This chapter provides procedures for maintaining the Cisco ONS 15454 SDH.

Contents

Before You Begin

Before performing any of the following procedures, investigate all alarms and clear any trouble conditions. Refer to the *Cisco ONS 15454 SDH Troubleshooting Guide* as necessary.

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

1. NTP-D107 Inspect and Maintain the Air Filter-Complete as needed.
2. NTP-D108 Back Up the Database-Complete as needed.
3. NTP-D109 Restore the Database-Complete as needed.
4. NTP-D328 View and Manage OSI Information-Complete as needed.
5. NTP-D163 Restore the Node to Factory Configuration-Complete as needed to clear the database and upload a blank database and the latest software.
6. NTP-D312 Viewing the Audit Trail Records-Complete as needed.
7. NTP-D214 Off-Load the Audit Trail Record-Complete as needed.
8. NTP-D313 Off-Load the Diagnostics File-Complete as needed.

9. NTP-D231 Initiate or Clear an External Switching Command-Complete as needed to initiate a Force switch, Manual switch, lockout, or lock-on.
10. NTP-D112 Clean Fiber Connectors-Complete as needed.
11. NTP-D153 Reset a Card Using CTC-Complete as needed.
12. NTP-D215 View G-Series Ethernet Maintenance Information-Complete as needed.
13. NTP-D266 View E-Series Ethernet Maintenance Information-Complete as needed.
14. NTP-D233 Change the Node Timing Reference-Complete as needed.
15. NTP-D265 View the ONS 15454 SDH Timing Report-Complete as needed.
16. NTP-D229 Replace an In-Service Cross-Connect Card-Complete as needed.
17. NTP-D230 Replace the Fan-Tray Assembly-Complete as needed.
18. NTP-D345 Edit Network Element Defaults-Complete as needed to edit the factory-configured (default) network element (NE) settings for the Cisco ONS 15454 SDH.
19. NTP-D346 Import Network Element Defaults-Complete as needed to import the factory-configured (default) NE settings for the Cisco ONS 15454 SDH.
20. NTP-D347 Export Network Element Defaults-Complete as needed to export the factory-configured (default) NE settings for the Cisco ONS 15454 SDH.

NTP-D107 Inspect and Maintain the Air Filter

Purpose	This procedure explains how to inspect and maintain reusable air filters. It ensures that the air filter is free from dirt and dust, which allows optimum air flow and prevents dirt and dust from entering the shelf.
Tools/Equipment	Vacuum or detergent and water faucet, spare filter, pinned hex key tool
Prerequisite Procedures	None
Required/As Needed	Clean the filter every three to six months. Replace the air filter every two to three years.
Onsite/Remote	Onsite
Security Level	None

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! If you install the air filter below 15454E-CC-FTA, only filters with part numbers 700-23193-01 and 700-23194-01 can be used in this configuration.

Caution! Although the air filter can work with older fan trays if it is installed with either side facing up, Cisco recommends that you install it with the metal bracing facing up to preserve the surface of the filter. You must install the air filter with the metal bracing facing up with 15454E-CC-FTA.

Note: Avoid cleaning the air filter with harsh cleaning agents or solvents.

1. Verify that you are replacing a reusable air filter. The reusable filter is made of a gray, open-cell, polyurethane foam that is specially coated to provide fire and fungi resistance. NEBS 3E and later versions of the ONS 15454 SDH use a reusable air filter.
2. If the air filter is installed in the external filter brackets, slide the filter out of the brackets while being careful not to dislodge any dust that might have collected on the filter and proceed to Step 9. Figure 15-1 illustrates a reusable fan-tray air filter in an external filter bracket.
3. If the filter is installed beneath the fan tray and not in the external filter brackets, open the front door of the shelf assembly by completing the following substeps:
    1. Open the front door lock.

Turn the key counterclockwise to unlock the door and clockwise to lock it. (The ONS 15454 SDH comes with a pinned hex key for locking and unlocking the front door.)

2. Press the door button to release the latch.

3. Swing the door open.

4. (Optional) Remove the front door by completing the following substeps. If you do not want to remove the door, proceed to Step 5.

   1. Detach the ground strap from either the door or the chassis by removing one of the Kepnuts.

   2. Place the Kepnut back on the stud after the ground strap is removed to avoid misplacement.

   3. Secure the dangling end of the ground strap to the door or chassis with tape.

Figure 15-1: Reusable Fan-Tray Air Filter in an External Filter Bracket (Front Door Removed)

Fan tray filter
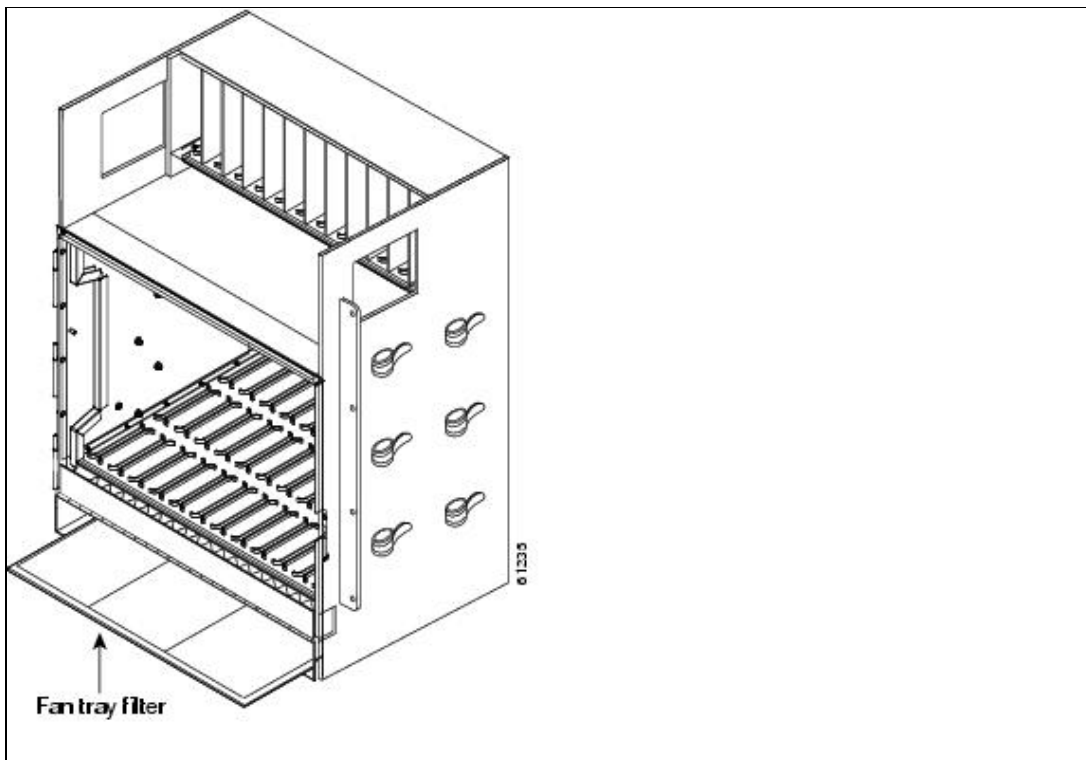
5. Push the outer side of the handles on the fan-tray assembly to expose the handles.

6. Pull the handles and slide the fan-tray assembly one half inch (12.7 mm) out of the shelf assembly and wait until the fans stop.

7. When the fans have stopped, pull the fan-tray assembly completely out of the shelf assembly.

8. Gently remove the air filter from the shelf assembly. Be careful not to dislodge any dust that might have collected on the filter.

9. Visually inspect the air filter material for dirt and dust.

10. If the reusable air filter contains a concentration of dirt and dust, replace the dirty air filter with a clean air filter (spare filters should be kept in stock) and reinsert the fan-tray assembly. Then, vacuum the dirty air filter or wash it under a faucet with a light detergent.

Caution! Do not leave the fan tray out of the chassis for an extended period of time because excessive heat can damage the ONS 15454 SDH cards.

Note: Cleaning should take place outside the operating environment to avoid releasing dirt and dust near the equipment.

11. If you washed the filter, allow it to completely air dry for at least eight hours. **Caution!** Do not put a damp filter back in the ONS 15454 SDH.

12. Replace the clean filter by completing the following substeps:
    1. If the air filter is installed in the external filter brackets, slide the dry air filter all the way to the back of the brackets to complete the procedure.
    2. If the filter is installed beneath the fan-tray assembly, remove the fan-tray assembly, and slide the dry/clean air filter into the recessed compartment at the bottom of the shelf assembly. Put the front edge of the air filter flush against the front edge of the recessed compartment. Push the fan tray back into the shelf assembly.

   Caution! If the fan tray does not slide all the way to the back of the shelf assembly, pull the fan tray out and readjust the position of the reusable filter until the fan tray fits correctly.

   Note: On a powered-up ONS 15454 SDH, the fans start immediately after the fan-tray assembly is correctly inserted.
13. To verify that the tray is plugged into the backplane, ensure that the LCD on the front of the fan-tray assembly is activated and displays node information.
14. Rotate the retractable handles back into their compartments.
15. If you replace the door, also reattach the ground strap.
16. Close and lock the door.

   Stop. You have completed this procedure.

NTP-D108 Back Up the Database

Purpose	This procedure stores a backup version of the TCC2/TCC2P (software) database on the workstation running Cisco Transport Controller (CTC) or on a network server.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	Required. Cisco recommends performing a database backup at approximately weekly intervals and prior to and after configuration changes.
Onsite/Remote	Onsite or remote
Security Level	Maintenance or higher

Note: You must back up and restore the database for each node on a circuit path in order to maintain a complete circuit.

Note: The following parameters are not backed up and restored: node name, IP address, subnet mask and gateway, and Internet Inter-ORB Protocol (IIOP) port. If you change the node name and then restore a backed up database with a different node name, the circuits map to the new node name. Cisco recommends keeping a record of the old and new node names.

1. Complete the <u>"DLP-D60 Log into CTC"</u> task at the node that you want to back up. If you are already logged in, proceed to Step 2.
2. In node view, click the **Maintenance > Database** tabs.
3. Click **Backup**.
4. Save the database on the workstation's hard drive or on network storage. Use an appropriate file name with the .db file extension; for example, database.db.
5. Click **Save**.
6. Click **OK** in the confirmation dialog box.

   Stop. You have completed this procedure.

Figure 15-1: Reusable Fan-Tray Air Filter in an External Filter Bracket (Front Door Removed)　　4

NTP-D109 Restore the Database

Purpose	This procedure restores the TCC2/TCC2P software database, either partially or completely.
Tools/Equipment	None
Prerequisite Procedures	NTP-D108 Back Up the Database
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser only

Caution! E1000-2 cards lose traffic for approximately 90 seconds when an ONS 15454 SDH database is restored. Traffic is lost during the period of spanning tree reconvergence. The CARLOSS alarm appears and clears during this period.

Caution! If you are restoring the database on multiple nodes, wait approximately one minute after the TCC2/TCC2P reboot has completed on each node before proceeding to the next node.

Caution! TCC2P cards can be used in single IP address (repeater) and dual IP address (secure) mode. The secure mode has advanced features that affect database restore: A database from a secure node cannot be loaded on an unsecure repeater node. An unsecure database can be loaded onto a secure node but the database will follow the node characteristics (that is, become secure). A secure database cannot be loaded onto a TCC2; the restore is disallowed because the TCC2 card cannot boot in secure mode. For more information about the dual IP secure mode, refer to the NTP-D169 Set Up CTC Network Access. Also refer to the" Management Network Connectivity" chapter in the *Cisco ONS 15454 SDH Reference Manual*.

Caution! To avoid a node IP and secure IP ending up in the same domain after restoring a database, ensure that the node IP stored in the database differs in domain from that of the node in repeater mode. Also, after restoring a database, ensure that the node IP and secure IP differ in domain.

Note: The following parameters are not backed up and restored: node name, IP address, subnet mask and gateway, and IIOP port. If you change the node name and then restore a backed up database with a different node name, the circuits map to the new renamed node. Cisco recommends keeping a record of the old and new node names.

Note: ML-Series Ethernet cards must be reset after a database restore. For more information about restoring these cards, refer to the *Cisco ONS 15454 and Cisco ONS 15454 SDH Ethernet Card Software Feature and Configuration Guide*.

1. Complete the "DLP-D60 Log into CTC" task at the node where you are restoring the database. If you are already logged in, continue with Step 2.
2. Ensure that no ring or span (four-fiber only) switch events are present; for example, RING-SW-EAST, RING-SW-WEST, SPAN-SW-EAST, or SPAN-SW-WEST. In network view, click the **Conditions** tab and click **Retrieve** to view a list of conditions.
3. If switch events need to be cleared, in node view click the **Maintenance > MS-SPRing** tabs and view the West Switch and East Switch columns.
4. If a switch event is present, choose **CLEAR** from the drop-down list and click **Apply**.
   > **Note:** A switch, if present, might have been caused by a standing Wait to Restore (WTR) condition.
   > When a switch event is cleared, NO COMMAND appears in the column to indicate that the switch event is no longer in effect.
5. In node view, click the **Maintenance > Database** tabs (Figure 15-2).

Figure 15-2: Restoring the TCC2/TCC2P Database
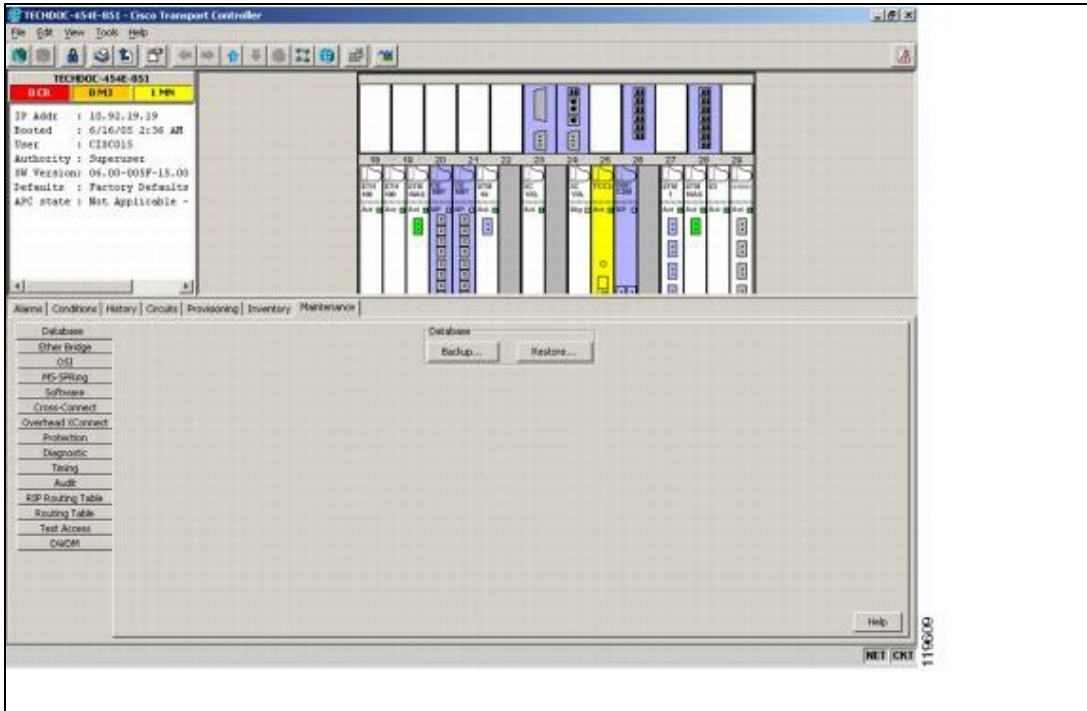
6. Click **Restore**.
7. Locate the database file stored on the workstation hard drive or on network storage.

> **Note:** To clear all existing provisioning, locate and upload the database found on the latest ONS 15454 SDH software CD.

8. Click the database file to highlight it.
9. Click **Open**. The DB Restore dialog box appears.

Caution! Opening a restore file from another node or from an earlier backup might affect traffic on the login node.

10. If you need a complete database restore, check the **Complete database (System and Provisioning)** checkbox. Continue with Step 12.

Note: Complete database restore may be used only on a node that is removed from the network, and does not carry live provisioning traffic. This operation needs to be done by a live operator onsite, and must not use a remote connection.

11. If you need to restore only the provisioning database (partial restore), do not check the **Complete database (System and Provisioning)** checkbox.
12. Click **Ok**.

The Restore Database dialog box monitors the file transfer (Figure 15-3).

Figure 15-3: Restoring the Database-In-Process Notification

Figure 15-2: Restoring the TCC2/TCC2P Database   6
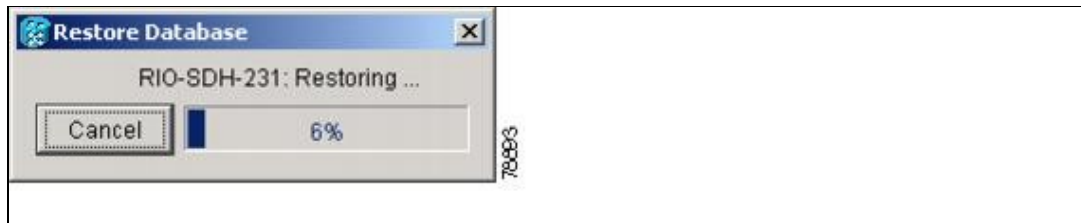
13. Wait for the file to complete the transfer to the TCC2/TCC2P card.
14. Click **OK** when the "Lost connection to node, changing to Network View" dialog box appears. Wait for the node to reconnect.
15. If you cleared a switch in Step 3, reapply the switch as needed.
   Stop. You have completed this procedure.

NTP-D328 View and Manage OSI Information

Purpose	This procedure allows you to view and manage Open System Interconnection (OSI), including the End System-to-Intermediate System (ES-IS) and Intermediate System-to-Intermediate System (IS-IS) routing information tables, Target Identifier Address Resolution Protocol (TARP) data cache, and manual area table.
Tools/Equipment	None
Prerequisite Procedures	NTP-D108 Back Up the Database NTP-D278 Set Up Computer for CTC NTP-D326 Provision OSI
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

Note: Additional information about the ONS 15454 SDH implementation of OSI is provided in the "Management Network Connectivity" chapter of the *Cisco ONS 15454 SDH Reference Manual*.

1. Complete the "DLP-D60 Log into CTC" task. If you are already logged in, continue with Step 2.
2. Perform any of the following tasks as needed:
   ♦ DLP-D183 View IS-IS Routing Information Base
   ♦ DLP-D184 View ES-IS Routing Information Base
   ♦ DLP-D185 Manage the TARP Data Cache
   Stop. You have completed this procedure.

NTP-D163 Restore the Node to Factory Configuration

Purpose	This procedure reinitializes the ONS 15454 SDH using the CTC reinitialization tool. Reinitialization uploads a new software package to the TCC2/TCC2P cards, clears the node database, and restores the factory default parameters.
Tools/Equipment	ONS 15454 SDH System Software CD, Version 8.5 JRE 5.0 is required to log into the node at the completion of the reinitialization. The reinitialization tool can run on JRE 1.3.1_02, JRE 1.4.2, or JRE 5.0.
Prerequisite Procedures	NTP-D108 Back Up the Database

Figure 15-3: Restoring the Database-In-Process Notification   7

NTP-D278 Set Up Computer for CTC

And one of the following:

- NTP-D260 Set Up CTC Computer for Local Craft Connection to the ONS 15454 SDH
- NTP-D261 Set Up a Computer for a Corporate LAN Connection to the ONS 15454 SDH

Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	Superuser only

Caution! Cisco strongly recommends that you keep different node databases in separate folders. This is because the reinitialization tool chooses the first product-specific software package in the specified directory if you use the Search Path field instead of the Package and Database fields. You might accidentally copy an incorrect database if multiple databases are kept in the specified directory.

Caution! Restoring a node to the factory configuration deletes all cross-connects on the node.

Caution! Cisco recommends that you save the node database to safe location if you will not be restoring the node using the database provided on the software CD.

Note: The following parameters are not backed up and restored when you delete the database and restore the factory settings: node name, IP address, subnet mask and gateway, and IIOP port. If you change the node name and then restore a backed up database with a different node name, the circuits map to the new renamed node. Cisco recommends keeping a record of the old and new node names.

1. If you need to install or replace one or more TCC2/TCC2P cards, see the "DLP-D332 Install the TCC2/TCC2P Cards" task.
2. If you are using Microsoft Windows, complete the "DLP-D244 Use the Reinitialization Tool to Clear the Database and Upload Software (Windows)" task.
3. If you are using UNIX, complete the "DLP-D245 Use the Reinitialization Tool to Clear the Database and Upload Software (UNIX)" task.

Stop. You have completed this procedure.

NTP-D312 Viewing the Audit Trail Records

Purpose	This procedure allows you to view audit trail records. Audit trail records are useful for maintaining security, recovering lost transactions, and enforcing accountability. Accountability refers to tracing user activities; that is, associating a process or action with a specific user.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "DLP-D60 Log into CTC" task at the node where you want to view the audit trail log. If you are already logged in, continue with Step 2.
2. In node view, click the **Maintenance > Audit** tabs.
3. Click **Retrieve**.

A window containing the most recent Audit Trail records appears as shown in Figure 15-4.

Figure 15-4: Viewing the Audit Trail Records
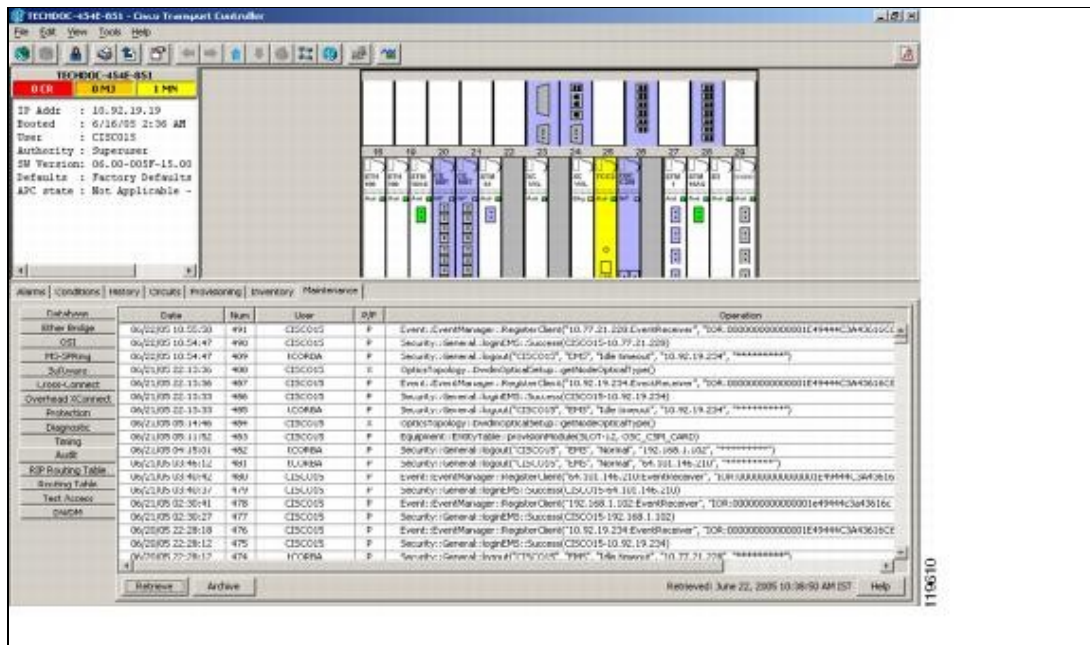
A definition of each column in the Audit Trail log is listed in Table 15-1.

Table 15-1: Audit Trail Column Definitions

Column	Definition
Date	Date when the action occurred in the format MM/dd/yy HH:mm:ss
Num	Incrementing count of actions
User	User ID that initiated the action
P/F	Pass/Fail (that is, whether or not the action was executed)
Operation	Action that was taken

4. Right-click the column headings if you want to display the list in ascending-to-descending or descending-to-ascending order.
5. Left-click the column heading if you want to display the following options:

· Reset Sorting-Resets the column to the default setting.
· Hide Column-Hides the column from view.
· Reset Columns Order/Visibility-Displays all hidden columns.
· Row Count-Provides a numerical count of log entries.
6. Shift-click the column heading if you want to display an incrementally sorted list.

Stop. You have completed this procedure.

NTP-D214 Off-Load the Audit Trail Record

Purpose	This procedure describes how to off-load up to 640 audit trail log entries into a local or network drive file to maintain a record of actions performed for the node. If the audit trail log is not off-loaded, the oldest entries are overwritten after the log reaches capacity.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Provisioning or higher

1. Complete the "DLP-D60 Log into CTC" task at the node where you want to off-load the audit trail log. If you are already logged in, continue with Step 2.
2. In node view, click the **Maintenance > Audit** tabs.
3. Click **Retrieve**.
4. Click **Archive**.
5. In the Archive Audit Trail dialog box, navigate to the directory (local or network) where you want to save the file.
6. Enter a name in the File Name field.
   > You do not have to give the archive file a particular extension. It is readable in any application that supports text files, such as WordPad, Microsoft Word (imported), etc.
7. Click **Save**.
   > The 640 entries are saved in this file. Subsequent entries continue with the next number in the sequence, rather than starting over.
   > **Note:** Archiving does not delete entries from the CTC audit trail log. However, entries can be self-deleted by the system after the log maximum is reached. If you archived the entries, you cannot reimport the log file back into CTC and will have to view the log in a different application.

   Stop. You have completed this procedure.

NTP-D313 Off-Load the Diagnostics File

Purpose	This procedure describe how to off-load a diagnostic file. The diagnostic file contains a set of debug commands run on a node and its results. This file is useful to Cisco Technical Support (TAC) when troubleshooting problems with the node.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Maintenance or higher

1. Complete the "DLP-D60 Log into CTC" task at the node where you want to off-load the diagnostics file. If you are already logged in, continue with Step 2.
2. In node view, click the **Maintenance > Diagnostic** tabs.

3. Click **Retrieve Tech Support Log**.
4. In the Saving Diagnostic File dialog box, navigate to the directory (local or network) where you want to save the file.
5. Enter a name in the File Name field.
> You do not have to give the archive file a particular extension. It is a compressed file (gzip) that can be unzipped and read by Cisco Technical Support.
6. Click **Save**.
> The Get Diagnostics status window shows a progress bar indicating the percentage of the file being saved, then shows "Get Diagnostics Complete."
7. Click **OK**.

Stop. You have completed this procedure.

NTP-D231 Initiate or Clear an External Switching Command

Purpose	This procedure applies an external switching command (Force, Manual, Lock On, and Lock Out) to optical cards, electrical cards, subnetwork connection protection (SNCP) rings, and multiplex section-shared protection rings (MS-SPRings).
Tools/Equipment	None
Prerequisite Procedures	NTP-D170 Create Protection Groups
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Maintenance or higher

1. Complete the "DLP-D60 Log into CTC" task at the node where you want to initiate an external switching command. If you are already logged in, continue with Step 4.
2. As needed, complete the "DLP-D43 Initiate an Optical Protection Switch" task.
3. As needed, complete the "DLP-D44 Initiate an Electrical Protection Switch" task.
4. To prevent traffic on a working or protect card from switching to the other card in the pair, complete the "DLP-D201 Apply a Lock-On" task.
5. To switch traffic from a working or protect card to the other card in the pair to prevent revertive switching, complete the "DLP-D202 Apply a Lockout" task.
> **Note:** A combination of lock-on and lockout is allowed in 1:1 and 1:N protection; for example, a lock-on applied to the working card and a lockout on the protect card is permissible.
6. To remove a lock-on or lockout and return a protection group to its usual switching method, complete the "DLP-D203 Clear a Lock-On or Lockout" task.
7. Complete the "DLP-D303 Initiate an MS-SPRing Force Ring Switch" task as needed.
8. Complete the "DLP-D194 Clear an MS-SPRing Force Ring Switch" task as needed.
9. Complete the "DLP-D197 Initiate an SNCP Force Switch" task as needed.
10. Complete the "DLP-D198 Clear an SNCP Force Switch" task as needed.
11. To lock out traffic on an MS-SPRing span, complete the "DLP-D299 Initiate an MS-SPRing Span Lockout" task.
12. Complete the "DLP-D300 Clear an MS-SPRing Span Lockout" task as needed.

Stop. You have completed this procedure.

NTP-D112 Clean Fiber Connectors

Purpose	This procedure cleans the fiber connectors.
Tools/Equipment	Inspection microscope Compressed air/duster Type A" Fiber Optic Connector Cleaner (CLETOP reel) Isopropyl alcohol 70 percent or higher Optical swab Optical receiver cleaning stick
Prerequisite Procedures	None
Required/As Needed	Required
Onsite/Remote	Onsite
Security Level	None

Warning! Invisible laser radiation may be emitted from disconnected fibers or connectors. Do not stare into beams or view directly with optical instruments. Statement 1051

1. Using an inspection microscope, inspect each fiber connector for dirt, cracks, or scratches.
2. Replace any damaged fiber connectors.
   Note: Replace all dust caps whenever the equipment is unused for 30 minutes or more.
3. Complete the "DLP-D204 Scope and Clean Fiber Connectors and Adapters with Alcohol and Dry Wipes" task as necessary.
4. Complete the "DLP-D205 Clean Fiber Connectors with CLETOP" task as necessary.
5. Complete the "DLP-D206 Clean the Fiber Adapters" task as necessary.

Caution! Do not reuse the optical swabs. Keep unused swabs off of work surfaces.

Stop. You have completed this procedure.

NTP-D153 Reset a Card Using CTC

Purpose	This procedure resets TCC2/TCC2P, electrical, optical, Ethernet, and FC_MR-4 cards.
Tools/Equipment	None
Prerequisite Procedures	One of the following procedures: • DLP-D332 Install the TCC2/TCC2P Cards • NTP-D16 Install STM-N Cards and Connectors • NTP-D17 Install the Electrical Cards • NTP-D18 Install Ethernet Cards and Connectors • NTP-D286 Install the FC_MR-4 Cards
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser only

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

1. Complete the <u>"DLP-D60 Log into CTC"</u> task at the node where you are performing the software reset. If you are already logged in, continue with Step 2.
2. Complete the <u>"DLP-D37 Reset a TCC2/TCC2P Card Using CTC"</u> task as needed.
3. Complete the <u>"DLP-D38 Reset a Traffic Card in CTC"</u> task as needed to reset an optical card, electrical card, FC_MR-4 card, or G-Series, E-Series, CE-1000-4, or ML-Series Ethernet card.
4. Complete the <u>"DLP-D102 Hard-Reset a CE-100T-8 Card Using CTC"</u> task as needed.
5. Complete the <u>"DLP-D103 Soft-Reset a CE-100T-8 Card Using CTC"</u> task as needed.

Stop. You have completed this procedure.

NTP-D215 View G-Series Ethernet Maintenance Information

Purpose	This procedure enables you to view loopback, bandwidth, and J1 path trace information on a selected G-Series Ethernet card.
Tools/Equipment	None
Prerequisite Procedures	NTP-D18 Install Ethernet Cards and Connectors
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

1. Complete the <u>"DLP-D60 Log into CTC"</u> task. If you are already logged in, continue with Step 2.
2. In node view, double-click a G-Series Ethernet card. The card view appears.
3. To view loopback status, click the **Maintenance > Loopback** tabs.
   The Admin State and Service State columns identify the port number and current service state. Administrative states include Unlocked; Locked,disabled; Unlocked,maintenance; and Unlocked, automaticInService. Service states include Locked-Enabled, loopback & maintenance; Locked-Enabled, disabled; Locked-Enabled, maintenance; Unlocked-Disabled, automaticInService; and Unlocked-Enabled. The Loopback Type column identifies the type of loopback (None, Terminal [Inward], or Facility [Line]) applied to each port on the card.
4. To view Ethernet bandwidth utilization, click the **Maintenance > Bandwidth** tabs.
5. Click **Retrieve Bandwidth Usage**.
   The current STS bandwidth usage information appears.
6. To view J1 path trace information, click the **Maintenance > Path Trace** tabs and then click **Retrieve**.
   Stop. You have completed this procedure.

NTP-D266 View E-Series Ethernet Maintenance Information

Purpose	This procedure enables you to view spanning tree, MAC address, and and trunk utilization information on a selected E-Series Ethernet card.
Tools/Equipment	None
Prerequisite Procedures	NTP-D18 Install Ethernet Cards and Connectors
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

1. Complete the <u>"DLP-D60 Log into CTC"</u> task. If you are already logged in, continue with the next step.

2. To view spanning tree information, in node view click the **Maintenance > Ether Bridge > Spanning Trees** tabs.
3. As needed, complete the following tasks:
   ◆ DLP-D309 View Ethernet MAC Address Table
   ◆ DLP-D310 View Ethernet Trunk Utilization
   Stop. You have completed this procedure.

NTP-D233 Change the Node Timing Reference

Purpose	This procedure enables you to switch the node timing reference to enable maintenance on a timing reference or to return the node timing to normal operation.
Tools/Equipment	None
Prerequisite Procedures	NTP-D28 Set Up Timing
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Maintenance or higher

1. Complete the **"DLP-D60 Log into CTC"** task at the node where you want to change the timing reference. If you are already logged in, continue with Step 2.
2. Complete the **"DLP-D368 Manual or Force Switch the Node Timing Reference"** task as needed.
3. Complete the **"DLP-D369 Clear a Manual or Force Switched Node Timing Reference"** task as needed.
   Stop. You have completed this procedure.

NTP-D265 View the ONS 15454 SDH Timing Report

Purpose	This procedure displays a current status report of the ONS 15454 SDH timing references.
Tools/Equipment	None
Prerequisite Procedures	NTP-D28 Set Up Timing
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Retrieve or higher

1. Complete the **"DLP-D60 Log into CTC"** task at the node where you want to view a report of the node timing references. If you are already logged in, continue with Step 2.
2. Click the **Maintenance > Timing > Report** tabs.
3. In the Timing Report area, you can view node timing information. The date and time of the report appear at the top of the report. The time stamp is the same as the alarms time stamp and can be configured using the **"DLP-D112 Display Alarms and Conditions Using Time Zone"** task. Table 15-2 describes the report fields and entries.
4. To update the report, click the **Reset** button.

Table 15-2: ONS 15454 SDH Timing Report

Item	Description	Options	Option Descriptions
Clock	Indicates the timing clock. The report	NE	The node timing clock.
		BITS-1 Out	The BITS-1 Out timing clock.

		BITS-2 Out	The BITS-2 Out timing clock.
Status	Indicates the status of the timing clock.	INIT_STATE	The timing reference has not been provisioned. For an NE reference, this status appears just before the first provisioning messages when the TCC2/TCC2P is booting. Timing is provisioned to the internal clock of the node.
		HOLDOVER_STATE	The clock was locked onto a valid timing reference for more than 140 seconds when a failure occurred. Holdover state timing is a computation based on timing during Normal state combined with the node's internal clock. The node holds onto this frequency until the valid reference is restored. This status appears for NE references only.
		FREERUN_STATE	The node is running off its internal clock without any modification except the calibrated value to bring timing to 0 PPM. Free-run state can occur when a Force switch to the Internal clock is initiated, when all references fail without the 140 seconds of holdover data, or when only Internal timing references are defined. This status appears for NE references only.
		NO_SYNC_STATE	A synchronization timing reference is not defined. BITS-1 Out or BITS-2 Out default to this status until an STM-N card is defined as its reference on the Provisioning > Timing tab. This status appears for external references only.
		NE_SYNCH_STATE	BITS-1 Out and BITS-2 Out use the same timing source as the NE. This is displayed when NE Reference is selected for BITS-1 Out and BITS-2 Out in the Reference List on the Provisioning > Timing tab.
		NORMAL_STATE	The timing reference is locked onto one of its provisioned references. The reference cannot be Internal or no sync state.
		FAST_START_STATE	The node has switched references, but the reference is too far away to

Table 15-2: ONS 15454 SDH Timing Report   15

			reach Normal state within an acceptable amount of time. Fast Start is a fast acquisition mode to allow the node to quickly acquire the reference. After it achieves this goal, the node progresses to the Normal state.
		FAST_START_FAILED_STATE	A timing reference is too far away to reach in Normal state. The Fast Start state could not acquire sufficient timing information within the allowable amount of time.
Status Changed At	Date and time of the last status change.	-	-
Switch Type	Type of switch.	AUTOMATIC	The timing switch was system-generated.
		Manual	The timing switch was a user-initiated Manual switch.
		Force	The timing switch was user-initiated Force switch.
Reference	Indicates the timing reference.	Three timing references (Ref-1, Ref-2, and Ref-3) are available on the Provisioning > Timing tab.	These options indicate the timing references that the system uses, and the order in which they are called. (For example, if Ref-1 becomes available, Ref-2 is called.)
Selected	Indicates whether the reference is selected.	Selected references are indicated with an X.	-
Facility	Indicates the timing facility provisioned for the reference on the Provisioning > Timing tab.	BITS-1	The timing facility is a building integrated timing supply (BITS) clock attached to the node's BITS-1 pins.
		BITS-2	The timing facility is a BITS clock attached to the node's BITS-2 pins.
		STM-N card with port number	If the node is set to line timing, the STM-N card and port provisioned as the timing reference.
		Internal clock	The node is using its internal clock.
State	Indicates the timing reference state.	unlocked	The timing reference is operational.
		locked	The timing reference is not operational.
Condition	Indicates the timing reference condition.	OKAY	The reference is valid to use as a timing reference.
		OOB	Out of bounds; the reference is not valid and cannot be used as a timing reference, for example, a BITS clock is disconnected.
		-	-

Table 15-2: ONS 15454 SDH Timing Report 16

Condition Changed	Indicates the date and time of the last status change in MM/DD/YY HH:MM:SS format.		
SSM	Indicates whether synchronization status messaging (SSM) is enabled for the timing reference.	Enabled	SSM is enabled.
		Disabled	SSM is not enabled.
SSM Quality	Indicates the SSM timing quality.	8 to 10 SSM quality messages might be displayed.	For a list of SSM message sets, see the "Timing" chapter in the *Cisco ONS 15454 SDH Reference Manual*.
SSM Changed	Indicates the date and time of the last SSM status change in MM/DD/YY HH:MM:SS format.	-	-

Stop. You have completed this procedure.

NTP-D229 Replace an In-Service Cross-Connect Card

Purpose	This procedure replaces an in-service (Unlocked-enabled) cross-connect card.
Tools/Equipment	None
Prerequisite Procedures	DLP-D333 Install the XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G Cards
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
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! Removing any active card from the ONS 15454 SDH can result in traffic interruption. Use caution when replacing cards and verify that only standby cards are being replaced. An improper removal (IMPROPRMVL) alarm is raised when a card reseat is performed, unless the card is first deleted in CTC. The alarm clears after the card replacement is complete.

1. Complete the "DLP-D60 Log into CTC" task at the node where you want to replace the card.
2. From the View menu, choose **Go to Network View**.
3. Click the **Alarms** tab and complete the following substeps:
    1. Verify that the alarm filter is not on. See the "DLP-D227 Disable Alarm Filtering" task as necessary.
    2. Verify that no unexplained alarms appear on the network. If unexplained alarms appear, resolve them before continuing. Refer to the *Cisco ONS 15454 SDH Troubleshooting Guide* if necessary.
4. Determine the active XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G card. The ACT/STBY LED of the active card is green. The ACT/STBY LED of the standby card is amber.
    Note: You can also place the cursor over the card graphic to display a popup identifying the card as active or standby.
5. If you want to replace the active card, you must first switch it to standby by completing the following

substeps. If you want to replace the standby card, skip this step and continue with Step 6:
1. In the node view, click the **Maintenance > Cross-Connect** tabs.
2. In the Cross Connect Cards area, choose **Switch**.
3. Click **Yes** in the Confirm Switch dialog box.
    Note: After the active XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G goes into standby, the original standby slot becomes active. This causes the ACT/STBY LED to become green on the former standby card.
6. Physically remove the standby XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G card from the ONS 15454 SDH.
7. Insert the replacement XC-VXL-10G, XC-VXL-2.5G, or XC-VXC-10G card into the empty slot.
    The replacement card boots up and becomes ready for service after approximately one minute.
    Stop. You have completed this procedure.

NTP-D230 Replace the Fan-Tray Assembly

Purpose	This procedure replaces a malfunctioning fan-tray assembly (FTA).
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite
Security Level	None

Caution! Do not force an FTA into place. Doing so can damage the connectors on the fan tray and/or the connectors on the back panel of the shelf assembly.

Caution! 15454E-CC-FTA is compatible with Software R4.0 and greater.

Caution! As with the FTA3, the 15454E-CC-FTA Fan Fail LED on the front of the fan-tray assembly illuminates when one or more fans fail to indicate that a fan-tray assembly or AIP replacement is required. But the Fan Fail LED on the 15454E-CC-FTA will also illuminate when only one power source is connected to the chassis, and or any fuse blows. In such conditions, the Fan Alarm is triggered and the fans run at maximum speed.

Note: To replace the FTA, it is not necessary to move any of the cable management facilities.

1. Review Table 15-3 to ensure that you have compatible components when replacing the FTA and note the alarms that will occur when an incompatible combination of hardware is installed.
    Note: If you need to determine the hardware that has been installed on a node, click the **Inventory** tab in node view.

Table 15-3: Incompatibility Alarms

Shelf Assembly [1]	Fan Tray[2]	10G Cards[3]	Ethernet Cards[4]	Alarms
15454E-SA-ETSI	2A	No	-	None
15454E-SA-ETSI	2A	Yes	-	Mismatch of Equipment Attributes (MEA) on 10G
15454E-SA-ETSI	2A	No	-	None
15454E-SA-ETSI	2A	Yes	-	MEA on 10G
15454E-SA-ETSI	5A	No	-	MEA on fan tray
15454E-SA-ETSI	5A	Yes	-	MEA on fan tray and 10G cards

15454E-SA-ETSI	5A	No	-	None
15454E-SA-ETSI	5A	Yes	-	MEA on 10G
ETSI	2A	No	-	None
ETSI	2A	Yes	2.5G compatible	MEA on fan tray or Ethernet
ETSI	2A	Yes	10G compatible	MEA on fan tray
ETSI	2A	No	Either	None
ETSI	2A	Yes	2.5G compatible	MEA on fan tray, Ethernet
ETSI	2A	Yes	10G compatible	MEA on fan tray
ETSI	5A	Yes	2.5G compatible	MEA on Ethernet
ETSI	5A	No	Either	None
ETSI	5A	Yes	Either	None

1. 15454E-SA-ETSI (P/N: 800-08708-XX) = ONS 15454 SDH Release 3.3 and later shelf assembly.

2. 5A Fan Tray = 15454E-FTA-60V, 15454E-CC-FTA; 2A Fan Tray = 15454E-FTA-48V.

3. 10G cards include the XC-VXC-10G, XC-VXL-10G, STM-64, and STM-16 any slot (AS).

4. 2.5G indicates cards compatible with the XC-VXL-2.5G cross-connect card: E100T-12, E1000-2, E100T-G, E1000-2-G, G1K-4, ML100T-12, ML1000-2. 10G indicates cards compatible with the XC-VXC-10G and XC-VXL-10G cross-connect cards: E100T-G, E1000-2-G, G1K-4, ML100T-12, ML1000-2.

2. Open the front door of the shelf assembly by completing the following substeps:
   1. Open the front door lock.

      The ONS 15454 SDH comes with a pinned hex key for locking and unlocking the front door. Turn the key counterclockwise to unlock the door and clockwise to lock it.
   2. Press the door button to release the latch.
   3. Swing the door open.
3. (Optional) Remove the front door by completing the following substeps. If you do not want to remove the door, proceed to Step 4.
   1. Detach the ground strap from either the door or the chassis by removing one of the Kepnuts.
   2. Place the Kepnut back on the stud after the ground strap is removed to avoid misplacement.
   3. Secure the dangling end of the ground strap to the door or chassis with tape.
4. Push the outer side of the handles on the fan-tray assembly to expose the handles.
5. Fold out the retractable handles at the outside edges of the fan tray.
6. Pull the handles and slide the fan-tray assembly one half inch (12.7 mm) out of the shelf assembly and wait until the fans stop.
7. When the fans have stopped, pull the fan-tray assembly completely out of the shelf assembly. Figure 15-5 shows the location of the fan tray.

Figure 15-5: Removing or Replacing the Fan-Tray Assembly (Front Door Removed)

Table 15-3: Incompatibility Alarms   19
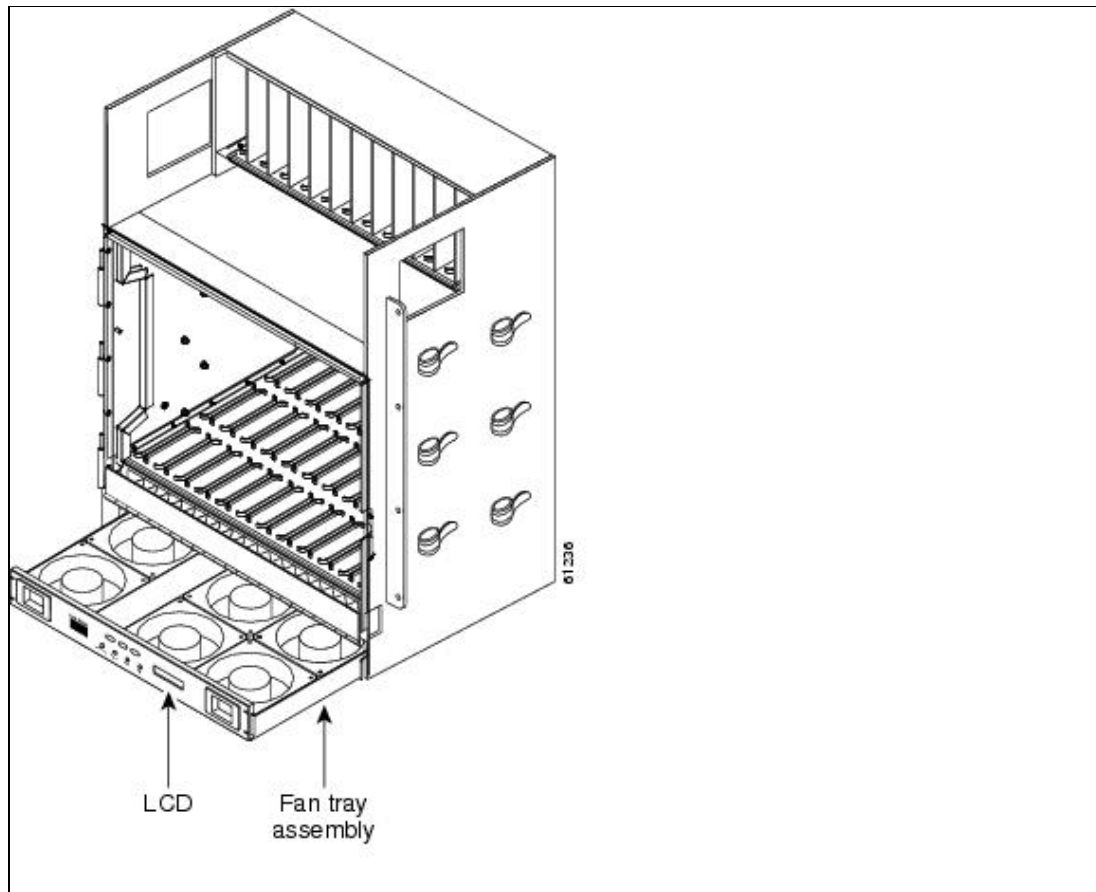
8. If you are replacing the fan-tray air filter and it is installed beneath the fan-tray assembly, slide the existing air filter out of the shelf assembly and replace it before replacing the fan-tray assembly.

For information on the fan-tray air filter, see the <u>NTP-D107 Inspect and Maintain the Air Filter</u>.

9. Slide the new fan tray into the shelf assembly until the electrical plug at the rear of the tray plugs into the corresponding receptacle on the backplane.
10. To verify that the tray has plugged into the backplane, check that the LCD on the front of the fan tray is activated.
11. Replace the door and reattach the ground strap.
Stop. You have completed this procedure.

NTP-D345 Edit Network Element Defaults

Purpose	This procedure edits factory-configured NE defaults using the NE Defaults editor. The new defaults can either be applied only to the node on which they are edited or exported to a file and imported for use on other nodes.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser only

Figure 15-5: Removing or Replacing the Fan-Tray Assembly (Front Door Removed)   20

Note: For a list of card and node default settings, refer to the "Network Element Defaults" appendix in the *Cisco ONS 15454 SDH Reference Manual*. To change card settings individually (that is, without changing the defaults), see Change Card Settings. To change node settings, see Change Card Settings.

1. Complete the <u>"DLP-D60 Log into CTC"</u> task CTC at the node where you want to edit NE defaults.
2. Click the **Provisioning > Defaults** tabs.
3. Under Defaults Selector, choose a card type (if editing card-level defaults), **CTC** (if editing CTC defaults), or **NODE** (if editing node-level defaults). Click the node name (at the top of the Defaults Selector column) to display all available NE defaults in the Default Name column. To selectively display just the defaults for a given card type, for node-level, or for CTC-level, you can drill down the Defaults Selector menu structure.
4. Locate a default that you want to change in the Default Name column.
5. Click the **Default Value** column for the default property you are changing and either choose a value from the drop-down list (when available), or type the desired new value.
   > **Note:** If you click **Reset** before you click **Apply**, all values will return to their original settings.
6. Click **Apply**. (If it is unavailable, click in the **Default Name** column to activate the button.) You can modify multiple default values before applying the changes.
   > A pencil icon will appear next to any default value that will be changed as a result of editing the defaults file.
   > **Note:** Changes to most node defaults reprovision the node when you click Apply. Changes made to card settings using the Defaults Editor do not change the settings for cards that are already installed or slots that are preprovisioned for cards, but rather, change only cards that are installed or preprovisioned thereafter. To change settings for installed cards or preprovisioned slots, see Change Card Settings.
   > **Note:** Changing some NE defaults can cause CTC disconnection or a reboot of the node in order for the default to take effect. Before you change a default, view the Side Effects column of the Defaults editor (right-click a column header and select **Show Column > Side Effects**) and be prepared for the occurrence of any side effects listed for that default.
7. If you are modifying node-level defaults, a dialog box appears confirming whether you want to apply defaults for node level attributes that will override current provisioning. Click **Yes**.
8. If you are modifying the IIOP Listener Port setting, a dialog box appears warning you that the node will reboot and asks if you want to continue. Click **Yes**.

   Stop. You have completed this procedure.

NTP-D346 Import Network Element Defaults

Purpose	This procedure imports the NE defaults using the NE Defaults editor. The defaults can either be imported from the CTC software CD (factory defaults) or from a customized file exported and saved from a node.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser only

Note: For a list of card and node default settings, refer to the "Network Element Defaults" appendix in the *Cisco ONS 15454 SDH Reference Manual*.

1. Complete the <u>"DLP-D60 Log into CTC"</u> task at the node where you want to import NE defaults.
2. Click the **Provisioning > Defaults** tabs.
3. Click **Import**.
4. If the correct file name and location of the desired file do not appear in the Import Defaults from File dialog box, click **Browse** and browse to the file you are importing.
5. When the correct file name and location appear in the dialog box, click **OK**. (The correct file name is 15454SDH-defaults.txt if you are importing the factory defaults.)
   > A pencil icon appears next to any default value that will be changed as a result of importing the new defaults file.
6. Click **Apply**.
7. If the imported file fails to pass all checks, the problem field shows the first encountered problem default value that must be fixed. Change the problem default value and click **Apply**. Repeat until the imported file passes all checks successfully.
   > **Note:** Changes to most node defaults reprovision the node when you click Apply. Changes made to card settings using the Defaults Editor do not change the settings for cards that are already installed or slots that are preprovisioned for cards, but rather, change only cards that are installed or preprovisioned thereafter. To change settings for installed cards or preprovisioned slots, see Change Card Settings.
   > **Note:** Changing some NE defaults can cause CTC disconnection or a reboot of the node in order for the default to take effect. Before you change a default, view the Side Effects column of the Defaults editor (right-click a column header and select **Show Column > Side Effects**) and be prepared for the occurrence of any side effects listed for that default.
8. If you are modifying node-level defaults, a dialog box appears to confirm that you wan to apply defaults for node level attributes and override current provisioning. Click **Yes**.
9. If you are modifying the IIOP Listener Port setting, a dialog box appears warning you that the node will reboot and asks if you want to continue. Click **Yes**.

Stop. You have completed this procedure.

NTP-D347 Export Network Element Defaults

Purpose	This procedure exports the NE defaults using the NE Defaults editor. The exported defaults can be imported to other nodes.
Tools/Equipment	None
Prerequisite Procedures	None
Required/As Needed	As needed
Onsite/Remote	Onsite or remote
Security Level	Superuser only

Note: The defaults currently displayed are exported whether or not they have been applied to the current node.

Note: The NE defaults can also be exported from the File > Export menu. These exported defaults are for reference only and cannot be imported.

1. Complete the <u>"DLP-D60 Log into CTC"</u> task at the node where you want to export NE defaults.
2. Click the **Provisioning > Defaults** tabs.
3. Click **Export**.
4. If the desired file to export to does not appear in the Export Defaults to File dialog box (or does not yet exist) click **Browse** and browse to the directory where you want to export the data; then either choose or type in (to create) the file to export to [the defaults will be exported as a text file delimited

by equals (=) signs].

5. Click **OK**.

Stop. You have completed this procedure.