RECOMMENDED PROCEDURE FOR REPLACING THE PCMCIA CARD ON THE CISCO CRS-1 Carrier Routing System LINE CARD CHASSIS

This document describes the procedure that Cisco recommends for replacing the PCMCIA flash card on the Cisco CRS-1 Carrier Routing System Line Card Chassis(LCC) and Fabric Card Chassis (FCC). The following line cards include PCMCIA flash card and they need to refer to this document to perform PCMCIA flash card replacement or upgrade:

CRS-16-RP(=), Router Processor for CRS-16 Line Card Chassis
CRS-16-RP-B(=) , Router Processor B for CRS-16 Line Card Chassis
CRS-8-RP(=) , Router Processor for CRS-8 and CRS-4 Line Card Chassis
CRS-DRP-B-PLIM(=) , Distributed Router Processor B PLIM card
CRS-FCC-SC-22GE(=) , Integrated System Controller and GE Ethernet Switch Interface for Fabric Card Chassis

Guidelines for Preventing Electrostatic Discharge

Caution: Electrostatic discharge (ESD) damage, which can occur when electronic cards or components are improperly handled, results in complete or intermittent failures. We recommend using an ESD-preventive strap whenever you handle network equipment or one of its components.

The guidelines for preventing ESD damage are as follows:

- Always use an ESD-preventive wrist or ankle strap and ensure that it makes good skin contact. Connect the equipment end of the connection cord to an ESD connection socket on the router or to a bare metal surface on the chassis.

- Handle a card by its ejector levers, when applicable, or the card's metal carrier only. Avoid touching the board or connector pins.

- When you remove a card, place the card board-side-up on an antistatic surface or in a static-shielding bag. If you plan to return the component to the factory, immediately place it in a static-shielding bag.

- Avoid contact between the card and your clothing. The wrist strap protects the board only from ESD voltage on the body; ESD voltage on clothing can still cause damage.

Identifying RP Disk Upgrade or Replacement

The disk swap procedure described in this document is typically used when the Flash Disk upgrade or replacement is identified to be needed by the IOS XR release note or problems with the Flash disk devices installed in either the Standby or Active RP have been identified. If there is any doubt about which RP disk is failing, use the following commands or contact the Cisco TAC for support:

```
#cfs check
#Admin
(admin)#cfs check
#exit
```

Important:

- If uncorrectable errors are reported on the Active RP, then you must execute an RP failover procedure before continuing to the section **"Preparing the Cisco CRS-1 System for PCMCIA Card Swap"**
- If uncorrectable errors are reported on the Standby RP, continue with the procedure described in the section entitled **"Preparing the Cisco CRS-1 System for PCMCIA Card Swap"**
- If the Standby RP is NOT in 'ready' state, continue with the section entitled **"Resetting the Standby Route Processor"**
- If uncorrectable errors are found on *both* the Active and Standby RPs, follow the procedure described in the section "**Preparing the CRS-1 for disk replacement and TurboBoot Software reinstallation**"
- If NO errors are reported on either RP, continue with the procedure described in the section entitled **"Preparing the Cisco CRS-1 System for PCMCIA Card Swap"**

IF YOU HAVE ANY QUESTIONS ABOUT THE STEPS DETAILED IN THIS DOCUMENT, PLEASE CONTACT CISCO TAC FOR ASSISTANCE

Preparing the Cisco CRS-1 System for PCMCIA Card Swap

This section describes how to prepare the Cisco CRS-1 system for PCMCIA card swap.

Preparation:

When you receive your new disk(s), insert the disk into the disk1: slot position on the Active RP. You will need to open the protective door in order to do this.

Once inserted, format the disk using the command:

```
Format disk1:
```

Once completed, remove the disk.

This step must be repeated for each new disk you have received.

NOTE – the disk must be formatted on a CRS in order to make the device bootable. Formatting the disk on a PC, a router running IOS or an 12000-series device running IOS-XR will not make the disk bootable.

Step 1:

Verify that the standby RP is in Standby mode.

To verify that the standby RP is in Standby mode, use the following command (from admin mode):

show redundancy location *<active RP>*

The output should look similar to this:

```
RP/0/RP1/CPU0:ios(admin)# show redundancy location 0/rp1/cpu0
Node 0/RP1/CPU0 is in ACTIVE role
Partner node (0/RP0/CPU0) is in STANDBY role
Standby node in 0/RP0/CPU0 is ready

Reload and boot information
----------------------
RP reloaded Thu Jul  6 10:42:34 2006: 19 minutes ago
Active node booted Thu Jul  6 10:42:34 2006: 19 minutes ago
Standby node boot Thu Jul  6 10:43:08 2006: 19 minutes ago
Standby node last went not ready Thu Jul  6 10:56:04 2006:
6 minutes ago
Standby node last went ready Thu Jul  6 10:56:04 2006: 6
minutes ago
There have been 0 switch-overs since reload
```

Note: If the Standby RP is not ready, refer to the section, "**Resetting the Standby Route Processor**"

Step 2:

From the Active RP, in admin mode, use the **show version** command to verify the configuration-register is set to **autoboot**.

Typical output is similar to the following:

```
RP/0/RP1/CPU0:ios(admin)# show version | inc register
Configuration register on node 0/0/CPU0 is 0x102
Configuration register on node 0/2/CPU0 is 0x102
Configuration register on node 0/RP0/CPU0 is 0x102
Configuration register on node 0/RP1/CPU0 is 0x102
RP/0/RP1/CPU0:ios(admin)#
```

Step 3:

Remove the Standby RP from the chassis then replace the PCMCIA card. using the procedure described in the section "**Removing or Inserting Customer-Inaccessible PCMCIA Cards**".

Step 4:

Insert the RP back into the chassis.

Now the Standby RP will go into the IOS XR PREP state, as indicated in the output of the **show platform** command in admin mode:

```
RP/0/RP1/CPU0:ios(admin)# show platform

Node            Type            PLIM            State           Config State
--------------------------------------------------------------------------------
0/0/SP          MSC(SP)         N/A             IOS XR RUN      PWR,NSHUT,MON
0/0/CPU0        MSC             8-10GbE         IOS XR RUN      PWR,NSHUT,MON
0/2/SP          MSC(SP)         N/A             IOS XR RUN      PWR,NSHUT,MON
0/2/CPU0        MSC             8-10GbE         IOS XR RUN      PWR,NSHUT,MON
0/RP0/CPU0      RP(Standby)     N/A             IOS XR PREP     PWR,NSHUT,MON
0/RP1/CPU0      RP(Active)      N/A             IOS XR RUN      PWR,NSHUT,MON
0/SM0/SP        FC/S(SP)        N/A             IOS XR RUN      PWR,NSHUT,MON
0/SM1/SP        FC/S(SP)        N/A             IOS XR RUN      PWR,NSHUT,MON
0/SM2/SP        FC/S(SP)        N/A             IOS XR RUN      PWR,NSHUT,MON
0/SM3/SP        FC/S(SP)        N/A             IOS XR RUN      PWR,NSHUT,MON
RP/0/RP1/CPU0:ios(admin)#
```

Note: After about 30 to 40 minutes, the standby RP will automatically reload and boot from the disk. The time it takes for the RP to reload depends on the number of packages installed.

Step 5:

Once it comes back up, verify that the Standby RP is in Standby mode using the **show redundancy location** <*active RP*> command:

```
RP/0/RP1/CPU0:ios(admin)# show redundancy location 0/rp1/CPU0
Node 0/RP1/CPU0 is in ACTIVE role
Partner node (0/RP0/CPU0) is in STANDBY role
```

```
Standby node in 0/RP0/CPU0 is ready

Reload and boot info
----------------------
RP reloaded Thu Jul  6 10:42:34 2006: 1 hour, 36 minutes ago
Active node booted Thu Jul  6 10:42:34 2006: 1 hour, 36 minutes
ago
Standby node boot Thu Jul  6 12:14:21 2006: 4 minutes ago
Standby node last went not ready Thu Jul  6 12:16:58 2006: 1
minute ago
Standby node last went ready Thu Jul  6 12:16:58 2006: 1 minute
ago
There have been 0 switch-overs since reload
```

RP/0/RP1/CPU0:ios(admin)#

Step 6:

Once the inserted RP goes to 'Standby, Ready' mode, execute the **redundancy switchover** command (from admin mode) on the active RP:

 # redundancy switchover

Note: All limitations, caveats and restrictions regarding redundancy switchover apply here.

Step 7:

After failover, repeat the procedure from Step 3 through Step 6 for the non-active RP.

Note: In this case, there is no need to wait for the other RP to go to Standby state before removing the RP from the chassis.

Resetting the Standby Route Processor

If the Standby RP is not 'ready', follow these steps:

Preparation:

When you receive your new disk(s), insert the disk into the disk1: slot position on the Active RP. You will need to open the protective door in order to do this.

Once inserted, format the disk using the command:

```
Format disk1:
```

Once completed, remove the disk.

This step must be repeated for each new disk you have received.

NOTE – the disk must be formatted on a CRS in order to make the device bootable. Formatting the disk on a PC, a router running IOS or an 12000-series device running IOS-XR will not make the disk bootable.

Step 1:

If you have not already done so, remove the Standby RP from the chassis.

Step 2:

Replace the PCMCIA card using the procedure detailed in the section, "**Removing or Inserting Customer-Inaccessible PCMCIA Cards**", then reinstall the RP in the chassis. The RP will then attempt to boot.

Step 3:

Connect a cable to the console port on the Standby RP.

Step 4:

To place the Standby RP in Rommon mode, send **Ctrl-C** signals during the boot-up sequence.

A console message is displayed indicating when **Ctrl-C** can be used to abort the boot sequence.

Step 5:

When the Standby RP is in Rommon mode, issue the following command sequence:

Rommon> `unset BOOT`

Rommon> `unset TFTP_FILE`

Rommon> **sync**

Rommon> **confreg 0x102**

Rommon> **reset**

The Standby RP will boot and will synchronize its software with the Active RP.

The Standby RP will go into the IOS XR PREP state, as indicated in the output of the **show platform** command in admin mode from the Active RP:

```
RP/0/RP1/CPU0:ios(admin)# show platform
```

Note: After about 30 to 40 minutes, the standby RP will automatically reload to boot off the disk. The time it takes for the RP to reload depends on the number of packages installed.

Step 6:

Once it comes back up, verify that the Standby RP is in 'Standby, ready' mode using the **show redundancy location** *<active RP>* command:

```
RP/0/RP1/CPU0:ios(admin)# show redundancy location 0/rp1/CPU0
Node 0/RP1/CPU0 is in ACTIVE role
Partner node (0/RP0/CPU0) is in STANDBY role
Standby node in 0/RP0/CPU0 is ready
```

Step 7:

Once the inserted RP goes to 'Standby, ready' mode, perform the verification steps detailed in the section "**Identifying RP Disk Issues**" to confirm that the operating system is correctly installed on both Primary and Standby RPs. Should any problems be reported, please contact Cisco TAC.

Note: All limitations, caveats and restrictions regarding redundancy switchover apply here.

Preparing the CRS-1 for disk replacement and TurboBoot Software reinstallation

In the situation where both the Active and Standby RP's report problems, or both Active AND Standby RPs are having their disks replaced AT THE SAME TIME, the following steps should be followed:

Step 1:
Copy the running-configuration and admin-configuration to a temporary storage location. This could be on a remote TFTP server or by copying the configuration to the harddisk: device present on the RP. The configuration should NOT be copied to the disk0: device, since the disk(s) will be removed.

```
#copy running-configuration harddisk:running_config.txt

#admin

Admin#copy running-configuration harddisk:admin-running_config.txt

Admin#exit
```

Step 2:
Turn off power from the CRS-1

Step 3:
follow the procedure in "**Removing or Inserting Customer-Inaccessible PCMCIA Cards**" for both RPs

Step 4:

Once the disk replacements have been conducted on both RPs, execute the "turboboot" procedure described in the *Router Recovery with ROM Monitor* document at:

http://www.cisco.com/en/US/products/ps5845/products_configuration_guide_chapter09186a0080798d29.html.

Ensure that the Turboboot variable is set as follows:

```
TURBOBOOT=on,disk0,format
```

Once the "turboboot" procedure has been completed, perform the verification steps detailed in the section "**Identifying RP Disk Issues**" to confirm that the operating system is correctly installed on both Primary and Standby RPs. Should any problems be reported, please contact Cisco TAC.

Step 5:
Restore the running configuration as follows:

```
#config

(config)#load <source/filename>
```

```
(config)#commit replace

(config)#show configuration failed
```

Verify any rejected configuration

```
(config)#exit
```

Step 6:
Restore the admin-running-configration as follows

```
#admin

admin#config

(admin-config)#load <source/filename>

(admin-config)#commit replace

(admin-config)#show configuration failed
```

Verify any rejected configuration

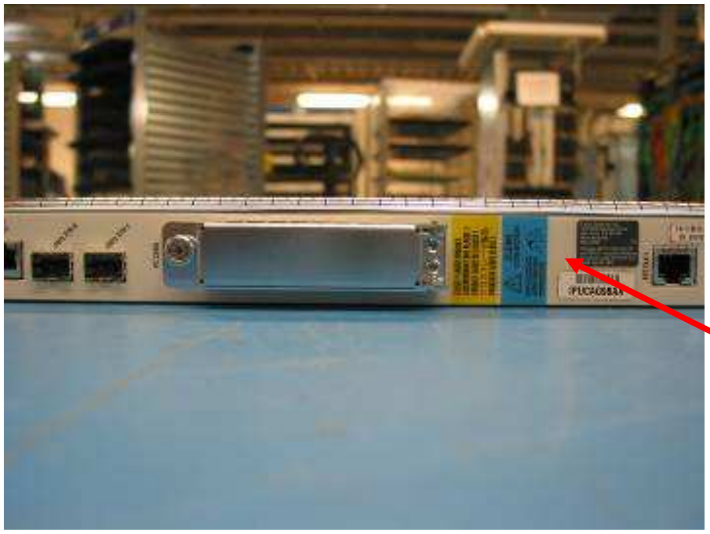
```
(admin-config)#exit

admin#exit
```

Removing or Inserting Customer-Inaccessible PCMCIA Cards in the CRS-16-RP and CRS-8-RP Assembly

The following procedure describes how to remove or insert customer-inaccessible PCMCIA cards in Cisco CRS-1 16-slot route processor (**CRS-16-RP**) and Cisco CRS-1 8-slot RP **(CRS-8-RP)** assemblies.

The PCMCIA door assembly is common to the Cisco CRS-1 16-slot and Cisco CRS-1 8-slot RP assemblies. The PCMCIA assembly is a two-part assembly that consists of a door and a hinge (that also blocks the customer-inaccessible PCMCIA card).

Figure 1. CRS-1 8-Slot Line Card Chassis RP Assembly



Description of Parts and Assemblies

Figure 2. CRS-1 8-Slot Line Card Chassis PCMCIA Door in Closed Position

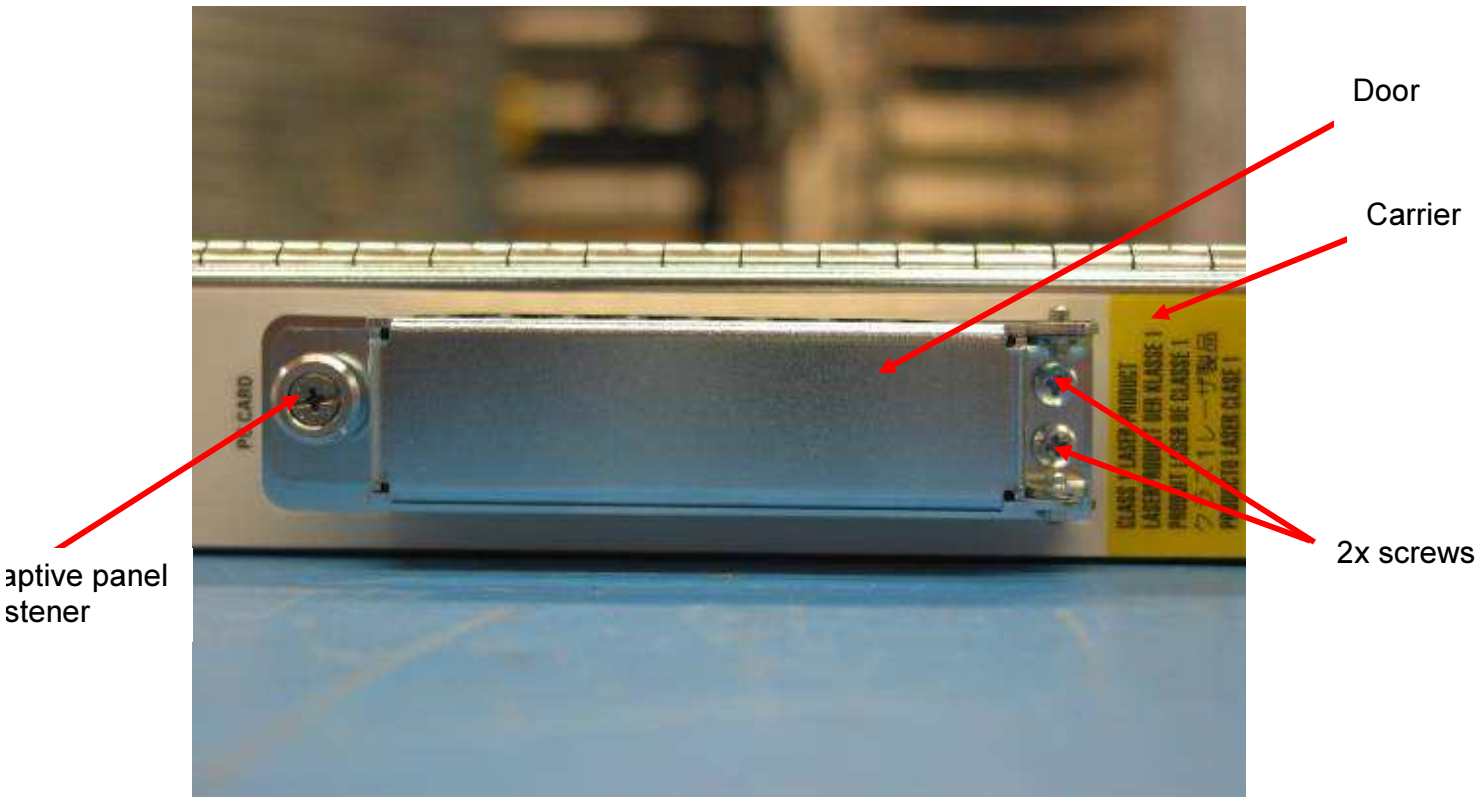
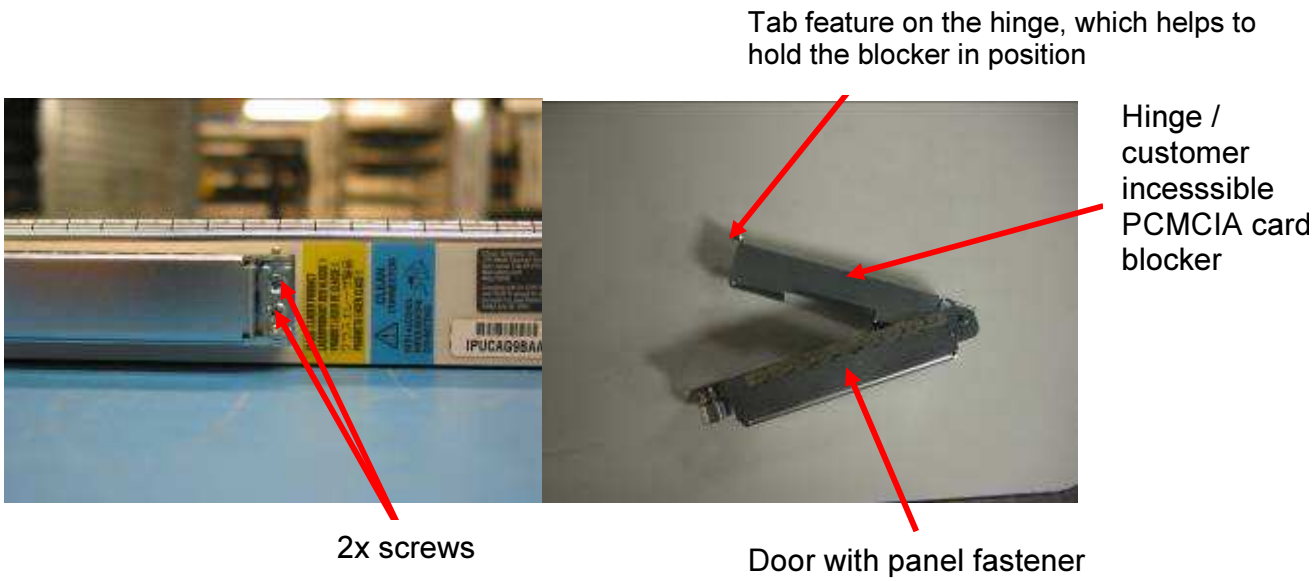


Figure 2 above shows a PCMCIA assembly with the door in closed position. The panel fastener, which is a part of the door assembly, is fastened to the hardware on the carrier.

To the right of the door/hinge assembly are two screws by which the door assembly is installed on the carrier (see Figure 3).

Figure 3. Fastening Screws and the Door/Hinge Assembly



Procedure

Before using the procedure detailed below to remove the disk devices, the Route Processor MUST be removed from the chassis and placed in on an Electro-statically 'safe' surface. Please see the following URLs for details on how to remove the RP:

CRS-1 8S: How to Install or Remove an RP Card or DRP PLIM

http://www.cisco.com/en/US/products/ps5763/products_pre-installation_guide_chapter09186a008036e123.html#wp1300861

CRS-1 16S How to Install or Remove a Route Processor Card or DRP PLIM

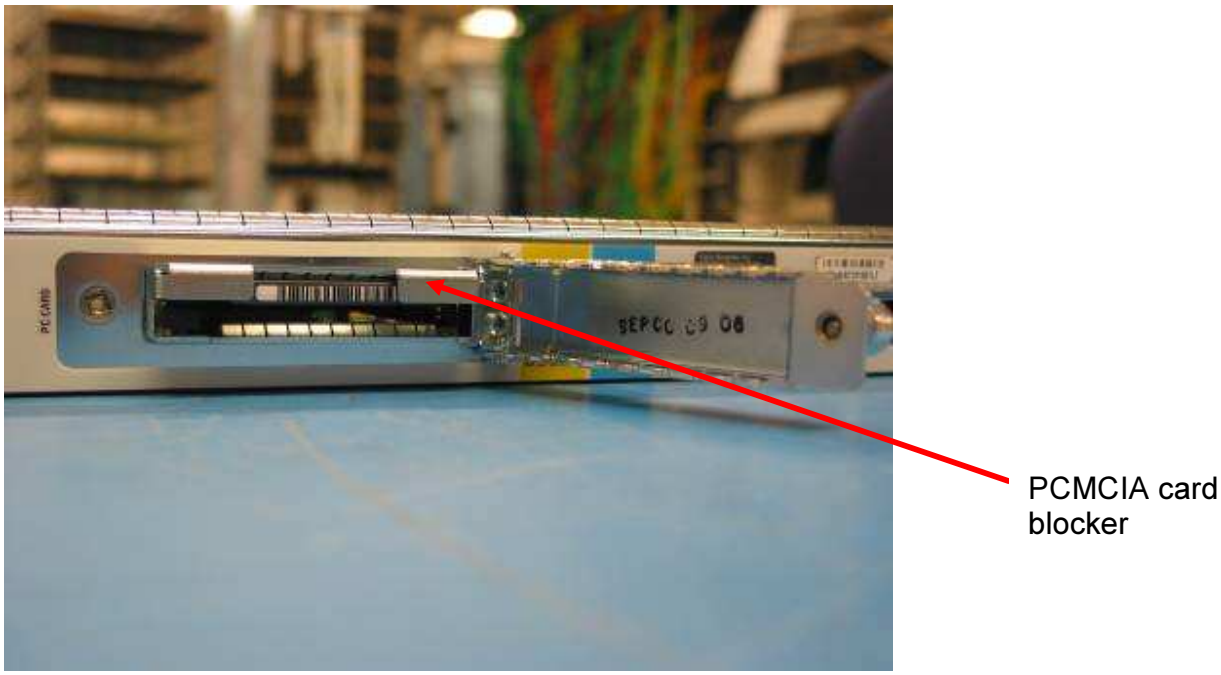
http://www.cisco.com/en/US/products/ps5763/products_installation_guide_chapter09186a008021fee1.html#wp1272685

Step 1:

Unscrew the panel fastener on the door assembly.

The panel fastener helps open the door. Inside is the customer-inaccessible PCMCIA card (which is made inaccessible by the blocker, as shown in Figure 4 below).

Figure 4. PCMCIA Card Blocker

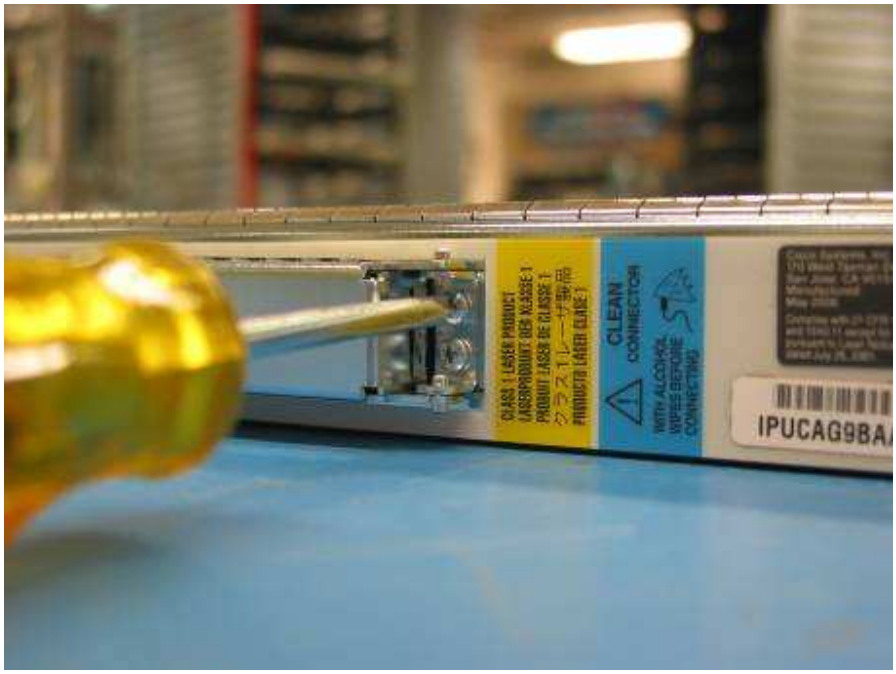


Step 2:

Remove the two screws on the right side of the door assembly.

When these two screws are removed, you can remove the door assembly from the carrier (see Figure 5).

Figure 5. Removing Door Assembly Screws

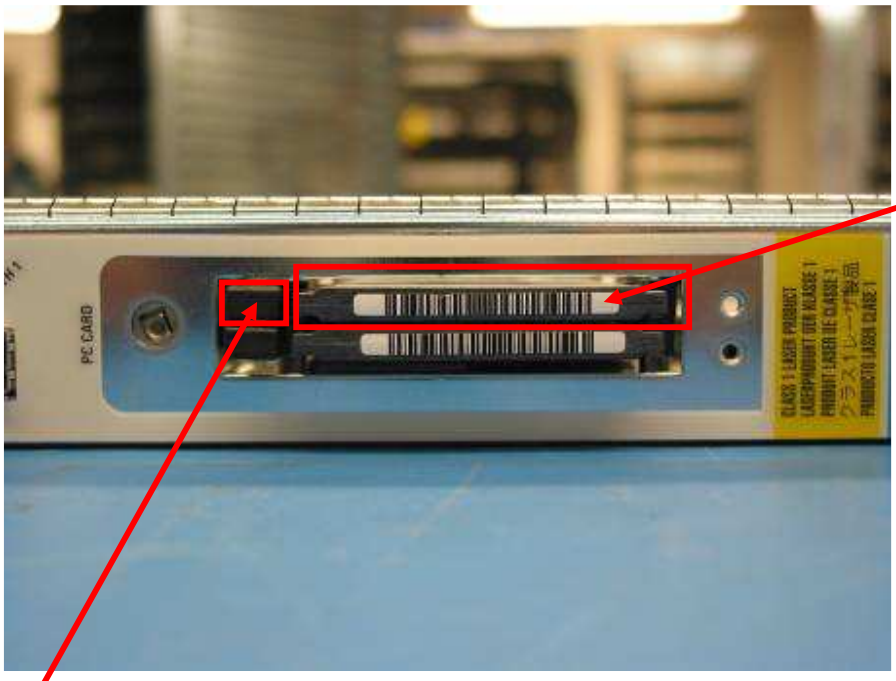


Step 3:

When you remove the door/hinge assembly from the carrier, the customer-inaccessible PCMCIA card (which is behind the blocker) can now be ejected.

To remove the PCMCIA card, push the ejector on the PCMCIA socket (see Figure 6).

Figure 6. Removing the PCMCIA Card



Step 4:

After replacing the PCMCIA card, install the door/hinge assembly by **inserting the tab** as shown—the tab goes behind the front panel (see Figure 7).

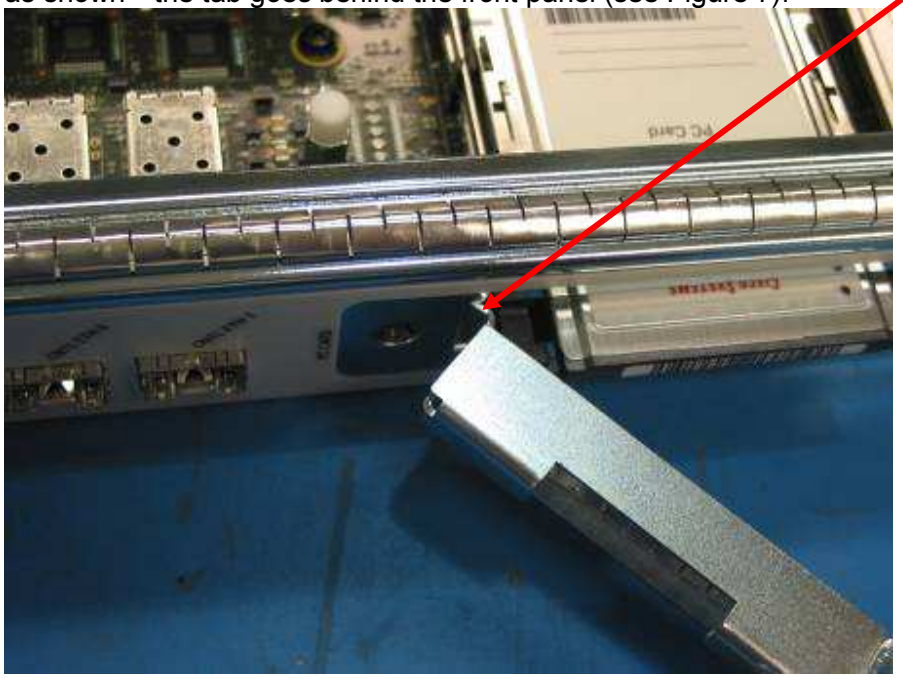


Figure 7. Inserting the Tab Behind the Front Panel

Step 5:

Install the two screws on the right side of the door/hinge assembly to secure the door to the carrier.

To close the door assembly, secure the panel fastener on the door (see Figure 8).

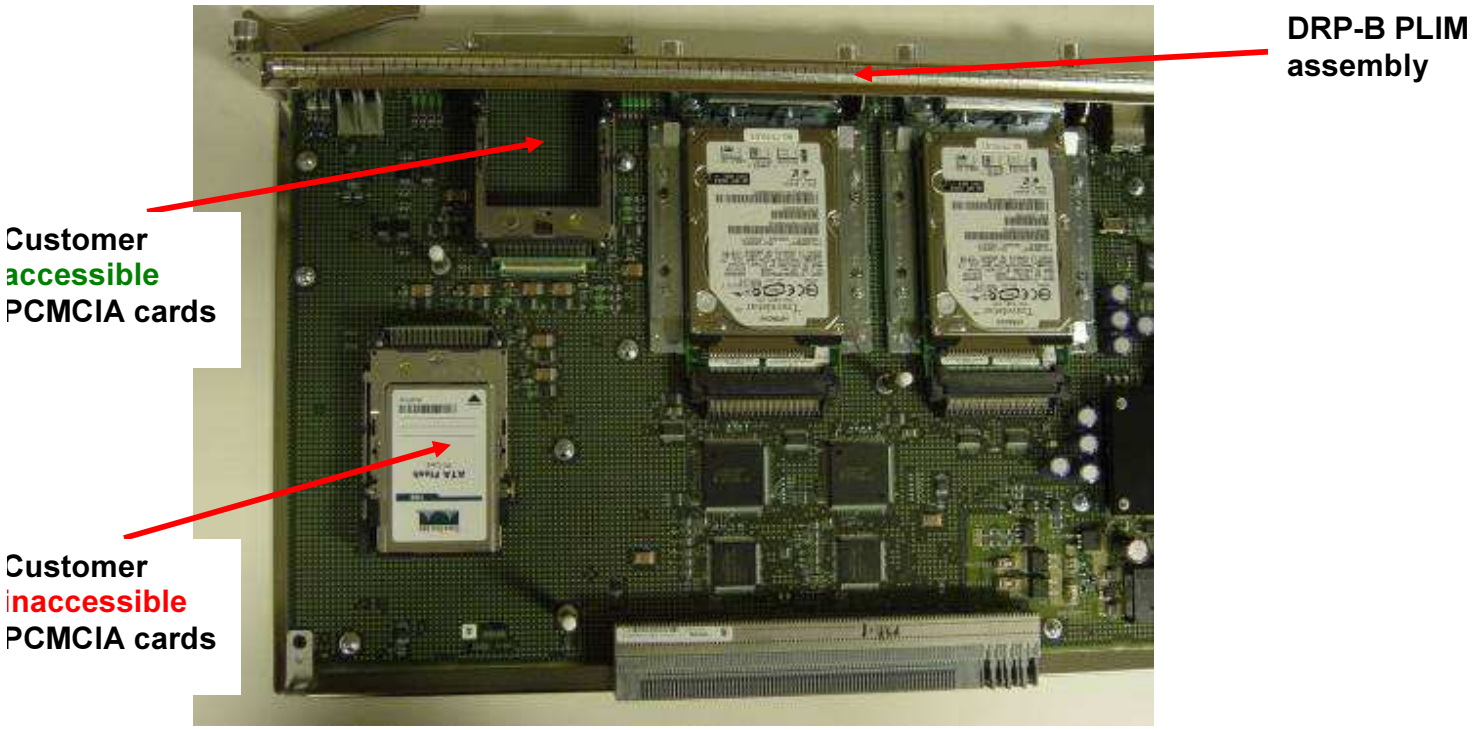
Figure 8. Closing the Door Assembly

Removing or Inserting Customer-Inaccessible PCMCIA Cards in the CRS-DRP-B-PLIM Assembly

The following procedure describes how to remove or insert the customer inaccessible PCMCIA cards in the DRP-B PLIM assembly.

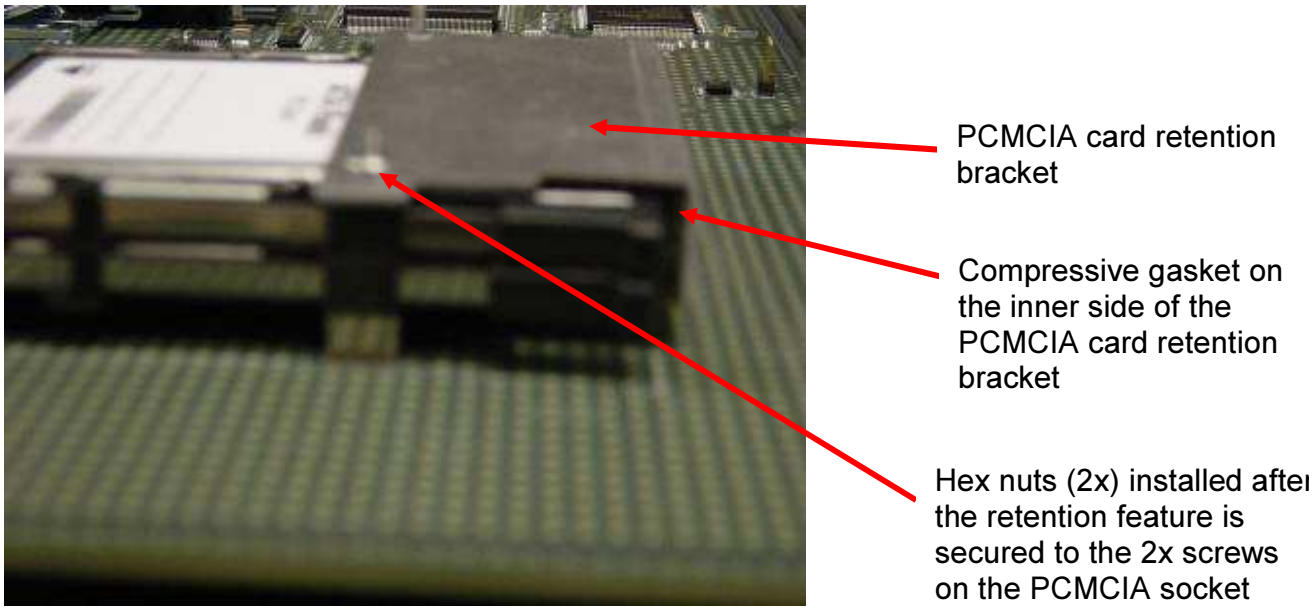
The Distributed Route Processor (DRP-B) PLIM is an optional card that is inserted into the chassis from the PLIM side in the slot corresponding to the DRP-B. In the case of DRP-B PLIM boards, the two PCMCIA cards that are customer accessible are on the front-panel side. Both of the customer-inaccessible PCMCIA cards are away from the front and are in-board (see Figure 9.)

Figure 9. PCMCIA and DRP-B PLIM Assembly Overview



Description of Parts

Figure 10. PCMCIA Card Retention Bracket



Procedural Steps

To remove or insert customer-inaccessible PCMCIA cards in the CRS-DRP-B-PLIM assembly, follow these steps:

Step 1:

Remove the 2x hex nuts that are present above the PCMCIA card retention feature (installed with the 2x screws in the PCMCIA socket) (see Figure 10).

Step 2:

Expose both the customer inaccessible PCMCIA cards by removing the PCMCIA card retention feature.

Step 3:

To eject the PCMCIA card(s) that needs to be replaced, push on the appropriate ejectors.

Step 4:

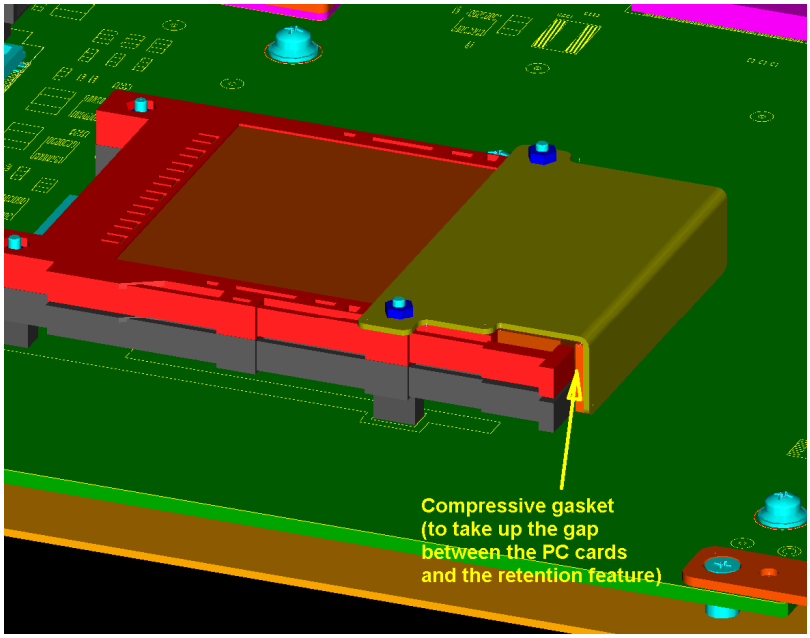
Replace the PCMCIA card(s).

Step 5:

Install the retention bracket by aligning the two holes on the bracket with the 2x screws on the PCMCIA socket.

The compressive gasket on the inner side of the retention bracket rests on the exposed edge of the PCMCIA cards and keeps it in place (see Figure 11).

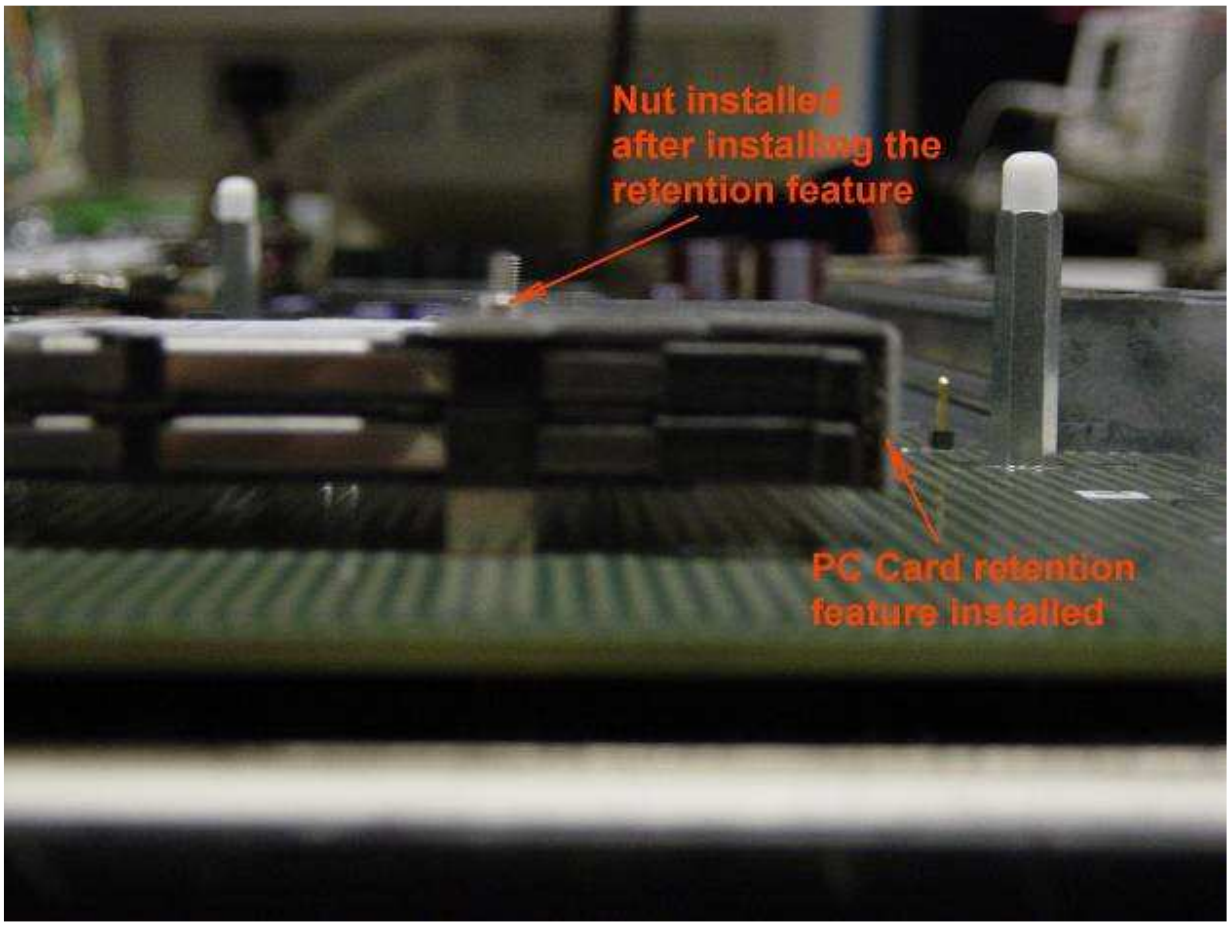
Figure 11. Compressive Gasket



Step 6:

Install the 2x hex nuts on the 2x screws of the PMCIA socket, thereby keeping the customer inaccessible PCMCIA cards in position (see Figure 12).

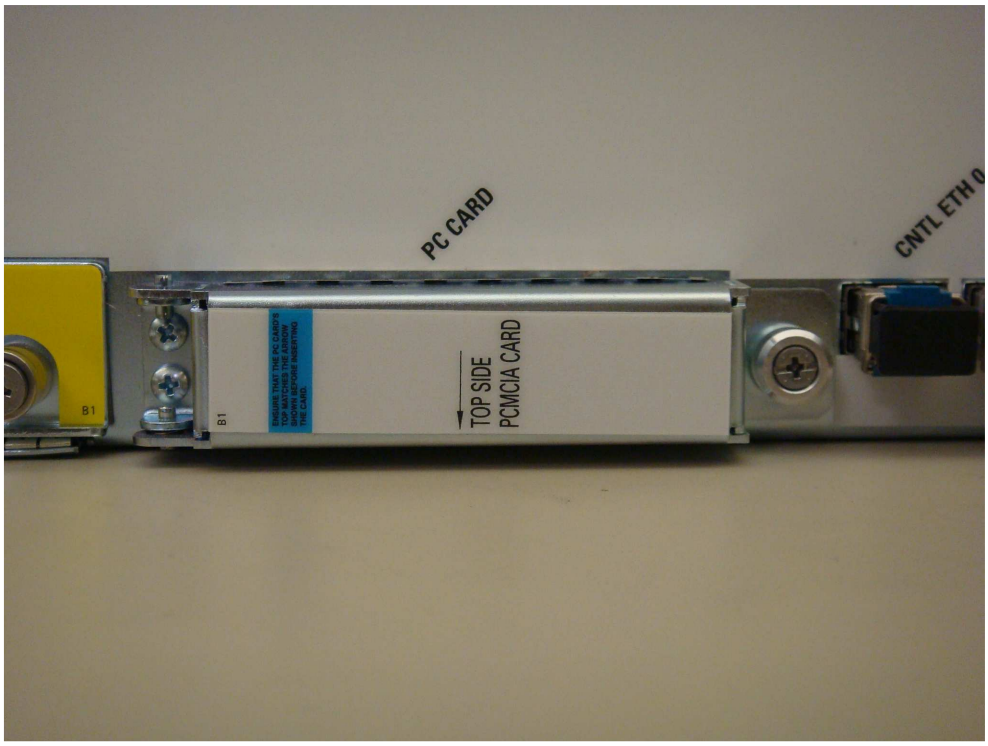
Figure 12. Retention Feature Installed



Removing or Inserting Customer-Inaccessible PCMCIA Cards in the CRS-16-RP-B Assembly

The PCMCIA door assembly for CRS-16-RP-B is shown in Figure 13.

Figure 13. CRS-16-RP-B Assembly

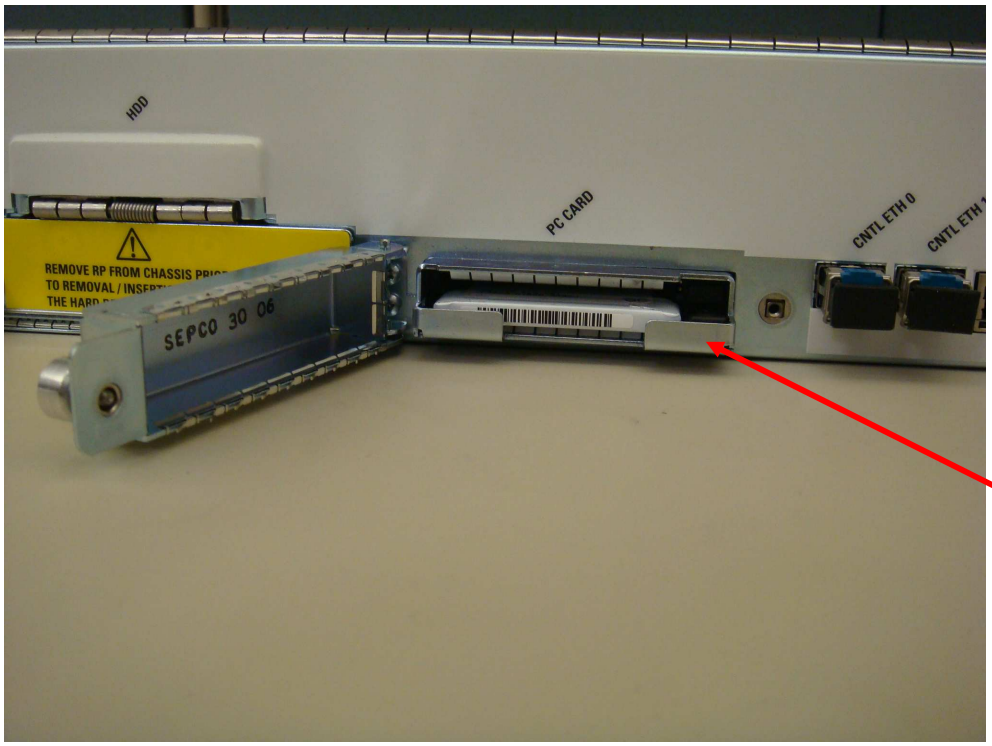


Procedure

Step 1:

Unscrew the panel fastener on the door assembly.
The panel fastener helps open the door. Inside is the customer-inaccessible PCMCIA card (which is made inaccessible by the blocker, as shown in Figure 14 below).

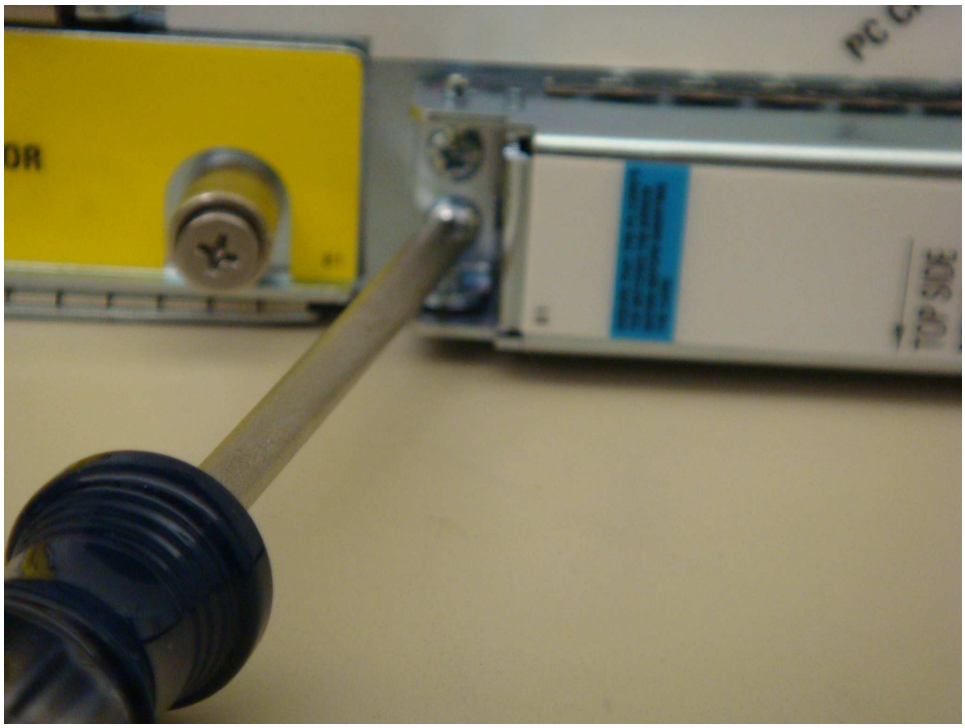
Figure 14. PCMCIA Card Blocker



Step 2:

Remove the two screws on the left side of the door assembly.
When these two screws are removed, you can remove the door assembly from the carrier (see Figure 15).

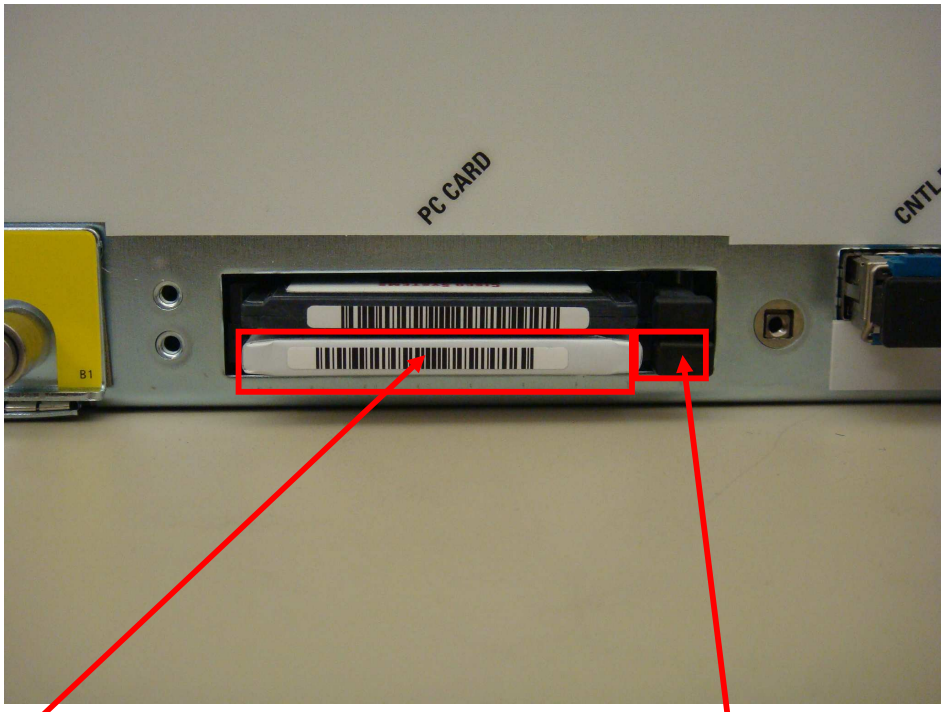
Figure 15. Removing Door Assembly Screws



Step 3:

When you remove the door/hinge assembly from the carrier, the customer-inaccessible PCMCIA card (which is behind the blocker) can now be ejected.
To remove the PCMCIA card, push the ejector on the PCMCIA socket (see Figure 16).

Figure 16. Removing the PCMCIA Card



Customer-inaccessible PCMCIA card (the card is behind the blocker)

Push here to remove the customer-inaccessible PCMCIA card.

Step 4:

After replacing the PCMCIA card, install the door/hinge assembly by **inserting the tab** —the tab goes behind the front panel

Step 5:

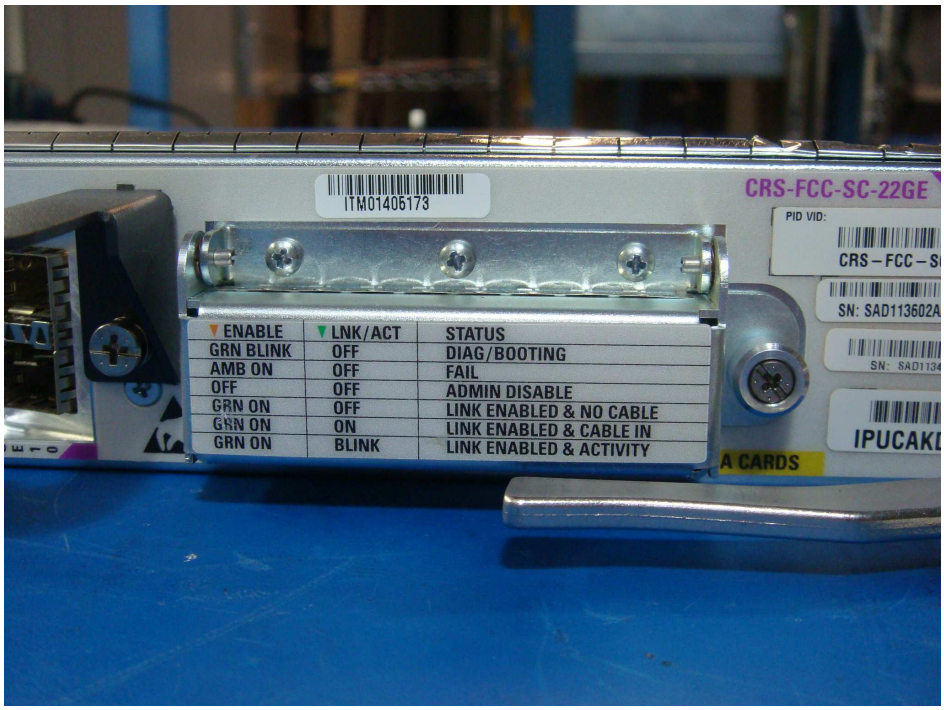
Install the two screws on the left side of the door/hinge assembly to secure the door to the carrier.
To close the door assembly, secure the panel fastener on the door (see Figure 17).

Figure 17. Closing the Door Assembly

Removing or Inserting Customer-Inaccessible PCMCIA Cards in the CRS-FCC-SC-22GE Assembly

The PCMCIA door assembly for CRS-FCC-SC-22GE is shown in Figure 18.

Figure 18. CRS-FCC-SC-22GE Assembly

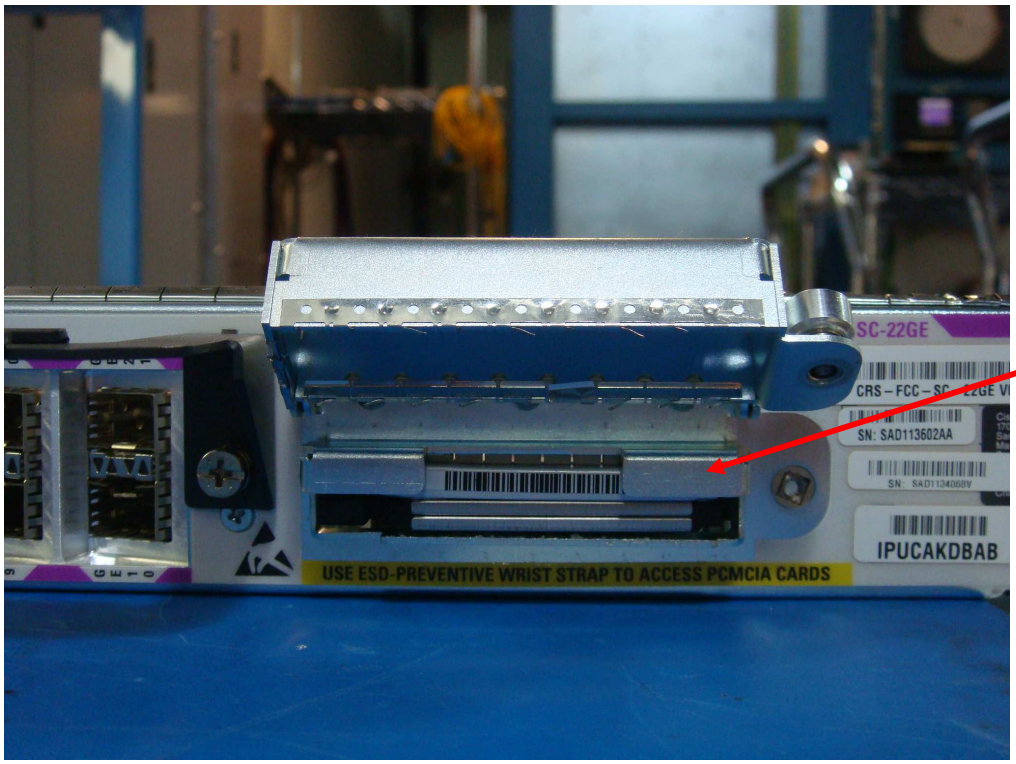


Procedure

Step 1:

Unscrew the panel fastener on the door assembly.
The panel fastener helps open the door. Inside is the customer-inaccessible PCMCIA card (which is made inaccessible by the blocker, as shown in Figure 19 below).

Figure 19. PCMCIA Card Blocker



Step 2:

Remove the three screws on the upper side of the door assembly.
When these three screws are removed, you can remove the door assembly from the carrier (see Figure 20).

Figure 20. Removing Door Assembly Screws

Step 3:

When you remove the door/hinge assembly from the carrier, the customer-inaccessible PCMCIA card (which is behind the blocker) can now be ejected.
To remove the PCMCIA card, push the ejector on the PCMCIA socket (see Figure 21).

Figure 21. Removing the PCMCIA Card

Step 4:

After replacing the PCMCIA card, install the door/hinge assembly by **inserting the tab** —the tab goes behind the front panel

Step 5:

Install the three screws on the upper side of the door/hinge assembly to secure the door to the carrier. To close the door assembly, secure the panel fastener on the door (see Figure 22).

Figure 22. Closing the Door Assembly