Replacing Application Cards

This chapter provides information on replacing a failed application card.

Caution During installation, maintenance, and/or removal, wear a grounding wrist strap to avoid ESD damage to the components. Failure to do so could result in damage to sensitive electronic components and potentially void your warranty.

This chapter includes the following sections:

Determining Whether an Application Card has Failed

The system has several ways to indicate an application card failure. The first indicator is that the Status LED on the System Management Card (SMC) turns red to indicate the failure of a chassis component. Another indicator is the Run/Fail LED on an application card is red or turns off if that card has a problem.

If you see either of these indicators, you can determine the nature of the problem via the CLI or by checking the Simple Network Management Protocol (SNMP) traps.

Using the CLI

Monitor application cards in the chassis by executing the following CLI commands in Exec mode:

show card diag *slot_#*

slot_# is the chassis slot number in which the particular card that you wish to monitor is installed. For application cards, slot_# is any integer between 1 and 16. The following is a sample output for this command to monitor the card in chassis slot 8:

```
Card 8:
  Card Usable : Yes
  Card Tests  : Pass
  Boot Mode   : Normal
```

show card info *slot_#*

The following is a sample output for this command issued to monitor the card in chassis slot 8:

```
Card 8:
    Slot Type                       : SMC
    Card Type                       : System Management Card
    Operational State               : Active
    Last State Change               : Thursday January 27 16:00:32 EST 2008
    Administrative State            : Enabled
    Card Lock                       : Locked
    Reboot Pending                  : No
    Upgrade In Progress             : No
    Card Usable                     : Yes
    Single Point of Failure : No
    Attachment                      : 24 (System Processor I/O Card)
    Attachment                      : 25 (System Processor I/O Card)
    Temperature                     : 24 C (limit 101 C)
    Voltages:                       : Good
    Card LEDs                       : Run/Fail: Green | Active: Green | Standby: Off
    System LEDs                     : Status: Green | Service: Off
    CPU 0                           : Kernel Running, Tasks Running
```

If any of this information appears to be erroneous, such as the operational state or an LED state, check for any of the SNMP alarms listed in Using SNMP Traps, on page 2.

Using SNMP Traps

The system supports SNMP traps that are triggered when conditions indicate the need to replace an application card. The system provides the traps listed in the table below.

Table 1: SNMP Traps for Application Cards

SNMP Trap	Description
starCardVoltageFailure	A voltage regulation failure has been detected in a card.
starCardBootFailed	A card has failed to start up properly. The card is not operational.
starCardFailed	The card has failed and is no longer operational.
starCardSWFailed	An unrecoverable software error has occurred on the card.
starCardPSCMigrateStart	A packet processing card migration operation has begun. The first varbind identifies the packet processing card whose tasks are being migrated from; the second varbind identifies the packet processing card where the tasks are being migrated to. If a migration is taking place, it is likely that there is a problem with the original packet processing card.

SNMP Trap	Description
starCardPSCMigrateComplete	A packet processing card migration operation has successfully completed. The first varbind identifies the packet processing card whose tasks are being migrated from; the second varbind identifies the packet processing card to which the tasks are being migrated.
starCardPSCMigrateFailed	A packet processing card migration operation has failed. The first varbind identifies the packet processing card whose tasks are being migrated from; the second varbind identifies the packet processing card to which the tasks are being migrated.
starCardSMCSwitchoverStart	An SMC switchover operation has begun. The first varbind identifies the SMC whose tasks are being switched from; the second varbind identifies the SMC where the tasks are being switched to. If a migration is taking place, it is likely that there is a problem with the original SMC.
starCardSMCSwitchoverComplete	An SMC Switchover has completed successfully. The starSlotNum varbind identifies the new primary SMC.
starCardSMCSwitchoverFailed	An SMC switchover operation has failed. The first varbind identifies the SMC whose tasks are being switched from; the second varbind identifies the SMC to which the tasks are being switched.

If any of the above traps have been generated, it is likely that an application card needs to be replaced.

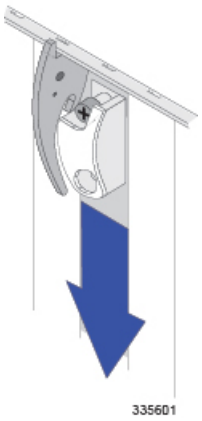
Removing the Application Card

This section describes how to remove an application card.

Important Before you remove and replace an application card on an active system, refer to the *System Administration Guide* for instructions on how to migrate or switch processes and services to a redundant (standby) card.

Step 1 Use a Phillips #2 screwdriver to loosen the screws at the top and bottom of the failed application card's front panel.

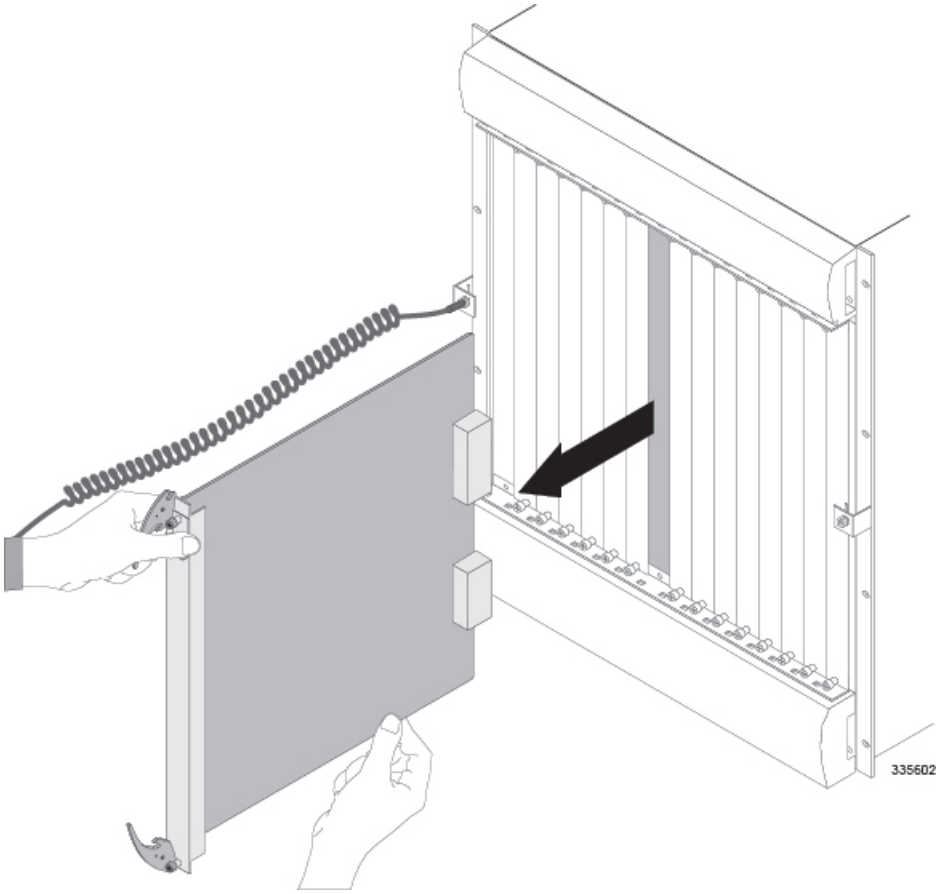
Step 2 Slide the interlock switch on the front panel of the application card downward.



Caution To minimize the risk of data loss, ensure that all LEDs on the packet processing card are Off (extinguished) and that SMCs have stopped blinking prior to removing the card from the chassis.

Step 3 Pull the ejector levers outward, firmly and straight, until the card is unseated from the chassis.

Step 4 Holding the card by its ejector levers, gently slide the card out of the chassis by pulling the card toward you.



Caution Do not leave chassis slots uncovered for extended periods of time. This reduces airflow through the chassis and could cause it to overheat. Make sure a card or a blanking panel is installed in every chassis slot at all times.

Step 5 Proceed to Installing the Application Card, on page 5.

Important If the card just removed from the chassis was an SMC, proceed to Replacing the CompactFlash on an SMC, on page 8.

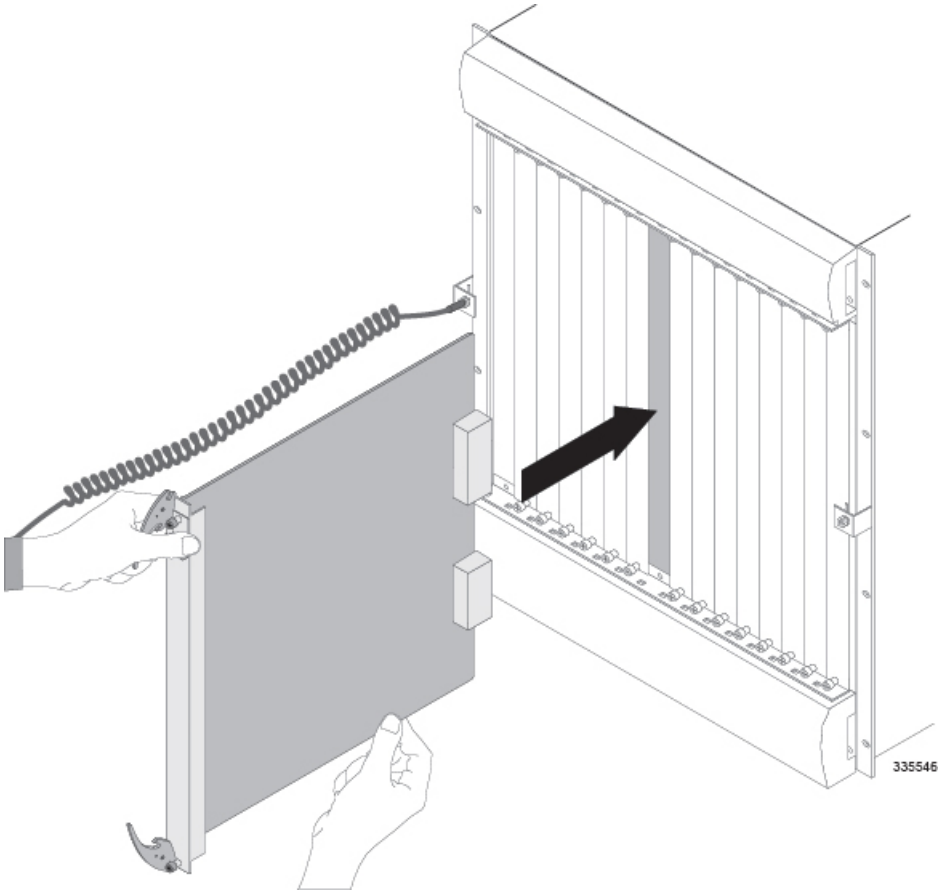
Installing the Application Card

This section describes how to install an application card.

Step 1 Slide the interlock switch on the card fully downward. Flip the ejector levers outward and away from the card's faceplate.

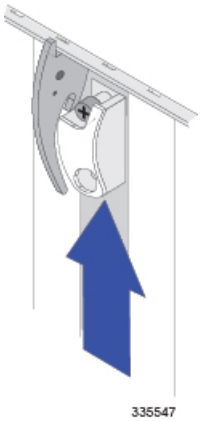
Step 2 Holding the card by its ejector levers, align the card with the upper and lower card guides of the appropriate chassis slot and gently slide the card into the slot until the levers touch the chassis frame.

Caution Take extra caution when installing packet processing cards. These cards contain heat sinks that could become loose or damaged if they come into contact with an adjacent card while the packet processing card is being inserted in the chassis slot.



Step 3 Push the ejector levers inward firmly and straight until the card is firmly seated in the chassis midplane and the ejector levers can be pushed in no further. Press firmly on the card's faceplate to ensure that it is fully seated. The card's front panel should be flush against the chassis' upper and lower card mounts for the slot.

Step 4 Slide the interlock switch on the front panel of the application card upward to lock the ejector tab in place. The flange on the left-side of the interlock switch prevents movement of the ejector tab when raised completely.



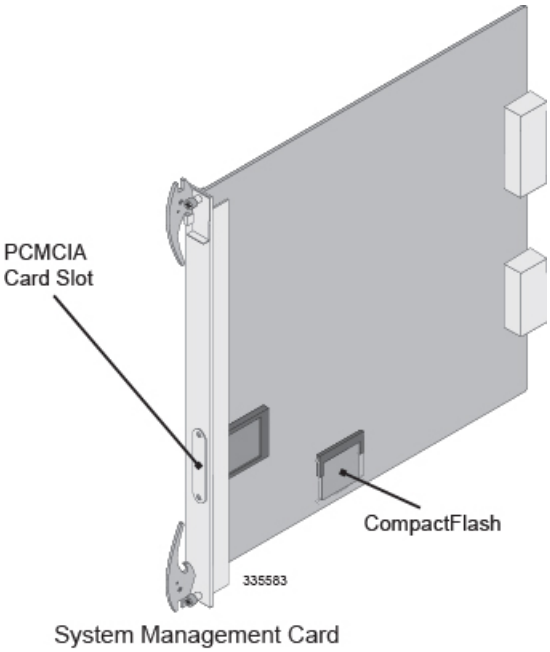
Important You must slide the interlock switch upward before securing the card's top screw to the mounting rail.

Step 5 Use a Phillips #2 screwdriver to tighten the screws at the top and bottom of the application card's front panel to secure the card.

Replacing the CF Memory Card on SMCs

SMC cards ship with a CompactFlash (CF) memory card that stores configuration files, software images, and session capacity/feature licensing keys for the system. The following figure displays the location of the CompactFlash memory card on the SMC.

Figure 1: Location of CompactFlash Card



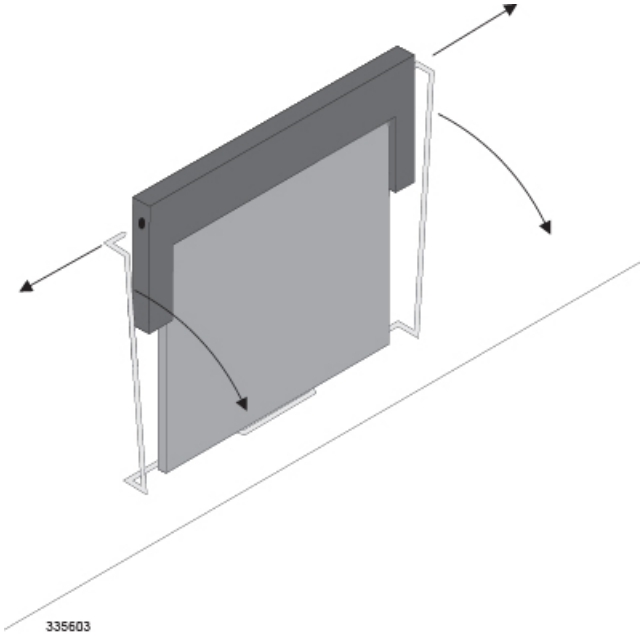
In the event of an SMC hardware failure, you must remove the CompactFlash from the failed card and install it on the replacement SMC. This ensures that the proper software image, configuration files, and license keys are loaded as the system boots.

Caution To reduce the risk of damage, handle the CompactFlash memory card only when necessary as part of the maintenance process.

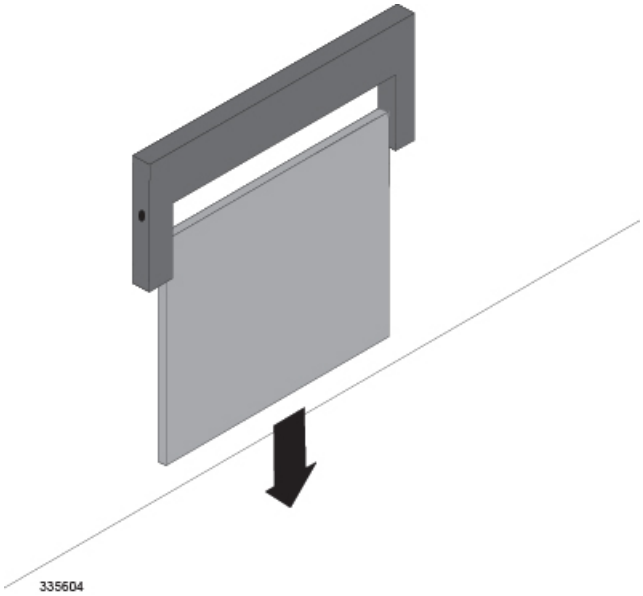
Replacing the CompactFlash on an SMC

This section provides instructions for the removal of the CompactFlash card from the failed SMC and its safe insertion in the replacement SMC.

Step 1 On the failed SMC, remove the card retainer clip that secures the CompactFlash module in the socket by pulling the ends of the card retainer clips out and away from the socket.

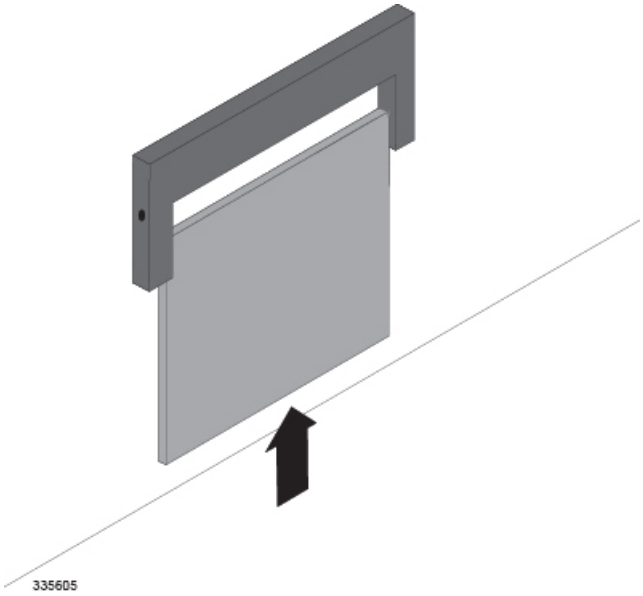


Step 2 Gently pull the module out of the socket.



Step 3 Repeat step 1 and step 2 to remove the module on the replacement SMC.

Step 4 Gently insert the module removed in step 1 into the socket on the replacement SMC.



Step 5 Replace the card retainer clip to secure the CompactFlash module in place.

Step 6 Proceed to Installing the Application Card, on page 5 for instructions on installing the replacement SMC.

What to do with the Failed Application Card

If the failed application card is still under warranty, return it to the vendor for repair.

If the failed application card is out of warranty, contact Cisco to determine if it can be sent in for repair at an additional cost.

Important Disposal of this product should be performed in accordance with all national laws and regulations.

Refer to the support area of http://www.cisco.com for up-to-date product documentation pertaining to installation, configuration, and maintenance. A valid username and password is required to use this site. Please contact your local sales or service representative for additional information.

Important For additional information on the RMA process, see the *RMA Shipping Procedures* appendix.