

Configure Line Cards Using CTC

This section provides the CTC procedures to configure line cards.

- Understand ODU and ODU Cross Connections, on page 1
- Client Port Optimization in NCS4K-4H-OPW-QC2 Cards, on page 2
- Laser Quelching, on page 2
- Idle Frame, on page 3
- Configure Line Cards Using CTC, on page 3
- Connect Backplane/Regeneration of line cards Using CTC, on page 11
- Upgrade to 400G Fabric Card Using CTC, on page 13
- Upgrade FPD using CTC, on page 14
- Non Disruptive FPD Upgrade for Fabric Card using CTC, on page 15
- Non Disruptive FPD Upgrade for Route Processor using CTC, on page 16

Understand ODU and ODU Cross Connections

In the case of channelization, ODU is created as a sub controller of an OTU controller.

Optical Channel Data Unit (ODU) contains information for maintenance and operational functions to support optical channels. ODU Over Head (OH) information is added to the ODU payload to create the complete ODUk. The ODUk OH consists of portions dedicated to the end-to-end ODUk path and to six levels of tandem connection monitoring. The ODUk path OH is terminated where the ODUk is assembled and disassembled. The TCM OH is added and terminated at the source and sink to the corresponding tandem connections.

ODU cross connection is an end-to-end channel between two OTN/Client ports in OTN network within NCS4k node.

The NCS 4000 network element supports the following types of ODU cross connections:

1. Unidirectional point to point
    - 1+1 unidirectional SNC/N, SNC/I protection without an APS protocol
    - 1+1 unidirectional SNC/N, SNC/I protection with an APS protocol
2. Bidirectional point to point
    - 1+1 bidirectional SNC/N, SNC/I protection with an APS protocol

Client Port Optimization in NCS4K-4H-OPW-QC2 Cards

The number of QSFP+ pluggables used on the client and network side of the NCS4K-4H-OPW-QC2 card can be optimised.

To achieve a total bandwidth of 400G, the CFP2 ports and client ports can be configured in any one of the configurations shown in the following tables:



Note A total of five QSFP+ pluggables, each supporting 40G are used on the client side.

Table 1: Port Configuration 1 on NCS4K-4H-OPW-QC2 Cards

Bandwidth (Total of 400G)	CFP2 (Port 10)	CFP2 (Port 11)	Client Ports (0, 1, 2, 3, or 4)	Client Ports (5, 6, 7, 8, or 9)
220G	100G	-	3 QSFP+ x (4 x 10G) or 3 QSFP+ x 40G	-
180G	-	100G	-	2 QSFP+ x (4 x 10G) or 2 QSFP+ x 40G

Table 2: Port Configuration 2 on NCS4K-4H-OPW-QC2 Cards

Bandwidth (Total of 400G)	CFP2 (Port 10)	CFP2 (Port 11)	Client Ports (0, 1, 2, 3, or 4)	Client Ports (5, 6, 7, 8, or 9)
180G	100G	-	2 QSFP+ x (4 x 10G) or 2 QSFP+ x 40G	-
220G	-	100G	-	3 QSFP+ x (4 x 10G) or 3 QSFP+ x 40G

To configure the ports, see Configure an OTN Controller Using CTC, on page 3.

Laser Quelching

Squelching supports the laser shutdown of the client signal when there is a failure in the OTN network.When the network is down, squelching saves power. The Squelched alarm is raised on the client controller when the laser is squelched.

You can configure the squelch hold-off timer. After the expiry of the hold-off timer, the laser is squelched.

Squelching is supported on the NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 cards.

Idle Frame

Idle frames are used to prevent unnecessary switching at the client end. When there is a fault in the client signal, valid idles frames are sent in the downstream direction on the ten GigE, forty GigE, or hundred GigE client interface instead of raising an AIS or LF. This prevents unnecessary switching at the client end.

You can configure the idle frame hold-off timer. When the hold-off timer is running, idle frames are sent to the downstream client router. After the expiry of the hold-off timer, idle frames are no longer sent in the downstream direction. Instead, the upstream router communicates the incidence of a fault that has occurred using applicable alarms to the client router in the downstream dirction.

Idle frames are supported on the ethernet mapper ODUs of the NCS4K-4H-OPW-QC2 card.

Configure Line Cards Using CTC

This section provides the CTC procedures to configure line cards.

Configure an OTN Controller Using CTC

Purpose	This procedure enables you to create an OTN controller for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series*
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, double-click the line card.

Step 2 Click the **Provisioning** > **Port Modules** tabs.

Step 3 Perform the following steps for the port number on which you want to configure the controller interface :

a) Click the **Port Mode** column and select the port mode type from the drop down list.

b) Click the **Framing Type** column and select the OPU type from the drop down list.

c) Click the **Mapping** column and select the mapping type from the drop down list.

Step 4 Click **Apply**.

Stop. You have completed this procedure.

Configure Controller Optics for OTN Controller Using CTC

Purpose	This procedure enables you to update the default parameters of controller optics, for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, double-click the line card.

Step 2 Click the **Provisioning** > **Controllers** > **Optics** tabs.

Step 3 Perform the following (as required) to update the parameters of Controller Optics you want to configure:

a) Click the **Admin State** column and select the administrative state of the controller from the drop down list.

Note
Primary and Secondary states are shown as Admin state in CTC.

b) Check the **Enable PM** check box.

Step 4 Click **Apply**.

Stop. You have completed this procedure.

Configure Flex Grid Spacing Using CTC

Purpose	This procedure enables you to update the grid spacing wavelength for the NCS4K-4H-OPW-QC2 and NCS4K-4H-QDD-P line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Table 3: Feature History

Feature Name	Release Information	Feature Description
100MHz Grid Spacing for NCS4K-4H-QDD-P line card	Cisco IOS XR Release 6.5.35	The 100MHz flex-grid-spacing feature is now supported on the NCS4K-4H-QDD-P card. Configuration can be done on Bright ZRP optics ports 4 to 7 using the Cisco Transport Controller (CTC) interface or command-line interface (CLI).
100MHz Grid Spacing for NCS4K-4H-OPW-QC2 card	Cisco IOS XR Release 6.5.33	In addition to the 50GHZ flex-grid-spacing, you can now configure 100MHz flex-grid-spacing on the CFP2 trunk ports of the NCS4K-4H-OPW-QC2 card. The setup can be done by Cisco Transport Controller (CTC) or CLI. With 100MHz flex-grid-spacing, you can configure up to 761 different wavelengths; which is more than 96 wavelengths that can be done with 50GHZ flex-grid-spacing.

You can set up the NCS4K-4H-OPW-QC2 and NCS4K-4H-QDD-P line cards with the 50GHz and 100GHz flex grid spacing wavelength options. The NCS4K-4H-OPW-QC2 card supports this feature with coherent CFP2 optics, while the NCS4K-4H-QDD-P card supports it with Bright ZRP optics.

The 100GHz grid spacing allows for frequency configurations with seven-digit granularity, enabling the deployment of up to 761 distinct wavelengths on colored optics. This is a significant increase in capacity compared to the 50GHz grid spacing, which supports only 96 wavelengths. This advancement provides users with the flexibility to scale their optical networks more efficiently, accommodating higher volumes of data traffic and catering to the growing demand for bandwidth.

You can also configure the 100MHz grid spacing through CLI. See Configure Flex Grid Spacing Using CLI.

Procedure

Step 1 In the Node view, double-click the line card.

Step 2 Click **Controllers** in the **Provisioning** tab.

Step 3 Select one of the following from the **Admin State** drop-down list, in the **Optics** tab:

- *OOS, DSBLD*: Shutdown the controller.
- *OOS, MT*: Set the controller to Maintenance mode.

Step 4 Click **Apply**.
The **Grid Type** and **Wavelength** drop-down lists are enabled.

Step 5 Select the bandwidth from the **Grid Type** drop-down list.

Step 6 Select the **Wavelength** from the drop-down list.

For details on the frequency range of the line cards, optical module compatibility, and ports supporting flex grid spacing, see Table 2.

Step 7 Select *IN, AINS* from the **Admin State** drop-down list to enable the controller.

Step 8 Click **Apply**.

Configure OTU for OTN Controller Using CTC

Purpose	This procedure enables you to update the default parameters of OTUk for OTN controller, for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, double-click the line card.

Step 2 Click the **Provisioning** > **Controllers** > **OTU** tabs.

Step 3 Perform the following (as required) to update the parameters of the OTU you want to configure:

a) Click the **Admin State** column and select the administrative state of the controller from the drop down list.

Note
Primary and Secondary states are shown as Admin state in CTC.

b) Click the **FEC** column and select FEC value from drop down list. Available options are None and Standard.

c) Check the **GCC0** check box to enable GCC on the corresponding controller.

d) Check the **Enable PM** check box.

Step 4 Click **Apply**.

Stop. You have completed this procedure.

Configure ODU for OTN Controller Using CTC

Purpose	This procedure enables you to update the default parameters of ODUk for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, double-click the line card.

Step 2 Click the **Provisioning** > **Controllers** > **ODU** tabs.

Step 3 Perform the following (as required) to update the parameters of the ODU you want to configure:

a) Click the **Admin State** column and select the administrative state of the controller from the drop down list.

Note
Primary and Secondary states are shown as Admin state in CTC.

b) Check the **GCC1** check box to enable GCC on the corresponding controller.

c) Check the **Enable PM** check box to enable performance monitoring.

d) Click the **TSG** column and select TSG (Time Slot Granularity) value from drop down list. Available options are 1.25 to 2.5.

Note
Time granularity is optional for user.

Step 4 Click **Apply**.

Stop. You have completed this procedure.

Configure Squelch for ODU Controller Using CTC

Purpose	This procedure enables you to configure the squelch settings on an ODU controller of the NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, or NCS4K-4H-OPW-QC2 card using CTC.

Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series.*
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the node view, double-click the card where you want to provision squelch for the controllers.

The card view appears.

Step 2 Click the **Provisioning** > **Controllers** > **ODU** tabs.

Step 3 Choose Laser Squelch from the Fault Signalling drop-down list.

Step 4 Set the hold-off time in ms in the Hold-off Timer field.

The range for the hold-off timer is 20ms to 10000ms.

Step 5 Click **Apply**.

Stop. You have completed this procedure.

Configure Idle Frame for ODU Controller Using CTC

Purpose	This procedure enables you to configure the idle frame settings on an ODU controller of the NCS4K-4H-OPW-QC2 card using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series.*
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the node view, double-click the card where you want to provision squelch for the controllers.

The card view appears.

Step 2 Click the **Provisioning** > **Controllers** > **ODU** tabs.

Step 3 Choose Idle Frame from the Fault Signalling drop-down list.

Step 4 Set the hold-off time in ms in the Hold-off Timer field.

The range for the hold-off timer is 20ms to 10000ms.

Step 5 Click **Apply**.

Stop. You have completed this procedure.

Configure Trace Monitoring for OTN Controller Using CTC

Purpose	This procedure enables you to configure trace monitoring for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node view, double-click the line card.

Step 2 Click the **Provisioning** > **Trace Monitoring** tabs.

Step 3 From the **Controller Name** drop-down list, choose a name of the controller.

Step 4 In the Transmit area, perform following steps:

a) Select **Operator Specific Type** to specify the data type for the transmit string. Available options are ASCII and Hex (1 byte).

b) Enter the transmit string in the **Operator String** field.

c) Click **Hex Mode or ASCII Mode** to convert the current transmit string to hexadecimal or ASCII data.

Step 5 In the Expected area, perform following steps:

a) Select **Operator Specific Type** to specify the data type for the expected string. Available options are ASCII and Hex (1 byte).

b) Enter the expected string in the **Operator String** field.

c) Click **Hex Mode or ASCII Mode** to convert the current expected string to hexadecimal or ASCII data.

Step 6 Click **Apply**.

Stop. You have completed this procedure.

Configure the Alarm Threshold Values for OTN Controllers Using CTC

Purpose	This procedure enables you to configure the alarm threshold values of a controller, for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series*. Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, double-click the line card.

Step 2 Click the **Provisioning** > **Alarm Thresholds** > **OTU** tabs.

Step 3 Click the **OTU** tab and seect the SF BER and SD BER parameters, to configure threshold values of an OTU.

Parameter	Description
SF BER	Sets the signal fail bit error rate. The range is for NCS4K-20T-O-S is from 1E-6 to 1E-9. The default value is 6. The range for other cards is from 1E-5 to 1E-9. The default value is 5.
SD BER	Sets the signal degrade bit error rate. The range is from 1E-3 to 1E-9. The range is for NCS4K-20T-O-S is from 1E-6 to 1E-9. The default value is 7. The range for other card is from 1E-5 to 1E-9. The default value is 7.

Step 4 Click the **ODU** tab and modify the following settings, to configure threshold values of an ODU.

Parameter	Description
SF BER	Sets the signal fail bit error rate. The range is for NCS4K-20T-O-S is from 1E-6 to 1E-9. The default value is 6. The range for other cards is from 1E-5 to 1E-9. The default value is 5.
SD BER	Sets the signal degrade bit error rate. The range is from 1E-3 to 1E-9. The range is for NCS4K-20T-O-S is from 1E-6 to 1E-9. The default value is 7. The range for other cards is from 1E-5 to 1E-9. The default value is 7.

Step 5 Click **Apply**.

Stop. You have completed this procedure.

Configure the Network SRLG for OTU and Controller Optics Using CTC

Purpose	This procedure enables you to configure the Shared Resource Link Group (SRLG) for NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, NCS4K-2H10T-OP-KS, and NCS4K-4H-OPW-QC2 line cards, using CTC.
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* Configure an OTN Controller Using CTC, on page 3
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node view, double-click the line card.

Step 2 Click the **Provisioning** > **Network SRLG** tab.

Step 3 To configure network SRLG, click the **Optics/ OTU** tab and perform the following steps:

a) From the **Controller Name** drop-down list, select the controller.

b) Double click **Set** column and enter the value of Set.

c) Double click the **SRLG 1** column and enter value of SRLG 1.

Repeat this step for columns SRLG2, SRLG3, SRLG4, SRLG5, and SRLG 6.

Note
Click **Add** and repeat steps 3b and 3c, for configuring more SRLG's on the controller.

Step 4 Click **Apply**.

Stop. You have completed this procedure.

Connect Backplane/Regeneration of line cards Using CTC

Purpose	This procedure enables you to connect Backplane/Regeneration of NCS4K-20T-O-S, NCS4K-2H-O-K,NCS4K-24LR-O-S, and NCS4K-2H10T-OP-KS line cards, using CTC.

Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series*
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node view, double-click the line card.

Step 2 Click the **Provisioning** > **Card** tabs.

Step 3 Click the **Backplane** radio buttons and perform the following steps in the screen that appears:

a) From the Backplane drop-down list, choose the port number of the card.

Note
The port number that appears in the Backplane drop-down list depends on the card provisioned in the chassis.

- NCS4K-2H-W 2 or 3
- NCS4K-20T-O-S (0-9) or Port (10-19)
- NCS4K-24LR-O-S
- NCS4K-2H10T-OP-KS

The card must be the following combination

- NCS4K-20T-O-S and NCS4K-2H-W
- NCS4K-2H-W and NCS4K-20T-O-S
- NCS4K-2H-O-K9 and NCS4K-2H-W
- NCS4K-2H-W and NCS4K-2H-O-K9
- NCS4K-2H10T-OP-KS and NCS4K-2H-W

b) From the Peer Card drop-down list, choose the location of the card in the Rack/Slot/Instance/Port format.

c) From the Peer Card Backplane drop-down list, choose a value.

Note
It depends on the peer card provisioned in the chassis.

- NCS4K-2H-O-K9 0 or 1
- NCS4K-2H-W 2 or 3
- NCS4K-20T-O-S (0-9) or Port (10-19)
- NCS4K-2H10T-OP-KS

d) Click **Apply**.

Step 4 Click the **Regeneration** radio button and perform the following steps in the screen that appears:

Note
The regeneration is applicable only with NCS4K-2H-W card.

a) From the Port drop-down list, choose port number of the card.
b) Click **Apply**.

Stop. You have completed this procedure.

Upgrade to 400G Fabric Card Using CTC

Purpose	This procedure provides instructions for upgrading from a 200G FC (NCS4016-FC-M) to a 400G FC (NCS4016-FC2-M).
Tools/Equipment	None
Prerequisite Procedures	"Login to CTC" in *System Setup and Software Installation Guide for Cisco NCS 4000 Series*.
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In Node View , select the **Maintenance** tab.

Step 2 Click **Fabric Upgrade** to get the current Fabric Details. The table displays the following details:

Title	Description
Plane ID	Displays all the plane IDs.
Plane Admin Status	Displays current admin status of all planes. The admin status can either be Up or Down.
Plane Oper Status	Displays current operational status of all planes. The operational status can either be Up or Down.
Hardware Status	Displays hardware status of all Fabrics. The possible states are IS-NR and OOS-AU, indicating In-service and Out-of-service, respectively.
Product ID	Displays the Product ID of all fabrics. The product-id for the 200G fabric card is NCS4016-FC-M; for the 400G fabric card is NCS4016-FC2-M.

Note
The Plane Admin status and the Plane Oper status need to be Up for all the Plane IDs before proceeding with the fabric card upgrade.

The Fabric Details table is for display purpose only, the displayed elements cannot be selected.

Step 3 Click **Refresh Fabric Details Table** , to get the updated table.

Step 4 The **Upgrade Wizard**, provides the console for upgrading the fabric. Select the fabric plane from the **Available Fabrics** drop-down menu.
Once this selection is done, the Available Fabrics option is grayed-out until the whole upgrade process is complete.

Step 5 Click **Next** (referred to as Step-1 in the Upgrade Wizard) to shutdown the selected fabric plane; click **Yes** on the Confirmation Dialog.
A message is displayed to indicate that the selected plane was successfully shutdown.

Step 6 Click **Next** (referred to as Step-2) to shutdown the corresponding fabric card.

Step 7 Replace the 200G FC with a 400G FC and click **Next** (referred to as Step 3 in the Upgrade Wizard).

The **Revert** option appears after Step-1. It allows the user to undo the action performed in the previous step. Be careful not to use this option after replacing the card. Clicking **Revert** will un shut the newly inserted card.

Step 8 Wait for the Hardware Status column of the relevant Plane ID, in the fabric details table to display IS-NR, indicating in-service. Click **Next** (referred to as Step 4 in the Upgrade Wizard).

Step 9 Click **Next** to upgrade the FPD device for the selected fabric (referred tp as Step 5 in the Upgrade Wizard).

Step 10 On choosing to upgrade the FPD device, a message is displayed recommending the user to check the FPD status under the **Maintenance** > **Software** > **FPD Upgrade** tab.

The user has an option to click **Skip** to proceed without upgrading the FPD devices. The user can revisit the **FPD Upgrade** tab anytime to upgrade the FPDs.

Step 11 Click **Finish**, to activate (no shutdown) the fabric plane (referred to as Step 6 in the Upgrade Wizard).
The **Available Fabrics** drop-down menu is now available, wherein the user can select another fabric card.

Step 12 The **Output Window** , displays the details of the performed actions. The user can extract this log by clicking the **Export Log** button and saving the information to a desired location.

What to do next

Repeat the procedure to upgrade all the 200G FCs to 400G FCs. Mixed mode (where 200G FCs and 400G FCs co-exist) is recommended only while performing the upgrade . The user is required to upgrade all the FCs to 400G before making any configuration change(s).

Upgrade FPD using CTC

Purpose	This procedure enables you to upgrade Field-programmable device (FPD) .
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, click the **Maintenance** tab.

Step 2 Click the **Software** > **FPD Upgrade** tab.

Step 3 To Upgrade FPD, perform the following steps:

a) Click **Reset** to refresh the drop-down lists.

b) From **Location** drop-down list, select the card/RP.

c) From **FPD Device** drop-down list, select the FPD that needs upgrade.

d) For forced upgrade/downgrade of all FPD's, check the **Force** checkbox.

Note
Skip this step, if forced upgrade/downgrade of all FPD's is not required.

e) Click **Upgrade**.

f) Click **Reload**, if card/RP reload is required to complete the FPD upgrade.

Note
Reload is traffic impacting operation and should be carried in planned maintenance window.

To perform non traffic impacting FPD upgrade for fabric card refer Non Disruptive FPD Upgrade for Fabric Card using CTC, on page 15.

To perform non traffic impacting FPD upgrade for RP refer Non Disruptive FPD Upgrade for Route Processor using CTC, on page 16.

Stop. You have completed this procedure.

Non Disruptive FPD Upgrade for Fabric Card using CTC

Purpose	This procedure enables you to upgrade FPD for fabric card without impacting traffic .
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, click the **Maintenance** tab.

Step 2 Click the **Software** > **FPD Upgrade** tab.

Step 3 To upgrade the FPD, perform following steps:

a) Click **Reset** to refresh the drop-down lists.

b) From **Location** drop-down list, select the required fabric card.

c) From **FPD** drop-down list, select a FPD.

For forced upgrade/downgrade of all FPD's, check the **Force** checkbox.

d) Click **Upgrade**.

Step 4 Click **Fabric Plane** tab.

Step 5 Click **Fabric Plane Maintenance**.

Step 6 In the **Fabric Plane Maintenance** dialog box, perform the following steps to shut down the fabric plane:

a) From the **Plane ID** drop down list, select the fabric plane of the selected fabric card.

b) From the **Admin State** drop down list, set the state of the selected fabric plane as OOS/DSBLD (Out Of Service/Disabled).

c) Click **Apply**.
This will shut down the fabric plane.

Step 7 Click the **Software** > **FPD Upgrade** tabs.

Step 8 Select the fabric card whose fabric plane was shut down in Step6.

Step 9 Click **Reload**.
This will reload the selected fabric card. No traffic impact shall be observed because of 3+1 fabric card redundancy.

Step 10 Wait for 2 minutes.

Step 11 Click **Fabric Plane** tab.

Step 12 Click **Fabric Plane Maintenance**.

Step 13 In the **Fabric Plane Maintenance** dialog box, perform the following steps to make the fabric plane operational again:

a) From the **Plane ID** drop down list, select the fabric plane that was shut down in Step6.

b) From the **Admin State** drop down list, set the state of the selected fabric plane as IS (In Service).

c) Click **Apply**.

Note
Repeat these steps 4 to 13 for other fabric cards.

Stop. You have completed this procedure.

Non Disruptive FPD Upgrade for Route Processor using CTC

Purpose	This procedure enables you to upgrade FPD image for Route Processor (RP) without impacting traffic.
Tools/Equipment	None
Prerequisite Procedures	None

Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 In the Node View, click the **Maintenance** tab.

Step 2 Click the **Software** > **FPD Upgrade** tabs.

Step 3 Perform the following steps, to upgrade FPD's for Standby RP :

a) Click **Reset** to refresh the drop-down lists.
b) From **Location** drop-down list, select the Standby RP.
c) From **FPD** drop-down list, select a FPD.

For forced upgrade/downgrade of all FPD's, check the **Force** checkbox.

d) Click **Upgrade**.
e) Click **Reload**, if RP reload is required to complete FPD upgrade.

Step 4 Perform the following steps, to upgrade FPD's for Active RP :

a) Click **Reset** to refresh the drop-down lists.
b) From **Location** drop-down list, select the Active RP.
c) From **FPD** drop-down list, select the FPD.

For forced upgrade/downgrade of all FPD's, check the **Force** checkbox.

d) Click **Upgrade**.
e) Click **Reload**, if RP reload is required to complete FPD upgrade.

Note
This would result in RP switchover, standby RP taking over as active RP, and upgrade of FPD's for both RP's.

Stop. You have completed this procedure.