Configure the OTN Cards

This chapter provides the CTC procedures to configure the OTN controllers. For more information on the OTN cards, see the data sheet

Datasheet link is
http://www.cisco.com/c/en/us/products/collateral/optical-networking/network-convergence-system-4000-series/data_sheet_c78-729398.html

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

NTP-K1 Configure the OTN Controllers Using CTC

Purpose	This procedure helps to configure the OTN controller that needs to create an OTN circuit .
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Perform any of the following procedures as needed to configure the OTN controllers:

- DLP-K1 Configure an OTN Controller Using CTC, on page 2
- DLP-K2 Configure an OTUk Controller Using CTC, on page 4
- DLP-K3 Configure an ODUk Controller Using CTC, on page 5
- DLP-K4 Configure the Section Trace for OTN Controllers Using CTC, on page 6
- DLP-K5 Configure the Alarm Threshold Values of OTN Controllers Using CTC, on page 7
- DLP-K6 Configure the Network SRLG for OTUk/Optics Controller Using CTC, on page 8
- DLP-K7 Connect Backplane/Regeneration of line cards Using CTC, on page 9
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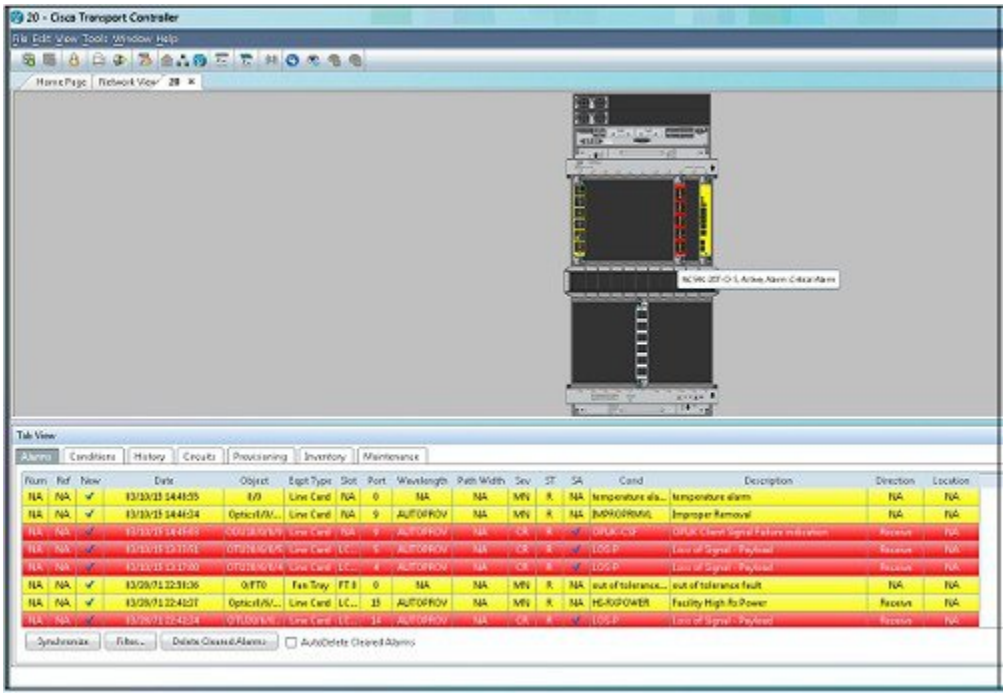
End of procedure.

DLP-K1 Configure an OTN Controller Using CTC

Purpose	This procedure provides instructions to configure the OTN controller that helps to create an OTN circuit 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** (NCS4K-20T-O-S/ NCS4K-2H-O-K/ NCS4K-24LR-O-S).



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

Step 3 To create OTN controllers, complete the following:

a) Click the **Port Mode** column.
b) Select the supported type from the available options.
c) Click the **Framing Type** column.
d) Select the supported **OPU Type** from the available options.
e) Click the **Mapping** column.

f) Select the supported type from the available options.

Step 4 Click **Apply**.

Step 5 Return to your originating procedure (NTP).

DLP-K2 Configure an OTUk Controller Using CTC

Purpose	This procedure provides instructions to configure the OTUk controller that helps to create an OTN circuit using CTC.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* DLP-G46 Log into CTC
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Procedure

Step 1 D

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

Step 3 To configure OTUk controllers, click the **OTU** tab and perform the following steps:

a) Click the **Admin State** cell.

b) Choose an administrative state from the available options for corresponding controllers or ports.

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

c) Click the **FEC** cell.

d) Choose from the drop-down list:

- **None**
- **Standard**
- **Enhanced i4**
- **Enhanced i7**

e) Check the **GCC0** check box to enable the GCC0 on the corresponding OTN.

f) Choose **Enable**.

g) Click **Apply**.

Step 4 Return to your originating procedure (NTP).

DLP-K3 Configure an ODUk Controller Using CTC

Purpose	This procedure provides instructions to configure an ODUk controller that helps to create an OTN circuit using CTC.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* DLP-K1 Configure an OTN Controller Using CTC, on page 2
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** (NCS4K-20T-O-S/ NCS4K-2H-OK/ NCS4K-24LR-O-S).

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

Step 3 Click the **ODU** tab to configure ODUk controllers or ports, and perform the following steps:

a) Click the **Admin State** cell.

b) Choose an administrative state from the available options for the corresponding controllers or ports.

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

c) Check the **GCC1** check box to enable the GCC1 on the corresponding OTN.

d) Choose **Enable**.

e) From the **TSG** drop-down list, choose the **TSG** (Time Slot Granularity) value from 1.25 to 2.5.

Note Time granularity is optional for user.

f) Check the adjacent **Enable** PM check box to enable performance monitoring for an ODUk.

g) Click **Apply**.

Step 4 Return to your originating procedure (NTP).

DLP-K4 Configure the Section Trace for OTN Controllers Using CTC

Purpose	This procedure provides instructions to configure the section trace that helps to create OTN circuit using CTC.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* DLP-K1 Configure an OTN Controller Using CTC, on page 2
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** (NCS4K-20T-O-S/ NCS4K-2H-O-K/ NCS4K-24LR-O-S).

Step 2 Click the **Provisioning** > **Section Trace** tab.

Step 3 To configure transmitted section trace for OTN controllers, complete the following steps in the Transmitted or Expected area:

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

b) In the **Transmit/Expected** area, select an option **ASCII** or **Hex (1 byte)** to specify the data type for the transmit string.
c) In the **New Transmit String** field, enter a value.
d) Click the **Hex/ASCII** option to convert the current transmit string to hexadecimal or ASCII data type.
e) Click **Apply**.

Step 4 Return to your originating procedure (NTP).

DLP-K5 Configure the Alarm Threshold Values of OTN Controllers Using CTC

Purpose	This procedure provides instructions to configure the threshold values of OTN controllers that helps to create OTN circuit using CTC.
Tools/Equipment	None
Prerequisite Procedures	Login to CTC in *System Setup and Software Installation Guide for Cisco NCS 4000 Series* DLP-K1 Configure an OTN Controller Using CTC, on page 2
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 (NCS4K-20T-O-S/ NCS4K-2H-O-K/NCS4K-24LR-O-S).
Step 2 Click the **Provisioning** > **Alarm Thresholds** > **OTU** tabs.
Step 3 Click the **OTU** tab and modify the following settings:

Parameter	Description
SF BER	Sets the signal fail bit error rate. The range is for NCS4K-20T-O-S and 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 and 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 4 Click the **ODU** tab and modify the following settings, to configure threshold values of an ODUk controller.

Parameter	Description
SF BER	Sets the signal fail bit error rate. The range is for NCS4K-20T-O-S and 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 and 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**.

Step 6 Return to your originating procedure (NTP).

DLP-K6 Configure the Network SRLG for OTUk/Optics Controller Using CTC

Purpose	This procedure provides instructions to configure the Shared Resource Link Group (SRLG) that helps to create an OTN circuit 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** (NCS4K-20T-O-S/ NCS4K-2H-O-K/ NCS4K-24LR-O-S) to configure the network SRLG.

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

Step 3 To configure network SRLG, click the **Optics** tab and perform the following steps in the screen that appears:

a) From the controller or port drop-down list, choose a name of the controller or port.

b) Enter the unique value in the columns from SRLG1 to SRLG 6.

c) Click **Apply**.

Step 4 To configure network SRLG, click the **OTU** tab and perform the following steps:

a) From the controller drop-down list, choose a name of the controller.

b) Enter the unique value in the columns from SRLG1 to SRLG 6.

c) Click **Apply**.

Step 5 Return to your originating procedure (NTP).

DLP-K7 Connect Backplane/Regeneration of line cards Using CTC

Purpose	This procedure provides instructions of connecting Backplane/Regeneration of line cards that helps to create an OTN circuit 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** (NCS4K-20T-O-S/ NCS4K-2H-O-K/ NCS4K-24LR-O-S) to connect the backplane/regeneration.

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

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

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

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)

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**.

Step 5 Return to your originating procedure (NTP).

DLP-K8 Create a Permanent Connection Using CTC

Purpose	Permanent connection allows to create a cross-connection. This procedure provides instructions to create a permanent connection 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/Card View**, double-click the **line card** (NCS4K-20T-O-S/ NCS4K-2H-O-K/ NCS4K-24LR-O-S) to create a permanent connection.

Step 2 Click the **Circuits > Permanent Connection** tab.

Step 3 Click **Create**. Perform the following steps in the Create Permanent Connection dialog box that appears.

Note User is allowed to create high order cross connection only. The high order being used should not be channelized. All the permanent connections (except high order connections) are read only.

a) Enter the XConnect Name of the permanent connection. The connection ID value ranges from 1 to 32655.

b) From the **End Point 1** drop-down list, select the ingress point of the permanent connection.

c) From the **End Point 2** drop-down list, select the egress point of the permanent connection.

d) Click **OK**.

Step 4 Return to your originating procedure (NTP).

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** (refered 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 unshut 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

Purpose	This procedure helps to upgrade FPD image .
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 image, perform the following steps:

a) From **Location** drop-down list, choose a location.

b) From **FPD** drop-down list, choose a FPD.

Note Click **Reset** button to refresh the drop-down lists in case of change in inventory (Card plug out/ plug in) on a node.

c) Check the **Force** checkbox if forced upgrade/downgrade of all FPD images is required.

d) Click **Upgrade** button.

e) Click **Reload** button if card reload is required for FPD upgrade.

Note This will reload only one card at a time. In case multiple cards require reload, select individual card from **Location** drop-down list and click **Reload** button.