



## Upgrade Cards and Spans



### Note

The terms "Unidirectional Path Switched Ring" and "UPSR" may appear in Cisco literature. These terms do not refer to using Cisco ONS 15xxx products in a unidirectional path switched ring configuration. Rather, these terms, as well as "Path Protected Mesh Network" and "PPMN," refer generally to Cisco's path protection feature, which may be used in any topological network configuration. Cisco does not recommend using its path protection feature in any particular topological network configuration.

This chapter explains how to upgrade cross-connect cards, DS3-12 and DS3N-12 cards, and optical spans for the Cisco ONS 15454.

## Before You Begin

This section lists the chapter procedures (NTPs). Turn to a procedure for applicable tasks (DLPs).

1. [NTP-A219 Prevent an Optical Protection Switch During Cross-Connect Card Upgrades, page 12-2](#)—Complete this procedure before upgrading an XC or XCVT card.
1. [NTP-A92 Upgrade the XC Card to the XCVT Card, page 12-5](#)—Complete as needed.
2. [NTP-A220 Upgrade the XC or XCVT Card to the XC10G Card, page 12-6](#)
3. [NTP-A418 Upgrade the TCC+ Card to the TCC2 Card, page 12-8](#)—Complete as needed.
4. [NTP-A419 Upgrade the TCC Card to the TCC2 Card, page 12-10](#)—Complete as needed.
5. [NTP-A93 Upgrade DS3-12 Cards to DS3-12E, page 12-12](#)— Complete this procedure as needed to upgrade DS3-12 or DS3N-12 cards to DS3-12E or DS3N-12E cards.
6. [NTP-A153 Upgrade the AIC Card to AIC-I, page 12-17](#)—Complete as needed.
7. [NTP-A94 Upgrade Optical Spans Automatically, page 12-17](#)—Complete this procedure as needed to upgrade optical cards within path protection configurations, BLSRs, and 1+1 protection groups.
8. [NTP-A95 Upgrade Optical Spans Manually, page 12-21](#)—Complete this procedure as needed to perform error recovery for the Span Upgrade Wizard or back out of a span upgrade (downgrade).

# NTP-A219 Prevent an Optical Protection Switch During Cross-Connect Card Upgrades

<b>Purpose</b>	This procedure prevents a 1+1, path protection configuration, or BLSR protection switch from occurring during cross-connect card upgrades. You must perform this procedure before any cross-connect card upgrade.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Required
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Maintenance or higher

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- Step 1** Log into the node where you will perform the upgrade. See the [“DLP-A60 Log into CTC” task on page 3-23](#) for instructions. If you are already logged in, continue with Step 2.
- Step 2** Ensure that the working span is active:
- For a BLSR protection scheme:
    - In node view, click the **Maintenance > BLSR** tabs.
    - Locate the applicable span in the West Line and East Line columns. The working/active span is identified by Work/Act.
  - For a 1+1 protection scheme:
    - In node view, click the **Maintenance > Protection** tabs.
    - Locate the applicable 1+1 protection group and make sure the status is Working/Active and Protect/Standby, rather than Working/Standby and Protect/Active.
  - For a path protection configuration scheme, no verification is necessary.
- Step 3** Ensure that the working span is carrying error-free traffic (i.e. no SD or SF alarms present):
- From the View menu, choose **Go to Network View**.
  - Click the **Alarms** tab. Make sure the **Filter** button is not selected.
  - If alarms are present, refer to the *Cisco ONS 15454 Troubleshooting Guide*.
- Step 4** Lock out or Force switch the protection span according to the specific protection scheme:
- Lock out the protection span in a BLSR protection scheme. Complete the [“DLP-A299 Initiate a BLSR Span Lockout” task on page 12-3](#).
  - Lock out the protection span in a 1+1 protection scheme. Complete the [“DLP-A202 Apply a Lock Out” task on page 15-20](#).
  - Apply a Force switch to the path protection configuration span that will be upgraded. Complete the [“DLP-A197 Initiate a Path Protection Configuration Force Switch” task on page 14-18](#).
- Step 5** Complete the [“NTP-A92 Upgrade the XC Card to the XCVT Card” procedure on page 12-5](#) or the [“NTP-A220 Upgrade the XC or XCVT Card to the XC10G Card” procedure on page 12-6](#).
- Stop. You have completed this procedure.**
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## DLP-A299 Initiate a BLSR Span Lockout

<b>Purpose</b>	This task allows you to perform a BLSR span lockout, which prevents traffic from switching to the locked out span.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Caution

Traffic is not protected during a span lockout.

**Step 1** Click the **Provisioning > BLSR** tabs.

**Step 2** Choose the BLSR and click **Edit**.



### Tip

To move an icon to a new location, for example, to see BLSR channel (port) information more clearly, you can drag and drop icons on the Edit BLSR network graphic.

**Step 3** To lock out a west span:

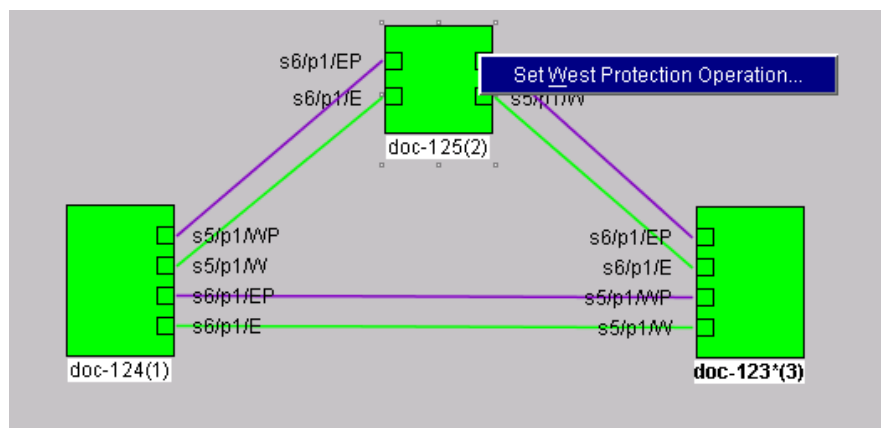
- a. Right-click any BLSR node west channel (port) and choose **Set West Protection Operation**. [Figure 12-1](#) shows an example.



### Note

For two-fiber BLSRs, the squares on the node icons represent the BLSR working and protect channels. You can right-click either channel. For four-fiber BLSRs, the squares represent ports. You can right-click either working port.

**Figure 12-1 Protection Operation on a Three-Node BLSR**



- b. In the Set West Protection Operation dialog box, choose **LOCKOUT SPAN** from the pull-down menu. Click **OK**.

- c. In the Confirm BLSR Operation dialog box, click **Yes**. An “L” appears on the selected channel (port) where you created the lock out.

Lockouts generate LKOUTPR-S and FE-LOCKOUTOFPR-SPAN conditions.

**Step 4** To lock out an east span:

- a. Right-click the node’s east channel (port) and choose **Set East Protection Operation**.
- b. In the Set East Protection Operation dialog box, choose **LOCKOUT SPAN** from the pull-down menu. Click **OK**.
- c. In the Confirm BLSR Operation dialog box, click **Yes**. An “L” indicating the lockout appears on the selected channel (port) where you invoked the protection switch.

Lockouts generate LKOUTPR-S and FE-LOCKOUTOFPR-SPAN conditions.

**Step 5** From the File menu, choose **Close**.

**Step 6** Return to your originating procedure (NTP).

## DLP-A300 Clear a BLSR Span Lockout

<b>Purpose</b>	This task clears a BLSR span lockout.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Step 1** Display the network view.

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

**Step 3** Choose the BLSR and click **Edit**.



**Tip**

To move an icon to a new location, for example, to see BLSR channel (port) information more clearly, you can drag and drop icons on the Edit BLSR network graphic.

**Step 4** Right-click the BLSR node channel (port) where the lockout will be cleared and choose **Set West Protection Operation or Set East Protection Operation**.

**Step 5** In the dialog box, choose **CLEAR** from the pull-down menu. Click **OK**.

**Step 6** In the Confirm BLSR Operation dialog box, click **Yes**. The “L” that indicated the lockout disappears from the network view map.

**Step 7** From the File menu, choose **Close**.

**Step 8** Return to your originating procedure (NTP).

# NTP-A92 Upgrade the XC Card to the XCVT Card

<b>Purpose</b>	This procedure upgrades the XC card to the XCVT card.
<b>Tools/Equipment</b>	Two XCVT cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Maintenance or higher



**Note** The UNEQ-P alarm is raised during a cross-connect card upgrade if you have E100T-12/E1000-2 cards installed in the node. The alarm will appear and clear within a few seconds.

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- Step 1** Log into the node where you will perform the upgrade. See the “[DLP-A60 Log into CTC](#)” task on [page 3-23](#) for instructions. If you are already logged in, continue with Step 2.
- Step 2** Complete the “[NTP-A219 Prevent an Optical Protection Switch During Cross-Connect Card Upgrades](#)” procedure on [page 12-2](#).
- Step 3** Determine the standby XC card. The ACT/STBY LED of the standby XC card is amber, while the ACT/STBY LED of the active XC card is green.
- Step 4** Physically replace the standby XC card on the ONS 15454 with an XCVT card:
- Open the XC card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
  - Open the ejectors on the XCVT card.
  - Slide the XCVT card into the slot along the guide rails.
  - Close the ejectors.
- On the XCVT card the fail LED above the ACT/STBY LED becomes red, blinks for several seconds, and turns off. The ACT/STBY LED turns amber and remains illuminated.
- Step 5** In node view, click the **Maintenance > Cross-Connect** tabs.
- Step 6** From the Cross Connect Cards menu, choose **Switch**.
- Step 7** Click **Yes** on the Confirm Switch dialog box. Traffic switches to the XCVT card inserted in [Step 4](#). The ACT/STBY LED on this card changes from amber to green.



**Note** The Interconnection Equipment Failure alarm appears, but it will clear when the upgrade procedure is complete and the node has matching cross-connect cards installed.

- Step 8** Physically remove the now standby XC card from the ONS 15454 and insert the second XCVT card into the empty XC slot:
- Open the XC card ejectors.
  - Slide the XC card out of the slot.
  - Open the ejectors on the XCVT.
  - Slide the XCVT card into the slot along the guide rails.

- e. Close the ejectors.

The upgrade is complete when the second XCVT card boots up and becomes the standby XCVT.

**Step 9** Clear the external switching command that you applied in [Step 2](#):

- If you applied a BLSR span lock out, complete the [“DLP-A300 Clear a BLSR Span Lockout” task on page 12-4](#).
- If you applied a 1+1 lock out, complete the [“DLP-A203 Clear a Lock On or Lock Out” task on page 15-21](#).
- If you applied a Path Protection Configuration Force switch, complete the [“DLP-A198 Clear a Path Protection Configuration Force Switch” task on page 14-19](#).

**Stop. You have completed this procedure.**

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## NTP-A220 Upgrade the XC or XCVT Card to the XC10G Card

<b>Purpose</b>	This procedure upgrades an XC or XCVT card to an XC10G card.
<b>Tools/Equipment</b>	Two XC10G cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Software Release 3.1 and later and the 15454-SA-ANSI shelf are required for XC10G card operation.
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Maintenance or higher



**Note**

This procedure only applies to the XC or XCVT cards that are installed in the 15454-SA-ANSI (Software Release 3.1 and later). You cannot perform this upgrade from shelves released prior to Software R3.1. The XC10G requires the 15454-SA-ANSI.

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**Note**

The UNEQ-P alarm is raised during a cross-connect card upgrade if you have E100T-12/E1000-2 cards installed in the node. The alarm will appear and clear within a few seconds.

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**Note**

Downgrade procedures from XC10G cards to XCVT or XC cards are not supported. Contact Cisco Technical Assistance Center (TAC) for more information.

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- Step 1** Log into the node where you will perform the upgrade. See the [“DLP-A60 Log into CTC” task on page 3-23](#) for instructions. If you are already logged in, continue with Step 2.
- Step 2** Complete the [“NTP-A219 Prevent an Optical Protection Switch During Cross-Connect Card Upgrades” procedure on page 12-2](#).
- Step 3** Determine the standby XC or XCVT card. The ACT/STBY LED of the standby XC or XCVT card is amber, while the ACT/STBY LED of the active XC or XCVT card is green.
- Step 4** Physically replace the standby XC or XCVT card on the ONS 15454 with an XC10G card:
- a. Open the XC or XCVT card ejectors.

- b. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
- c. Open the ejectors on the XC10G card.
- d. Slide the XC10G card into the slot along the guide rails.
- e. Close the ejectors.



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**Note** On the XC10G card the fail LED above the ACT/STBY LED becomes red, blinks for several seconds, and turns off. The ACT/STBY LED turns amber and remains illuminated. In node view, the XC10G appears as the standby XC or XCVT.

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**Step 5** In node view, click the **Maintenance > Cross-Connect** tabs.

**Step 6** From the Cross Connect Cards menu, choose **Switch**.

**Step 7** Click **Yes** on the Confirm Switch dialog box. Traffic switches to the XC10G card you inserted in [Step 4](#). The ACT/STBY LED on this card changes from amber to green.



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**Note** The Interconnection Equipment Failure alarm appears, but it will clear when the upgrade procedure is complete and the node has matching cross-connect cards installed.

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**Step 8** Physically remove the now standby XC or XCVT card from the ONS 15454 and insert the second XC10G card into the empty XC or XCVT card slot:

- a. Open the XC or XCVT card ejectors.
- b. Slide the XC or XCVT card out of the slot.
- c. Open the ejectors on the XC10G card.
- d. Slide the XC10G card into the slot along the guide rails.
- e. Close the ejectors.

The upgrade is complete when the second XC10G card boots up and becomes the standby XC10G card. In node view, both the active and standby cards will change to XC10G.

**Step 9** Clear the external switching command you applied during [Step 2](#):

- If you applied a BLSR span lock out, complete the “[DLP-A300 Clear a BLSR Span Lockout](#)” task on [page 12-4](#).
- If you applied a 1+1 lock out, complete the “[DLP-A203 Clear a Lock On or Lock Out](#)” task on [page 15-21](#).
- If you applied a Path Protection Configuration Force switch, complete the “[DLP-A198 Clear a Path Protection Configuration Force Switch](#)” task on [page 14-19](#).

**Stop. You have completed this procedure.**

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# NTP-A418 Upgrade the TCC+ Card to the TCC2 Card

<b>Purpose</b>	This procedure upgrades the TCC+ card to the TCC2 card. The TCC2 card supports ONS 15454 Software R4.0. The TCC+ card is compatible with ONS 15454 Software R4.0 and earlier software versions.
<b>Tools/Equipment</b>	Two SONET TCC2 cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	Software R4.0 is required for TCC2 card operation.
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Maintenance or higher

**Note**

The TCC2 card does not carry any software other than Software R4.0. You will not be able to revert to a software release earlier than Software R4.0 with TCC2 cards installed.

**Note**

Downgrade procedures from TCC2 cards to TCC+ cards are not supported. Contact Cisco Technical Assistance Center (TAC) at 1-800-553-2447 for more information.

- Step 1** Complete the [“DLP-A60 Log into CTC” task on page 3-23](#). If you are already logged in, continue with Step 2.
- Step 2** Verify that the LAN wires on the backplane are installed properly. The TCC2 card does not autodetect miswired LAN connections. If a LAN connection is miswired, a “LAN Connection Polarity Reversed” condition appears. See the [“DLP-A21 Install LAN Wires on the Backplane” task on page 1-38](#) for instructions.
- Step 3** Verify that the node you are upgrading has ONS 15454 Software R4.0 installed. The software version is displayed in the upper left corner of the window.
- Step 4** Complete the [“NTP-A108 Back Up the Database” procedure on page 15-8](#) before beginning the upgrade.
- Step 5** Physically replace the standby TCC+ card on the ONS 15454 with a TCC2 card.
- Check the LED on the faceplate. The ACT/STBY LED on the faceplate of the TCC+/TCC2 card indicates whether the card is in active or standby mode. A green ACT/STBY LED indicates an active card and an amber light indicates a standby card.
  - Open the standby TCC+ card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm which will clear when the upgrade is complete.
  - Open the ejectors on the TCC2 card to be installed.
  - Slide the TCC2 card into the slot along the guide rails.
  - Close the ejectors.
  - In CTC node view, Ldg (loading) appears on the recently installed TCC2 card.

**Note**

The MEA (card mismatch) alarm appears because CTC recognizes a mismatch between TCC card types. Disregard this alarm; it clears by the end of the procedure.



**Note**

It takes approximately 10 minutes for the active TCC+ card to transfer the database to the newly-installed TCC2 card. During this operation, the LEDs on the TCC2 flash Fail and then the active/standby LED flashes. When the transfer completes, the TCC2 card reboots and goes into standby mode after approximately three minutes. Do not remove the card from the shelf during a database transfer.

**Caution**

If your active TCC+ card resets during the upgrade before the new TCC2 card has come to a full standby mode, remove the new TCC2 card immediately.

**Step 6** When the newly installed TCC2 card is in standby, go to the active TCC+ and right-click the card.

**Note**

You can no longer revert to a software version prior to Software R4.0 once you switch the standby TCC2 card to the active TCC2 card.

**Step 7** From the pull-down menu, click **Reset Card**.

Wait for the TCC+ card to reboot. The ONS 15454 switches the standby TCC2 card to active mode. The TCC+ card verifies that it has the same database as the TCC2 card and then switches to standby.

**Step 8** Verify that the remaining TCC+ card is now in standby mode (the ACT/STBY LED changes to amber).

**Step 9** Physically replace the remaining TCC+ card with the second TCC2 card.

- a. Open the TCC+ card ejectors.
- b. Slide the card out of the slot. This raises the MEA alarm, which will clear when the upgrade is complete.
- c. Open the ejectors on the TCC2 card.
- d. Slide the TCC2 card into the slot along the guide rails.
- e. Close the ejectors.

The ONS 15454 boots up the second TCC2 card. The second TCC2 card must also copy the database, which can take approximately 10 minutes. Do not remove the card from the shelf during a database transfer.

**Step 10** If power-related alarms occur after the second TCC2 card is installed, check the voltage on the backplane. See the “[DLP-A33 Measure Voltage](#)” task on page 1-61 for instructions. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for information on clearing alarms.

**Stop. You have completed this procedure.**

## NTP-A419 Upgrade the TCC Card to the TCC2 Card

<b>Purpose</b>	This procedure upgrades the TCC card to the TCC2 card. TCC+ cards are necessary to complete this upgrade procedure. The TCC2 card supports ONS 15454 Software R4.0. The TCC+ card is compatible with ONS 15454 Software R4.0 and earlier software versions back to Software R2.2.x.
<b>Tools/Equipment</b>	Two SONET TCC2 cards Two TCC+ cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Maintenance or higher

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- Step 1** Complete the [“DLP-A60 Log into CTC” task on page 3-23](#). If you are already logged in, continue with Step 2.
- Step 2** Before you begin the upgrade, complete the [“NTP-A108 Back Up the Database” procedure on page 15-8](#).
- Step 3** Before you install TCC+ cards, verify that the node you are upgrading has ONS 15454 Software R2.2.x. The TCC card to TCC+ card upgrade process requires Release 2.2.x to support the TCC/TCC+ mismatch that occurs briefly during the TCC card to TCC+ card upgrade process.
- Step 4** Complete the [“DLP-A291 Upgrade the TCC Card to the TCC+ Card” task on page 12-10](#).
- Step 5** Before you install TCC2 cards, verify that the node you are upgrading has ONS 15454 Software R4.0 installed. The software version is displayed in the upper left pane.
- Step 6** Complete the [“NTP-A418 Upgrade the TCC+ Card to the TCC2 Card” procedure on page 12-8](#).
- Stop. You have completed this procedure.**
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## DLP-A291 Upgrade the TCC Card to the TCC+ Card

<b>Purpose</b>	This task upgrades the TCC card to the TCC+ card.
<b>Tools/Equipment</b>	Two TCC+ cards
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

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- Step 1** Physically replace the standby TCC card on the ONS 15454 with a TCC+ card.
- Open the TCC card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm which will clear when the upgrade is complete.

- c. Open the ejectors on the TCC+ card.
- d. Slide the TCC+ card into the slot along the guide rails.
- e. Close the ejectors.



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**Note** The MEA (card mismatch) alarm appears because CTC recognizes a mismatch between TCC card types. Disregard this alarm; it clears by the end of the procedure.

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**Note** It takes approximately 20 or 30 minutes for the active TCC to transfer the system software to the newly-installed TCC+. Software transfer occurs in instances where different software versions exist on the two cards. During this operation, the LEDs on the TCC+ flash Fail and then the active/standby LED flashes. When the transfer completes, the TCC+ reboots and goes into standby mode after approximately three minutes.

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**Caution** If your active TCC card resets during the upgrade before the new TCC+ card has come to a full standby mode, remove the new TCC+ card immediately.

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**Step 2** Right click the active TCC card to reveal a pull-down menu.

**Step 3** Click **Reset Card**.

Wait for the TCC card to reboot. The ONS 15454 switches the standby TCC+ card to active mode.

**Step 4** Verify that the remaining TCC card is now in standby mode (the ACT/STBY LED changes to amber).

**Step 5** Physically replace the remaining TCC card with the second TCC+ card.

- a. Open the TCC card ejectors.
- b. Slide the card out of the slot.
- c. Open the ejectors on the TCC+ card.
- d. Slide the TCC+ card into the slot along the guide rails.
- e. Close the ejectors.

The ONS 15454 boots up the second TCC+ card. The second TCC+ card must also copy the system software, which can take up to 20 or 30 minutes. The MEA alarm clears when the ONS 15454 recognizes the matching TCC+ cards.

**Step 6** Return to your originating procedure (NTP).

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## NTP-A93 Upgrade DS3-12 Cards to DS3-12E

<b>Purpose</b>	This procedure upgrades DS3-12 cards to DS3-12E cards or downgrades DS3-12E cards to DS3-12 cards.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher


**Note**

Upgrading to DS3-12E or DS3N-12E cards requires that the ONS 15454 is running CTC Release 3.1 or later. Upgrades must be performed between two N-type cards or two non-N-type cards. You cannot upgrade between an N-type card and a non-N-type card. When physically replacing a card, the new card must be in the same slot as the old card. The DS3-12E card upgrade supports 1:1 and 1:N protection schemes. The procedure is non-service affecting; that is, the upgrade will cause a switch less than 50 ms in duration.

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- Step 1** Complete the “[DLP-A60 Log into CTC](#)” task on page 3-23. If you are already logged in, continue with Step 2.
- Step 2** Complete the “[DLP-A182 Upgrade the DS3-12/DS3N-12 Card to the DS3-12E/DS3N-12E Card](#)” task on page 12-13 as necessary.



**Note** This procedure can also be used to enable the capabilities of a DS3-12E card that was installed in a shelf with Software R3.1 or earlier.

- Step 3** Complete the “[DLP-A183 Downgrade a DS3-12E/DS3NE Card to a DS3-12/DS3N-12 Card](#)” task on page 12-16 as necessary. The procedure for downgrading is the same as upgrading except you choose **DS3-12** or **DS3N-12** from the Change Card pull-down menu.

**Stop. You have completed this procedure.**

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## DLP-A182 Upgrade the DS3-12/DS3N-12 Card to the DS3-12E/DS3N-12E Card

<b>Purpose</b>	This task upgrades the DS3-12 card to the DS3-12E card or the DS3N-12 card to the DS3N-12E card.
<b>Tools/Equipment</b>	DS3-12E or DS3N-12E card
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Caution

Protect cards must be upgraded before working cards because working cards cannot have more capabilities than their protect card.



### Note

During the upgrade some minor alarms and conditions display and then clear on their own; however, there should be no Service-Affecting (SA, Major, or Critical) alarms. If any service-affecting alarms occur, Cisco recommends backing out of the procedure. See the [“DLP-A183 Downgrade a DS3-12E/DS3NE Card to a DS3-12/DS3N-12 Card” task on page 12-16](#).

### Step 1

Determine if the card you are upgrading is protected or unprotected:

- a. A protected card will be listed under Protection Groups in the **Maintenance > Protection** tabs. The slot, port and status (i.e., Protect/Standby, Working/Active) of each card will be listed under Selected Group.
- b. An unprotected card will not be listed under Protection Groups/Selected Group in the **Maintenance > Protection** tabs.

### Step 2

If the card you are upgrading is unprotected, skip to [Step 3](#) and ignore references to the protect card and protect slot. If the card you are upgrading is protected, use the [“DLP-A287 Switch 1+1 Traffic” task on page 12-14](#) to put a Force switch on the protect card.



### Note

Traffic will be lost during an upgrade on an unprotected card.

### Step 3

Physically remove the protect DS3-12 or the protect DS3N-12 card:

- a. Open the DS3-12 or DS3N-12 card ejectors.
- b. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.

### Step 4

Right-click the protect slot and choose **Change Card** from the pull-down menu.

### Step 5

Choose the new card (DS3-12E or DS3N-12E) from the Change to: pull-down menu.

### Step 6

Click **OK**.

### Step 7

Insert the new DS3-12E or DS3N-12E card into the protect slot:

- a. Open the ejectors on the DS3-12E or DS3N-12E card.
- b. Slide the DS3-12E or DS3N-12E card into the slot along the guide rails.

### Step 8

Close the ejectors.

Wait for the IMPROPRMVL alarm to clear and the card to become standby.

**Step 9** If you switched traffic in [Step 2](#), complete the “[DLP-A288 Clear a 1+1 Traffic Switch](#)” task on [page 12-15](#) to remove the Force switch from the protect card.

**Step 10** Repeat this task (Steps [1](#) through [9](#)) for the working card.



**Note** After upgrading from a DS3-12 card to a DS3-12E card, verify that the DS3-12E line type is set to the framing type used by your particular SONET network. At the card level, click the **Provisioning > Line** tabs and check the Line Type column.

**Step 11** Return to your originating procedure (NTP).

## DLP-A287 Switch 1+1 Traffic

<b>Purpose</b>	This task switches 1+1 traffic using an external switch command.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Step 1** In the node view, click the **Maintenance > Protection** tabs.

**Step 2** Choose the affected 1+1 protection group from the Protection Groups window. In the Selected Group window, the working and protect spans appear.

**Step 3** Under Selected Group, click the affected OC-N port.

**Step 4** In Switch Commands, choose Manual or Force:

- **Manual**—Switches traffic if the new span is error free.
- **Force**—Forces the traffic to switch, even if the path has signal degrade (SD) or signal failure (SF) conditions. Force switch states have a higher priority than manual switches.


**Step 5** Click **Yes** on the confirmation dialog box.

- MANUAL-SWITCH-TO-WORKING or MANUAL-SWITCH-TO-PROTECT appears next to a manually switched span.
- FORCE-SWITCH-TO-WORKING or FORCE-SWITCH-TO-PROTECT appears next to a forced span.

**Step 6** If the protect port was selected in [Step 3](#), verify that the working slot is carrying traffic (Working/Active).



**Note** If the slot is not active, look for conditions or alarms that may be preventing the card from carrying working traffic. Refer to the *Cisco ONS 15454 Troubleshooting Guide*.

- Step 7** When the working slot is carrying nonrevertive traffic, clear the manual switch:
- In Switch Commands, choose **Clear**.
  - Click **Yes** on the confirmation dialog box.
- Step 8** With nonrevertive traffic, verify that the working slot does not switch back to Standby, which might indicate a problem on the working span.
-  **Note** A Force switch request on a span or port) causes CTC to raise a FORCED-REQ condition. It is informational only; the condition will clear when the Force switch command is cleared.
- Step 9** Return to your originating procedure (NTP).

## DLP-A288 Clear a 1+1 Traffic Switch

<b>Purpose</b>	This task clears a 1+1 external switching command.
<b>Tools/Equipment</b>	None
<b>Prerequisite Procedures</b>	<a href="#">“DLP-A60 Log into CTC” task on page 3-23</a> <a href="#">DLP-A287 Switch 1+1 Traffic, page 12-14</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite or remote
<b>Security Level</b>	Maintenance

- Step 1** In the node view, click the **Maintenance > Protection** tabs.
- Step 2** Under Protection Groups, click the protection group that contains the card you want to clear.
- Step 3** Under Selected Group, click the card you want to clear.
- Step 4** From Inhibit Switching, click **Unlock**.
- Step 5** Click **Yes** on the confirmation dialog box.  
The Manual or Force switch is cleared.
- Step 6** Return to your originating procedure (NTP).

## DLP-A183 Downgrade a DS3-12E/DS3NE Card to a DS3-12/DS3N-12 Card


<b>Purpose</b>	This task downgrades a DS3-12E or DS3NE card. Downgrading can be performed to back out of an upgrade.
<b>Tools</b>	None
<b>Prerequisite Procedures</b>	<a href="#">DLP-A182 Upgrade the DS3-12/DS3N-12 Card to the DS3-12E/DS3N-12E Card, page 12-13</a> <a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Note**

All ports must be provisioned as UNFRAMED and not have the Path Trace enabled.

**Note**

Working cards must be downgraded before protect cards.

- Step 1** Determine if the card you are downgrading is protected or unprotected:
- A protected card will be listed under Protection Groups in the **Maintenance > Protection** tabs. The slot, port and status (i.e., Protect/Standby, Working/Active) of each card will be listed under Selected Group.
  - An unprotected card will not be listed under Protection Groups/Selected Group in the **Maintenance > Protection** tabs.
- Step 2** If the card you are downgrading is unprotected, skip to [Step 3](#). If the card you are downgrading is protected, complete the [“DLP-A287 Switch 1+1 Traffic” task on page 12-14](#) to Force switch the working card.
- Step 3** Physically remove the working DS3-12E card or the working DS3N-12E card:
- Open the DS3-12E or DS3N-12E card ejectors.
  - Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the downgrade is complete.
- Step 4** Right-click the slot to be downgraded and choose **Change Card** from the pull-down menu.
- Step 5** Choose **DS3-12** or **DS3N-12** from the Change to: pull-down menu.
-  **Tip** The procedure for downgrading is the same as upgrading except you choose DS3-12 or DS3N-12 from the Change Card pull-down menu.
- Step 6** Click **OK**.
- Step 7** Insert the DS3-12 or DS3N-12 card into the working slot:
- Open the ejectors on the DS3-12 or DS3N-12 card.
  - Slide the DS3-12 or DS3N-12 card into the slot along the guide rails.
- Step 8** Close the ejectors. Wait for the IMPROPRMVL alarm to clear and the card to become active.



- Step 9** If you placed a Force switch on the working card in [Step 2](#), complete the “[DLP-A288 Clear a 1+1 Traffic Switch](#)” task on [page 12-15](#) to clear the switch.
- Step 10** Repeat Steps [1](#) through [9](#) to downgrade the protect card if applicable.
- Step 11** Return to your originating procedure (NTP).
- 

## NTP-A153 Upgrade the AIC Card to AIC-I

<b>Purpose</b>	This procedure upgrades an AIC card to an AIC-I card; the AIC-I card provides additional alarm contacts.
<b>Tools</b>	None
<b>Prerequisite Procedures</b>	None
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Maintenance or higher

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- Step 1** Physically remove the AIC card:
- Open the AIC card ejectors.
  - Slide the card out of the slot. After several seconds this raises the IMPROPRMVL alarm, which will clear when the downgrade is complete.
- Step 2** Complete the “[NTP-A123 Provision External Alarms and Controls on the Alarm Interface Controller-International](#)” procedure on [page 7-35](#).
- Stop. You have completed this procedure.**
- 

## NTP-A94 Upgrade Optical Spans Automatically

<b>Purpose</b>	This task upgrades two-fiber BLSR spans, four-fiber BLSR spans, path protection configuration spans, and 1+1 protection group spans. The Span Upgrade Wizard only supports OC-N span upgrades. It does not support electrical upgrades.
<b>Tools/Equipment</b>	Higher-rate cards  Compatible hardware necessary for the upgrade (For example XC10G cards and OC-48 any slot cards)
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>  The span upgrade procedure requires at least two technicians (one at each end of the span) who can communicate with each other during the upgrade.
<b>Required/As Needed</b>	As needed

Onsite/Remote	Onsite
Security Level	Provisioning or higher

**Warning**

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**

**Note**

Optical transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in the *Cisco ONS 15454 Reference Manual*.

**Caution**

Do not perform any other maintenance operations or add any circuits during a span upgrade.

**Note**

An OC-3 to eight-port OC-3 span upgrade, or an OC-12 to four-port OC-12 span upgrade can only be performed from multispeed slots (Slots 1 to 4 and 14 to 17) because the OC3-8 and OC12-4 card can only be installed in multispeed slots. Ensure that the OC-3 and OC-12 cards are in multispeed slots before performing a span upgrade to the OC3-8 and OC12-4. The four OC-3 ports will be mapped to Ports 1 to 4 on the eight-port OC-3 card. The OC-12 port will be mapped to Port 1 on the four-port OC-12 card.

**Note**

BLSR protection channel access (PCA) circuits, if present, will remain in their existing STSs. Therefore, they will be located on the working path of the upgraded span and will have full BLSR protection. To route PCA circuits on protection channels in the upgraded span, delete and recreate the circuits after the span upgrade. For example, if you upgrade an OC-48 span to an OC-192, PCA circuits on the protection STSs (STSs 25 to 48) in the OC-48 BLSR will remain in their existing STSs (STSs 25 to 48) which are working, protected STSs in the OC-192 BLSR. Deleting and recreating the OC-48 PCA circuits moves the circuits to STSs 96 to 192 in the OC-192 BLSR. To delete circuits, see the [“NTP-A152 Delete Circuits” procedure on page 9-16](#). To create circuits, see [Chapter 6, “Create Circuits and VT Tunnels.”](#)

**Step 1**

Determine the type of span you need to upgrade and make sure you have the necessary cards. Valid span upgrades include:

- Four-port OC-3 to eight-port OC-3
- Single-port OC-12 to four-port OC-12
- Single-port OC-12 to OC-48
- Single-port OC-12 to OC-192
- OC-48 to OC-192

**Caution**

You cannot upgrade a four-port OC-12 span. If the ring contains any OC-12-4 cards and you need to upgrade all the spans in the ring, you will need to downgrade the OC-12-4 card to a single-port OC-12 card (which is not possible unless only one port on the OC12-4 card is being used).

**Step 2**

Complete the [“DLP-A60 Log into CTC” task on page 3-23](#). If you are already logged in, continue with Step 3.



**Note** The Span Upgrade option will only be visible and available if the hardware necessary for the upgrade is present; for example, no upgrade is possible from an OC48 span unless XC10G cards are installed in the nodes at both ends of the span.

**Step 3** Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present. See the “[DLP-A298 Check the Network for Alarms and Conditions](#)” task on page 13-3 for instructions.

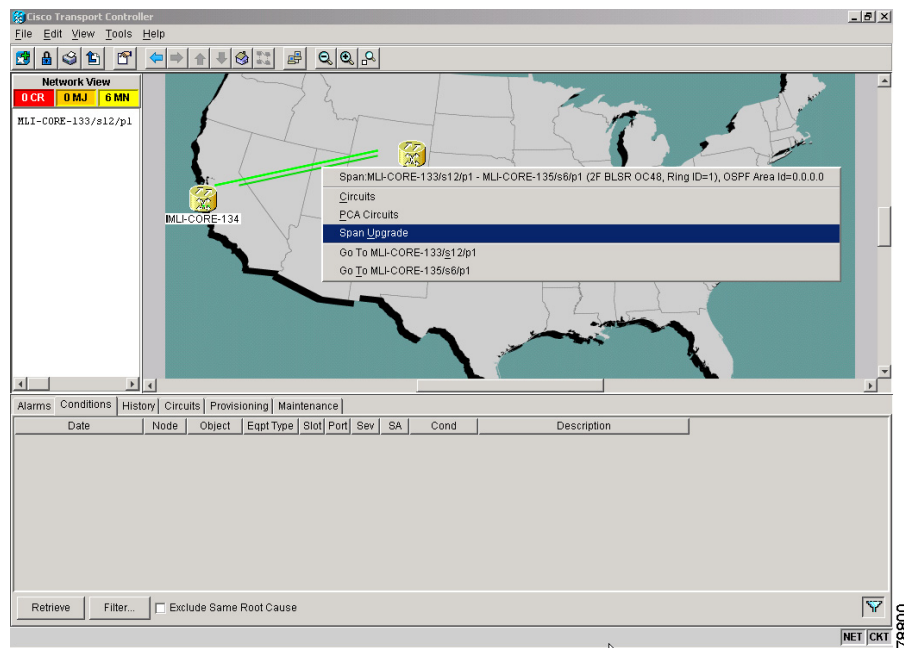


**Note** During the upgrade/downgrade some minor alarms and conditions display and then clear automatically. No service-affecting alarms (SA, Major, or Critical) should occur other than BLSROSync, which will clear when the upgrade/downgrade of all nodes is complete. If any other service-affecting alarms occur, Cisco recommends backing out of the procedure. A four-node BLSR can take up to five minutes to clear all of the BLSROSync alarms. Allow extra time for a large BLSR to clear all of the BLSROSync alarms.

**Step 4** In network view, right-click the span you want to upgrade.

**Step 5** Choose **Span Upgrade** from the pull-down menu (Figure 12-2).

**Figure 12-2 Span Upgrade Pull-Down Menu**

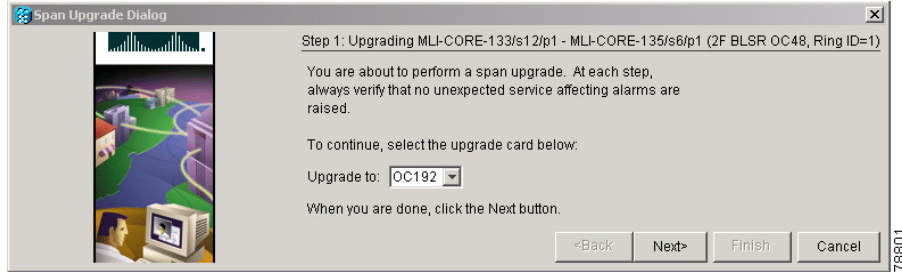


**Step 6** The first Span Upgrade dialog box appears (Figure 12-3). Follow the instructions on the dialog box and the wizard will lead you through the rest of the span upgrade.



**Note** The Back button is only enabled on Step 2 of the wizard; because you cannot back out of an upgrade via the wizard, close the wizard and initiate the manual procedure if you need to back out of the upgrade at any point beyond Step 2.

Figure 12-3 Span Upgrade Wizard

**Caution**

As indicated by the wizard, when installing cards you must wait for the cards to boot up and become active before proceeding to the next step.

**Note**

If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

**Note**

Remember to attach the fiber after installing the OC-N cards.

**Note**

The span upgrade process resets the line's CV-L threshold to factory default. The CV-L threshold is reset because the threshold is dependent on line rate.

**Step 7** Repeat Steps 4 through 6 for additional spans in the ring.

**Stop. You have completed this procedure.**

# NTP-A95 Upgrade Optical Spans Manually

<b>Purpose</b>	This procedure upgrades OC-N speeds within BLSRs, path protection configurations, and 1+1 protection groups by upgrading OC-N cards.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	The manual span upgrade procedure requires at least two technicians (one at each end of the span) who can communicate with each other during the upgrade.
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher


**Note**

Optical card transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in the *Cisco ONS 15454 Reference Manual*.


**Note**

In this context the word “span” represents the optical path between two nodes. The words “span endpoint” represent the nodes on each end of a span.


**Note**

If any of the cross-connect cards reboot during the span upgrade, you must reset each one when the span upgrade procedure is complete for all the nodes in the ring.

- Step 1** Determine the type of span you need to upgrade and make sure you have the necessary cards. Valid span upgrades include:
- Four-port OC-3 to eight-port OC-3
  - Single-port OC-12 to four-port OC-12
  - Single-port OC-12 to OC-48
  - Single-port OC-12 to OC-192
  - OC-48 to OC-192


**Caution**

You cannot upgrade a four-port OC-12 span. If the ring contains any OC-12-4 cards and you need to upgrade all the spans in the ring, you will need to downgrade the OC-12-4 card to a single-port OC-12 card (which is not possible unless only one port on the OC12-4 card is being used).

- Step 2** Complete the “[DLP-A60 Log into CTC](#)” task on page 3-23. If you are already logged in, continue with Step 3.
- Step 3** Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, SF, SD, and FORCED-REQ-RING are present. See the “[DLP-A298 Check the Network for Alarms and Conditions](#)” task on page 13-3 for instructions.

**Note**


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During the upgrade/downgrade some minor alarms and conditions display and then clear automatically. No service-affecting alarms (SA, Major, or Critical) should occur other than BLSROSYNC, which will clear when the upgrade/downgrade of all nodes is complete. If any other service-affecting alarms occur, Cisco recommends backing out of the procedure. A four-node BLSR can take up to five minutes to clear all of the BLSROSYNC alarms. Allow extra time for a large BLSR to clear all of the BLSROSYNC alarms. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for information about alarms.

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- Step 4** Complete a manual upgrade task if you need to perform error recovery for the Span Upgrade Wizard or back out of a span upgrade (downgrade):
- Complete the “[DLP-A293 Perform a Manual Span Upgrade on a Two-Fiber BLSR](#)” task on [page 12-23](#) to upgrade an optical span manually within a two-fiber BLSR.
  - Complete the “[DLP-A294 Perform a Manual Span Upgrade on a Four-Fiber BLSR](#)” task on [page 12-24](#) to upgrade an optical span manually within a four-fiber BLSR.
  - Complete the “[DLP-A295 Perform a Manual Span Upgrade on a Path Protection Configuration](#)” task on [page 12-26](#) to upgrade an optical span manually within a two-fiber path protection configuration.
  - Complete the “[DLP-A296 Perform a Manual Span Upgrade on a 1+1 Protection Group](#)” task on [page 12-27](#) to upgrade an optical span manually within a 1+1 protection group.
  - Complete the “[DLP-A297 Perform a Manual Span Upgrade on an Unprotected Span](#)” task on [page 12-28](#) to upgrade an unprotected optical span manually.

**Note**


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The span upgrade process resets the line’s CV-L threshold to factory default. The CV-L threshold is reset because the threshold is dependent on line rate.

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**Note**


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The Span Upgrade option will only be visible and available if the hardware necessary for the upgrade is present; for example, no upgrade is possible from an OC48 span unless XC10G cards are installed in the nodes at both ends of the span.

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**Note**


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An OC-3 to eight-port OC-3 span upgrade, or an OC-12 to four-port OC-12 span upgrade can only be performed from multispeed slots (Slots 1 to 4 and 14 to 17) because the OC3-8 and OC12-4 card can only be installed in multispeed slots. Ensure that the OC-3 and OC-12 cards are in multispeed slots before performing a span upgrade to the OC3-8 and OC12-4. The four OC-3 ports will be mapped to Ports 1-4 on the eight-port OC-3 card. The OC-12 port will be mapped to Port 1 on the four-port OC-12 card.

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**Stop. You have completed this procedure.**

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## DLP-A293 Perform a Manual Span Upgrade on a Two-Fiber BLSR

<b>Purpose</b>	This task upgrades a two-fiber BLSR span to a higher optical rate.
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.



### Note

All spans connecting the nodes in a BLSR must be upgraded before the bandwidth is available.



### Note

BLSR protection channel access (PCA) circuits, if present, will remain in their existing STSs. Therefore, they will be located on the working path of the upgraded span and will have full BLSR protection. To route PCA circuits on protection channels in the upgraded span, delete and recreate the circuits after the span upgrade. For example, if you upgrade an OC-48 span to an OC-192, PCA circuits on the protection STSs (STSs 25 to 48) in the OC-48 BLSR will remain in their existing STSs (STSs 25 to 48) which are working, protected STSs in the OC-192 BLSR. Deleting and recreating the OC-48 PCA circuits moves the circuits to STSs 96 to 192 in the OC-192 BLSR. To delete circuits, see the [“NTP-A152 Delete Circuits” procedure on page 9-16](#). To create circuits, see [Chapter 6, “Create Circuits and VT Tunnels.”](#)

### Step 1

Apply a Force switch to both span endpoints (nodes) on the span that you will upgrade first. See the [“DLP-A303 Initiate a BLSR Force Switch - Ring” task on page 14-7](#).



### Note

A Force switch request on a span or card causes CTC to raise a FORCED-REQ condition. It is informational only; the condition will clear when the Force switch is cleared.

### Step 2

Remove the fiber from both endpoints and ensure that traffic is still running.

### Step 3

Remove the OC-N cards from both endpoints.

### Step 4

From both endpoints, in node view right-click each OC-N slot and choose **Change Card**.

### Step 5

In the Change Card dialog box, choose the new OC-N card type.

### Step 6

Click **OK**.

### Step 7

Before attaching the fiber to the newly installed OC-N cards, check that the transmit signal falls within the acceptable range. Install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.



**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

- Step 8** When cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the forced switch from both endpoints on the upgraded span. See the [“DLP-A194 Clear a BLSR Force Switch - Ring” task on page 14-9](#).
- The Force switch clears and traffic is running. If you have lost traffic, perform a downgrade. Repeat this task to downgrade but choose a lower-rate card in [Step 5](#).
- Step 9** Repeat this task for each span in the BLSR. When you are done with each span, the upgrade is complete.
- Step 10** Return to your originating procedure (NTP).

## DLP-A294 Perform a Manual Span Upgrade on a Four-Fiber BLSR

<b>Purpose</b>	This task upgrades a four-fiber BLSR span to a higher optical rate. Repeat the task to upgrade each span to the higher optical rate.
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher

**Warning**

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**

**Caution**

Do not perform any other maintenance operations or add any circuits during a span upgrade.

**Note**

All spans connecting the nodes in a BLSR must be upgraded before the bandwidth is available.

**Note**

BLSR protection channel access (PCA) circuits, if present, will remain in their existing STSs. Therefore, they will be located on the working path of the upgraded span and will have full BLSR protection. To route PCA circuits on protection channels in the upgraded span, delete and recreate the circuits after the span upgrade. For example, if you upgrade an OC-48 span to an OC-192, PCA circuits on the protection STSs (STSs 25 to 48) in the OC-48 BLSR will remain in their existing STSs (STSs 25 to 48) which are working, protected STSs in the OC-192 BLSR. Deleting and recreating the OC-48 PCA circuits moves the circuits to STSs 96 to 192 in the OC-192 BLSR. To delete circuits, see the [“NTP-A152 Delete Circuits” procedure on page 9-16](#). To create circuits, see [Chapter 6, “Create Circuits and VT Tunnels.”](#)



---

**Step 1** Apply a Force switch to both span endpoints (nodes) on the span that you will upgrade first. See the [“DLP-A303 Initiate a BLSR Force Switch - Ring” task on page 14-7](#).



**Note** A Force switch request on a span or card causes CTC to raise a FORCED-REQ condition. It is informational only; the condition will clear when the Force switch command is cleared.

---

**Step 2** Remove the fiber from both working and protect cards at both span endpoints (nodes) and ensure that traffic is still running.

**Step 3** Remove the OC-N cards from both end points.

**Step 4** For both ends of the span endpoints, in node view right-click each OC-N slot and choose **Change Card**.

**Step 5** In the Change Card dialog box, choose the new OC-N card type.

**Step 6** Click **OK**.

**Step 7** Before attaching the fiber to the newly installed OC-N cards, check that the transmit signal falls within the acceptable range. Install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.



**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

---

**Step 8** When cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the forced switch from both endpoints (nodes) on the upgraded span. See [“194 Clear a BLSR Force Switch - Ring” section on page 14-9](#).

The forced switch clears and traffic is running. If you have lost traffic, perform a downgrade. Repeat this task to downgrade but choose a lower-rate card in [Step 5](#).

**Step 9** Repeat these steps for each span in the BLSR. When all spans in the BLSR have been upgraded, the ring is upgraded.

**Step 10** Return to your originating procedure (NTP).

---

## DLP-A295 Perform a Manual Span Upgrade on a Path Protection Configuration

<b>Purpose</b>	This task upgrades path protection configuration spans to a higher optical speed. Repeat the task for each span to upgrade the entire ring to the higher optical rate.
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.

- Step 1** Complete the “[DLP-A197 Initiate a Path Protection Configuration Force Switch](#)” task on page 14-18 to apply a Force switch on the span that you will upgrade.
- Step 2** Remove the fiber from both endpoint nodes in the span and ensure that traffic is still running.
- Step 3** Remove the OC-N cards from both span endpoints.
- Step 4** For both ends of the span, in node view right-click each OC-N slot and choose **Change Card**.
- Step 5** In the Change Card dialog box, choose the new OC-N card type.
- Step 6** Click **OK**.
- Step 7** Before attaching the fiber to the newly installed OC-N cards, check that the transmit signal falls within the acceptable range. Install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.



**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

- Step 8** Complete the “[DLP-A198 Clear a Path Protection Configuration Force Switch](#)” task on page 14-19 when cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared.  
The forced switch clears and traffic is running. If you have lost traffic, perform a downgrade. Repeat this task to downgrade but choose a lower-rate card in [Step 5](#).
- Step 9** Return to your originating procedure (NTP).

## DLP-A296 Perform a Manual Span Upgrade on a 1+1 Protection Group

<b>Purpose</b>	This task upgrades a linear span to a higher optical rate.
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.

- Step 1** Complete the “[DLP-A287 Switch 1+1 Traffic](#)” task on page 12-14 to apply a Force switch to the protect port on the span you will upgrade.



**Note** If the switching mode is bidirectional in the 1+1 protection group, apply the Force command to only one end of the span. If the Force command is applied to both ends when the switching mode is bidirectional, it will cause a switch of more than 50 ms in duration.

- Step 2** Repeat [Step 1](#) for each port you will upgrade.
- Step 3** Remove the fiber from both ends of the span and ensure that traffic is still running.
- Step 4** Remove the OC-N cards from both span endpoints.
- Step 5** At both ends of the span, in node view, right-click the OC-N slot and choose **Change Card**.
- Step 6** In the Change Card dialog box, choose the new OC-N card type.
- Step 7** Click **OK**.
- Step 8** Before attaching the fiber to the newly installed OC-N cards, verify that the transmit signal falls within the acceptable range. Install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become standby.



**Note** If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

- Step 9** When cards on each end of the span have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, complete the “[DLP-A288 Clear a 1+1 Traffic Switch](#)” task on page 12-15 to remove the Force switch.

The Force switch clears and traffic is running. If you have lost traffic, perform a downgrade. Repeat this task to downgrade but choose a lower-rate card in [Step 6](#).

- Step 10** Repeat this task for any other spans in the 1 + 1 linear configuration.
- Step 11** Return to your originating procedure (NTP).

## DLP-A297 Perform a Manual Span Upgrade on an Unprotected Span

<b>Purpose</b>	This task manually upgrades unprotected spans to a higher optical rate.
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-A60 Log into CTC, page 3-23</a>
<b>Required/As Needed</b>	As needed
<b>Onsite/Remote</b>	Onsite
<b>Security Level</b>	Provisioning or higher



### Warning

**Do not reach into a vacant slot or chassis while you install or remove a module or a fan. Exposed circuitry could constitute an energy hazard.**



### Caution

Upgrading unprotected spans will cause all traffic running on those spans to be lost.



### Caution

Do not perform any other maintenance operations or add any circuits during a span upgrade.

- Step 1** Remove the fiber from both endpoint nodes in the span.



### Caution

Removing the fiber will cause all traffic on the unprotected span to be lost.

- Step 2** Remove the OC-N cards from both span endpoints.
- Step 3** For both ends of the span, in node view, right-click each OC-N slot and choose **Change Card**.
- Step 4** In the Change Card dialog box, choose the new OC-N type.
- Step 5** Click **OK**.
- Step 6** When you have finished Steps 2 – 5 for both nodes, install the new OC-N cards in both endpoints and attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.



### Note

If you install OC-192 cards, a disabled OC-192 laser causes an LOS alarm to be reported for each OC-192 slot. Enable the OC-192 laser by setting the safety key lock on the OC-192 faceplate to the ON position (labeled 1).

- Step 7** Return to your originating procedure (NTP).