Myricom nVoy Series
Packet Broker

Getting Started Guide

Version 1.0

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Welcome

The Myricom nVoy Series Packet Broker Getting Started Guide provides the user with all the information needed to verify, setup, and operate the nVoy Packet Broker appliance.

The getting started guide is divided into five chapters, as described below:

- Chapter 1: Check the Items in nVoy Packet Broker Package
- Chapter 2: Install the nVoy Packet Broker Appliance
- Chapter 3: Power on and Power off nVoy Packet Broker Appliance
- Chapter 4: Use Command Line Interface (CLI) to Setup Management Parameters
- Chapter 5: Create Virtual Wire Domain Between Two Traffic Ports

Should you have any questions, suggestions, or a feature request, please do not hesitate to contact the CSPi team at: support@cspi.com.

We are more than happy to help you.
# nVoy Packet Broker Package Contents

Before you install the nVoy Packet Broker appliance, please check that the following items have been shipped and received. Contact CSPi at support@cspi.com if any of the items are damaged or missing.

<table>
<thead>
<tr>
<th>Item Name</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>nVoy Packet Broker</td>
<td>1</td>
</tr>
<tr>
<td>Mini USB to DB9 cable</td>
<td>1</td>
</tr>
<tr>
<td>Cat.6 RJ45 Ethernet Cable</td>
<td>1</td>
</tr>
<tr>
<td>Power Cord</td>
<td>1</td>
</tr>
<tr>
<td>Rack Mount Kit</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1: nVoy Packet Broker package contents
2 nVoy Packet Broker Hardware and Cabling

Before you install and connect the nVoy Packet Broker, familiarize yourself with the appliance’s hardware design and cabling requirements.

This chapter includes the following sections:

- nVoy Packet Broker Front Panel
- nVoy Packet Broker Rear Panel
- nVoy Packet Broker Lithium Battery
- Cabling

2.1 nVoy Packet Broker Front Panel

This section describes the layout of nVoy Packet Broker front panel and main interfaces, as described below.

Figure 1: nVoy Packet Broker front panel layout.
General description (front panel)
The following important interfaces, listed from left to right, are:

- 48, 1G/10G/25G SFP+/SFP28 Traffic Ports
- 6, 40G/100G QSFP+/QSFP28 Traffic Ports
- 1, Serial Console Port
- 1, Ethernet Management Port
- 1, USB Port

LEDs (front panel)

- one LED indicator for each 1G/10G/25G SFP+ Ethernet port (Ports 1 to 48)
- one LED indicator for each 40G/100G QSFP+ Ethernet port (Ports 49 to 54)
- one LED system indicator

Important Considerations

The nVoy Packet Broker has the hardware capability to split 1×40G/100G QSFP+/QSFP28 port into 4×1G/10G/25G SFP+/SFP28 mapping ports.

Each QSFP+/QSFP28 port has four, Yellow/Green LEDs to indicate 4×1G/10G/25G SFP+/SFP28 port link and activity status for Ports 49 to 54.

LED meaning and behavior is documented in the following sections.
2.1.1 Power, Fan and STAT Status LEDs

Figure 2: Power, Fan, and STAT status console.

<table>
<thead>
<tr>
<th>System and Power LEDs Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PSU1</strong></td>
</tr>
<tr>
<td>GREEN</td>
</tr>
<tr>
<td>ORANGE</td>
</tr>
<tr>
<td>OFF</td>
</tr>
<tr>
<td>Power Supply 1 working normal</td>
</tr>
<tr>
<td>Power Supply 1 failure</td>
</tr>
<tr>
<td>Power Supply 1 not inserted</td>
</tr>
</tbody>
</table>

Table 2: Power, Fan, and STAT Status LED descriptions.

2.1.2 Management Port LED

Figure 3: Management port LEDs.

<table>
<thead>
<tr>
<th>Management Port LEDs Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>LINK LED (Speed)</strong></td>
</tr>
<tr>
<td>ORANGE</td>
</tr>
<tr>
<td>GREEN</td>
</tr>
<tr>
<td>OFF</td>
</tr>
<tr>
<td>1Gbps linked</td>
</tr>
<tr>
<td>100 Mbps linked</td>
</tr>
<tr>
<td>10 Mbps linked</td>
</tr>
</tbody>
</table>

Table 3: Management port LEDs description.
2.1.3 1G/10G/25G SFP+/SFP28 Port LED

Figure 4: 1G/10G/25G SFP+/SFP28 Port LEDs

<table>
<thead>
<tr>
<th>1G LINK/ACT LED</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>(Port No. 1 to 48)</td>
<td><strong>ORANGE</strong> ORANGE BLINKING 1Gbps Link established Transmit or receive data at 1Gbps speed</td>
</tr>
<tr>
<td>10G LINK/ACT LED</td>
<td><strong>ORANGE</strong> ORANGE BLINKING 10Gbps Link established Transmit or receive data at 10Gbps speed</td>
</tr>
<tr>
<td>(Port No. 1 to 48)</td>
<td>25G LINK/ACT LED <strong>GREEN</strong> GREEN BLINKING 25Gbps Link established Transmit or receive data at 25Gbps speed</td>
</tr>
<tr>
<td>(Port No. 1 to 48)</td>
<td>OFF No 1G/10G/25G link in this port</td>
</tr>
</tbody>
</table>

Table 4: 1G/10G/25G SFP+/SFP28 Port LED descriptions.
2.1.4 40G/100G QSFP+/QSFP28 Port LED

![40G/100G QSFP+/QSFP28 Port LEDs](image)

Figure 5: 40G/100G QSFP+/QSFP28 Port LEDs

<table>
<thead>
<tr>
<th>100G Link/Activity LEDs (Port No. 49 - 54)</th>
<th>GREEN</th>
<th>100Gbps link established Transmit or receive date at 100Gbps speed</th>
</tr>
</thead>
<tbody>
<tr>
<td>40G Link/Activity LEDs (Port No. 49 - 54)</td>
<td>ORANGE BLINKING</td>
<td>40Gbps link established Transmit or receive date at 40Gbps speed</td>
</tr>
<tr>
<td>OFF</td>
<td></td>
<td>No 40/10G Network Link in this port.</td>
</tr>
</tbody>
</table>

Table 5: 40G/100G QSFP+/QSFP28 Port LED descriptions.
2.2 nVoy Packet Broker Rear Panel

This section describes the layout of the nVoy Packet Broker rear panel, as shown below.

**Figure 6: nVoy Packet Broker rear panel layout.**

**LEDs (rear panel)**
- one LED indicator for each power supply unit (2)
- one LED indicator for each fan (4)

**Power supply units (PSUs)**
The nVoy Packet Broker has two redundant power supply units, each with its own LEDs to indicate failure.

**DANGER**
The nVoy Packet Broker can draw power from one power supply unit or the other. To prevent damage to the nVoy Packet Broker, protect data, and avoid personal injury, observe proper ESD precautions and disconnect the appliance from its power source prior to moving or servicing.

**Fans**

nVoy Packet Broker has 4 fan trays for system cooling, and each fan tray has one LED to indicate failure, please see below for Fan tray LED location and LED description.

**Figure 7: Fan with fan status LED.**
### 2.3 nVoy Packet Broker Lithium Battery

The nVoy Packet Broker contains a 3V CR2032 Lithium battery.

**Do not attempt to replace the Lithium battery with a different type.**

![DANGER]

**RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE MANUFACTURER’S INSTRUCTIONS.**

**Replacing the battery**

Contact CSPi support at support@cspi.com for Lithium battery replacement.

<table>
<thead>
<tr>
<th>Fan Status LED</th>
<th>RED</th>
<th>GREEN</th>
<th>Fan failure</th>
<th>Fan normal</th>
</tr>
</thead>
</table>

Table 6: Fan status LED description.
2.4 Cabling

The section describes how to connect the nVoy Packet Broker to the interfaces.

Prerequisites

The following are required before connecting the nVoy Packet Broker to the interfaces.

1. Personal computer, including:
   a. A working serial port attached
   b. Ethernet connectivity to the nVoy Packet Broker appliance
2. 110V 50-60Hz power outlet with 4 Amps capacity

Cabling procedure

1. Connect an Ethernet cable (Cat 5 or better) from the nVoy Packet Broker management port to a switch or PC. The management Ethernet cable is provided.

2. Connect the nVoy Packet Broker console port to the PC's serial port with the console cable provided. Fasten the screw on the DB-9 connector.

3. For 1G/10G/25G traffic ports, run SFP+/SFP28 copper cables or fiber optical modules (with proper cables) from one or more SFP+/SFP28 traffic ports to the devices. SFP+/SFP28 Direct Attach Cables (DACs) or SFP+/SFP28 fiber optical modules and cables are not provided.

4. For 40G/100G traffic ports, run QSFP+/QSFP28 copper 40G/100G cables or QSFP+/QSFP28 fiber optical modules (with proper cables) from one or more QSFP+/QSFP28 traffic ports to the devices. The QSFP+/QSFP28 cables or QSFP+/QSFP28 fiber optical modules and cables are not provided.

5. Connect nVoy Packet Broker Appliance to a power outlet with the power cord provided
The following diagram displays the nVoy Packet Broker with all connections in place.

Figure 8: nVoy Packet Broker with all cables in place.
3 Powering ON the nVoy Packet Broker

This chapter describes how to power ON and OFF the nVoy Packet Broker appliance.

3.1 Power ON Sequence

Before you power on the nVoy Packet Broker appliance:

1. Unplug the Ethernet cable to your network first to prevent IP address conflicts.
2. Connect the appliance power cords to the power supply.
   It takes about five minutes for the appliance to be ready for use.
3. Connect the Ethernet cable directly to a PC or laptop.

NOTE: We recommend connecting the appliance to a desktop or a laptop to change the IP address from the Web GUI.

3.2 Power OFF Sequence

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

Figure 9: Web UI - Device Operations panel.

1. Click [Shutdown] in the Devices Operation panel, as shown in Figure 1.
   A Confirm Shutdown System window appears, as shown in Figure 2.
Figure 10. Confirming shutdown.

2. Click **OK** to confirm shutting down the device operation.
4 Setting up Management Parameters

Once you have cabled and powered on the nVoy Packet Broker appliance, you can now set up the management parameters through the serial port. The settings will take effect immediately once the parameters are set. Table 1 lists the necessary parameters.

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Meaning</th>
<th>Importance</th>
<th>Command</th>
</tr>
</thead>
<tbody>
<tr>
<td>Management IP</td>
<td>Management IP address and netmask</td>
<td>Mandatory</td>
<td>config interface mgmt ip</td>
</tr>
<tr>
<td>Gateway</td>
<td>Gateway</td>
<td>Optional</td>
<td>Config interface mgmt gateway</td>
</tr>
<tr>
<td>Date</td>
<td>Date and Time</td>
<td>Optional</td>
<td>Config system date</td>
</tr>
<tr>
<td>Host name</td>
<td>Appliance Name</td>
<td>Optional</td>
<td>Config system hostname</td>
</tr>
<tr>
<td>Description</td>
<td>Appliance description</td>
<td>Optional</td>
<td>Config system desc</td>
</tr>
<tr>
<td>Location</td>
<td>Appliance location</td>
<td>Optional</td>
<td>Config system location</td>
</tr>
<tr>
<td>Contact</td>
<td>Administrator contact Information</td>
<td>Optional</td>
<td>Config system contact</td>
</tr>
</tbody>
</table>

Table 7: List of management parameters.

The following sections will guide you through the setup.

4.1 Setting up Default Serial Port Settings

Table 8 displays the nVoy Packet Broker appliance serial port default settings.

<table>
<thead>
<tr>
<th>Setting</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>115200</td>
</tr>
<tr>
<td>Data Bits</td>
<td>8 bit</td>
</tr>
<tr>
<td>Stop Bits</td>
<td>1 bit</td>
</tr>
<tr>
<td>Parity</td>
<td>No</td>
</tr>
<tr>
<td>Flow Control</td>
<td>No</td>
</tr>
</tbody>
</table>

Table 8: Serial port settings.

NOTE: Your console application serial port settings must match the nVoy Packet Broker default settings to ensure successful communication.

The following section describes how to set up serial ports in Tera Term and Microsoft HyperTerminal terminal emulators.
4.1.1 Serial port setup window - Tera Term

![Tera Term setup window](image)

Figure 11: Tera Term setup window.

4.1.2 Serial port setup window - Hyper Terminal

![Hyper Terminal setup window](image)

Figure 12: Hyper Terminal setup window.
4.2 Logging on the CLI through the Serial Console

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

4.2.1 Default login information

<table>
<thead>
<tr>
<th>Default IP address</th>
<th>192.168.0.240</th>
</tr>
</thead>
<tbody>
<tr>
<td>Default administrative username</td>
<td>Enter: admin</td>
</tr>
<tr>
<td>Default administrative account password</td>
<td>There is no default password issued.</td>
</tr>
<tr>
<td>Default console port setting</td>
<td>Baud rate of 115200, 8 data bit, no parity, and a 1 stop bit.</td>
</tr>
</tbody>
</table>

Table 9: Default login information.

Figure 13: Login screen.

A successful logon displays, with navigation keys, as shown below.

```
Welcome to 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

Hardware Platform   : nVoy Packet Broker
Firmware Version    : 1.0.2.6
Control Plane CPU   : Intel(R) Core(TM) i3- CPU @ 2.00GHz
Control Plane Memory Max/Free: 4139147264/3389046784
CP Core Temp        : 40.0 (°C)
```

Figure 14: Successful logon with navigation keys.
### 4.2.2 CLI Navigation Keys

The nVoy Packet Broker command line interface follows popular Cisco “CLI” style. Press “?” at any time.

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exit</td>
<td>exit shell</td>
</tr>
<tr>
<td>Config</td>
<td>configuration</td>
</tr>
<tr>
<td>Exec</td>
<td>execute operation</td>
</tr>
<tr>
<td>Show</td>
<td>display system information</td>
</tr>
<tr>
<td>Help</td>
<td>display help information</td>
</tr>
<tr>
<td>Tree</td>
<td>display command line tree</td>
</tr>
<tr>
<td>History</td>
<td>display command history</td>
</tr>
</tbody>
</table>

Table 10: CLI navigation keys.
4.3 Configuring the Network and System Parameters

The following example describes how to configure the network and system parameters:

**Example**

- IP address: 192.168.0.240
- Gateway: 192.168.0.1
- Hostname: QC01
- Location: QClab02-Rack1
- Administrator Contact: "x613 admin"
- Date: 2015-05-19 13:26:00

**Output**

```
nVoy Packet Broker# config interface mgmt ip 192.168.0.240 255.255.255.0
System IP address set to 192.168.0.240 with netmask 255.255.255.0
nVoy Packet Broker# config interface mgmt gateway 192.168.0.1
Default gateway address is set to 192.168.0.1
nVoy Packet Broker# config system
nVoy Packet Broker system# ?
hostname - name of the system
description - description of the system
location - location of the system
contact - administrator contact
date - Date and Time Settings

nVoy Packet Broker system# hostname QC01
QC01 system# description QC-10G
QC01 system# location QClab02-Rack1
QC01 system# contact x613 admin
QC01 system# date 2015-05-19 16:28:00
QC01 system#
```

The nVoy Packet Broker can now connect to the web user interface (Web UI) network, once the management IP address has been configured to the appliance.
4.4 Web User Interface (Web UI)

Once you have configured the nVoy Packet Broker appliance IP and the device is accessible through the 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 appliance.

![nVoy Packet Broker Web UI home page](image)

**Figure 15: nVoy Packet Broker Web UI home page**

### 4.4.1 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.
5 Creating a Virtual Wire to Connect Two Ports

In this chapter we employ the nVoy Packet Broker to cross-connect two ports with Virtual Wire Mode. The purpose is to introduce you to the various configuration options available on the Web UI.

The chapter includes the following sections:

- Changing the Port Name
- Changing the Port Speed
- Creating a TAP/Mirror Port
- Disabling and Enabling Ports
- Creating a Virtual Wire Domain
5.1 Changing the Port Name

To change the port name on the Web UI, follow these steps:

**Example**

In this example, port 14 is **XG14** and port 18 is **XG18**.

1. Click the Dashboard tab and scroll to the Device View panel.
2. Click **XG14** (Port14) and enter **Tester-P1** in the port name text box.
3. Click **Enter** for the new name to take effect.
   
   The port name changes from **XG14** to **Tester-P1**.
4. Click **XG18** (Port18) and enter **DUT-P1** in the port name text box.
5. Click **Enter** for the new name to take effect.
   
   The port name changes from **XG18** to **DUT-P1**.

![Image of Changing a port name](image)

Figure 16: Changing a port name.
5.2 Changing the Port Speed

To change the port speed on the Web UI, follow these steps:

**Example**

In this example, port 14 is **Tester-P1**.

1. Click the Dashboard tab and scroll to the Device View panel.
2. Right-click the port icon below the **Tester-P1** port name.
3. The Tester-P1 pull-down combo box appears.
4. Select **Link..** and click the desired port speed from the secondary menu, as shown in the figure 17 below.

The port speed is changed.

![Figure 17: Changing the port speed.](image-url)
5.3 Creating a TAP/Mirror Port

To create a TAP/Mirror Port on the Web UI, follow these steps:

Example

In this example, port 14 is **Tester-P1**.

1. Click the Dashboard tab and scroll to the Device View panel.
2. Right-click the port icon below the **Tester-P1** port name.

The **Tester-P1** pull-down combo box appears, as shown in Figure 18 below.

![Figure 18: Creating a TAP/Mirror Port from the Device View panel.]

3. Click **Change to Mirror Port…**

The Tap Port Settings window appears, as shown in Figure 19 below.

![Figure 19: Tap Port Settings window.]
4. Make the necessary changes to **Display:**, **Direction:**, **Truncate Packet:,** **Tap Port:,** or **Filter Definition:** settings.

5. Click **OK.**

The TAP/Mirror port is created.

### 5.4 Disabling and Enabling Ports

**NOTE** By default, all ports are enabled on the Web UI

To disable or enable ports on the Web UI, follow these steps:

**Example**

In this example, port 14 is **Tester-P1**.

1. Click the Dashboard tab and scroll to the Device View panel.
2. Right-click the port icon below the **Tester-P1** port name.
   
   The Tester-P1 pull-down combo box appears, as shown in Figure 20 below.
3. Click **Enable**, if the port is disabled.
4. **OR**

   4. Click **Disable**, if the port is enabled.

![Figure 20: Enabling or Disabling a port in the Device View panel.](image)
5.5 Creating a Virtual Wire Domain

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

5.5.1 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.

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 21.

A virtual wire is created between both ports, as shown in Figure 22.

Figure 21: Dragging a dropping a port.

Figure 22. Creating a virtual wire between two ports.
5.5.2 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 23.
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 23.

![Configuration Editor window](image)

**Figure 23: Configuration Editor window**
3. Click and drag the bi-directional domain template from the Data Path Templates panel to the grid.

4. Double-click the blocks PortX_Rx and PortX_Tx to assign the same port (Figure 24). In this example PortX_Rx and PortX_Tx are assigned to port XG34.

   The Device View window appears, displaying the available ports (Figure 24 inset).

5. Select port XG34 and click OK.

   The Device View window closes.
Figure 25: Assigning port XG33 to the bi-directional virtual wire template.

6. Double-click the blocks PortY_Rx and PortY_Tx to assign the same port (Figure 25). In this example PortY_Rx and PortY_Tx are assigned to port XG33.

   The Device View window appears, displaying the available ports (Figure 25 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. Click Activate Domain from the Device View toolbar.
The Domain drop-down combo box appears, as shown in Figure 26.

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 27).

   ![Figure 26. Selecting the domain to activate.](image)

   ![Figure 27. Start Domain in Progress window.](image)
The activated bi-directional domain appears in the Device View window with the virtual wire cross-connecting two ports, as shown in Figure 28.

Figure 28. Bi-directional domain.
6 Recommended Reading Material

The following list provides further reading materials when users find the need to gain in-depth knowledge in specific area.