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 common control cards, DS3-12 and DS3N-12 cards, and optical spans for the Cisco ONS 15454.

Contents

Before You Begin

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

1. NTP-A220 Upgrade the XCVT Card to the XC10G Card-Complete as needed.
2. NTP-A333 Upgrade the XCVT/XC10G Card to the XC-VXC-10G Card-Complete as needed.
3. NTP-A296 Upgrade the TCC2 Card to the TCC2P Card-Complete as needed.
4. NTP-A93 Upgrade the DS3-12 Card to the DS3-12E Card- Complete as needed.
5. NTP-A308 Upgrade Low-Density Electrical Cards to High-Density Electrical Cards-Complete as needed to upgrade low-density cards in a 1:N configuration to high-density cards.
6. NTP-A254 Downgrade a DS3-12E/DS3NE Card to a DS3-12/DS3N-12 Card-Complete as needed to downgrade a DS3E card or to back out of a DS3-12 to DS3-12E card upgrade.
7. NTP-A94 Upgrade OC-N Cards and Spans Automatically-Complete this procedure as needed to upgrade OC-N cards within path protection configurations, bidirectional line switched rings (BLSRs), and 1+1 protection groups.
8. NTP-A95 Upgrade OC-N Spans Manually-Complete this procedure as needed to perform error recovery for the Span Upgrade Wizard or back out of a span upgrade (downgrade).

Note: Always upgrade the standby cross-connect card first. Active cross-connect (XC10G/XCVT/XCVXL/XCVXC) cards should not be physically removed unless you first perform an XCVT/XC10G/XCVXL/XCVXC side switch or TCC2/TCC2P reset. You may remove the card once it comes to standby. Alternatively, perform a lockout on all circuits originating from the node whose active cross-connect or active TCC2/TCC2P needs to be removed. Performing a lockout on all spans also accomplishes the same goal. No lockout is necessary for switches initiated through CTC or through TL1.

NTP-A220 Upgrade the XCVT Card to the XC10G Card

Purpose	This procedure upgrades an XCVT card to an XC10G card.
Tools/Equipment	Two XC10G cards

Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

Caution! Always upgrade the standby cross-connect card. Removing an active cross-connect card can cause a protection switch unless a lockout is in place. If the standby card is being upgraded, a lockout is unnecessary.

Note: The XC10G requires the 15454-SA-ANSI or the 15454-SA-HD shelf assembly.

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 clear within a few seconds.

Note: The Interconnection Equipment Failure alarm might appear during the upgrade procedure, but will clear when the upgrade is complete and the node has matching cross-connect cards installed.

Note: Downgrading from XC10G cards to XCVT cards is not supported. Contact the Cisco Technical Assistance Center (TAC) for more information (see the Obtaining Documentation and Submitting a Service Request).

1. Complete the "DLP-A60 Log into CTC" task at the node where you will perform the upgrade. If you are already logged in, continue with Step 2.
2. According to local site practice, complete the NTP-A108 Back Up the Database.
3. Determine the standby XCVT card. The ACT/STBY LED of the standby XCVT card is amber, while the ACT/STBY LED of the active XCVT card is green.
4. Physically replace the standby XCVT card on the ONS 15454 with an XC10G card:
    1. Open the XCVT card ejectors.
    2. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
    3. Open the ejectors on the XC10G card.
    4. Slide the XC10G card into the slot along the guide rails.
    5. Close the ejectors.
       Note: On the XC10G card, the fail LED above the ACT/STBY LED becomes red, blinks for some time (20 to 30 seconds), and turns off. The ACT/STBY LED turns amber and remains on. In node view, the XC10G appears as the standby XCVT.
5. In node view, click the **Maintenance > Cross-Connect** tabs.
6. From the Cross Connect Cards menu, choose **Switch**.
7. Click **Yes** in 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.
8. Physically remove the now standby XCVT card from the ONS 15454 and insert the second XC10G card into the empty XCVT card slot:
    1. Open the XCVT card ejectors.
    2. Slide the XCVT card out of the slot.
    3. Open the ejectors on the XC10G card.
    4. Slide the XC10G card into the slot along the guide rails.
    5. 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.
       Note: After you change out the first card, CTC continues to display the XCVT card in both slots. The display does not change to reflect the XC10G cards until the second card is upgraded and the XC10G card in that slot boots up.

Stop. You have completed this procedure.

NTP-A333 Upgrade the XCVT/XC10G Card to the XC-VXC-10G Card

Purpose	This procedure upgrades the XCVT or XC10G card to an XC-VXC-10G card.
Tools/Equipment	Two XC-VXC-10G cards
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

Note: The XC-VXC-10G requires the 15454-SA-ANSI or the 15454-SA-HD shelf assembly.

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 clear within a few seconds.

Note: The CTNEQPT-MISMATCH, CTNEQPT-PBWORK, or CTNEQPT-PBPROT alarms might appear during the upgrade procedure, but will clear when the upgrade is complete and the node has matching cross-connect cards installed.

Note: Downgrading from XC-VXC-10G cards to XCVT or XC10G cards is not supported. Contact the Cisco TAC for more information (see the Obtaining Documentation and Submitting a Service Request).

Caution! Always upgrade the standby cross-connect card. Removing an active cross-connect card can cause a protection switch unless a lockout is in place. If the standby card is being upgraded, a lockout is unnecessary.

1. Complete the "DLP-A60 Log into CTC" task at the node where you will perform the upgrade. If you are already logged in, continue with Step 2.
2. According to local site practice, complete the NTP-A108 Back Up the Database.
3. Determine the standby XCVT or XC10G card. The ACT/STBY LED of the standby XCVT or XC10G card is amber, while the ACT/STBY LED of the active XCVT or XC10G card is green.
4. Physically replace the standby XCVT or XC10G card on the ONS 15454 with an XC-VXC-10G card:
    1. Open the XCVT or XC10G card ejectors.
    2. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
    3. Open the ejectors on the XC-VXC-10G card.
    4. Slide the XC-VXC-10G card into the slot along the guide rails.
    5. Close the ejectors.
       Note: On the XC-VXC-10G card, the fail LED above the ACT/STBY LED becomes red, blinks for some time (20 to 30 seconds), and turns off. The ACT/STBY LED turns amber and remains on.
5. In node view, click the **Maintenance > Cross-Connect** tabs.
6. From the Cross Connect Cards menu, choose **Switch**.

    Note: When upgrading from XCVT or XC10G card to an XC-VXC-10G card with Path Protection circuits and a cross connect side switch is performed, the path protected circuits may switch from a working to protect path causing traffic hit.

7. Click **Yes** in the Confirm Switch dialog box. Traffic switches to the XC-VXC-10G card that you inserted in Step 4. The ACT/STBY LED on this card changes from amber to green.
8. Physically remove the now standby XCVT or XC10G card from the ONS 15454 and insert the second XC-VXC-10G card into the empty XCVT or XC10G card slot:

      1. Open the XCVT or XC10G card ejectors.
9. Slide the XCVT or XC10G card out of the slot.
10. Open the ejectors on the XC-VXC-10G card.
11. Slide the XC-VXC-10G card into the slot along the guide rails.
12. Close the ejectors.

The upgrade is complete when the second XC-VXC-10G card boots up and becomes the standby XC-VXC-10G card. In node view, both the active and standby cards change to XC-VXC-10G. **Note:** After you change out the first card, CTC continues to display the XCVT or XC10G card in both slots. The display does not change to reflect the XC-VXC-10G cards until the second card is upgraded and the XC-VXC-10G card in that slot boots up.

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

NTP-A296 Upgrade the TCC2 Card to the TCC2P Card

Purpose	This procedure upgrades the TCC2 card to the TCC2P card. The TCC2 and TCC2P cards support ONS 15454 Software R4.0 and later software versions.
Tools/Equipment	Two SONET TCC2P cards Two TCC2 cards
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Maintenance or higher

Note: Downgrading from TCC2P cards to TCC2 cards is not supported. Contact Cisco TAC for more information (see the Obtaining Documentation and Submitting a Service Request).

1. 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 for instructions.
2. Complete the "DLP-A60 Log into CTC" task. If you are already logged in, continue with Step 2.
3. Ensure that no alarms or abnormal conditions are present. See the "DLP-A298 Check the Network for Alarms and Conditions" task for instructions.
4. Before you begin the upgrade, complete the NTP-A108 Back Up the Database. Make sure ONS 15454 Software R4.0 or later is installed on the node. Refer to the release-specific software upgrade document. TCC2 and TCC2P cards are not compatible with releases prior to Software R4.0.
5. Physically replace the standby TCC2 card on the ONS 15454 with a TCC2P card:
      1. Check the LED on the faceplate. The ACT/STBY LED on the faceplate of the 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.
      2. Open the standby TCC2 card ejectors.
      3. Slide the card out of the slot. This raises the IMPROPRMVL alarm which will clear when the upgrade is complete.

4. Open the ejectors on the TCC2P card to be installed.
5. Slide the TCC2P card into the slot along the guide rails.
6. Close the ejectors.
7. In CTC node view, Ldg (loading) appears on the recently installed TCCP2 card.
   Note: During a TCC2 upgrade, the CONTBUS-IO-A or CONTBUS-IO-B TCC A (or B) To Shelf Slot Communication Failure alarm is raised as the TCC2 briefly loses communication with the backplane. This alarm usually clears after approximately 13 minutes. If the condition does not clear after a period, log onto http://www.cisco.com/tac for more information or call Cisco TAC at (800) 553-2447.
   Note: It takes approximately 10 minutes for the active TCC2 card to transfer the database to the newly installed TCC2P card. During this operation, the LEDs on the TCC2P flash Fail and then the active/standby LED flashes. When the transfer completes, the TCC2P 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 TCC2 card resets during the upgrade before the new TCC2P card has come to a full standby mode, remove the new TCC2P card immediately.

6. When the newly installed TCC2P card is in standby, go to the active TCC2 and right-click the card.
7. From the drop-down list, click **Reset Card**.
   Wait for the TCC2 card to reboot. The ONS 15454 switches the standby TCC2P card to active mode. The TCC2 card verifies that it has the same database as the TCC2P card and then switches to standby.
8. Verify that the remaining TCC2 card is now in standby mode (the ACT/STBY LED changes to amber).
9. Perform Step 5 to physically replace the remaining TCC2 card with the second TCC2P card.
   The ONS 15454 boots up the second TCC2P card. The second TCC2P card must also copy the database, which can take approximately 10 minutes. Do not remove the card from the shelf during a database transfer.
10. If power-related alarms occur after the second TCC2P card is installed, check the voltage on the backplane. See the "DLP-A33 Measure Voltage" task for instructions. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for information about clearing alarms.
    Stop. You have completed this procedure.

NTP-A93 Upgrade the DS3-12 Card to the DS3-12E Card

Purpose	This procedure upgrades the DS3-12 card to the DS3-12E card or the DS3N-12 card to the DS3N-12E card. 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.
Tools/Equipment	DS3-12E or DS3N-12E card
Prerequisite Procedures	NTP-A17 Install the Electrical Cards
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Note: 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 for protected cards; that is, the upgrade will cause a switch less than 50 ms in duration.

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 appear and then clear on their own; however, there should be no service-affecting (SA, Major, or Critical) alarms if you are upgrading protected cards. (Upgrading an unprotected card can be service affecting.) If any service-affecting alarms occur, Cisco recommends backing out of the procedure. See the <u>NTP-A254 Downgrade a DS3-12E/DS3NE Card to a DS3-12/DS3N-12 Card</u>.

1. Complete the <u>"DLP-A60 Log into CTC"</u> task. If you are already logged in, continue with Step 2.
2. According to local site practice, complete the <u>NTP-A108 Back Up the Database</u>.
3. Determine if the card you are upgrading is protected or unprotected:
    1. Protected cards are listed under Protection Groups on the **Maintenance > Protection** tab. The slot, port, and status (that is, Protect/Standby, Working/Active) of each card is listed in the Selected Group area.
    2. An unprotected card is not listed in the Protection Groups/Selected Group area on the **Maintenance > Protection** tab.

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

4. If the card you are upgrading is unprotected, skip this step and go to Step 5, ignoring references to the protect card and protect slot. If the card you are upgrading is protected, make sure the protect card is not active. If the card status is Protect/Active, perform a switch so that the working card becomes active:
    1. Double-click the protection group.
    2. Click the Protect/Active card.
    3. Click **Switch.**
    4. Click **Yes** in the confirmation dialog box.
5. Physically remove the protect DS3-12 or the protect DS3N-12 card:
    1. Open the DS3-12 or DS3N-12 card ejectors.
    2. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the upgrade is complete.
6. Right-click the protect slot and choose **Change Card** from the drop-down list.
7. Choose the new card (DS3-12E or DS3N-12E) from the Change to drop-down list.
8. Click **OK**.
9. Insert the new DS3-12E or DS3N-12E card into the protect slot:
    1. Open the ejectors on the DS3-12E or DS3N-12E card.
    2. Slide the DS3-12E or DS3N-12E card into the slot along the guide rails.
10. Close the ejectors.

    Wait for the IMPROPRMVL alarm to clear and the card to become standby.
11. If you switched traffic in Step 4, clear the switch:
    1. On the **Maintenance > Protection** tabs, double-click the protection group that contains the reporting card.
    2. Click the selected group.
    3. Click **Clear** and click **Yes** at the confirmation dialog box.
12. Repeat Steps 3 through 11 for the working card.

    Stop. You have completed this procedure.

NTP-A308 Upgrade Low-Density Electrical Cards to High-Density Electrical Cards

Purpose	This procedure upgrades DS-1 and DS3-12 electrical cards in a 1:N protection scheme (where N = 1 or 2) to high-density electrical cards (DS3/EC1-48, DS1/E1-56, and DS3XM-12 cards). This procedure also upgrades DS3XM-6 cards in a 1:1 protection scheme to DS3XM-12 cards, and EC-1 cards to DS3/EC1-48 cards.
Tools/Equipment	DS3/EC1-48 card(s), as needed DS3XM-12 card(s), as needed DS1/E1-56 card(s), as needed High-density shelf assembly (15454-SA-HD) High-density EIA (MiniBNC, UBIC-V, UBIC-H) installed
Prerequisite Procedures	NTP-A17 Install the Electrical Cards
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	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 appear and then clear on their own; however, there should be no Service-Affecting (SA, Major, or Critical) alarms if you are upgrading protected cards. (Upgrading an unprotected card can be service affecting.) If any service-affecting alarms occur, Cisco recommends backing out of the procedure.

1. Complete the "DLP-A60 Log into CTC" task. If you are already logged in, continue with Step 2.
2. According to local site practice, complete the NTP-A108 Back Up the Database.
3. As needed, complete the "DLP-A553 Upgrade DS3XM-6 Cards in a 1:1 Configuration to High-Density DS3XM-12 Electrical Cards" task.
4. As needed, complete the "DLP-A554 Upgrade EC-1 Cards in a 1:1 Configuration to DS3/EC1-48 Cards" task.
5. Repeat Steps 3 through 4 for additional electrical cards you want to upgrade. (If you are upgrading cards in a 1:N configuration, the card is typically in Slot 2/Slot 16.)
   Stop. You have completed this procedure.

NTP-A254 Downgrade a DS3-12E/DS3NE Card to a DS3-12/DS3N-12 Card

Purpose	This task downgrades a DS3-12E or DS3NE card. Downgrading can be performed to back out of an upgrade. The procedure for downgrading is the same as upgrading except you choose DS3-12 or DS3N-12 from the Change Card drop-down list.
Tools	None
Prerequisite Procedures	NTP-A17 Install the Electrical Cards

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

Note: All ports must be provisioned as UNFRAMED and have Path Trace disabled.

Note: Working cards must be downgraded before protect cards.

Tip: The procedure for downgrading is the same as upgrading except you choose DS3-12 or DS3N-12 from the Change Card drop-down list.

1. Complete the "DLP-A60 Log into CTC" task. If you are already logged in, continue with Step 2.
2. According to local site practice, complete the NTP-A108 Back Up the Database.
3. Determine if the card you are downgrading is protected or unprotected:
    1. A protected card is listed in the Protection Groups area on the **Maintenance > Protection** tab. The slot, port, and status (that is, Protect/Standby, Working/Active) of each card is listed in the Selected Group area.
    2. An unprotected card is not listed in the Protection Groups/Selected Group area in the **Maintenance > Protection** tab.

Caution! Traffic is lost during an upgrade on an unprotected card.

4. If the card you are upgrading is unprotected, skip this step and go to Step 5, ignoring references to the protect card and protect slot. If the card you are upgrading is protected, make sure that the protect card is not active. If the card status is Protect/Active, perform a switch so that the working card becomes active:
    1. Double-click the protection group.
    2. Click the Protect/Active card.
    3. Click **Switch** and **Yes** in the Confirmation dialog box.
5. Physically remove the working DS3-12E card or the working DS3N-12E card:
    1. Open the DS3-12E or DS3N-12E card ejectors.
    2. Slide the card out of the slot. This raises the IMPROPRMVL alarm, which will clear when the downgrade is complete.
6. Right-click the slot to be downgraded and choose **Change Card** from the drop-down list.
7. Choose **DS3-12** or **DS3N-12** from the Change to drop-down list.
8. Click **OK**.
9. Insert the DS3-12 or DS3N-12 card into the working slot:
    1. Open the ejectors on the DS3-12 or DS3N-12 card.
    2. Slide the DS3-12 or DS3N-12 card into the slot along the guide rails.
10. Close the ejectors. Wait for the IMPROPRMVL alarm to clear and the card to become active.
11. If you switched traffic in Step 4, clear the switch:
    1. In the **Maintenance > Protection** tabs, double-click the protection group that contains the reporting card.
    2. Click the selected group.
    3. Click **Clear** and click **Yes** in the confirmation dialog box.
12. Repeat Steps 3 through 11 to downgrade the protect card if applicable.

   Stop. You have completed this procedure.

NTP-A94 Upgrade OC-N Cards and Spans Automatically

Purpose	This procedure upgrades cards, two-fiber BLSR spans, four-fiber BLSR spans, path protection spans, and 1+1 protection group spans. The Span Upgrade Wizard only supports OC-N span upgrades. It does not support electrical upgrades.
Tools/Equipment	Higher-rate cards Compatible hardware necessary for the upgrade (for example, XC10G or XC-VXC-10G cards and OC-48 any slot [AS] cards) Attenuators might be needed for some applications
Prerequisite Procedures	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.
Required/As Needed	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. Statement 206

Caution! Do not perform any other maintenance operations, such as facility or terminal loopbacks, or add any circuits during a card or span upgrade.

Note: OC-N transmit and receive levels should be in their acceptable range as shown in the specifications for each card in Table 2-5.

Note: During upgrade, when replacing the PPMs, ensure that the reach of the PPMs match.

Note: During the upgrade, the IMPROPRMVL alarm might be raised. It will clear automatically.

Note: A four-port OC-3 to eight-port OC-3 upgrade, or an OC-12 to four-port OC-12 upgrade can only be performed from Slots 1 to 4 and 14 to 17 because the OC3-8 and OC12-4 card can only be installed in these slots. Ensure that the OC-3 and OC-12 cards are in these 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: The only cards that can be upgraded to a MRC-12 or MRC-2.5G-4 card are one-port OC-12 cards or one-port OC-48 cards. The port from the lower-speed card will be mapped to Port 1 on the MRC-12 or MRC-2.5G-4 card.

Note: BLSR 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-A278 Modify and Delete Overhead Circuits and Server Trails. To create circuits, see Create Circuits and VT Tunnels.

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

- Four-port OC-3 to eight-port OC-3
- Single-port OC-12 to four-port OC-12
- OC-48 to MRC-12
- OC-48 to MRC-2.5G-4
- OC-192 to OC192SR1/STM64IO Short Reach or OC192/STM64 Any Reach
  Valid span upgrades include:
- Single-port OC-12 to OC-48
- Single-port OC-12 to OC-192
- Single-port OC-12 to four-port OC-12
- Single-port OC-12 to MRC-12
- Single-port OC-12 to MRC-2.5G-4
- OC-48 to OC-192
- OC-48 to MRC-12
- OC-48 to MRC-2.5G-12
- OC-192 to OC192SR1/STM64IO Short Reach or OC192/STM64 Any Reach

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

2. Complete the "DLP-A60 Log into CTC" task. 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 OC-48 span unless XC10G or XC-VXC-10G cards are installed in the nodes at both ends of the span.
3. According to local site practice, complete the NTP-A108 Back Up the Database.
4. Ensure that no alarms or abnormal conditions (regardless of severity), including LOS, LOF, AIS-L, signal failure (SF), signal degrade (SD), and FORCED-REQ-RING are present. See the "DLP-A298 Check the Network for Alarms and Conditions" task 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.
5. In network view, right-click the span you want to upgrade.
6. Choose **Span Upgrade** from the drop-down list.
7. The first Span Upgrade dialog box appears (Figure 12-1). 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 in Step 2 of the wizard; because you cannot back out of an upgrade using 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 12-1: Span Upgrade Wizard

Figure 12-1: Span Upgrade Wizard   10
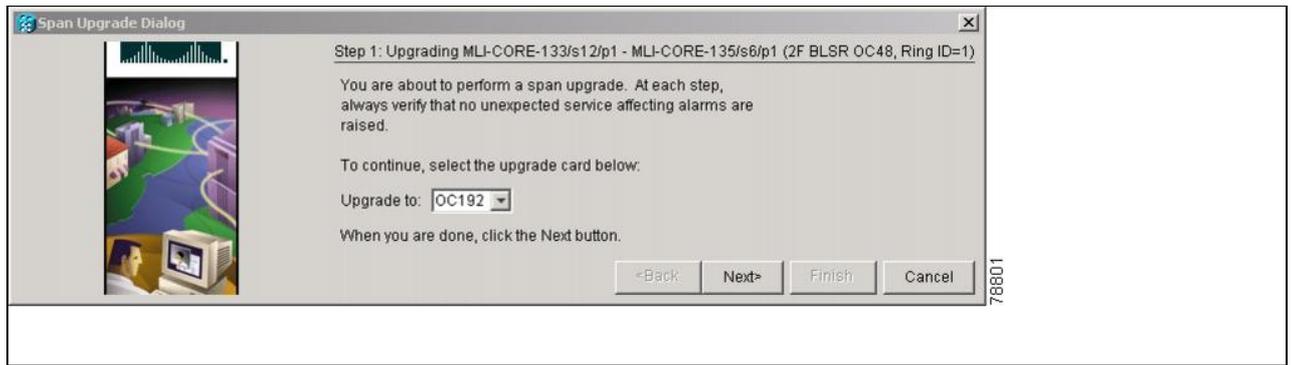
Caution! As indicated by the wizard, when installing cards you must wait for the cards to boot up and become active before proceeding to the next step. For the cards that support SFPs, prior to the installation of fiber the SFPs need to be checked for proper type(MM/SM/wavelength,etc).

> **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.

8. Repeat Steps 5 through 7 for additional spans in the ring.

Stop. You have completed this procedure.

NTP-A95 Upgrade OC-N Spans Manually

Purpose	This procedure upgrades OC-N speeds within BLSRs, path protection configurations, and 1+1 protection groups by upgrading OC-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).
Tools/Equipment	Replacement cards
Prerequisite Procedures	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.
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Provisioning or higher

Note: OC-N card transmit and receive levels should be in their acceptable range as shown in the specifications section for each card in Table 2-5.

Note: In this context, the word "span" represents the OC-N path between two nodes. The phrase "span endpoint" represents 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.

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
   ♦ Single-port OC-12 to MRC-12

- ◆ Single-port OC-12 to MRC-2.5G-4
- ◆ OC-48 to OC-192
- ◆ OC-192 to OC192SR1/STM64IO Short Reach or OC192/STM64 Any Reach

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

2. Complete the "DLP-A60 Log into CTC" task. If you are already logged in, continue with Step 3.
3. According to local site practice, complete the NTP-A108 Back Up the Database.
4. 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 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. Refer to the *Cisco ONS 15454 Troubleshooting Guide* for information about alarms.

5. Complete the appropriate task:

> - DLP-A293 Perform a Manual Span Upgrade on a Two-Fiber BLSR
> - DLP-A294 Perform a Manual Span Upgrade on a Four-Fiber BLSR
> - DLP-A295 Perform a Manual Span Upgrade on a Path Protection Configuration
> - DLP-A296 Perform a Manual Span Upgrade on a 1+1 Protection Group
> - DLP-A297 Perform a Manual Span Upgrade on an Unprotected Span
> **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:** 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 or XC-VXC-10G cards are installed in the nodes at both ends of the span.
> **Note:** A four-port 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 Slots 1 to 4 and 14 to17, because the OC3-8 and OC12-4 cards can only be installed in these slots. Ensure that the OC-3 and OC-12 cards are in these 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.

Stop. You have completed this procedure.