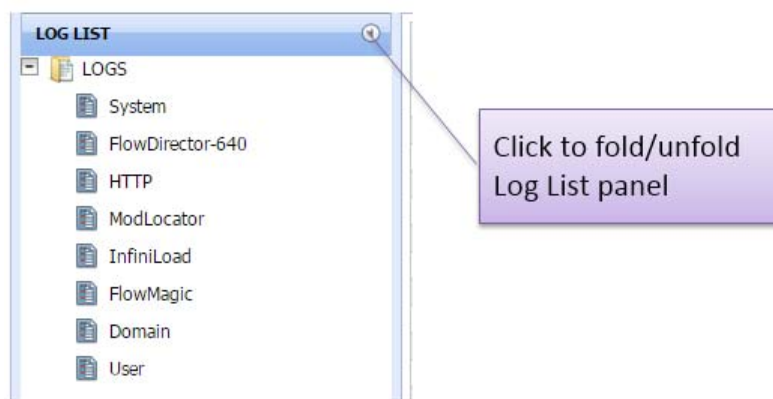


Figure 142: Log List displaying all Syslog categories.



### Viewing specific event log category details

To view the details of a specific event log category, such as nVoy Packet Broker, click nVoy Packet Broker from the Log list. The log table displays all event logs related to the nVoy Packet Broker appliance, as shown in Figure 143.

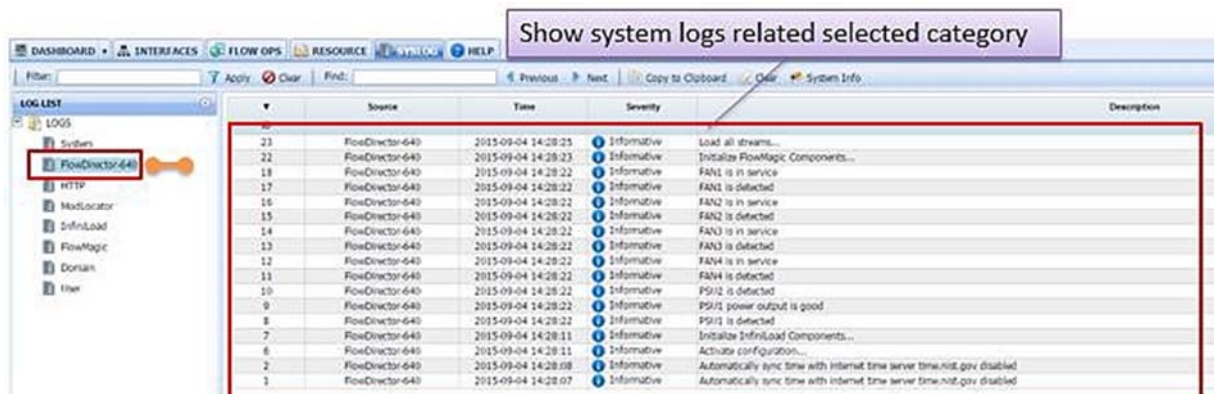


Figure 143: Log table showing Syslogs by selected category.



## 8.2 Syslog Table

The Syslog table displays event log information in detail, as shown in Figure 144.

ID	Source	Time	Severity	Description
29	Domain	2015-09-04 14:28:25	Informational	Domain runner enters execution state ...
52	Domain	2015-09-04 16:25:11	Error	Domain execution interrupted. Resource not available. Type: Egress Port. Number of Domain: 2
51	Domain	2015-09-04 16:25:10	Informational	Domain NewDomain1 is initializing...
50	Domain	2015-09-04 16:25:07	Informational	Domain NewDomain1 is created and alive
49	Domain	2015-09-04 16:25:03	Informational	Domain runner enters execution state ...
48	Domain	2015-09-04 15:27:13	Error	Domain with "Default Virtual Wire(Ports:KG3,3240-1)" is not active
47	Domain	2015-09-04 15:26:57	Error	Domain with "Default Virtual Wire(Ports:KG3,3240-1)" is not active
46	Domain	2015-09-04 15:25:51	Error	Domain Default Virtual Wire(Ports:KG3,3240-1) is terminated with exception
45	Domain	2015-09-04 15:25:51	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
44	Domain	2015-09-04 15:25:51	Informational	Domain Default Virtual Wire(Ports:KG3,3240-1) is initializing...
43	Domain	2015-09-04 15:25:51	Informational	Domain Default Virtual Wire(Ports:KG3,3240-1) is created and alive
42	Domain	2015-09-04 15:25:48	Informational	Domain runner enters execution state ...
41	Domain	2015-09-04 15:18:41	Error	Domain VM_240G-20_XG8 is terminated with exception
40	Domain	2015-09-04 15:18:41	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
39	Domain	2015-09-04 15:18:41	Informational	Domain VM_240G-20_XG8 is initializing...
38	Domain	2015-09-04 15:18:41	Informational	Domain VM_240G-20_XG8 is created and alive
37	Domain	2015-09-04 15:18:38	Informational	Domain runner enters execution state ...
36	Domain	2015-09-04 15:18:03	Error	Domain with "VM_XG8_240G-20" exists already
35	Domain	2015-09-04 15:17:15	Error	Domain VM_XG8_240G-20 is terminated with exception
34	Domain	2015-09-04 15:17:15	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
33	Domain	2015-09-04 15:17:15	Informational	Domain VM_XG8_240G-20 is initializing...
32	Domain	2015-09-04 15:17:15	Informational	Domain VM_XG8_240G-20 is created and alive
31	Domain	2015-09-04 15:17:12	Informational	Domain runner enters execution state ...
30	User	2015-09-04 14:53:17	Informational	User admin login successfully
29	Domain	2015-09-04 14:28:29	Informational	Domain NewDomain11 is running
28	Domain	2015-09-04 14:28:28	Informational	Domain NewDomain11 is initializing...
27	Domain	2015-09-04 14:28:28	Informational	Domain NewDomain11 is created and alive
26	Domain	2015-09-04 14:28:25	Informational	Domain runner enters execution state ...

Figure 144: Syslogs table.

### 8.2.1 Description

Five fields highlight the Syslog table's important features:

#### ID Column

Displays the event log ID, assigned to each event automatically and continuously.

#### Source

Displays the event source.

**NOTE:** The source categories are dynamic. They are populated as events occur by the component that captures them. Suggestions are included below.

- User
- ModLocator
- System
- HealthMon
- Console
- HTTP
- HTTPS
- SNMP
- Domain
- Port

- Task

**Time**

The date and time of the event log.

**Severity**

Indicates the severity of the event log. There are three severity levels:

<b>Severity</b>	<b>Description</b>
Informative Message	An informative message is just that—information about execution. It is never used to indicate problems. Only general information, such as system is starting, storage configuration loaded, disk mount successfully, is found in informative messages.
Warning Messages	Warning messages are generated when a task or operation experiences a situation that may cause a problem during its execution or when the result may not be what you expect. You can take action when a warning is returned, such as canceling the task or making another configuration setting.  <b>Examples</b> System starting Load all stream Storage configuration loaded
Error Messages	Error messages indicate a critical event that prevented a task or operation from executing. Errors are generated when one or more parameters have invalid values or when a critical execution process or routine has failed.  <b>Examples</b> Domain xxx terminated with exception Domain with xxx exists already Domain execution interrupted

**Description**

Displays detailed event description. Examples include:

- System start
- Load all stream
- Storage configuration loaded
- Disk drive xxx probed
- Disk xxx mounted successfully
- Task xxx created and live
- Task xxx running
- Xxx is live

## 8.2.2 Sorting Operations

Syslog is assigned a continuous ID from the time the event occurred and re-initialized every day. By default, event logs are listed by log ID number in descending order, and by chronological order, as shown in Figure 145.

The Syslog tab window displays only today's syslog. Old syslogs are saved to a log file on a daily basis.

For more information on accessing old syslog files, go to Section 4.5 *Service Status*.

Figure 145: Sorting events logs.

Sorting by ID in From High to Low Order

Sorting by Time in From Latest to Oldest Order

▼ ID	Source	Time	Severity	Description
56	User	2015-09-04 21:27:10	Informative	User admin login successfully
55	User	2015-09-04 20:53:23	Informative	User admin login successfully
54	User	2015-09-04 20:53:15	Informative	User admin login failed
53	Domain	2015-09-04 16:25:11	Error	Domain NewDomain1 is terminated with exception
52	Domain	2015-09-04 16:25:11	Error	Domain execution interrupted. Resource not available. Type: Egress Port. Number of Domain: 2
51	Domain	2015-09-04 16:25:10	Informative	Domain NewDomain1 is initializing...
50	Domain	2015-09-04 16:25:07	Informative	Domain NewDomain1 is created and alive
49	Domain	2015-09-04 16:25:03	Informative	Domain runner enters execution state ...
48	Domain	2015-09-04 15:27:13	Error	Domain with "Default Virtual Wire(Ports:XG3,3240-1)" is not active
47	Domain	2015-09-04 15:26:57	Error	Domain with "Default Virtual Wire(Ports:XG3,3240-1)" is not active
46	Domain	2015-09-04 15:25:51	Error	Domain Default Virtual Wire(Ports:XG3,3240-1) is terminated with exception
45	Domain	2015-09-04 15:25:51	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
44	Domain	2015-09-04 15:25:51	Informative	Domain Default Virtual Wire(Ports:XG3,3240-1) is initializing...
43	Domain	2015-09-04 15:25:51	Informative	Domain Default Virtual Wire(Ports:XG3,3240-1) is created and alive
42	Domain	2015-09-04 15:25:48	Informative	Domain runner enters execution state ...
41	Domain	2015-09-04 15:18:41	Error	Domain VM_240G-20_XGB is terminated with exception
40	Domain	2015-09-04 15:18:41	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
39	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is initializing...
38	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is created and alive
37	Domain	2015-09-04 15:18:38	Informative	Domain runner enters execution state ...
36	Domain	2015-09-04 15:18:03	Error	Domain with "VM_XGB_240G-20" exists already
35	Domain	2015-09-04 15:17:15	Error	Domain VM_XGB_240G-20 is terminated with exception
34	Domain	2015-09-04 15:17:15	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
33	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is initializing...
32	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is created and alive
31	Domain	2015-09-04 15:17:12	Informative	Domain runner enters execution state ...
30	User	2015-09-04 14:53:17	Informative	User admin login successfully
29	Domain	2015-09-04 14:28:29	Informative	Domain NewDomain11 is running
28	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is initializing...
27	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is created and alive
26	Domain	2015-09-04 14:28:25	Informative	Domain runner enters execution state ...
25	FlowMagic	2015-09-04 14:28:25	Informative	Start domain with name "NewDomain11" since it is enabled
24	System	2015-09-04 14:28:25	Informative	NFS sharing has been stopped.
23	FlowDirector-640	2015-09-04 14:28:25	Informative	Load all streams...
22	FlowDirector-640	2015-09-04 14:28:23	Informative	Initialize FlowMagic Components...
21	InfniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user QA_1@local
20	InfniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user guest@local
19	InfniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user admin@local
18	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is in service
17	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is detected.
16	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is in service
15	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is detected.
14	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN3 is in service



## Sorting events logs by source

By default, the Source table header lists all event logs by descending ID order.

Click the Source table header and an “Up” arrow appears, with all event logs listed in ascending alphabetical order, as shown in Figure 146.

Click the arrow a second time and a “Down” arrow appears, with all event logs listed in descending alphabetical order.

Sorting by Source in From A to Z  
 Alphabetical Order

ID	▲ Source	Time	Severity	Description
53	Domain	2015-09-04 16:25:11	Error	Domain NewDomain1 is terminated with exception
52	Domain	2015-09-04 16:25:11	Error	Domain execution interrupted. Resource not available. Type: Egress Port. Number of Domain: 2
51	Domain	2015-09-04 16:25:10	Informative	Domain NewDomain1 is initializing...
50	Domain	2015-09-04 16:25:07	Informative	Domain NewDomain1 is created and alive
49	Domain	2015-09-04 16:25:03	Informative	Domain runner enters execution state ...
48	Domain	2015-09-04 15:27:13	Error	Domain with "Default Virtual Wire(Ports:XG3,3240-1)" is not active
47	Domain	2015-09-04 15:26:57	Error	Domain with "Default Virtual Wire(Ports:XG3,3240-1)" is not active
46	Domain	2015-09-04 15:25:51	Error	Domain Default Virtual Wire(Ports:XG3,3240-1) is terminated with exception
45	Domain	2015-09-04 15:25:51	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
44	Domain	2015-09-04 15:25:51	Informative	Domain Default Virtual Wire(Ports:XG3,3240-1) is initializing...
43	Domain	2015-09-04 15:25:51	Informative	Domain Default Virtual Wire(Ports:XG3,3240-1) is created and alive
42	Domain	2015-09-04 15:25:48	Informative	Domain runner enters execution state ...
41	Domain	2015-09-04 15:18:41	Error	Domain VM_240G-20_XGB is terminated with exception
40	Domain	2015-09-04 15:18:41	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
39	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is initializing...
38	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is created and alive
37	Domain	2015-09-04 15:18:38	Informative	Domain runner enters execution state ...
36	Domain	2015-09-04 15:18:03	Error	Domain with "VM_XGB_240G-20" exists already
35	Domain	2015-09-04 15:17:15	Error	Domain VM_XGB_240G-20 is terminated with exception
34	Domain	2015-09-04 15:17:15	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
33	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is initializing...
32	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is created and alive
31	Domain	2015-09-04 15:17:12	Informative	Domain runner enters execution state ...
29	Domain	2015-09-04 14:28:29	Informative	Domain NewDomain11 is running
28	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is initializing...
27	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is created and alive
26	Domain	2015-09-04 14:28:25	Informative	Domain runner enters execution state ...
23	FlowDirector-640	2015-09-04 14:28:25	Informative	Load all streams...
22	FlowDirector-640	2015-09-04 14:28:23	Informative	Initialize FlowMagic Components...
18	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is in service
17	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is detected
16	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is in service
15	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is detected
14	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN3 is in service
13	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN3 is detected
12	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN4 is in service
11	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN4 is detected
10	FlowDirector-640	2015-09-04 14:28:22	Informative	PSU2 is detected
9	FlowDirector-640	2015-09-04 14:28:22	Informative	PSU1 power output is good
8	FlowDirector-640	2015-09-04 14:28:22	Informative	PSU1 is detected
7	FlowDirector-640	2015-09-04 14:28:11	Informative	Initialize InfiniLoad Components...
6	FlowDirector-640	2015-09-04 14:28:11	Informative	Activate configuration...
2	FlowDirector-640	2015-09-04 14:28:08	Informative	Automatically sync time with internet time server time.nist.gov disabled

Figure 146: Sorting event logs by source.



## Sorting event logs by severity

By default, the Severity table header lists all event logs by descending ID order.

Click the Severity table header and an “Up” arrow appears, with all event logs listed from most to least severe, as shown in Figure 147.

Click the arrow a second time and a “Down” arrow appears, with all event logs listed from least to most severe.

Sorting by Severity in From high to low Order

ID	Source	Time	▲ Severity	Description
53	Domain	2015-09-04 16:25:11	🚫 Error	Domain NewDomain1 is terminated with exception
52	Domain	2015-09-04 16:25:11	🚫 Error	Domain execution interrupted. Resource not available. Type: Egress Port. Number of Domain: 2
48	Domain	2015-09-04 15:27:13	🚫 Error	Domain with "Default Virtual Wire(Ports:YG3,3240-1)" is not active
47	Domain	2015-09-04 15:26:57	🚫 Error	Domain with "Default Virtual Wire(Ports:YG3,3240-1)" is not active
46	Domain	2015-09-04 15:25:51	🚫 Error	Domain Default Virtual Wire(Ports:YG3,3240-1) is terminated with exception
45	Domain	2015-09-04 15:25:51	🚫 Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
41	Domain	2015-09-04 15:18:41	🚫 Error	Domain VM_240G-20_XG8 is terminated with exception
40	Domain	2015-09-04 15:18:41	🚫 Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
36	Domain	2015-09-04 15:18:03	🚫 Error	Domain with "VM_XG8_240G-20" exists already
35	Domain	2015-09-04 15:17:15	🚫 Error	Domain VM_XG8_240G-20 is terminated with exception
34	Domain	2015-09-04 15:17:15	🚫 Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
51	Domain	2015-09-04 16:25:10	🟢 Informative	Domain NewDomain1 is initializing...
44	Domain	2015-09-04 15:25:51	🟢 Informative	Domain Default Virtual Wire(Ports:YG3,3240-1) is initializing...
43	Domain	2015-09-04 15:25:51	🟢 Informative	Domain Default Virtual Wire(Ports:YG3,3240-1) is created and alive
42	Domain	2015-09-04 15:25:48	🟢 Informative	Domain runner enters execution state ...
50	Domain	2015-09-04 16:25:07	🟢 Informative	Domain NewDomain1 is created and alive
49	Domain	2015-09-04 16:25:03	🟢 Informative	Domain runner enters execution state ...
39	Domain	2015-09-04 15:18:41	🟢 Informative	Domain VM_240G-20_XG8 is initializing...
38	Domain	2015-09-04 15:18:41	🟢 Informative	Domain VM_240G-20_XG8 is created and alive
37	Domain	2015-09-04 15:18:38	🟢 Informative	Domain runner enters execution state ...
54	User	2015-09-04 20:53:15	🟢 Informative	User ad,om login failed
56	User	2015-09-04 21:27:10	🟢 Informative	User admin login successfully
55	User	2015-09-04 20:53:23	🟢 Informative	User admin login successfully
33	Domain	2015-09-04 15:17:15	🟢 Informative	Domain VM_XG8_240G-20 is initializing...
32	Domain	2015-09-04 15:17:15	🟢 Informative	Domain VM_XG8_240G-20 is created and alive
31	Domain	2015-09-04 15:17:12	🟢 Informative	Domain runner enters execution state ...
30	User	2015-09-04 14:53:17	🟢 Informative	User admin login successfully
29	Domain	2015-09-04 14:28:29	🟢 Informative	Domain NewDomain11 is running
28	Domain	2015-09-04 14:28:28	🟢 Informative	Domain NewDomain11 is initializing...
27	Domain	2015-09-04 14:28:28	🟢 Informative	Domain NewDomain11 is created and alive
26	Domain	2015-09-04 14:28:25	🟢 Informative	Domain runner enters execution state ...
25	FlowMagic	2015-09-04 14:28:25	🟢 Informative	Start domain with name "NewDomain11" since it is enabled
24	System	2015-09-04 14:28:25	🟢 Informative	NFS sharing has been stopped.
23	FlowDirector-640	2015-09-04 14:28:25	🟢 Informative	Load all streams...
22	FlowDirector-640	2015-09-04 14:28:23	🟢 Informative	Initialize FlowMagic Components...
21	InfiniLoad	2015-09-04 14:28:23	🟢 Informative	Discovered 0 testcases for user QA_1@local
20	InfiniLoad	2015-09-04 14:28:23	🟢 Informative	Discovered 0 testcases for user guest@local
19	InfiniLoad	2015-09-04 14:28:23	🟢 Informative	Discovered 0 testcases for user admin@local
18	FlowDirector-640	2015-09-04 14:28:22	🟢 Informative	FAN1 is in service
17	FlowDirector-640	2015-09-04 14:28:22	🟢 Informative	FAN1 is detected
16	FlowDirector-640	2015-09-04 14:28:22	🟢 Informative	FAN2 is in service
15	FlowDirector-640	2015-09-04 14:28:22	🟢 Informative	FAN2 is detected
14	FlowDirector-640	2015-09-04 14:28:22	🟢 Informative	FAN3 is in service

Figure 147: Sorting event logs by severity.



## 8.3 Syslog Toolbar

The Syslog toolbar, enables the user to perform tasks such as event log filtering, searching, copying logs to clipboard, and so on, and shown in Figure 148.

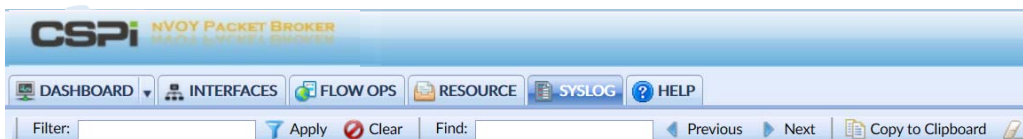


Figure 148: Syslog toolbar.



### Creating a syslog filter

A Syslog filter allows you to manage the flow of event messages. To create a Syslog filter, follow these steps:

1. Select any event log entry from the Log List panel.
2. Click **Apply**.
3. The log filter results appear in the Source column, as shown in Figure 149.

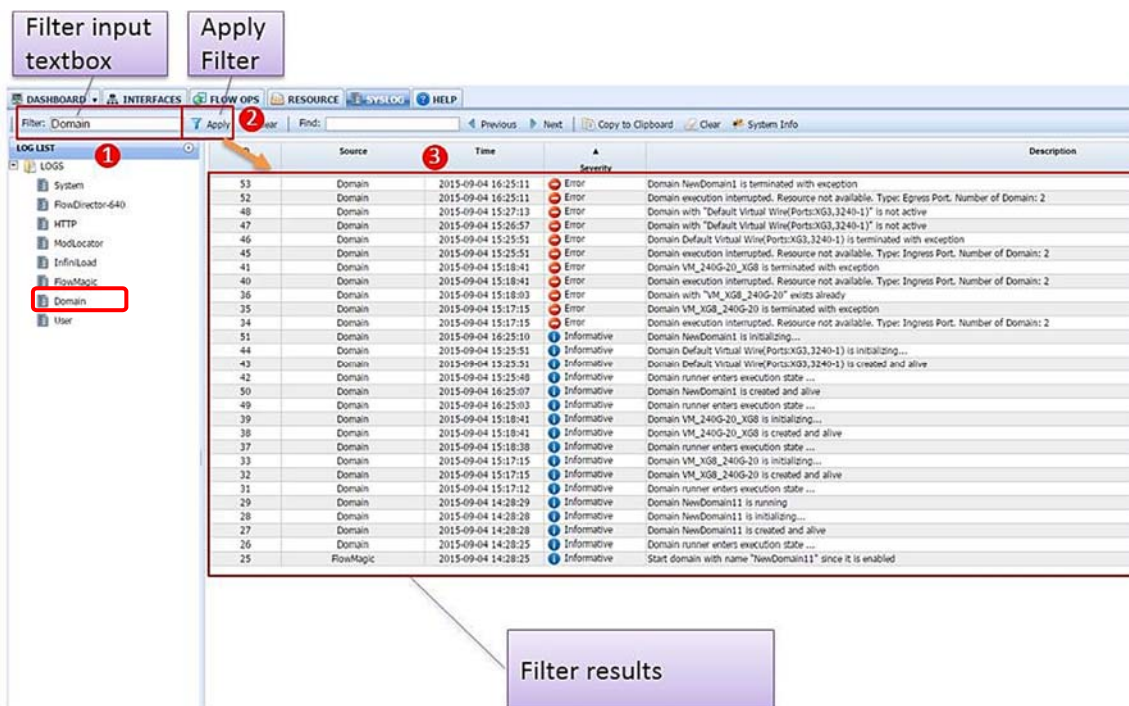


Figure 149: Creating a filter operation.



## Clearing a syslog filter

To cancel or clear an applied filter, follow these steps:

1. Click **Clear**.
2. The action clears the syslog filter from the Source column. The event logs reappear, sorted by descending event ID, as shown in Figure 150.

The screenshot shows the CSPi interface with a 'Clear Filter' button highlighted. Below it, a table of event logs is displayed, sorted by descending ID. The table has columns for ID, Source, Time, Severity, and Description. The logs show various system events, including domain terminations, initializations, and user logins.

ID	Source	Time	Severity	Description
53	Domain	2015-09-04 16:25:11	Error	Domain NewDomain1 is terminated with exception
52	Domain	2015-09-04 16:25:11	Error	Domain execution interrupted. Resource not available. Type: Egress Port. Number of Domain: 2
48	Domain	2015-09-04 15:27:13	Error	Domain with "Default Virtual Wire(Ports:KG3,3240-1)" is not active
47	Domain	2015-09-04 15:26:57	Error	Domain with "Default Virtual Wire(Ports:KG3,3240-1)" is not active
46	Domain	2015-09-04 15:25:51	Error	Domain Default Virtual Wire(Ports:KG3,3240-1) is terminated with exception
45	Domain	2015-09-04 15:25:51	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
41	Domain	2015-09-04 15:18:41	Error	Domain VM_240G-20_XGB is terminated with exception
40	Domain	2015-09-04 15:18:41	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
36	Domain	2015-09-04 15:18:03	Error	Domain with "VM_XGB_240G-20" exists already
35	Domain	2015-09-04 15:17:15	Error	Domain VM_XGB_240G-20 is terminated with exception
34	Domain	2015-09-04 15:17:15	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
51	Domain	2015-09-04 16:25:10	Informative	Domain NewDomain1 is initializing...
44	Domain	2015-09-04 15:25:51	Informative	Domain Default Virtual Wire(Ports:KG3,3240-1) is initializing...
43	Domain	2015-09-04 15:25:51	Informative	Domain Default Virtual Wire(Ports:KG3,3240-1) is created and alive
42	Domain	2015-09-04 15:25:48	Informative	Domain runner enters execution state ...
50	Domain	2015-09-04 16:25:07	Informative	Domain NewDomain1 is created and alive
49	Domain	2015-09-04 16:25:03	Informative	Domain runner enters execution state ...
39	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is initializing...
38	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is created and alive
37	Domain	2015-09-04 15:18:38	Informative	Domain runner enters execution state ...
54	User	2015-09-04 20:53:15	Informative	User admin login failed
56	User	2015-09-04 21:27:10	Informative	User admin login successfully
55	User	2015-09-04 20:53:23	Informative	User admin login successfully
33	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is initializing...
32	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is created and alive
31	Domain	2015-09-04 15:17:12	Informative	Domain runner enters execution state ...
30	User	2015-09-04 14:53:17	Informative	User admin login successfully
29	Domain	2015-09-04 14:28:29	Informative	Domain NewDomain11 is running
28	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is initializing...
27	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is created and alive
26	Domain	2015-09-04 14:28:25	Informative	Domain runner enters execution state ...
25	FlowMagic	2015-09-04 14:28:25	Informative	Start domain with name "NewDomain11" since it is enabled
24	System	2015-09-04 14:28:25	Informative	NFS sharing has been stopped.
23	FlowDirector-640	2015-09-04 14:28:25	Informative	Load all streams...
22	FlowDirector-640	2015-09-04 14:28:23	Informative	Initialize FlowMagic Components...
21	InfiniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user QA_1@local
20	InfiniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user guest@local
19	InfiniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user admin@local
18	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is in service
17	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is detected
16	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is in service
15	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is detected
14	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN3 is in service

Figure 150: Clearing a syslog filter operation.



## Searching for an event log

The search operation allows users to locate event logs quickly and effectively. To search for an event log that matches the search parameter(s), follow these steps:

1. Enter the search word in the **Find:** search box.
2. Click **Next** or **Previous**.
3. Any word in an event log that fits the search parameter is highlighted, as shown in Figure 151.
4. To search the next event log that matches the search parameter, click **Next**; to search a previous event log, click **Previous**.

The screenshot shows the Syslog interface with a search for 'NewDomain'. The search input is highlighted with a callout 'Search input textbox'. The 'Next' button is highlighted with a callout 'Search next one'. The search results are filtered to show only events containing 'NewDomain', with a callout 'Filter results' pointing to the filtered list. The table below shows the search results.

ID	Source	Time	Severity	Description
0	System	2015-09-04 14:28:01	Informative	System is starting...
1	FlowDirector-640	2015-09-04 14:28:07	Informative	Automatically sync time with internet time server time.nist.gov disabled
2	FlowDirector-640	2015-09-04 14:28:08	Informative	Automatically sync time with internet time server time.nist.gov disabled
3	HTTP	2015-09-04 14:28:08	Informative	Web Service is restarted. HTTP: true
4	HTTP	2015-09-04 14:28:08	Informative	Web Service is restarted. HTTPS: true
5	ModLocator	2015-09-04 14:28:09	Informative	Start device registration...
6	FlowDirector-640	2015-09-04 14:28:11	Informative	Activate configuration...
7	FlowDirector-640	2015-09-04 14:28:11	Informative	Initialize InfiniLoad Components...
8	FlowDirector-640	2015-09-04 14:28:22	Informative	PSI1 is detected
9	FlowDirector-640	2015-09-04 14:28:22	Informative	PSI1 power output is good
10	FlowDirector-640	2015-09-04 14:28:22	Informative	PSI2 is detected
11	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is detected
12	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is in service
13	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is detected
14	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is in service
15	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is detected
16	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN2 is in service
17	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is detected
18	FlowDirector-640	2015-09-04 14:28:22	Informative	FAN1 is in service
19	InfiniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user admin@local
20	InfiniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user guest@local
21	InfiniLoad	2015-09-04 14:28:23	Informative	Discovered 0 testcases for user QA_1@local
22	FlowDirector-640	2015-09-04 14:28:23	Informative	Initialize FlowMagic Components...
23	FlowDirector-640	2015-09-04 14:28:25	Informative	Log all streams...
24	System	2015-09-04 14:28:25	Informative	NFS sharing has been stopped.
25	FlowMagic	2015-09-04 14:28:25	Informative	Start domain with name "NewDomain11" since it is enabled
26	Domain	2015-09-04 14:28:25	Informative	Domain runner enters execution state ...
27	Domain	2015-09-04 14:28:28	Informative	Domain <b>NewDomain11</b> is created and alive
28	Domain	2015-09-04 14:28:28	Informative	Domain NewDomain11 is initializing...
29	Domain	2015-09-04 14:28:29	Informative	Domain NewDomain11 is running
30	User	2015-09-04 14:53:17	Informative	User admin login successfully
31	Domain	2015-09-04 15:17:12	Informative	Domain runner enters execution state ...
32	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is created and alive
33	Domain	2015-09-04 15:17:15	Informative	Domain VM_XGB_240G-20 is initializing...
34	Domain	2015-09-04 15:17:15	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
35	Domain	2015-09-04 15:17:15	Error	Domain VM_XGB_240G-20 is terminated with exception
36	Domain	2015-09-04 15:18:03	Error	Domain with "VM_XGB_240G-20" exists already
37	Domain	2015-09-04 15:18:38	Informative	Domain runner enters execution state ...
38	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is created and alive
39	Domain	2015-09-04 15:18:41	Informative	Domain VM_240G-20_XGB is initializing...
40	Domain	2015-09-04 15:18:41	Error	Domain execution interrupted. Resource not available. Type: Ingress Port. Number of Domain: 2
41	Domain	2015-09-04 15:18:41	Error	Domain VM_240G-20_XGB is terminated with exception

Figure 151: Searching for an event log operation.





### Copying an event log to the clipboard

The **Copy to Clipboard** operation allows users to copy all event logs to the Windows Clipboard.

1. Click **Copy to Clipboard** on the toolbar.  
A System Information window appears, as shown in Figure 152.
2. Enter **Ctrl+A** and **Ctrl+C** to copy events log text to the clipboard.  
The event log is copied to the clipboard.
3. Click **Close**.

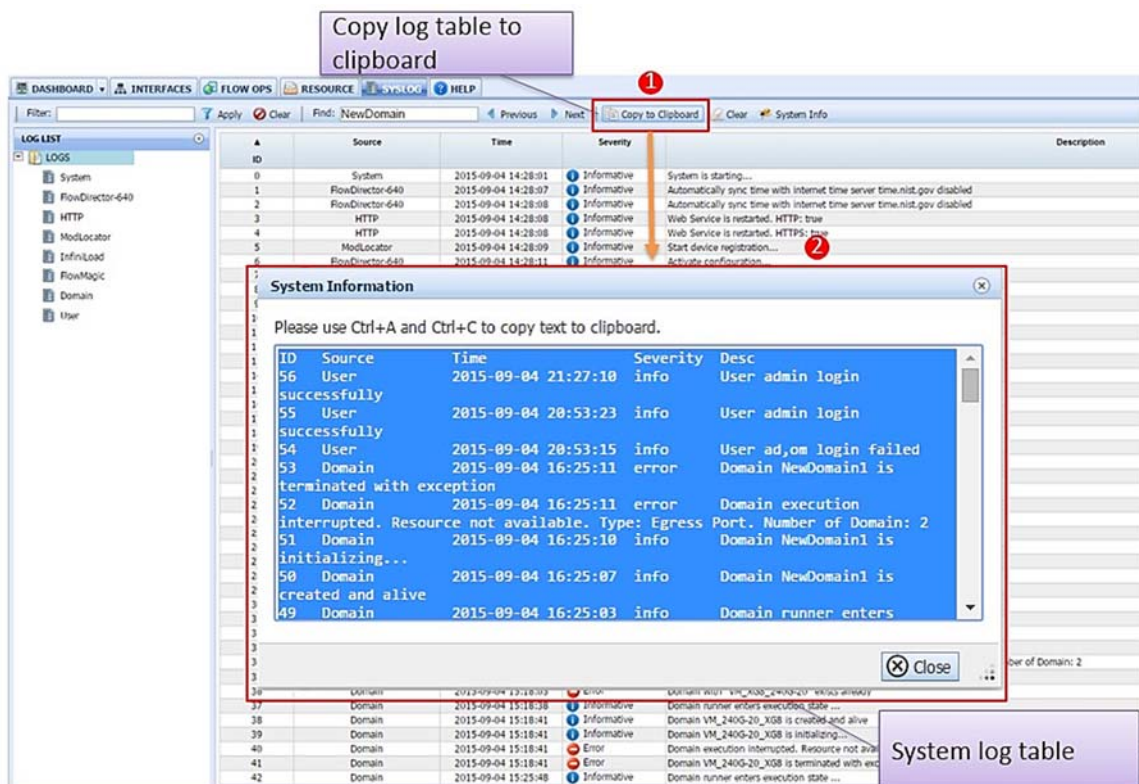


Figure 152: Copying a log table to the clipboard.



### Copying a specific log to the clipboard

To copy a specific log or logs from the same category, follow these steps:

1. Select a log category from the Log List panel.
2. Click **Copy to Clipboard** on the toolbar.  
A System Information window appears, as shown in Figure 153.
3. Enter **Ctrl+A** and **Ctrl+C** to copy events log text to the clipboard.  
The event log is copied to the clipboard.

4. Click **Close**.

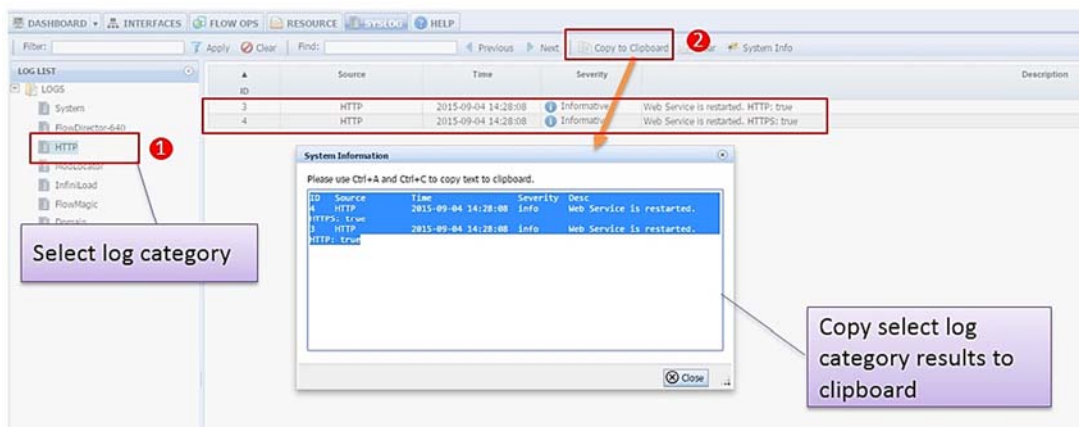


Figure 153: Copying a specific log to the clipboard.



**Clearing event log displays**

The **Clear** operation allows users to clear the entire event log display from the Systems Log table.



**Displaying syslog system information**

The **System Info** operation displays nVoy Packet Broker system information such as model, version, data plane version, PCI bridge, and so on. To display syslog system information, follow these steps:

1. Click **System Info** on the toolbar.  
A System Information window appears, as shown in Figure 154.
2. Enter **Ctrl+A** and **Ctrl+C** to copy the events log information to the clipboard.  
The syslog system information is stored as a JSON (JavaScript Object Notation) file to the clipboard.
3. Click **Close**.

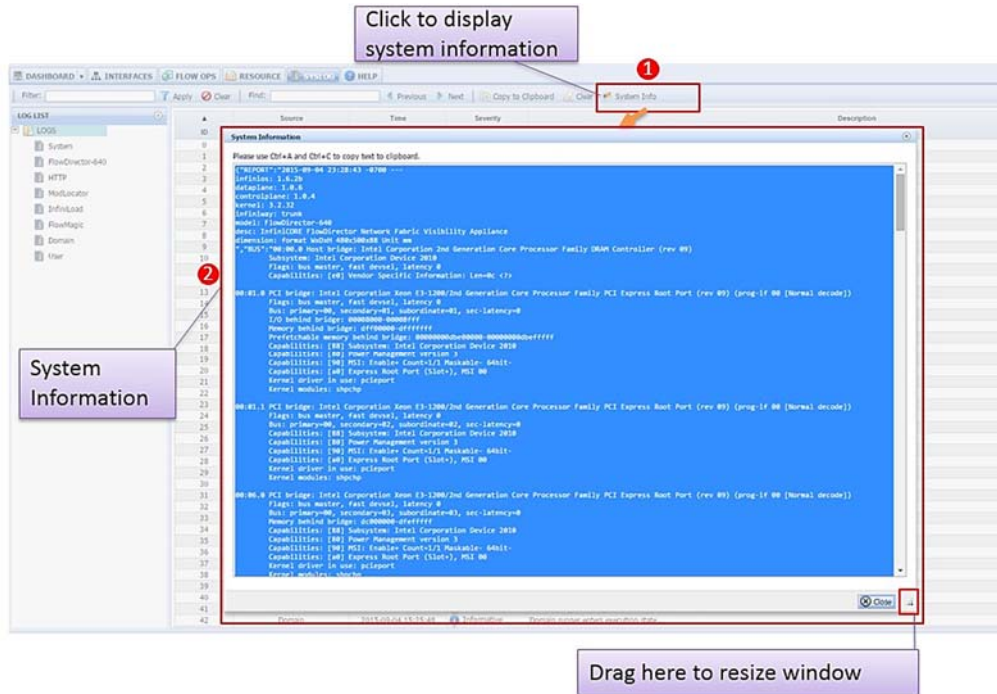


Figure 154: Displaying syslog system information operation.

## 9 Help Tab

The Help tab enables the user to access all pertinent nVoy Packet Broker online help documents in the form of user guides, user manual, and video tutorials, as shown in Figure 155.

**NOTE:** The Help tab has been revised since the release of this document. Refer to the Myricom nVoy Series Packet Broker Release Notes to access the newly revised Help tab.

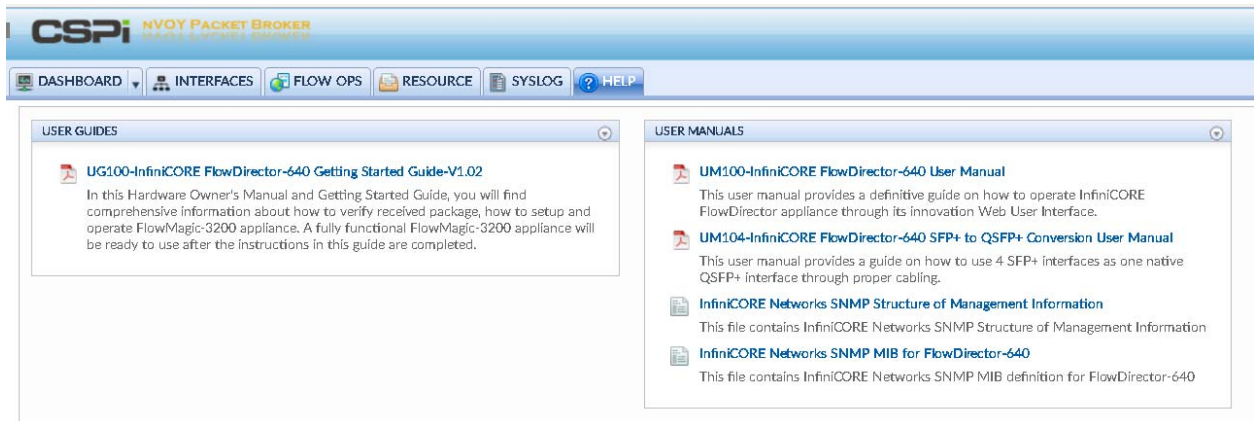


Figure 155: Help tab.

### User Guides

User guides offer an overall view of the tasks associated with the nVoy Packet Broker and on how to initiate a specific task.

### User Manuals

User manuals offer detailed guidance and instructions on the management and operational aspects of the nVoy Packet Broker appliance. Companion documentation includes API reference manuals, evaluation guides, case studies, white papers, and so on.

## 10 Managing Flow Domains

The nVoy Packet Broker organizes its data path around the concept of a flow domain. Each Flow Domain has a set of ports and a rule to define how to process the flows among the ports. Flow Domains are distinct entities and do not interfere with one another.

The nVoy Packet Broker supports a range of domain modes such as:

- Virtual Wire
- Bidirectional Traffic
- Traffic Replication
- Traffic Aggregation
- Traffic Aggregation and Replication
- Load Balancing

### 10.1 Virtual Wire

#### Use Case

The purpose of Virtual Wire is to provide an efficient way for the user to conduct automated cable management. Virtual Wire Mode can be viewed as a mode where two switch ports are internally connected through a lossless wire. This setting provides the best flexibility when the user wants to create a dedicated connection across a set of ports.

The two ports connected by virtual wire will be bi-directionally lossless that is capable of 10Gbps traffic @ 64 bytes with minimum latency.

#### Traffic Flow

In virtual wire mode, all the traffic coming from the TrafficPort0 is sent to TrafficPort1, while all the traffic coming from the TrafficPort1 is sent to TrafficPort0.



Figure 156: Example of a virtual wire domain.

All the virtual wire domains in the switch are isolated and will not interfere with one another.

## Settings

Figure 157 demonstrates how a simple virtual wire is created in the Configuration Editor, displaying the domain name, ingress ports and egress ports.

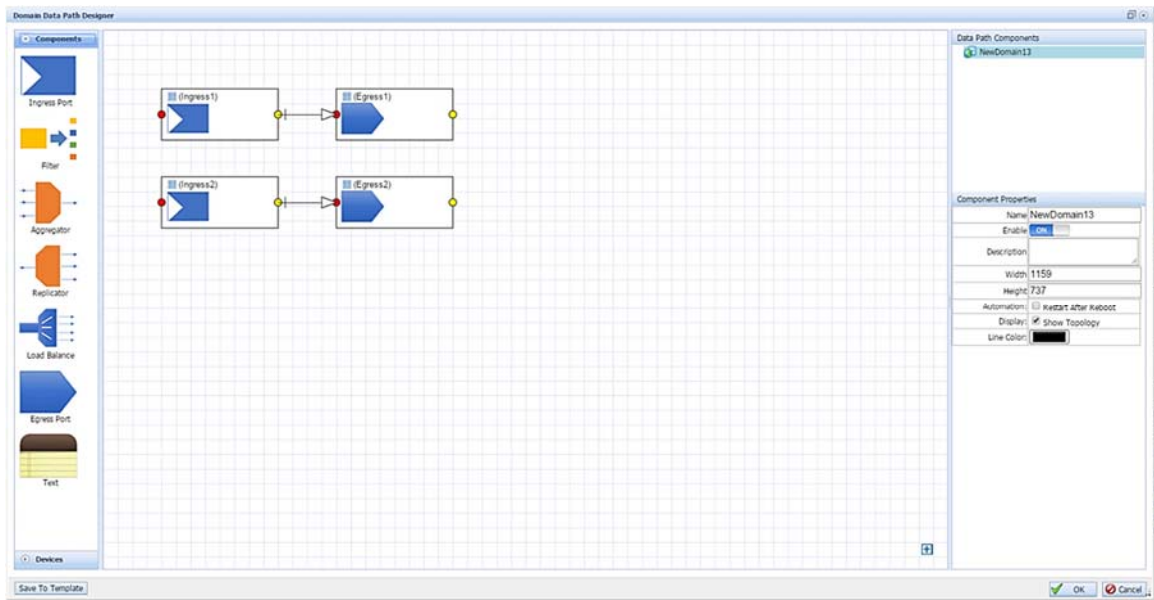


Figure 157: Setting up a virtual wire in the Configuration Editor.

## 10.2 Bidirectional Traffic

### Use Case

Bidirectional traffic allows the user to receive and transmit data within the same interface port. For the most part, ports are explicitly assigned to an egress or an ingress role; however, there are instances where hardware limitations require that one port take on both roles. For example, bidirectional traffic occurs in machines with only one PCI slot that rely on one port in an ingress and egress capacity to receive, analyze, and transmit traffic.

### Traffic Flow

The capabilities to handle bidirectional traffic are inherently built into many devices. This is called running in Full-Duplex mode. Full-Duplex mode allows for both Rx and Tx traffic on paired-off interfaces, compared to Half-Duplex mode, which only allows unidirectional traffic streaming. The traffic through the wire is unaffected.

### Settings

Bidirectional traffic on an interface requires two ingress and two egress ports, as shown in Figure 158.

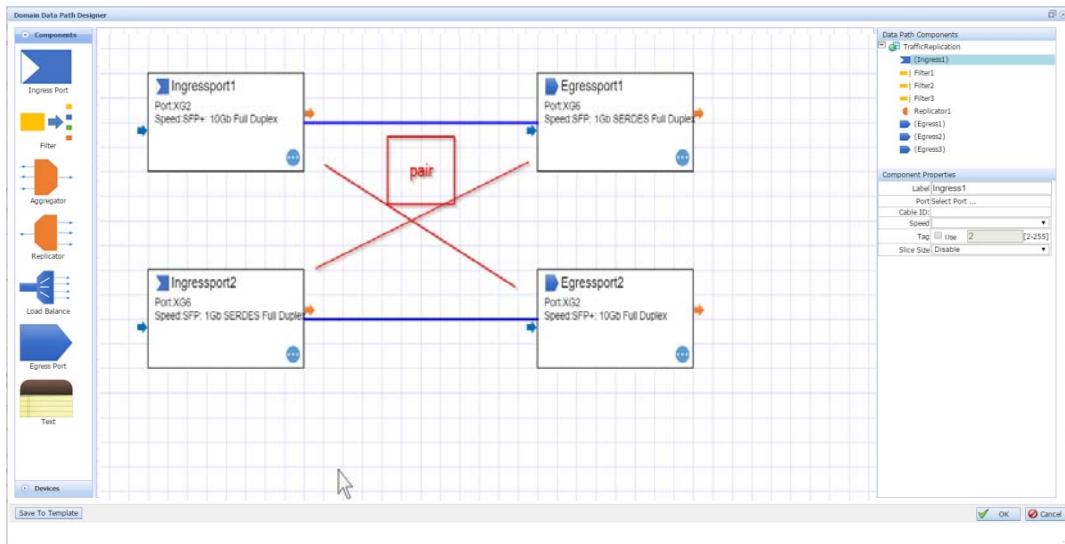


Figure 158: Setting up a bidirectional traffic scenario.



## 10.3 Traffic Replication

**NOTE:**

We suggest that you follow the directions in the *Envoy Packet Broker Filter User Guide* in Appendix 5. to acquaint yourself with the basics of creating a filter domain first before moving on to the more detailed procedures in the nVoy Packet Broker User Guide.

### Use Case

Traffic Replication allows the user to apply different processing technologies to the same traffic path.

### Traffic Flow

The Traffic Replication domain replicates the traffic coming into the Traffic port and sends it out to the FanoutPorts. Each FanoutPort transmits the same traffic (Figure 159).

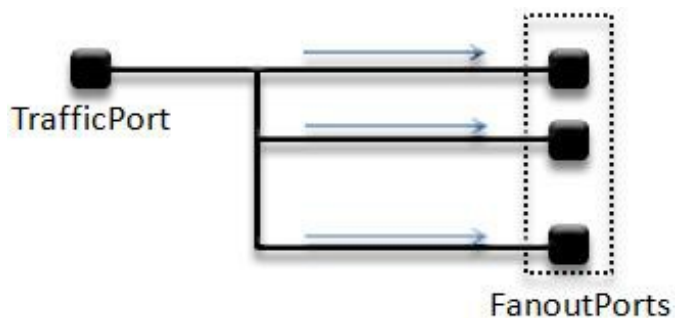


Figure 159: Traffic replication between TrafficPort and FanoutPorts.

Each FanoutPorts do not receive traffic. The dataflow is unidirectional from TrafficPort to FanoutPorts.

### Settings

The traffic replication requires one Ingress Traffic port and more than one Fanout Egress port to operate. The Fanout ports are completely isolated and don't interfere

with traffic, as shown in Figure 160.

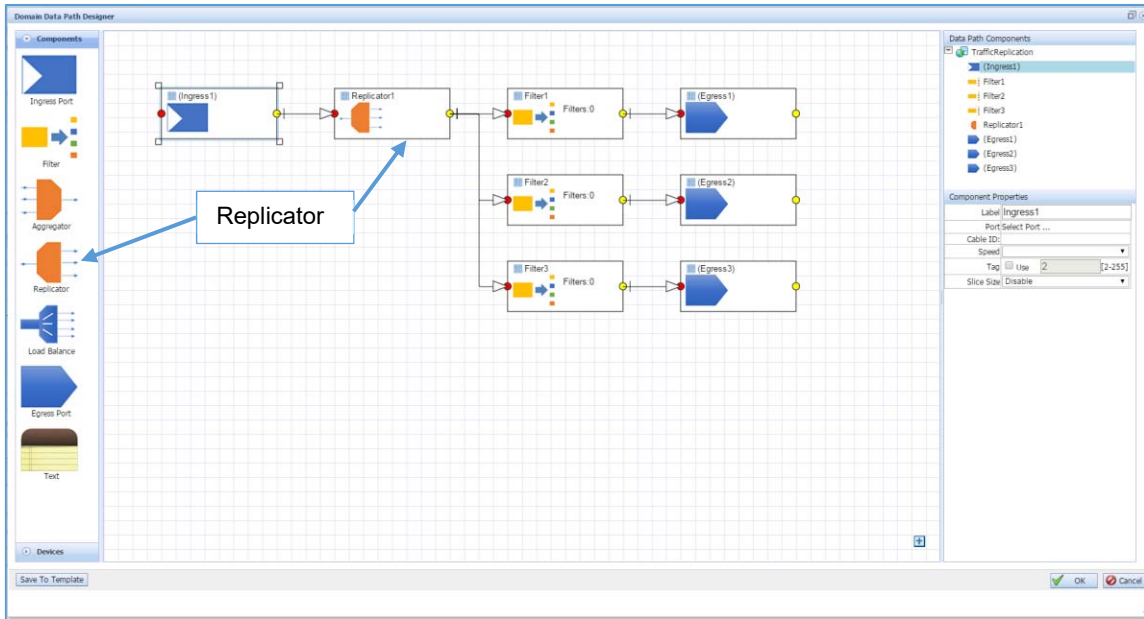


Figure 160: Setting up a traffic replication scenario.

## 10.4 Traffic Aggregation

**NOTE:** We suggest that you follow the directions in the *Envoy Packet Broker Filter User Guide* in Appendix 5. to acquaint yourself with the basics of creating a filter domain first before moving on to the more detailed procedures in the *nVoy Packet Broker User Guide*.

### Use Case

Traffic Aggregation can be used to construct N to 1 traffic concentration with filtering capabilities. Traffic coming from Traffic ports is sent through filter banks, aggregated together, and then forced out the Aggregation Port.

### Traffic Flow

The following diagram shows the traffic flow for this domain.

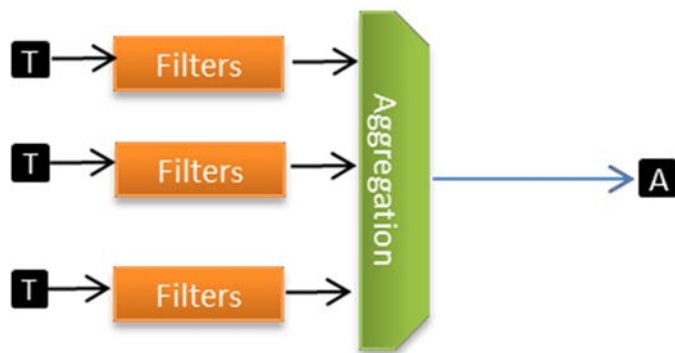


Figure 161: Representation of a traffic aggregation domain.

### Settings

The Traffic Aggregation Domain can manage two or more traffic ports and one port as the aggregation port.

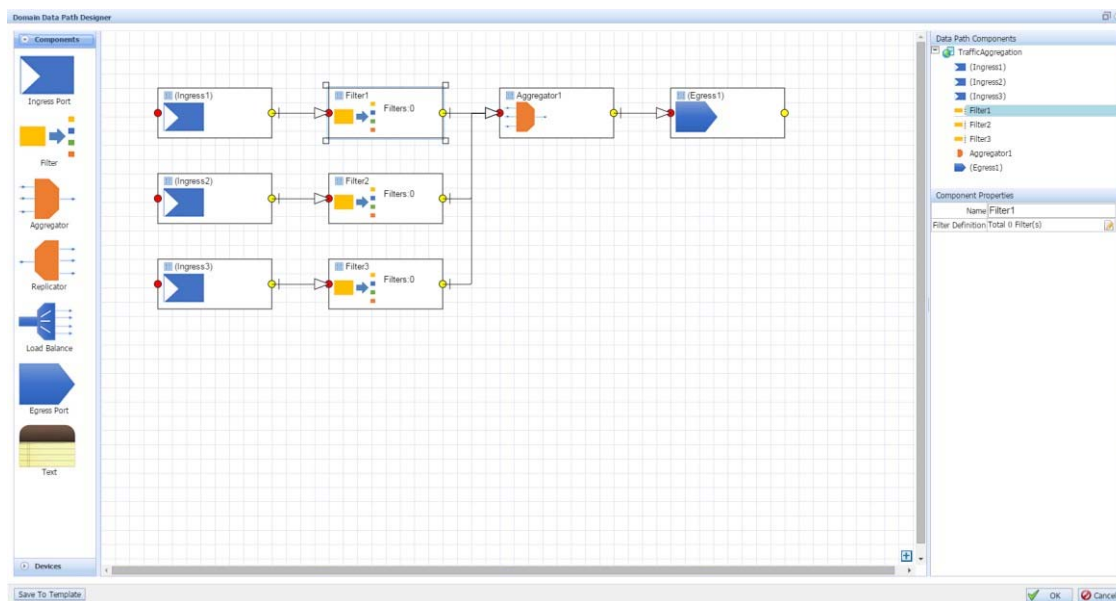


Figure 162: Setting up a traffic aggregation scenario.

The user can also configure the filters to define which traffic is permitted to egress.

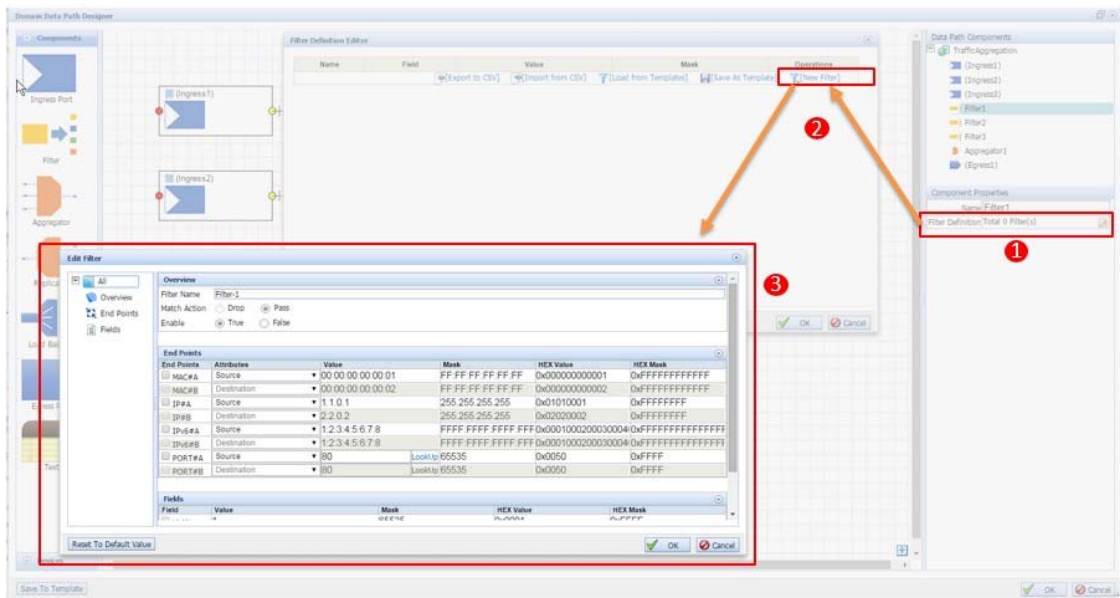


Figure 163: Configuring filters for the traffic aggregation domain.

## 10.5 Traffic Aggregation and Replication

**NOTE:** We suggest that you follow the directions in the *Envoy Packet Broker Filter User Guide* in Appendix 5. to acquaint yourself with the basics of creating a filter domain first before moving on to the more detailed procedures in the nVoy Packet Broker User Guide.

### Use Case

Traffic Aggregation and Replication Domain merges Traffic Aggregation and Replication together with slice engine and filtering capabilities in a single domain.

### Traffic Flow

There are several important elements in this domain (Figure 164.)

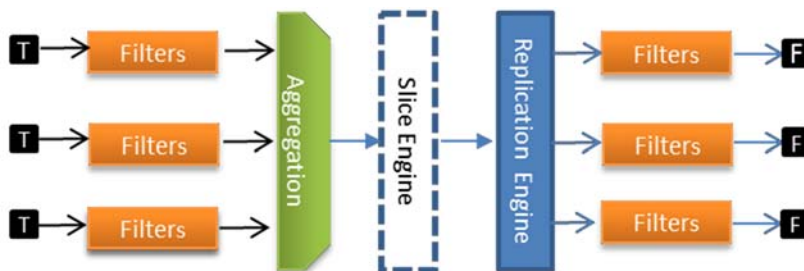


Figure 164: Representation of a traffic aggregation and replication domain.

### Filters

The filters are applied to traffic at the ingress port and egress port. The user assigns the default action of a port to be either pass or drop. Filters are set to screen a subset of the traffic and direct remaining traffic through the pipeline.

### Slice Engine

The slice engine can be configured to truncate the packet to a specific size.

### Replication Ports

The replication engine replicates the aggregated packets into multiple copies with its own filters.

## Settings

An example of a Traffic Aggregation and Replication domain is shown in Figure 165 below.

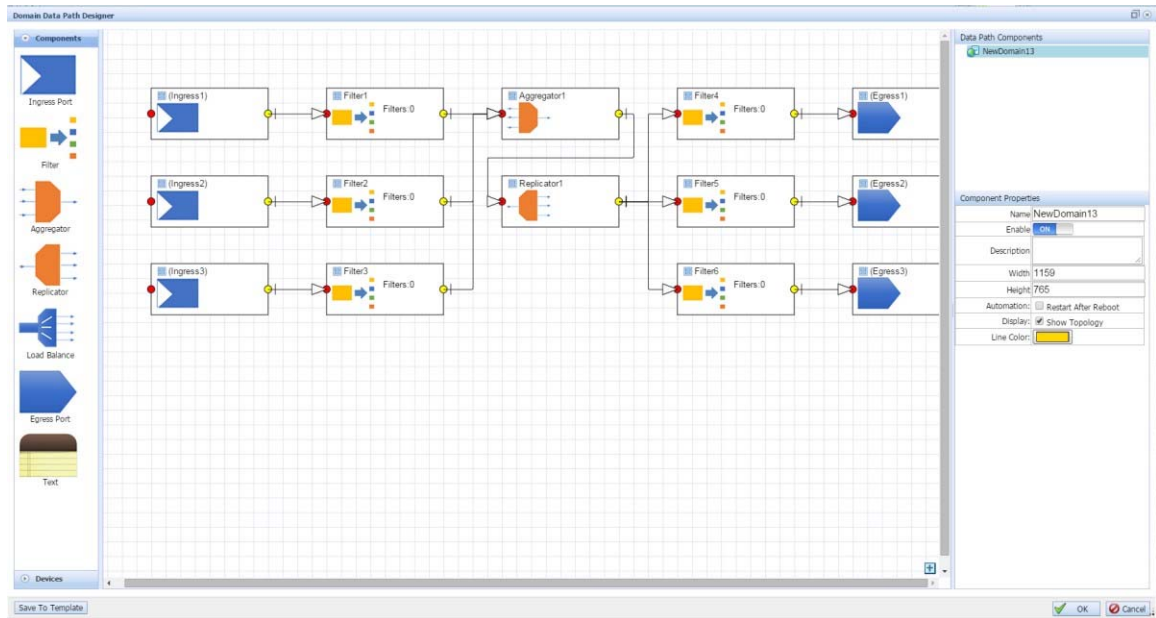


Figure 165: Setting up a traffic aggregation and replication domain scenario.

## 10.6 Load Balancing

### Use Case

In a network, it is common to create a bridge between high speed traffic (such as 10Gbps) and processing nodes with less capability. Examples of such nodes are IDS, IPS, and data recorders. The nVoy Packet Broker Load Balance domain offers a solution to this problem.

### Traffic Flow

The nVoy Packet Broker Load Balance domain manages the high-speed traffic by splitting the traffic across many low-speed interfaces while maintaining flow integrity and processing capability.

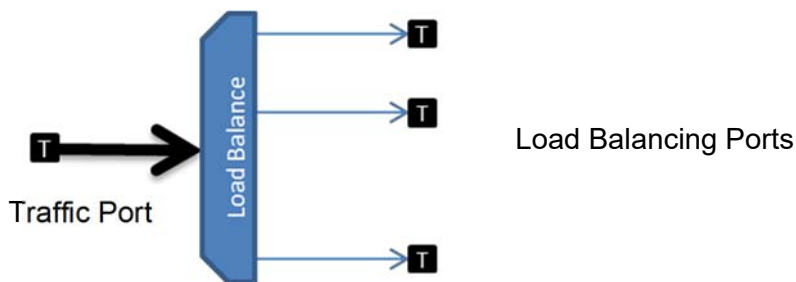


Figure 166: Representation of a load balancing domain.

### Settings

An example of a Load Balance domain is shown in Figure 167.

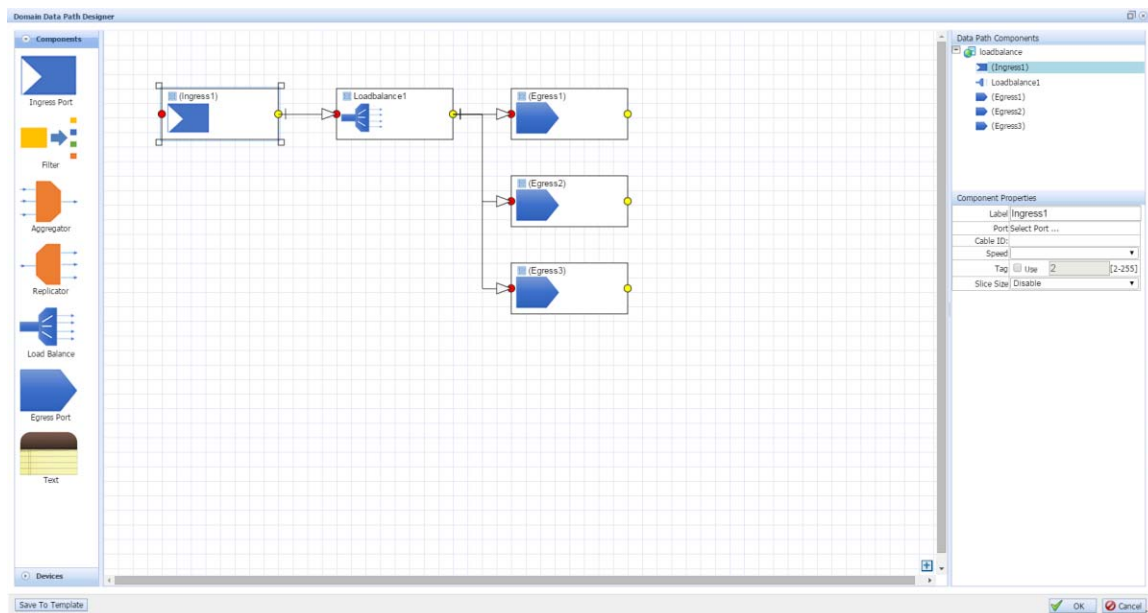


Figure 167: Setting up a load balancing domain scenario.

In this example, the Load Balance domain has one traffic port and multiple Load Balance ports. There are many ways to load-balance traffic.



## 10.6.1 TAP/RSPAN Required for Replication prior to Load Balancing

A user wants to replicate incoming traffic by sending one flow to a Load Balance component and the other flow for separate examination. Selecting a Replicator component may be a wise choice, but due to the nature of pipelines with the nVoy Packet Broker Tomahawk chipset, a different component is required. To interrupt the pipeline the user must rely on the TAP/RSPAN component instead of the Replicator component.

To demonstrate, Figure 168 shows a Flow Domain connected to a Replicator. While this may seem the intuitive way to create the domain, the Replicator cannot prevent the Load Balancer from drawing all traffic to itself.

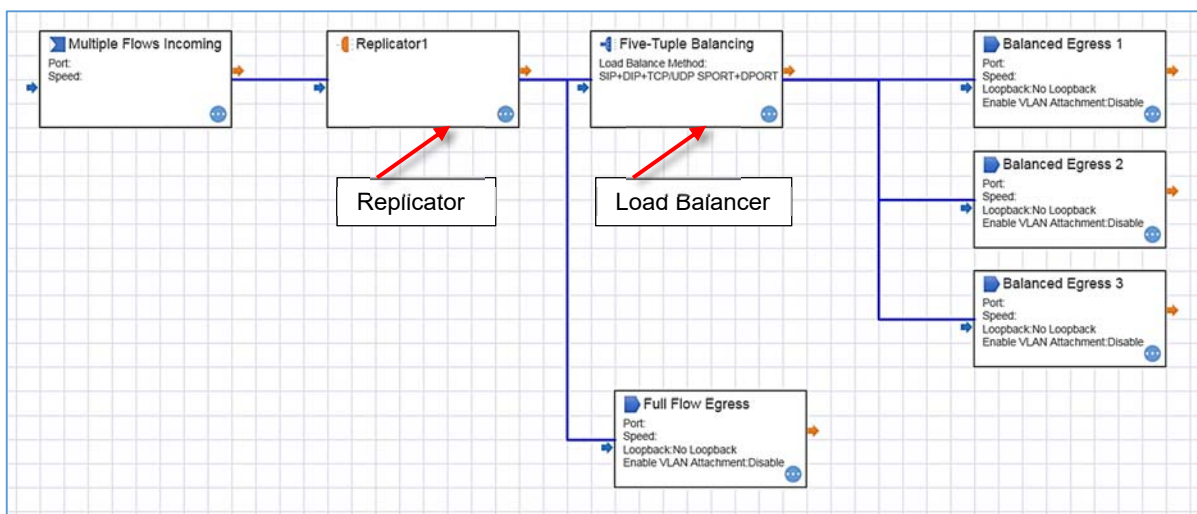


Figure 168: Flow domain connected to a replicator.

To successfully create two full flows, replace the Replicator component with a TAP/RSPAN component, as shown in Figure 169.

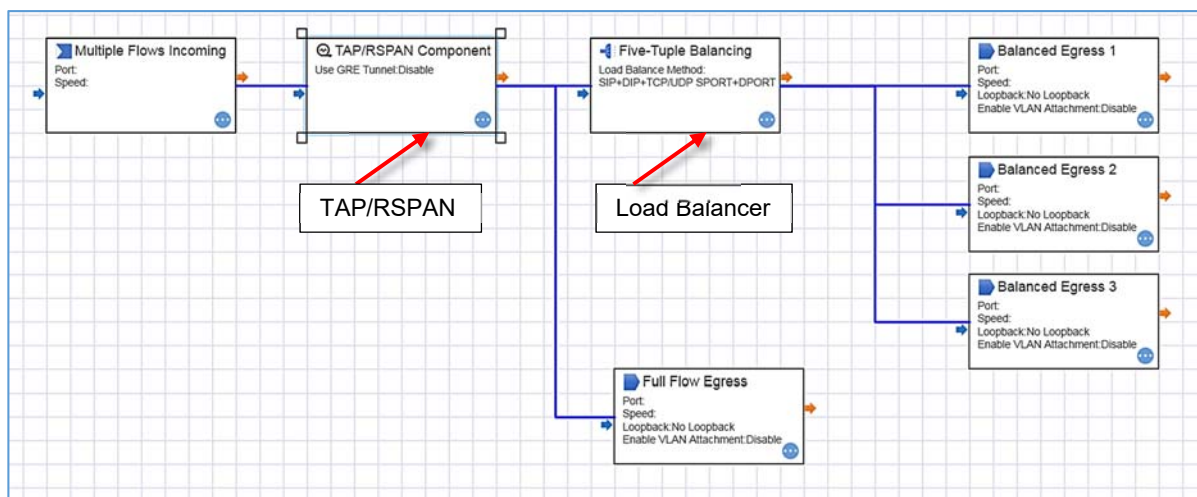


Figure 169: Flow domain with replicator replaced by a TAP/RSPAN component.

## Appendix 1: List of Error Messages

nVoy Packet Broker error messages and their possible cause.

ID	Message shown on user interface	Possible cause
1	Fail to connect "5.0.0.XXXXXX"	Internal Error; Reboot to clear.
2	Invalid port ID #{id}	Port number is invalid.
3	User #{username} exists already	User name exists already.
4	User #{username} does not exist	User name does not exist.
5	You can't delete administrator account #{username}	Administrator account is reserved and cannot be removed.
6	Domain #{domain} is not found in system. Invalid domain #{domain}.	Domain name is not found.
7	The old password is incorrect. Please retry with right password	Password is not correct.
8	Server \#{name}\ already exists in LDAP server list.	LDAP server exists already.
9	Server \#{name}\ already exists in TACACS+ server list.	TACACS server exists already.
10	LDAP Server #{name} does not exist.	LDAP server exists already.
11	Group #{name} exists already	Group name exists.
12	Group #{name} does not exist	Group name does not exist.
13	Current role is #{get_role_mode()} find a port that does not exist locally	Cluster link uses a non-existent port.
14	All cluster links are used, please retry later or reconfigure cluster with more cluster links	Cluster link has been used up.
15	When CSPI nVoy Packet Brokers are placed in cluster configuration, domain type \#{nd[:mode]}\ cannot be created with ports mixed from different CSPI nVoy Packet Broker appliances. Please change the ports so that they can be located on the same nVoy Packet Broker appliance	Ports can't be mixed within cluster setup.
16	CSPI nVoy Packet Broker Cluster does not support mode \#{nd[:mode]}	Cluster model is not supported.
17	User #{owner} has domain named #{name} already	The domain name is duplicated.
18	This device is a slave device of a cluster. Please use cluster master to operate slave device	Operation needs to be started from Master.
19	Domain with id #{domain_id} does not exist in the system	Domain is not existed.

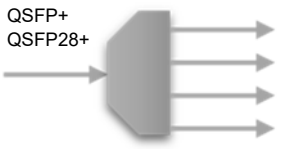
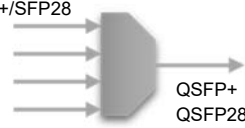
<b>ID</b>	<b>Message shown on user interface</b>	<b>Possible cause</b>
20	This device is a slave device and has active domain in use. Please use master device to remove domain before change the mode. Master device's URL is http://#{@role[:master_ip]}	The action needs to started from master device.
21	Fail to find port by port name #{port_name}	Port name does not exist.
22	Fail to find domain with port #{from_port} #{to_port}	Domain that contains specified port does not exist.
23	Free invalid filter VLAN id #{vlan_id}	VLAN id does not exists.
24	Port indexed by id #{portid} does not exist.	Invalid port index is used.
25	No Interface Module Detected!	Port does not have interface optical module.
26	Currently nVoy Packet Broker supports English and Chinese language, requested #{language}	Local language is not supported.
27	#{port_sysname} is taken by domain #{dom[:name]}, please disable or delete domain #{dom[:name]} to release #{port_sysname}	Port has been used already.
28	Lack of mirror resource #{@mirror_id_res.length}	There is no mirror left in device to use.
29	Lack of filter resource left #{@acl_id_res.length} require #{num}	There is no filter resource left in device to use.
30	Please specify an extra port for hardware processing resource. that required for the operation	Hardware processing port is needed.
31	Only one processing port can be used in this domain	Each domain can have one processing port.
32	Please specify one port to provide processing resource for domain operation.	The domain operation requires an additional processing port.

## Appendix 2: Supplemental Interface Commands

<i>Command root</i>	<i>Command (example)</i>	<i>Description</i>
#config interfaces trafficports port-name		Accesses the interface commands node.
speed [1G 10G]		Changes the port configuration to 1Gbps or 10Gbps. When setting the port to 1Gbps, the SFP module converts 10Mbps and 100Mbps speed grade to 1Gbps using SGMII protocol.
name [string]		Names the port name to string.
admin [enable disable]		Enables or disables the ports.
show		Displays the current port configuration and status.
sfpctrl [read write] i2caddress reg_addr [data]	# sfpctrl read 0xA2 0x80 # sfpctrl write 0xA2 0x0 0x1140	Reads or writes to the SFP configuration space.
linksync [enable disable]		Enables or disables the link synchronization feature when the virtual wire is created.

## Appendix 3: Hardware Specifications

### Hardware Specifications

Function	Compliance	Type	Quantity
Bi-mode 1Gb/10Gb/25Gb Traffic Ports	IEEE 802.3by Optical fiber, twinaxial, backplane 25 Gigabit Ethernet IEEE 802.3ae 10 Gigabit Ethernet IEEE 802.3aq 10GBASE-LRM	1G SFP+ Fiber Optics 1G SFP+ Passive DAC Cable 10G SFP+ Fiber Optics 10G SFP+ Passive DAC Cable 25G SFP28 Fiber Optics 25G SFP28 Passive DAC	48
40Gb/100Gb Traffic Ports	SFF-8436, SFF=8635 QSFP+ 40Gb port; QSFP28 100Gb Ports	QSFP+/QSFP28+ Fiber Optics or QSFP+/QSFP28 DAC Cable	6
40Gb/100Gb Traffic Ports Breakout Capabilities  4 x SFP+/SFP28 1Gb/10Gb/25Gb	Each 40Gb/100G Traffic Port can be split into 4 ports to support 1Gb/10Gb/25Gb Operation. IEEE 802.3ae 10 Gigabit Ethernet IEEE 802.3aq 10GBASE-LRM SFP+ MSA, Revision 4.1 Direct-attach copper support up to 10 meters	40G QSFP+ to 4x SFP+ splitter cable 100G QSFP28 to 4x SFP28 splitter cable	6 x QSFP+/QSFP28 to 24 SFP+/SFP28
1Gb/10Gb/25Gb Traffic Ports Gang Capabilities  4 x SFP+/SFP28 QSFP+ QSFP28	Four (4) adjacent 1Gb/10Gb/25Gb Ports can be ganged into one (1) QSFP+/QSP28 Port with QSFP+/QSP28 to SFP+/SFP28 Cable	QSFP+/QSP28 Fiber Optics or QSFP+/QSP28 DAC Cable	48 x SFP+/SFP28 to 12 x SFP+/QSFP28
LED - System	Power Module 1 Status LED Power Module 2 Status LED FAN Status LED STAT Status LED	GREEN/AMBER GREEN/AMBER GREEN/AMBER GREEN/AMBER	1 1 1 1
LED - SFP+ Traffic Ports	Combo LED for Link and Activity	GREEN LED	1 per Port
LED - QSFP+ Traffic Ports	Combo LED for Link and Activity	BLUE LED	1 per Port
10/100/1000 Mbps Management Port	10/100/1000BASE-T Category 5, Category 5e, Category 6 UTP	Copper RJ-45	1
Visible LED RJ-45 Management Port	LED for Link LED for Activity	GREEN/ORANGE LED GREEN LED	2
Console Port	115200 Baud 8 Bit Data No Parity 1 Stop Bit	Mini USB Type B	1
USB Port	USB 2.0 High Speed 480Mbps Port	USB Type A	1
Air Flow and Fans	PWM Controlled Long Endurance Fan	Front to Back Air Flow	4

<i>Function</i>	<i>Compliance</i>	<i>Type</i>	<i>Quantity</i>
Redundant Power Supply	Dual 750W High Efficiency 90-230V AC 50-60Hz Class I	1+1 Redundant Power Supply	2
Rack Mount Kit	19-inch Rack Mountable	19 Inch Rack Mountable	1
Chassis Dimension	Height x Width x Depth (inches)	1.75 x 17.3 x 19	1

## Standard Peripherals

<i>Part Name</i>	<i>Quantity</i>
DB-9 to Mini-B USB Serial Console Cable	1
UTP Cat 6. Ethernet Cable	1
Rail Mounting Kit	1

## Package and Environmental Specifications

<i>Item</i>	<i>Description</i>
Dimension (Unit: mm)	485 x 440 x 44 (Width x Depth x Height)
Net Weight (Unit: Kilogram)	8.5
Environment	Operating Temperature: 10 ~ 35 Non-Operating Temperature: -40 ~ 70 Humidity: 20 ~ 90% (Non-condensing)

## Protocols Support

The nVoy Packet Broker supports the following protocols:

TRILL, MPLS, VPWS, Q-in-Q, MAC-in-MAC, IPv4, IPv6, GRE, ECMP, TCP, UDP, IGMPv1, IGMPv2, IGMPv3, VEPA

## Appendix 4: Recommended Reading Materials

Suggested reading materials on the nVoy Packet Broker appliance.

1. Myricom nVoy Series Packet Broker Getting Started Guide.
2. Myricom nVoy Series Packet Broker Quick Reference Guide.

## Appendix 5: nVoy Packet Broker - Filter User Guide

The Filter User Guide provides the background information, conceptual model, and typical data path design patterns that allow users to manage packet filters effectively and efficiently.

### Packet Filters

Packet filters are often used to match protocol fields parsed from a packet against a set of pre-defined rules to a verdict. Depending, on the implementation technologies, there are hardware-based packet filters and software-based packet filters.

#### Hardware-based filters

Hardware based filters are implemented using dedicated resources found in hardware chipsets. In the case of the nVoy Packet Broker, it is the TCAM based lookup engines that are strategically placed along the packet processing pipeline. The main strength for hardware based filters comes from its deterministic performance of the pipeline operating at line rate speeds. The nVoy Packet Broker hardware-based lookup engine is capable of processing packets at line rate regardless of packet sizes.

#### Software-based filters

Software-based filters run on highly optimized network processors or general purpose processors optimized for data plane usage. They are flexible, feature-rich and can be quickly re-engineered to offer new features. Software-implemented filter performance is not nearly as high as hardware-based filters; however, they are good enough to process tens of millions of packets per second.

At its core, the operating system organizes the filter configuration around the following abstractions.

#### Filter Component

A filter component is a repository designated to hold filters and their relative location in the data path.



## Filter Definition

A filter is defined by three groups of attributes.

### 1. Filter Qualifiers

Filter qualifiers, also known as fields, specify the match conditions.

### 2. Filter Actions

Filter actions define the action that needs to take place when a packet is found to match all the qualifiers.

### 3. Filter Controls

Filter meta data specifies the name and enablement with an optional description.

The following nVoy Packet Broker Web UI screenshots provide an overall look and feel of the above abstractions.

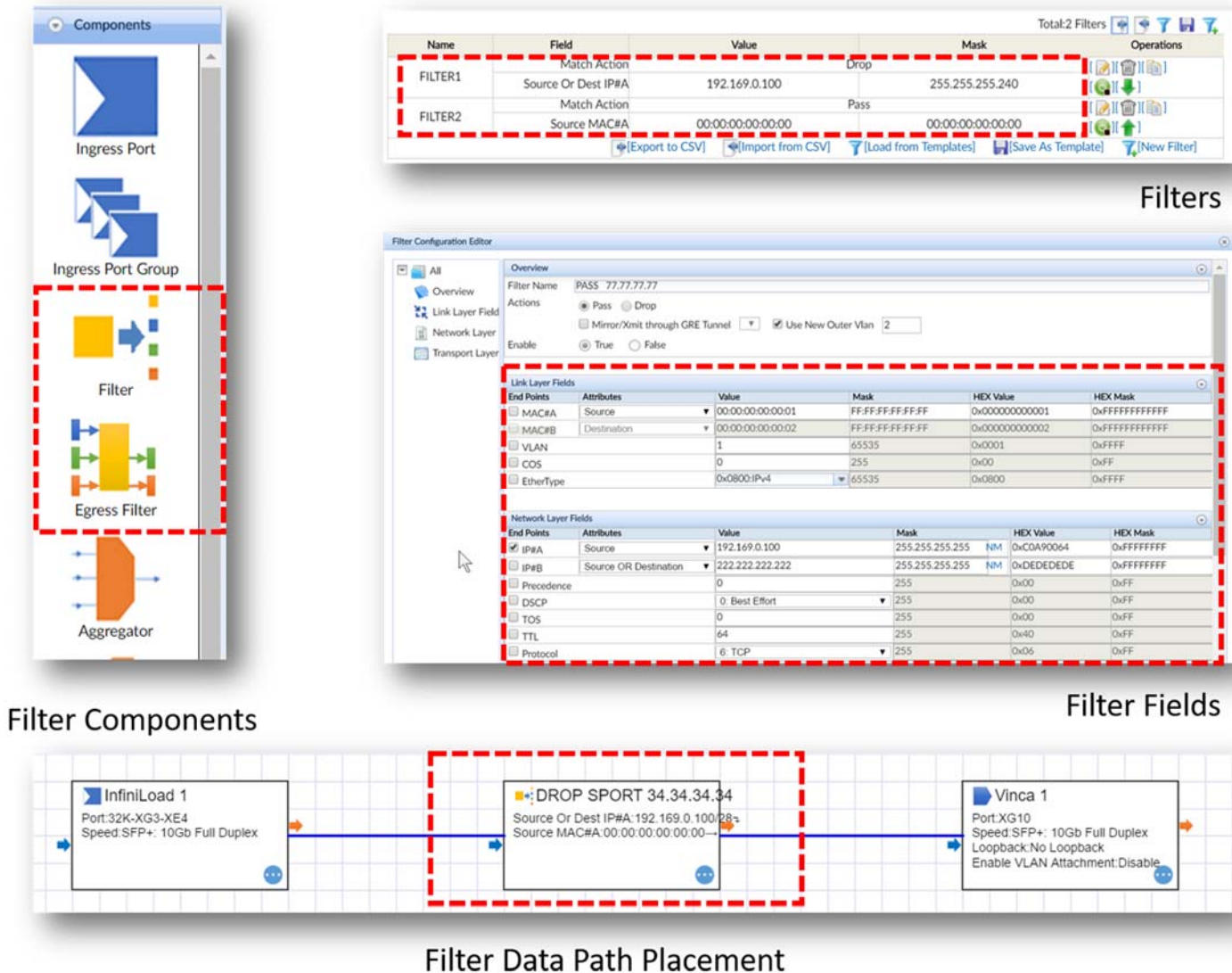


Figure 1: Filter components and their place in the data path.

## Description of Filter Building Blocks

The relationship among the filter component, filters, and fields is illustrated in Figure 2.

Each filter component can have one or more filters. Each filter has a collection of fields. Each field serves as qualifier against the data carried in the packet.

After a packet arrives at the ingress port, the packet parser extracts all the fields from the packet. These values are sent to the TCAM-based lookup engine where high performance parallel lookup takes place against predefined filters. The lookup engine outputs a verdict for each packet. The lookup engine uses the following formula to evaluate a given value-to-filter definition.

**(Field Value from Packet + Field Mask from Filter Definition) = Field Value**

Only when all fields in a filter produce a match, the corresponding action in the same filter will be taken. Examples of actions can be either dropping the packet, redirecting, or mirroring the packet. When multiple filters match a given packet, the filter precedence is determined by its order in the filter array.

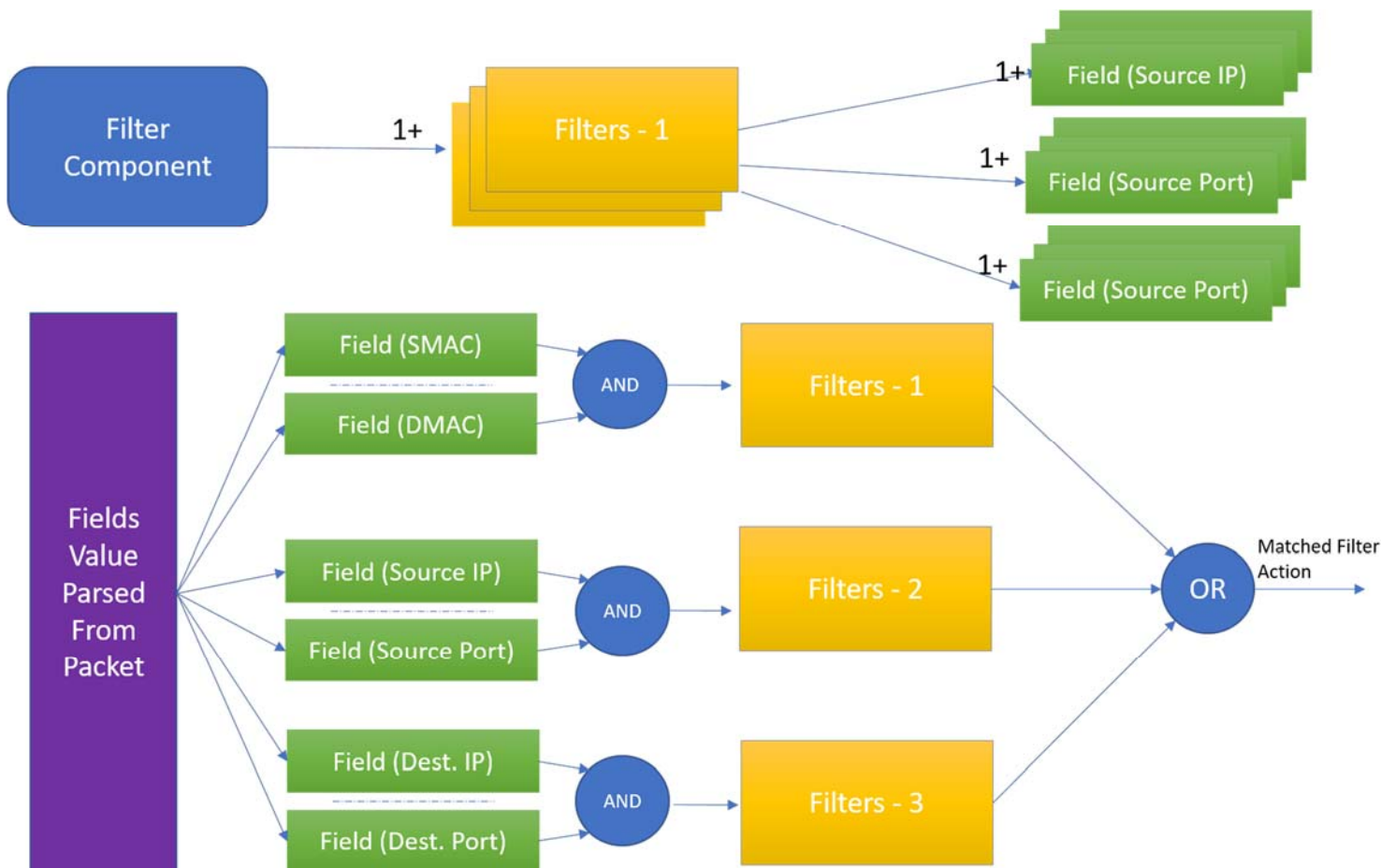


Figure 2: Relationship among the filter component, filters, and fields.

An example of a match process is shown in Figure 3 below.

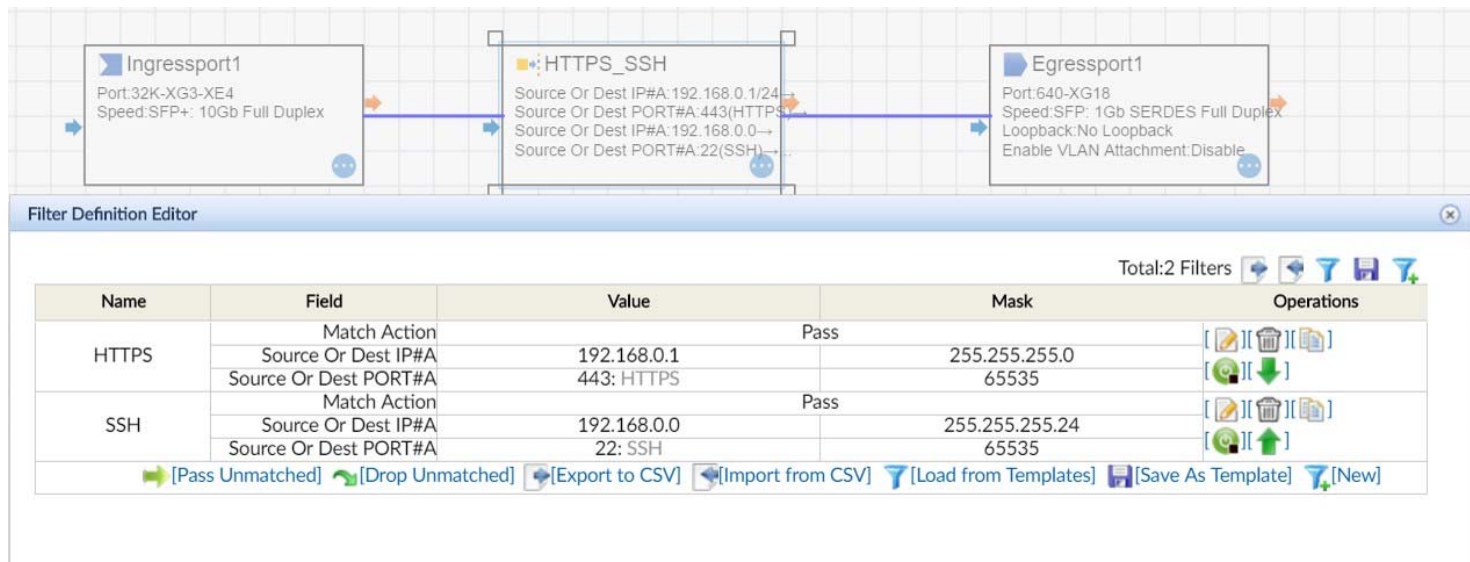


Figure 3: Illustration of a match process on the nVoy Packet Broker Web UI.

**Example**

In the above example, there is one filter component sitting in between the ingress and egress ports. In this filter component, two filters are configured to allow only HTTPS or SSH traffic to pass. The traffic is specified by its source or destination port number. An additional field is also specified to ensure the matched traffic only comes from a specific IP range.

Source or Destination port number for HTTPS	443
Source or Destination port number for SSH	22
IP Range	192.168.0.0/24.

Table 1: Specifying the source and destination ports for HTTPS and SSH.

**NOTE:** Since the configuration assigns **Source Or Dest** to each port and IP, bi-directional traffic can be matched and passed

The following traffic patterns should pass this filter component:

- Source IP = 192.168.0.100 AND Destination Port = 443
- Destination IP = 192.168.0.100 Source Port is 443
- Source IP = 192.168.0.100 AND Destination Port = 22
- Destination IP = 192.168.0.100 Source Port is 22

The following traffic patterns should *not* pass this filter component:

- Source IP = 192.168.1.100 AND Destination Port = 443
- Destination IP = 192.168.0.100 Source Port is 80

## Types of Filters

The nVoy Packet Broker provides two types of filters known as Ingress and Egress filters to facilitate its network visibility data path. The relative location of each component in the packet processing pipeline is represented in Figure 4.

The nVoy Packet Broker Web UI Configuration Editor uses Ingress Filter Component and Egress Filter Component to represent the ingress filter and the egress filter respectively.

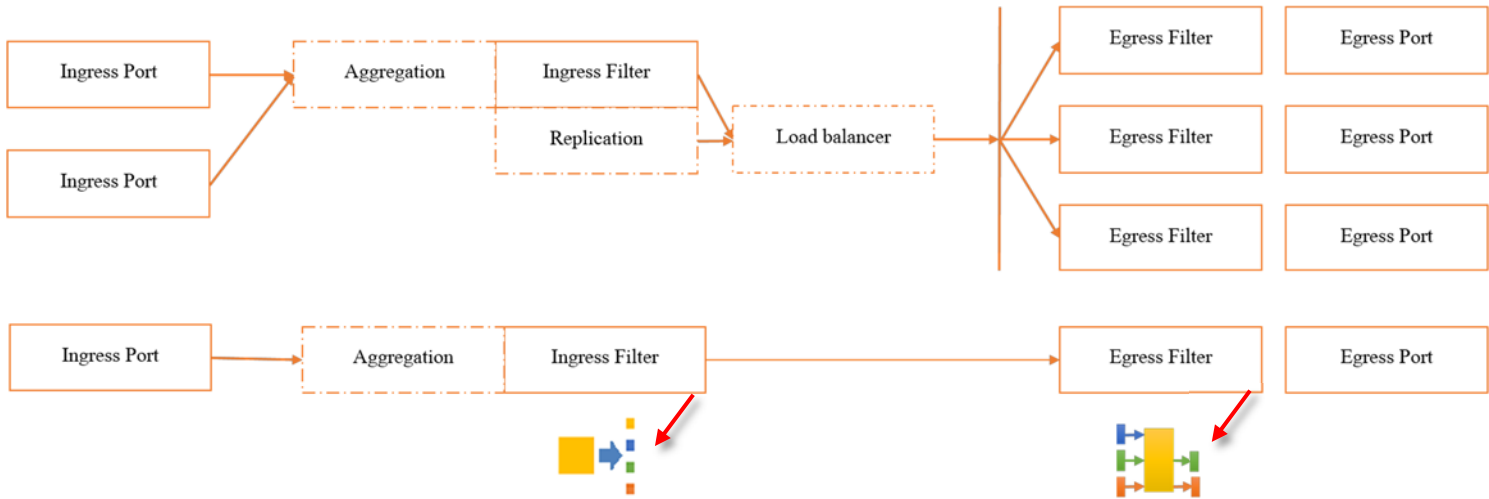


Figure 4: Relative location of the Ingress and Egress ports in the packet processing pipeline.

<b>NOTE:</b>	Each filter type can only be evaluated one time at the hardware level. Concatenation of filters in the Web UI is possible, however it may lead to over-committed hardware resources due to the flattening process.
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## Ingress Filters

Ingress filters are mainly used as pass filters to split ingress traffic into orthogonal traffic classes and then passing each traffic class to the next processing element. By default, all non-matched traffic is dropped. Ingress filters can associate matched packets with additional actions such as tunneling or VLAN attachment.

### Example 1:

A typical example of Ingress Filters is shown in Figure 5. The ingress traffic is split by Filters **A** and **B**. The catch-all port **C** continues to receive all the traffic.

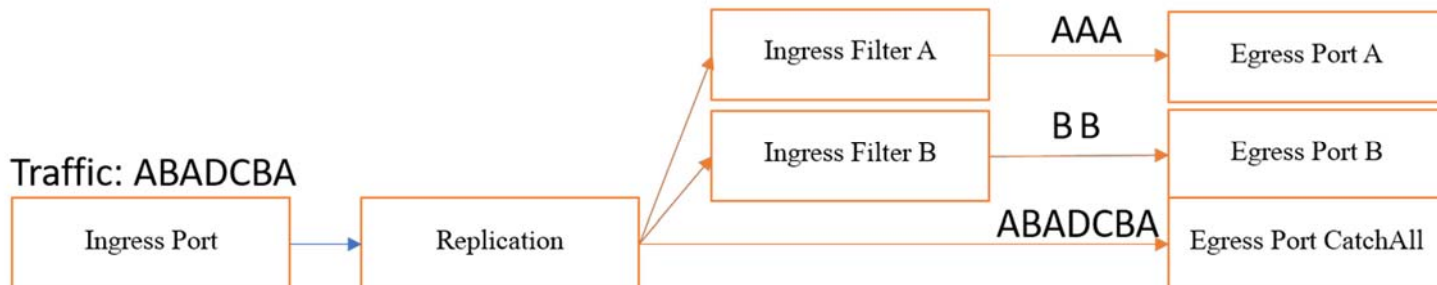


Figure 5: Ingress filtering when traffic is split into orthogonal classes.

### Example 2:

When it is difficult to split traffic into orthogonal traffic classes, such as the filter setup in Figure 6, the overlapped traffic "**C**" will appear at the output of the first filter.

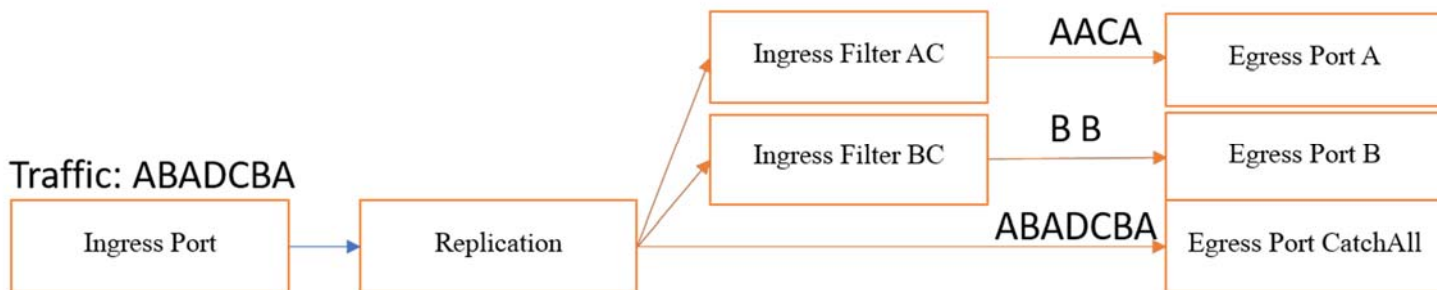


Figure 6: Ingress filtering behavior when traffic is not split into orthogonal classes.

**Example 2: Suggested workaround**

A suggested workaround is to introduce a new filter to filter out "C", followed by aggregation to combine the traffic together to produce **AC** and **BC**.

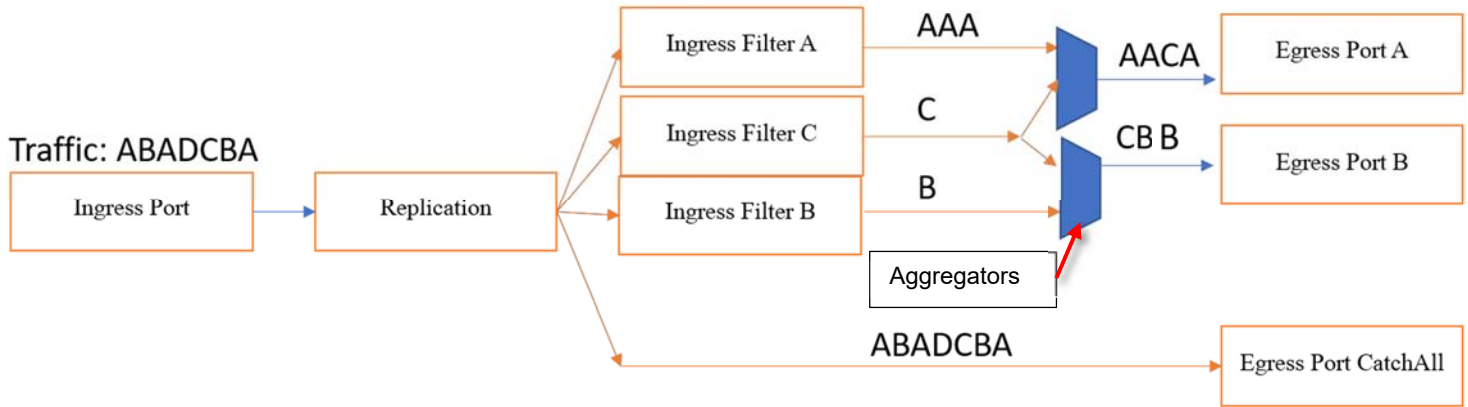


Figure 7: Ingress filtering with added filter and aggregation components.

One more solution to overcome the above non-orthogonal case is suggested in the next section with the help of the Egress Filter.

## Egress Filters

An Egress Filter can be connected to one and only one egress port. In other words, the egress filter is a localized filter, and only impacts the traffic to that egress port. In this release, the action of the egress filter is limited to “drop” only.

### Example 1:

One typical usage of egress filtering is to drop a known traffic pattern without affecting the other ports, as shown in Figure 8. The “Drop AB” on Port **A** will not impact Port **B** from transmitting **B**.

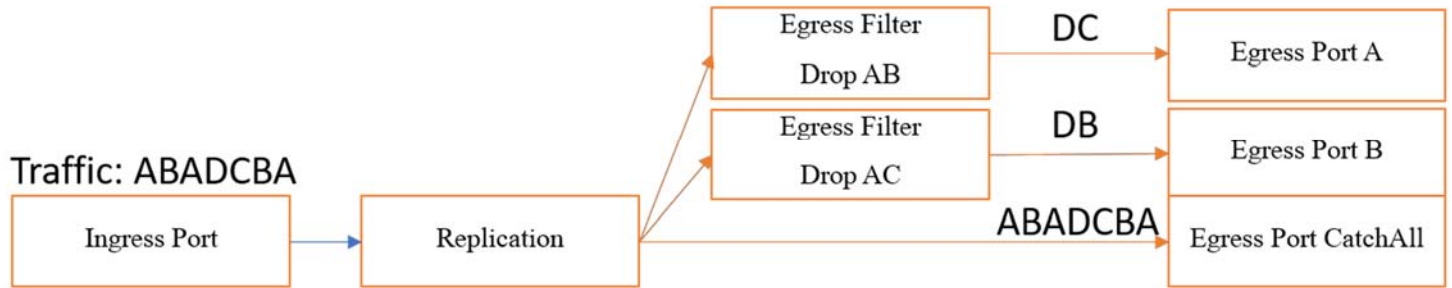


Figure 8: An example of egress filtering.

### Example 2:

In the case where it is difficult to split traffic into orthogonal traffic classes, the ingress filter is used to filter out the traffic of **ABC**, followed by an egress filter to drop traffic **B** and **C** on its corresponding egress interface.

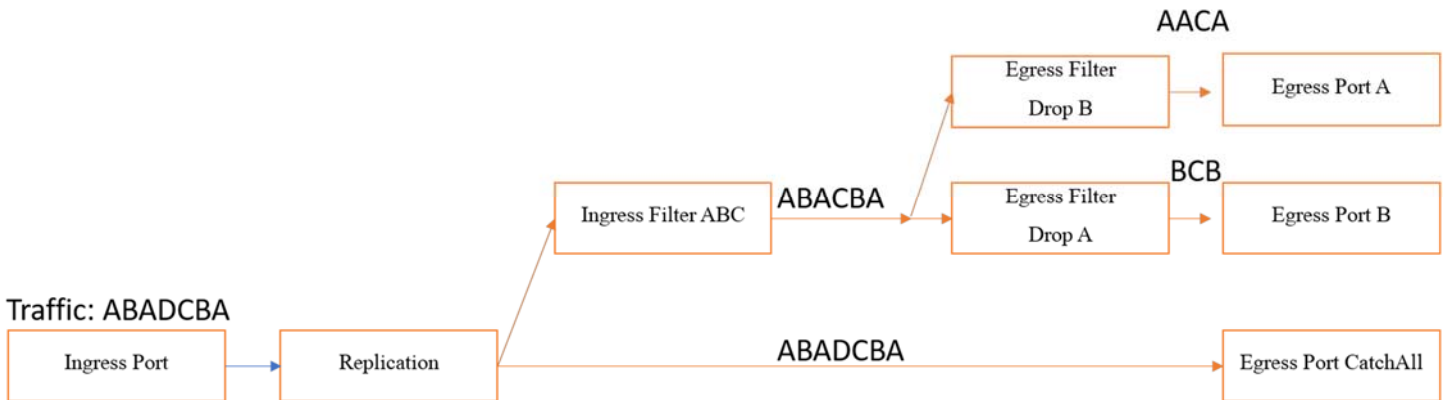


Figure 9: Egress filtering with an added ingress filter component.



## Filter Configuration Work Flow

The section describes how to create a domain filter from the nVoy Packet Broker Web UI.

**NOTE:** We suggest that you follow the directions in this section to acquaint yourself with the basics of creating a filter domain first before moving on to the more detailed procedures in the nVoy Packet Broker User Guide.

### Creating a filter

1. Click **New Flow Domain** from the Flow Domains panel or **Create Domain** from the Device View panel of the Web UI Dashboard, as shown in Figure 10.



Figure 10: Select **Create Domain** or **New Flow Domain**.

2. Enter the domain name in the text box of the Input Domain name window and click **OK**.

The Configuration Editor window appears.

3. Drag and drop the following components from the Components panel into the workspace:
  - 1, Ingress port
  - 1, Ingress filter
  - 1, Egress port
  - 1, Egress filter

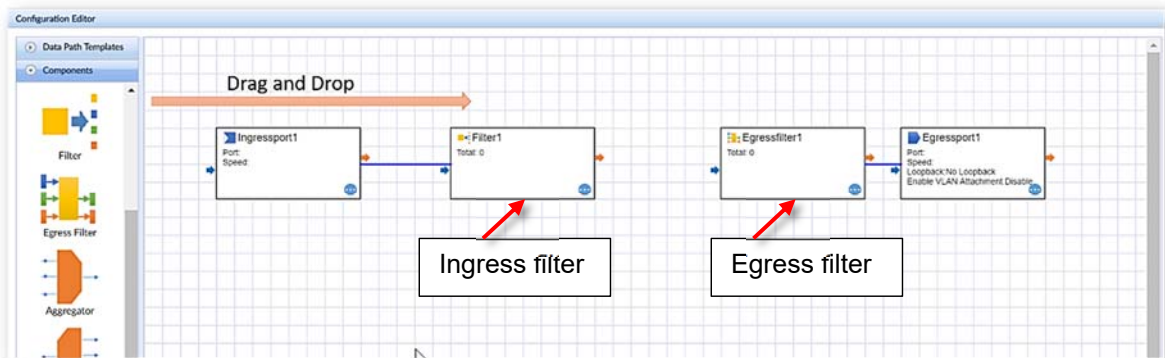


Figure 11: Configuration Editor.



4. Double-clicking a filter component or clicking **New Filter Definition...** in the Components Properties panel (Figure 12), launches the Filter Definition Editor window, as shown in Figure 13.

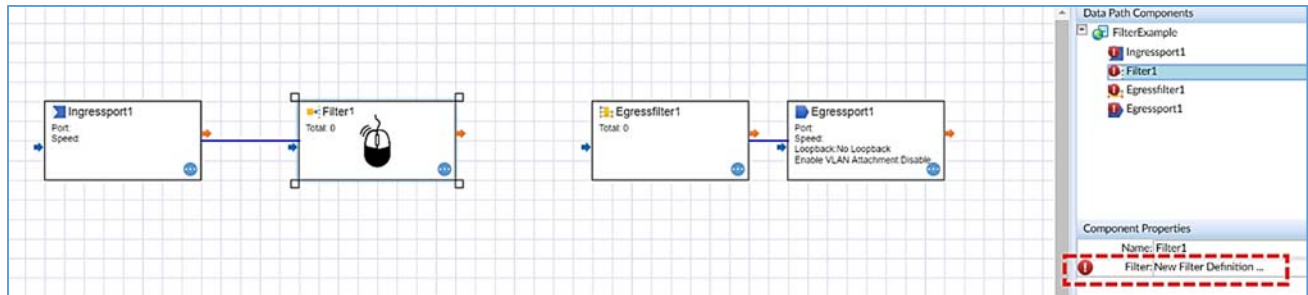


Figure 12: Selecting a filter component to define.

The Filter Definition Editor enables the user to add, edit, delete, duplicate, and enable and disable filters. The editor also enable users to load and save filter templates to the Web UI.

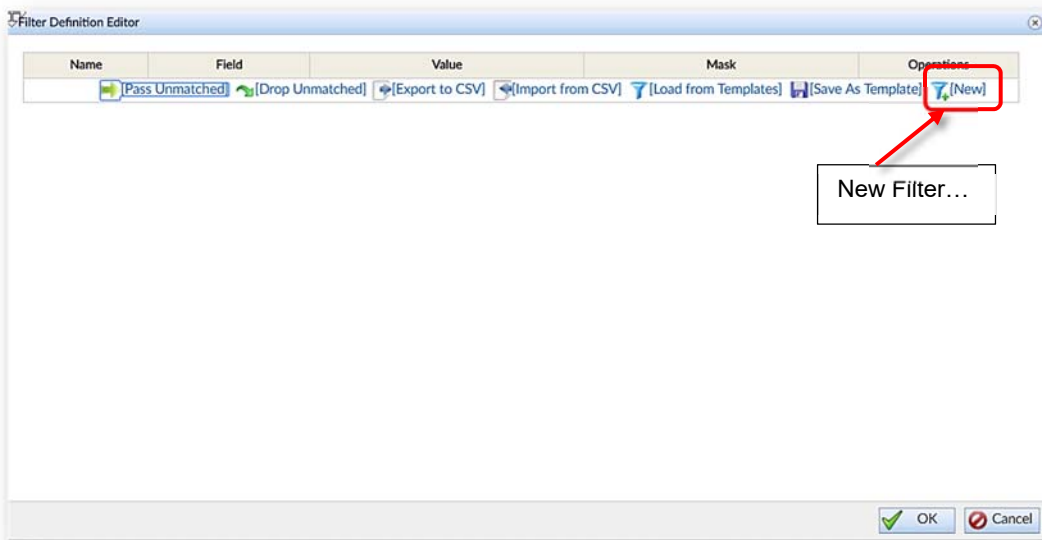


Figure 13: Filter Definition Editor.

5. Click **[New]** to create/configure a new filter.

The Filter Configuration Editor window appears, as shown in Figure 14.

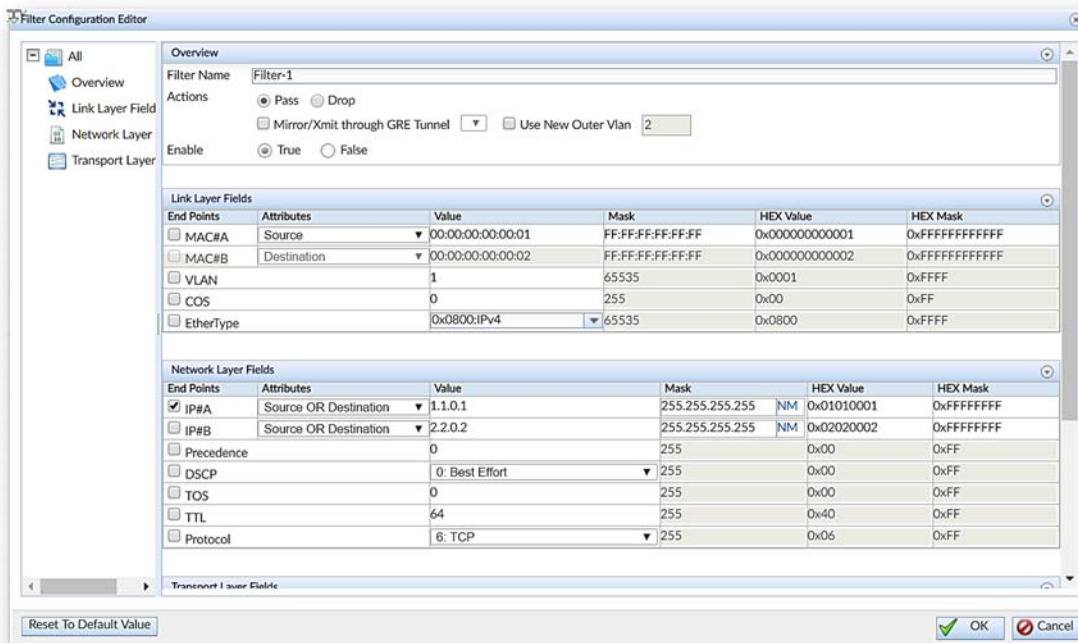


Figure 14: Filter Configuration Editor.

**6. Set your Overview, Link Layer Fields, Network Layer Fields, and Transport Layer Fields values.**

To add an outer VLAN ID, go the *Adding an Outer VLAN ID* in this section.

**7. Click OK.**

The Filter Definition Editor re-appears displaying the newly configured filter. Figure 15. shows the Filter Definition Editor with three configured filters.

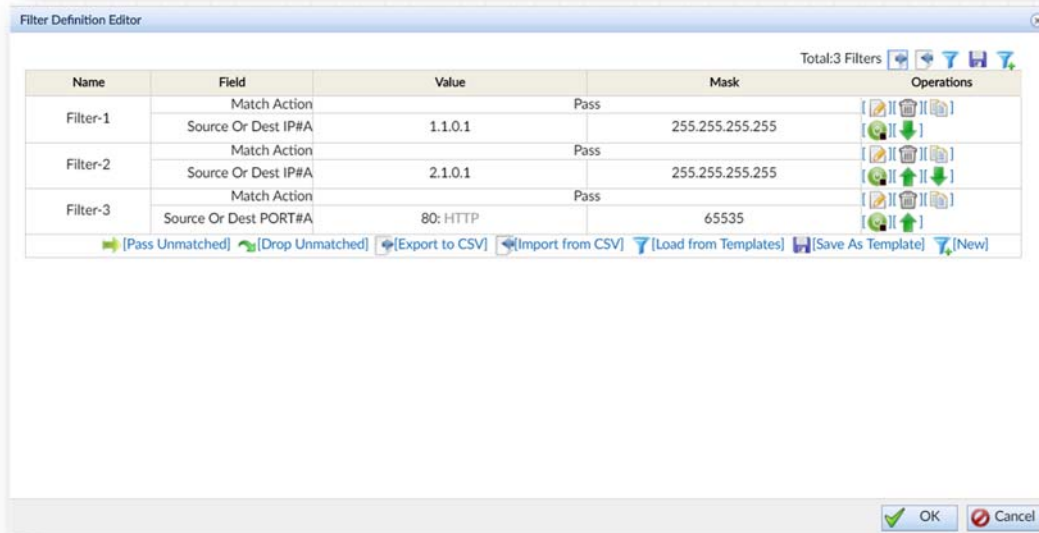


Figure 15: Filter Definition Editor with three configured filters.

8. After the filters are created, follow the general connectivity rules to connect the filters to upstream and downstream components.

**NOTE:** The Egress Filter can only be connected to one egress port.

For more information on connecting components to other upstream and downstream components, go to section 4.2.1 [Create Domain tab](#).

### Domain Compiler Warning

The current version of the nVoy Packet Broker contains a domain compiler that is particularly sensitive to filter behaviors. Therefore, if your domain contains filter components, you may encounter a domain compiler warning like the one shown in Figure 16.

The options available to you are as follows:

- CONTINUE – exit the editor and start running the domain.
- OK – exit the domain editor and leave domain disabled.
- CANCEL – return to editing the domain to verify your flow's logic.

If you believe that your domain's filters conform to best practices, then you may select **CONTINUE** to activate the domain.

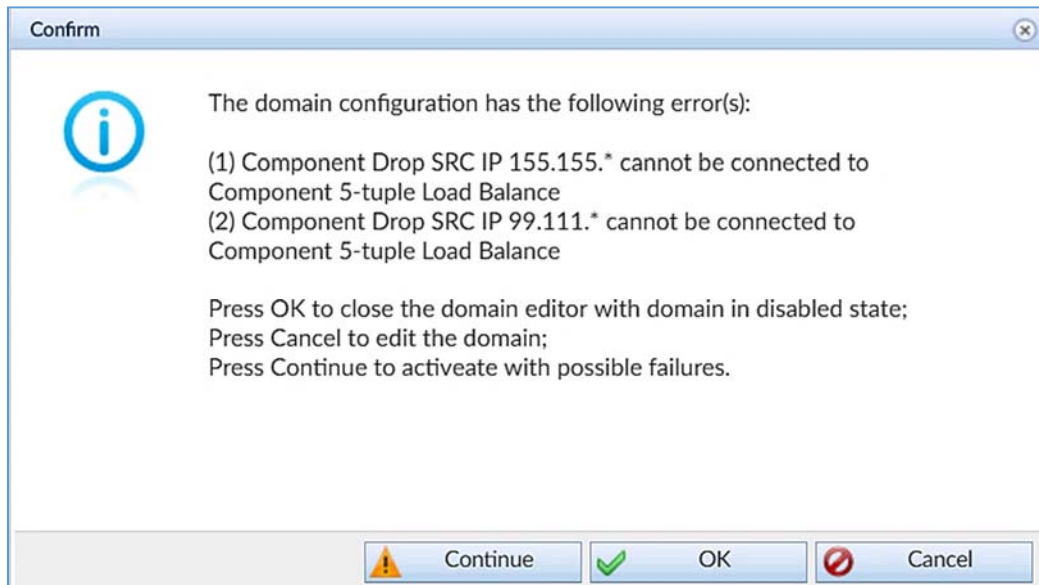


Figure 16: Domain compiler warning window.

## Adding an Outer VLAN ID

To add an outer VLAN ID to outgoing filter packets, follow these steps:

1. Check the **Use New Outer VLAN** checkbox in the Overview panel of the Filter Configuration Editor window and specify the VLAN ID value, as shown in Figure 17. In this example the VLAN ID value is **411**.

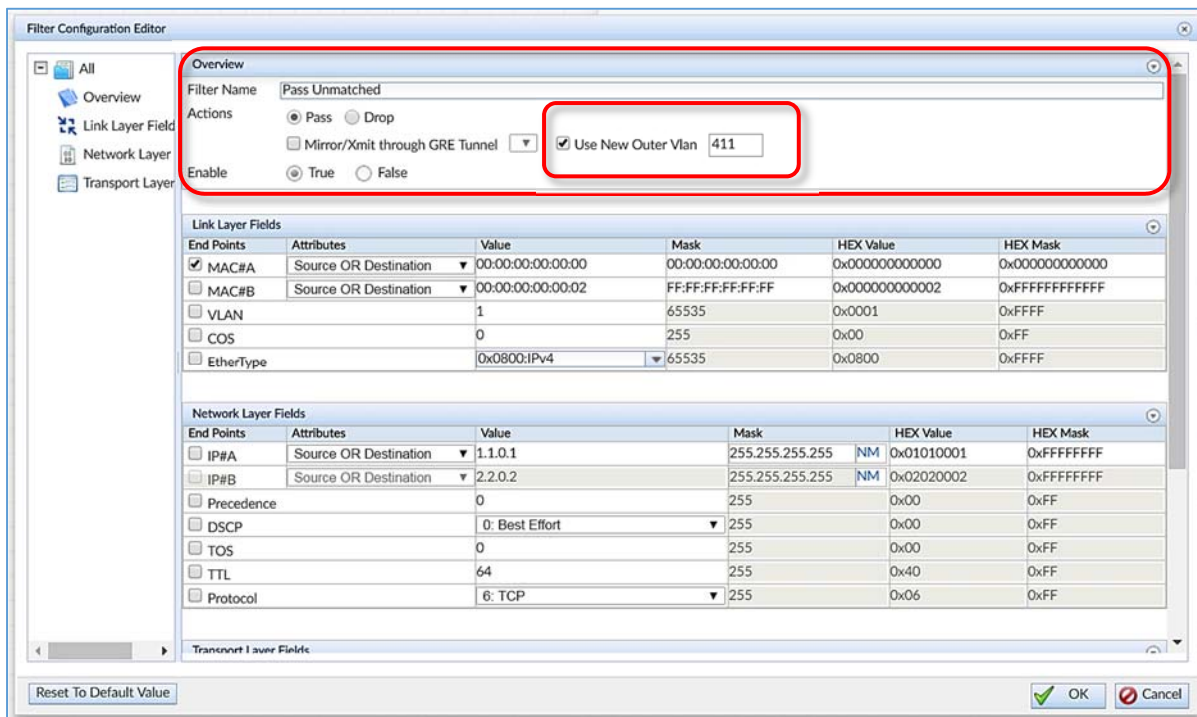


Figure 17: Selecting an outer VLAN ID value from the Filter Configuration Editor.

2. Select the Egress Port in the Configuration Editor and check the **Enable VLAN Attachment** checkbox to enable VLAN attachments, as shown in Figure 18.

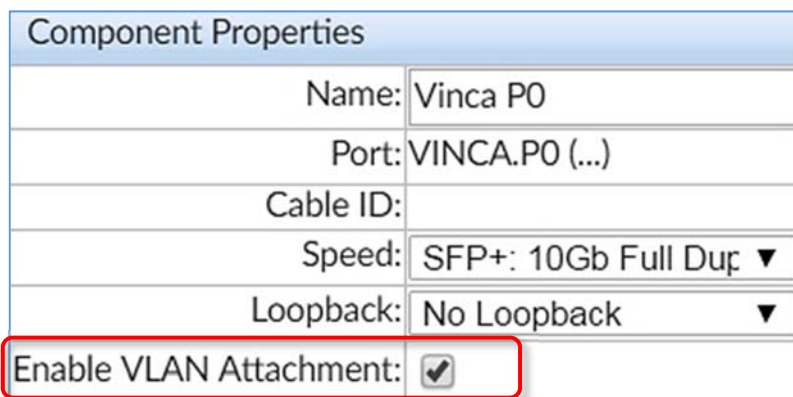


Figure 18: Enabling the VLAN attachment.

You are not obliged to add a VLAN ID value to attach to your packets. If that's the case, you can skip the Filter Configuration Editor entirely and simply enable the VLAN attachment in the Egress Port, as shown in Figure 18. The nVoy Packet Broker selects a value for you. Subsequently, all Egress Ports within the domain will choose unique VLAN ID's to attach to.