



## Upgrade Cards and Spans

This chapter explains how to upgrade cross-connect cards and optical spans (speeds) within a ring or protection group for the Cisco ONS 15454 SDH.

### Before You Begin

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

1. [NTP-D92 Upgrade the XC10G Card to the XCVXL Card, page 14-1](#)—Complete as needed.
2. [NTP-D234 Upgrade the XCVXL 2.5G Card to the XCVXL 10G Card, page 14-3](#)—Complete as needed.
3. [NTP-D94 Upgrade STM-N Cards and Spans Automatically, page 14-4](#)—Complete this procedure as needed to upgrade optical cards within SNCs, MS-SPRings, and 1+1 protection groups.
4. [NTP-D95 Upgrade Optical Spans Manually, page 14-7](#)—Complete this procedure as needed to perform error recovery for the Span Upgrade Wizard or to back out of a span upgrade (downgrade).

### NTP-D92 Upgrade the XC10G Card to the XCVXL Card

<b>Purpose</b>	This procedure upgrades XC10G cards to XCVXL 2.5G cards or XCVXL 10G cards. XCVXL 2.5G cards work with card speeds up to STM-16. XCVXL 10G cards work with card speeds up to STM-64.
<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>	Maintenance or higher



**Note**

This procedure applies only to XC10G cards that are installed in nodes running Software R4.0 and later.



**Note**

You cannot upgrade from an XC10G to an XCVXL 2.5G if an STM-64 card is preprovisioned or installed in the node. The XCVXL 2.5G works only with card speeds up to STM-16.

**Note**

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

- Step 1** Complete the “[DLP-D60 Log into CTC](#)” task on page 3-24. If you are already logged in, continue with Step 2.
- Step 2** Verify that the node you are upgrading has TCC2 cards installed.
- Step 3** Determine the standby XC10G card. The ACT/STBY LED of the standby XC10G card is amber, and the ACT/STBY LED of the active XC10G card is green.

**Note**

You can also place the cursor on the card graphic in CTC to display a dialog that identifies the card as Active or Standby.

- Step 4** Physically replace the standby XC10G card with an XCVXL card:
- Open the XC10G 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 XCVXL card.
  - Slide the XCVXL card into the slot along the guide rails.
  - Close the ejectors.
- On the XCVXL card the FAIL LED above the ACT/STBY LED becomes red, blinks for approximately a minute, and turns off. The ACT/STBY LED becomes amber and remains on.
- 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 XCVXL card that you 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 XC10G card from the shelf and insert the second XCVXL card into the empty cross-connect slot:
- Open the XC10G card ejectors.
  - Slide the XC10G card out of the slot.
  - Open the ejectors on the XCVXL card.
  - Slide the XCVXL card into the slot along the guide rails.
  - Close the ejectors.

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

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

# NTP-D234 Upgrade the XCVXL 2.5G Card to the XCVXL 10G Card

<b>Purpose</b>	This procedure upgrades XCVXL 2.5G cards to XCVXL 10G 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>	Maintenance or higher



**Note** This procedure applies only to XCVXL 2.5G cards that are installed in nodes running Software R4.0 and later.



**Note** The XCVXL 2.5G card works only with card speeds up to STM-16.



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

**Step 1** Complete the “[DLP-D60 Log into CTC](#)” task on page 3-24. If you are already logged in, continue with Step 2.

**Step 2** Determine the standby XCVXL 2.5G card. The ACT/STBY LED of the standby XCVXL 2.5G card is amber, and the ACT/STBY LED of the active XCVXL 2.5G card is green.



**Note** You can also place the cursor on the card graphic in CTC to display a dialog that identifies the card as Active or Standby.

**Step 3** Physically replace the standby XCVXL 2.5G card on the shelf with an XCVXL 10G card:

- a. Open the XCVXL 2.5G 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 XCVXL 10G card.
- d. Slide the XCVXL 10G card into the slot along the guide rails.
- e. Close the ejectors.

On the XCVXL 10G card the fail LED above the ACT/STBY LED becomes red, blinks for approximately a minute, and turns off. The ACT/STBY LED turns amber and remains illuminated.

**Step 4** In node view, click the **Maintenance > Cross-Connect** tabs.

**Step 5** From the Cross Connect Cards menu, choose **Switch**.

**Step 6** Click **Yes** on the Confirm Switch dialog box. Traffic switches to the XCVXL 10G card that you inserted in Step 3. 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 7** Physically remove the now standby XCVXL 2.5G card from the shelf and insert the second XCVXL 10G card into the empty cross-connect slot:
- a. Open the XCVXL 2.5G card ejectors.
  - b. Slide the XCVXL 2.5G card out of the slot.
  - c. Open the ejectors on the XCVXL 10G card.
  - d. Slide the XCVXL 10G card into the slot along the guide rails.
  - e. Close the ejectors.

The upgrade is complete when the second XCVXL 10G card boots up and becomes the standby XCVXL 10G card.

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

## NTP-D94 Upgrade STM-N Cards and Spans Automatically

<b>Purpose</b>	This procedure upgrades cards, STM-N speeds within MS-SPRings, SNCs, and 1+1 (linear) protection groups using the Span Upgrade Wizard.
<b>Tools/Equipment</b>	Replacement cards
<b>Prerequisite Procedures</b>	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
<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.**



### Note

Optical transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in the table in [“NTP-D19 Install Fiber-Optic Cables on STM-N Cards” procedure on page 2-30](#).



### Caution

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

**Note**

An STM-1 to eight-port STM-1 span upgrade, or an STM-4 to four-port STM-4 span upgrade can only be performed from multispeed slots (slots 1–4 and 14–17) because the STM1-8 and STM4-4 card can only be installed in multispeed slots. Ensure that the STM-1 and STM-4 cards are in multispeed slots before performing a span upgrade to the STM1-8 and STM4-4. The four STM-1 ports will be sequentially mapped to ports 1-4 on the eight-port STM-1 card. The STM-4 port will be mapped to port 1 on the four-port STM-4 card.

**Step 1** Determine the span upgrade you need to perform. Valid span upgrades include:

- Four-port STM-1 to eight-port STM-1
- Single-port STM-4 to four-port STM-4
- Single-port STM-4 to STM-16
- Single-port STM-4 to STM-64
- STM-16 to STM-64

**Note**

You cannot upgrade a four-port STM-4 span. If the ring contains any STM4-4 cards and you want to upgrade the entire ring, you will have to downgrade the STM4-4 card to a single-port STM-4 card (which is not possible unless only one port on the STM4-4 card is being used).

**Note**

Do not upgrade an STM-16 to an STM-64 if you have XCVXL 2.5Gs installed. The XCVXL 2.5G card works only with card speeds up to STM-16.

**Step 2** Complete the “[DLP-D60 Log into CTC](#)” task on page 3-24. 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-D298 Check the Network for Alarms and Conditions](#)” task on page 15-3 for instructions.

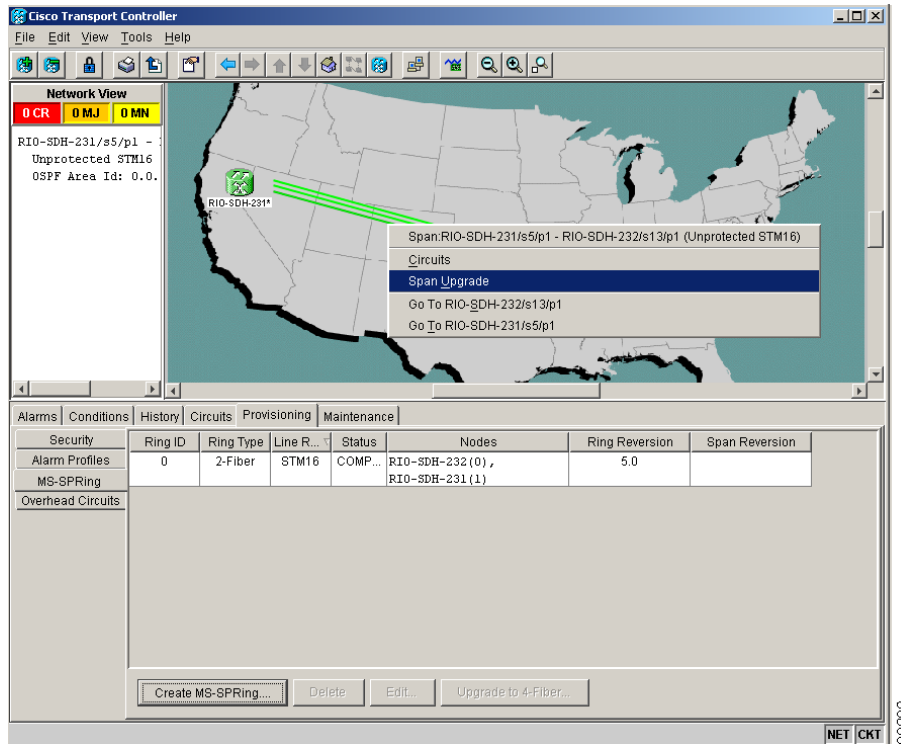
**Note**

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 MSSP-OSYNC, 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 MS-SPRing can take up to five minutes to clear all of the MSSP-OSYNC alarms. Allow extra time for a large MS-SPRing to clear all of the MSSP-OSYNC alarms.

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

**Step 5** Choose **Span Upgrade** from the drop-down menu ([Figure 14-1](#)).

Figure 14-1 Span Upgrade Drop-Down Menu

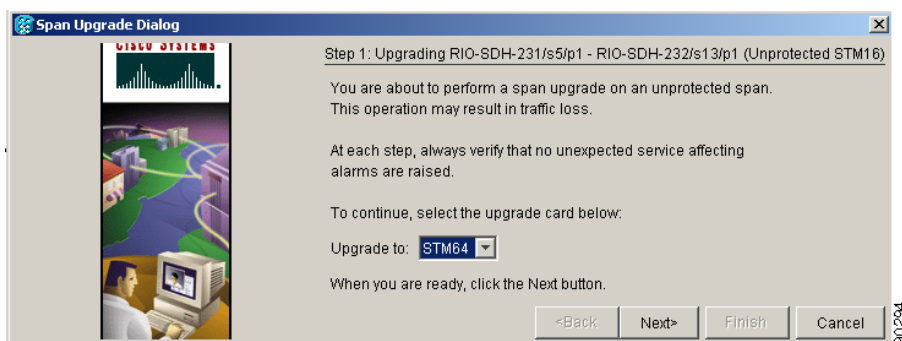


**Step 6** The first Span Upgrade dialog box appears (Figure 14-2). Follow the instructions in the dialog box and the wizard will lead you through the rest of the span upgrade.



**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 14-2 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 STM-64 cards, a disabled STM-64 laser causes an LOS alarm to be reported for each STM-64 slot. Enable the STM-64 laser by setting the safety key lock on the STM-64 faceplate to the ON position (labeled 1).



**Note** Remember to attach the fiber after installing the STM-N cards.

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



**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.

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

## NTP-D95 Upgrade Optical Spans Manually

<b>Purpose</b>	This procedure upgrades STM-N speeds within MS-SPRings, SNCs, and 1+1 protection groups by upgrading STM-N cards. 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):
<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



### Caution

If you want to upgrade all of the spans in a ring, determine if there are any four-port STM-4 cards in the ring. If the ring contains any STM4-4 cards and you wish to continue with the upgrade, you will have to downgrade the STM4-4 card to a single-port STM-4 card (which is not possible unless only one port on the STM4-4 card is being used).



### Note

Optical card transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in the table in the [“NTP-D19 Install Fiber-Optic Cables on STM-N Cards” procedure on page 2-30](#).



### 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 span upgrade you need to perform. Valid span upgrades include:

- Four-port STM-1 to eight-port STM-1
- Single-port STM-4 to four-port STM-4
- Single-port STM-4 to STM-16
- Single-port STM-4 to STM-64
- STM-16 to STM-64

**Note**

Do not upgrade an STM-16 to an STM-64 if you have XCVXL 2.5Gs installed. The XCVXL 2.5G works only with card speeds up to STM-16.

**Step 2** Complete the “[DLP-D60 Log into CTC](#)” task on page 3-24. 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-D298 Check the Network for Alarms and Conditions](#)” task on page 15-3 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 MSSP-OSYNC, 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 MS-SPRing can take up to five minutes to clear all of the MSSP-OSYNC alarms. Allow extra time for a large MS-SPRing to clear all of the MSSP-OSYNC alarms.

**Step 4** Complete the appropriate task:

- [DLP-D293 Perform a Manual Span Upgrade on a Two-Fiber MS-SPRing](#), page 14-9
- [DLP-D294 Perform a Manual Span Upgrade on a Four-Fiber MS-SPRing](#), page 14-10
- [DLP-D295 Perform a Manual Span Upgrade on an SNCP](#), page 14-11
- [DLP-D296 Perform a Manual Span Upgrade on a 1+1 Protection Group](#), page 14-12
- [DLP-D297 Perform a Manual Span Upgrade on an Unprotected Span](#), page 14-13

**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.

**Note**

Span upgrades do not upgrade SDH topologies; for example, 1+1 protection group to a two-fiber MS-SPRing.



**Note**

An STM-1 to eight-port STM-1 span upgrade, or an STM-4 to four-port STM-4 span upgrade can only be performed from multispeed slots (slots 1–4 and 14–17) because the STM1-8 and STM4-4 card can only be installed in multispeed slots. Ensure that the STM-1 and STM-4 cards are in multispeed slots before performing a span upgrade to the STM1-8 and STM4-4. The four STM-1 ports will be sequentially mapped to ports 1-4 on the eight-port STM-1 card. The STM-4 port will be mapped to port 1 on the four-port STM-4 card.

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

## DLP-D293 Perform a Manual Span Upgrade on a Two-Fiber MS-SPRing

<b>Purpose</b>	This task upgrades a two-fiber MS-SPRing span to a higher optical rate. To downgrade an optical span in a two-fiber MS-SPRing, repeat this task but choose a lower-rate card in <a href="#">Step 5</a> .
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-D60 Log into CTC, page 3-24</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.**

**Note**

All spans connecting the nodes in an MS-SPRing must be upgraded before the bandwidth is available.

**Note**

If you are upgrading a span on an MS-SPRing, a MSSP-OSYNC alarm will appear in the alarms list. Refer to the *Cisco ONS 15454 SDH Troubleshooting Guide* for information on this alarm.

- Step 1** Apply a Force switch to both span endpoints (nodes) on the span that you will upgrade first. See [“DLP-D303 Initiate an MS-SPRing Force Ring Switch”](#) task on page 16-7.
- Step 2** Remove the fiber from both endpoints and ensure that traffic is still running.
- Step 3** Remove the STM-N cards from both endpoints.
- Step 4** From both endpoints, in node view right-click each STM-N slot and choose **Change Card**.
- Step 5** In the Change Card dialog box, choose the new STM-N card type.
- Step 6** Click **OK**.
- Step 7** Complete the [“NTP-D16 Install the STM-N Cards”](#) procedure on page 2-12 to install the new OC-N cards in both endpoints.

- Step 8** Verify that the transmit signal falls within the acceptable range. See [Table 2-5 on page 2-31](#) for OC-N card transmit and receive levels.
- Step 9** Complete the “[DLP-D338 Install Fiber-Optic Cables for MS-SPRing Configurations](#)” task on [page 2-37](#) to attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.
- Step 10** When cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the Force switch from both endpoints on the upgraded span. See the “[DLP-D194 Clear an MS-SPRing Force Ring Switch](#)” task on [page 16-8](#).
- Step 11** Repeat this task for each span in the MS-SPRing. When you are done with each span, the upgrade is complete.
- Step 12** Return to your originating procedure (NTP).

## DLP-D294 Perform a Manual Span Upgrade on a Four-Fiber MS-SPRing

<b>Purpose</b>	This task upgrades a four-fiber MS-SPRing span to a higher optical rate. Repeat the task to upgrade each span in the ring to the higher optical rate. To downgrade an optical span in a four-fiber MS-SPRing, repeat this task but choose a lower-rate card in <a href="#">Step 5</a> .
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-D60 Log into CTC</a> , <a href="#">page 3-24</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.**



### Note

All spans connecting the nodes in an MS-SPRing must be upgraded before the bandwidth is available



### Note

If you are upgrading a span on an MS-SPRing, a MSSP-OSYNC alarm will appear in the alarms list. Refer to the *Cisco ONS 15454 SDH Troubleshooting Guide* for information on this alarm.

- Step 1** Apply a Force switch to both span endpoints (nodes) on the span that you will upgrade first. See “[DLP-D303 Initiate an MS-SPRing Force Ring Switch](#)” task on [page 16-7](#).
- 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 STM-N cards from both end points.
- Step 4** For both ends of the span endpoints, in node view right-click each STM-N slot and choose **Change Card**.

- Step 5** In the Change Card dialog box, choose the new STM-N card type.
- Step 6** Click **OK**.
- Step 7** Complete the “[NTP-D16 Install the STM-N Cards](#)” procedure on page 2-12 to install the new OC-N cards in both endpoints.
- Step 8** Verify that the transmit signal falls within the acceptable range. See [Table 2-5 on page 2-31](#) for OC-N card transmit and receive levels.
- Step 9** Complete the “[DLP-D338 Install Fiber-Optic Cables for MS-SPRing Configurations](#)” task on page 2-37 to attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.
- Step 10** When cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the Force switch from both endpoints (nodes) on the upgraded span. See “[DLP-D194 Clear an MS-SPRing Force Ring Switch](#)” task on page 16-8.
- Step 11** Repeat these steps for each span in the MS-SPRing. When all spans in the MS-SPRing have been upgraded, the ring is upgraded.
- Step 12** Return to your originating procedure (NTP).

## DLP-D295 Perform a Manual Span Upgrade on an SNCP

<b>Purpose</b>	This task upgrades SNCP spans to a higher optical speed. Repeat the task to upgrade each span, and thus the entire ring, to the higher optical rate. To downgrade an optical span in an SNCP ring, repeat this task but choose a lower-rate card in <a href="#">Step 5</a> .
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-D60 Log into CTC</a> , page 3-24
<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.**

- Step 1** Complete the “[DLP-D197 Initiate an SNCP Force Switch](#)” task on page 16-17 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 STM-N cards from both span endpoints.
- Step 4** For both ends of the span, in node view right-click each STM-N slot and choose **Change Card**.
- Step 5** In the Change Card dialog box, choose the new STM-N card type.
- Step 6** Click **OK**.
- Step 7** Complete the “[NTP-D16 Install the STM-N Cards](#)” procedure on page 2-12 to install the new OC-N cards in both endpoints.

- Step 8** Verify that the transmit signal falls within the acceptable range. See [Table 2-5 on page 2-31](#) for OC-N card transmit and receive levels.
- Step 9** Complete the “[DLP-D337 Install Fiber-Optic Cables for SNCP Configurations](#)” task on [page 2-34](#) to attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.
- Step 10** Complete the “[DLP-D198 Clear an SNCP Force Switch](#)” task on [page 16-18](#) when cards in both endpoint nodes have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared.
- Step 11** Return to your originating procedure (NTP).

## DLP-D296 Perform a Manual Span Upgrade on a 1+1 Protection Group

<b>Purpose</b>	This task upgrades a 1+1 protection group span. To downgrade an optical span, repeat this task but choose a lower-rate card in <a href="#">Step 6</a> .
<b>Tools/Equipment</b>	Higher-rate cards Compatible hardware necessary for the upgrade
<b>Prerequisite Procedures</b>	<a href="#">DLP-D60 Log into CTC, page 3-24</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.**

- Step 1** Initiate a Force switch on the ports you will upgrade, beginning with the protect port:



**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.

- In node view, click the **Maintenance > Protection** tabs.
- Choose the protection group from the Protection Groups area. In the Selected Group area, the working and protect spans appear.
- In the Selected Group area, click the protect OC-N port.
- In Switch Commands, choose **Force**.
- Click **Yes** in the confirmation dialog box.

FORCE-SWITCH-TO-WORKING appears next to the forced span.

- 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 STM-N cards from both span endpoints.
- Step 5** At both ends of the span, in node view, right-click the STM-N slot and choose **Change Card**.
- Step 6** In the Change Card dialog box, choose the new STM-N card type.

- Step 7** Click **OK**.
- Step 8** Complete the “[NTP-D16 Install the STM-N Cards](#)” procedure on page 2-12 to install the new OC-N cards in both endpoints.
- Step 9** Verify that the transmit signal falls within the acceptable range. See [Table 2-5 on page 2-31](#) for OC-N card transmit and receive levels.
- Step 10** Complete the “[NTP-D19 Install Fiber-Optic Cables on STM-N Cards](#)” procedure on page 2-30 to attach the fiber to the cards. Wait for the IMPROPRMVL alarm to clear and the cards to become active.
- Step 11** When cards on each end of the span have been successfully upgraded and all the facility alarms (LOS, SD or SF) are cleared, remove the Force switch:
- In node view, click the **Maintenance > Protection** tabs.
  - In the Protection Groups area, click the protection group that contains the card/port you want to clear.
  - In the Selected Group area, click the card you want to clear.
  - In the Switch Commands area, choose **Clear**.
  - Click **Yes** in the confirmation dialog box.
- Step 12** Repeat this task for any other spans in the 1+1 linear configuration.
- Step 13** Return to your originating procedure (NTP).

## DLP-D297 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-D60 Log into CTC, page 3-24</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

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

- Step 1** Remove the fiber from both endpoint nodes in the span.
- Step 2** Remove the STM-N cards from both span endpoints.

- Step 3** For both ends of the span, in node view, right-click each STM-N slot and choose **Change Card**.
- Step 4** In the Change Card dialog box, choose the new STM-N type.
- Step 5** Click **OK**.
- Step 6** When you have finished Steps 3 through 5 for both nodes, install the new STM-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.
- Step 7** Return to your originating procedure (NTP).
-