

Configure Line Cards Using CTC

This section provides the CTC procedures to configure line cards.

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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.

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

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.

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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 direction.

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

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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.

Table 3: Feature History

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 Step 2	In the Node view, double-click the line card. 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.

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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 <i>System Setup and Software Installation Guide for Cisco</i> <i>NCS 4000 Series</i> 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

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

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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

- **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

- **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

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Step 1 Step 2 Step 3	 In the Node View, click the Maintenance tab. Click the Software > FPD Upgrade tabs. 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.