



Replacing FRUs in a Spare CGR Chassis

This document describes how to replace the Field Replaceable Units (FRUs) in a chassis on the CGR1240 with a new one in the event of a Return Material Authorization (RMA).

Before You Begin

You must have the following tools available before starting the procedure.

- 1/2-inch (13-mm) socket wrench to open and close the router chassis door
- A Spudger pry tool, see [Figure 1](#)
<https://www.ifixit.com/Store/Tools/Spudger/IF145-002-2>
- A torque driver capable of exerting 72–84 lbs-in, see [Figure 2](#)
- Side cut pliers or an equivalent tool for cutting cable ties.
- A #1 Phillips head screwdriver
- A Strap Wrench, see [Figure 3](#)

High Level Description

Figure 1 Spudger pry tool



Figure 2 TBN Torque Wrench



Figure 3 Strap Wrench



High Level Description

These steps are explained in greater detail later on in this document.

1. Open the spare chassis. Open the console port and SD card slot. Do not power on router yet.
2. Power down the old chassis to be replaced. Physically disconnect the battery cable. Open the old chassis to be replaced.
3. Swap out the Modules, N-Connectors, Antennas and Batteries - all with spare chassis still powered down. Do not connect battery to the cable at this time.
4. Discard the SD card that you were previously using. The new SD card ships in the spare chassis.
5. Final Checks. Attach battery cable to battery, and power up the unit. Let system boot for approximately 20 minutes.
6. Close up the chassis.
7. Verify the device is not in rommon mode, but in IOS# where it is configurable.

Detailed Steps to Replace the Chassis

8. The new SD Card will come with images preloaded, but not with customer configurations. All configurations need to be pre-configured based on the customer configuration to join the Field Network Director.

Detailed Steps to Replace the Chassis

Follow these steps to replace the chassis and return the router to use.

Step 1. Open the Door per Documented Bolt Sequence (New Chassis and Old Chassis).

The router front door must be opened to access the old chassis and new chassis interior. The 6 captive M8 bolts, located at the rim of the front of the router will need to be loosened alternatively with a 1/2-inch (13 mm) socket wrench. See [Figure 4](#). Refer to the recommended order of loosening the bolts in [Figure 5](#).

1. Loosen the bolts until all the bolts can be wiggled and pulled up with your fingers at ease. The bolts should remain on the door of the new chassis for any planned operation activity.
2. After all 6 bolts are loose, carefully swing the door open on the left-side hinges.

Caution: The door gasket creates a seal when the door is closed, so the door might open suddenly when the last bolt is loosened.

Figure 4 Captive Bolt Detail

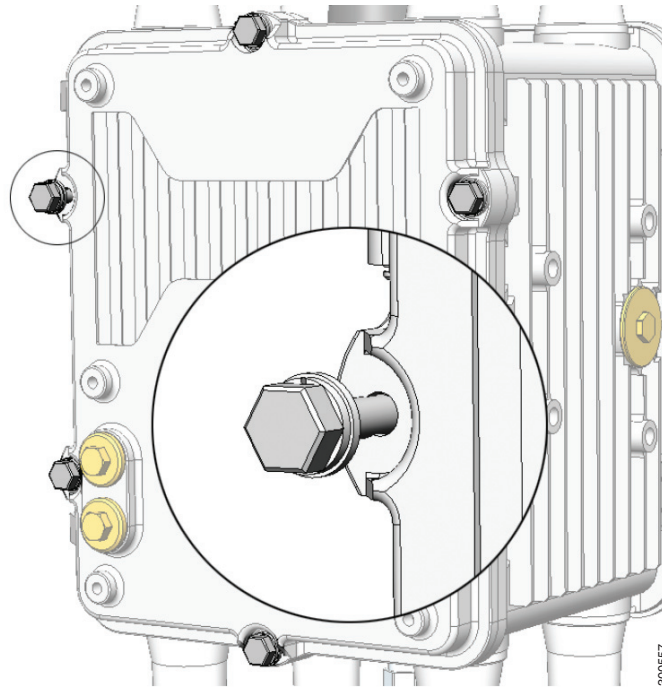
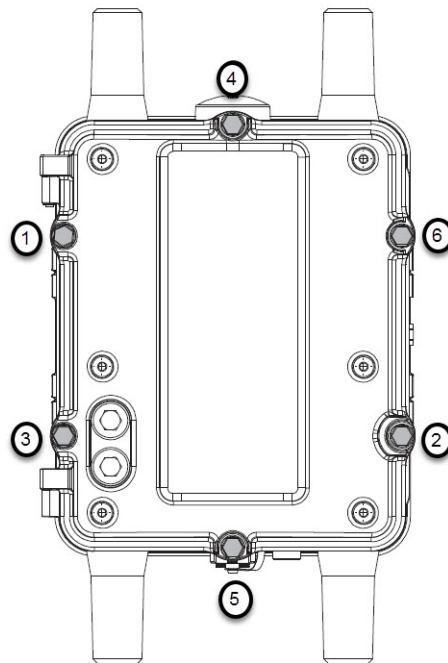


Figure 5 Recommended Order of Loosening Bolts



Step 2. Power down the router.

Disconnect the router from its power source.

Step 3. Replacing the Modules, N-Connectors, & Antennas.

Cisco recommends you to remove and insert modules to corresponding slots from the old chassis to the new chassis in the following order:

1. Slot 3 module
2. Slot 4 module
3. Slot 6 module
4. Slot 5 module

Please note that the sequence of steps below is per module. Before attempting to remove or install any modules, please ensure that you have the tools mentioned in the [Before You Begin](#) section.

The RF cables are connected to the Antenna/N-connector ports and assigned to slots as detailed in [Table 1](#).

Table 1 Port Assignment Table for Slots 3 & 4

Antenna Ports	3	4	5	6
Slot	3		4	N/A

The ports are shown in [Figure 6](#) and [Figure 7](#). For the antennas, please pay attention to the part numbers listed on the bottom upon following the swapping sequence.

Figure 6 Router Faced Down

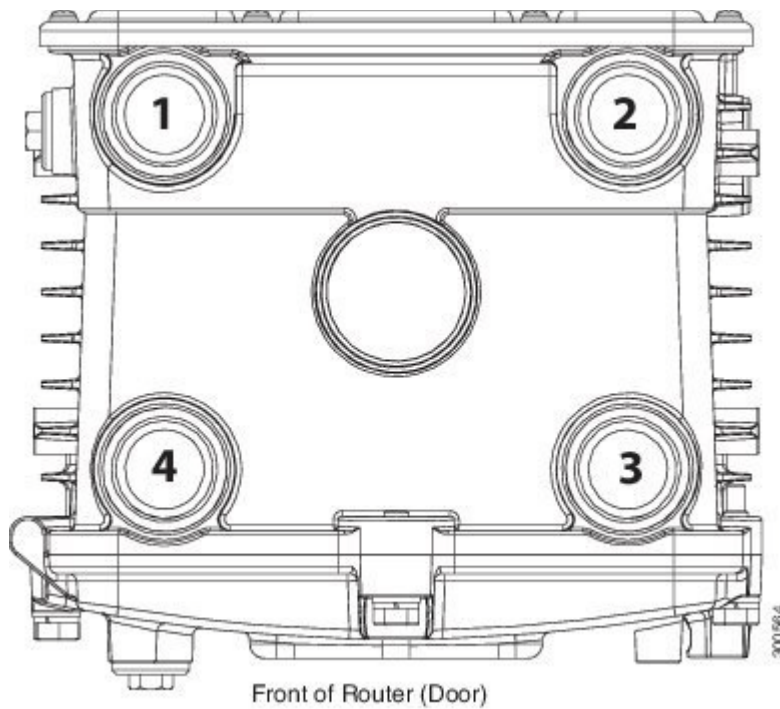
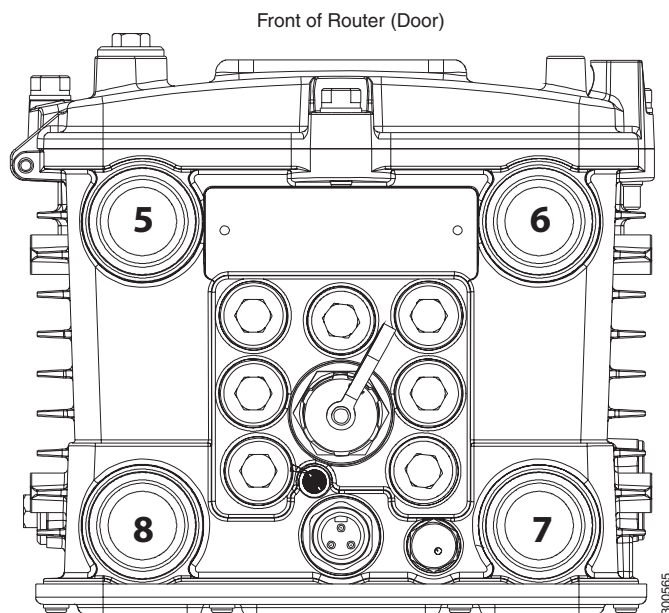


Figure 7 Router Faced Top



Removing and Replacing each module.

The steps for removing the module in the slots (1 by 1) of the old chassis and inserting into the new chassis are as follows:

1. Unplug the RF cable(s) from the antenna or N-connector with the spudger. The tool might need to be inserted at an angle under the cable for easy removal.

Detailed Steps to Replace the Chassis

2. Remove the corresponding antenna or N-connector from the old chassis. The antennas can be removed with a strap wrench or bare hands. The N-connector cap [Figure 8](#) can be removed with bare hands. The N-connector (with the threads as shown in [Figure 9](#)) can be removed from the head with the torque wrench at a torque between 6-7 lbs-ft.
3. Use the ½-inch (13mm) socket wrench to remove the appropriate plugs of the ports 3, 4, and/or 5 of the new chassis. Refer to [Table 1](#)
Note: This step can be skipped when removing the modules from slots 5 & 6. For port 5, make sure to move the 10.5" cable away from the BBU cable before removing the MCX connector.
4. Insert the antenna and/or N-connector to the new (spare) chassis at the same locations. The same tools in step 2 will be used at any torque in between 6-7 lbs-ft. If necessary, refer to the [Figure 6](#) and [Figure 7](#).
5. Remove module from the appropriate slot of the old chassis. Use the #1 Phillips screwdriver to loosen the captive screws next to the handles of the module. Cut zip tie from the handle of the module only if the RF cable is routed from the back of the router (only applies to slot 5 & 6). Grip the module just enough to pull it out of the PCI connector and the slot.
6. Remove the blank module from the corresponding slot of the new chassis.
7. Insert the old chassis module into the corresponding empty slot of the new chassis. Ensure that the slot is aligned with the slot edge guide and seated completely in the PCI connector.
Note: Do not force module into slot, if required, wiggle module to till PCI-E connector aligns and engages.
8. Use the Phillips screwdriver to tighten the module screws. Apply a zip tie to the module handle (only for slot 5 & 6) as shown in [Figure 10](#). The zip ties on slots 3 & 4 do not need to be reapplied to the module handles unless it was cut off during removal.
9. Snap the end of the RF cable to the antenna by using the spudger tool to guide the end of the antenna to the appropriate antenna or N-connector port connector (only applies for ports 3, 4, and 5). Cable part number 37-1391-01 goes with the LTE Main and LTE Aux connectors for slot 3 and the LTE main connector for slot 6. Cable part number 37-1380-01 goes only with the LTE Aux connector for slot 6.

Detailed Steps to Replace the Chassis

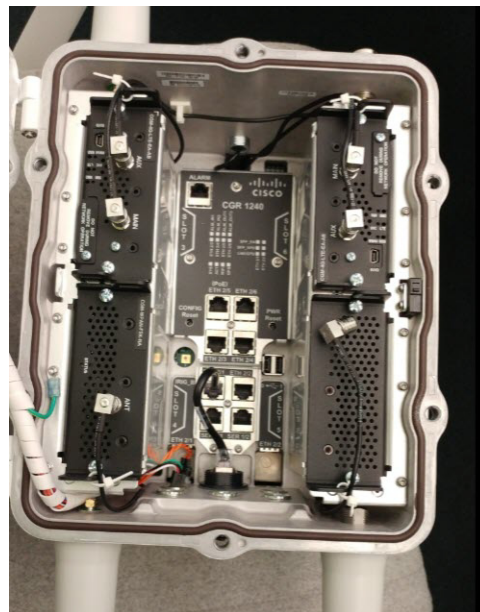
Figure 8 N-Connector Cap



Figure 9 N-Connector



Figure 10 Zip Tie Locations on Share Chassis



Step 4. Swapping Battery Back Up (BBUs) from Old to New Chassis

Before swapping the BBUs in the CGR 1240, Cisco recommends the following:

- Best practice is to replace all of the BBUs.
- Verify that all of the BBUs are the same version

Swapping out the BBUs requires the use of a #1 Phillips head screwdriver.

Detailed Steps to Replace the Chassis

Warning: Only trained and qualified personnel should be allowed to install, replace, or service this equipment.

To prevent ESD damage, follow these guidelines:

- Always use an ESD wrist or ankle strap and ensure that it makes good skin contact
- Connect the equipment end of the strap to an unfinished chassis surface
- Place the BBU on an anti-static surface or in a static shielding bag.
- Avoid contact between the battery and clothing
- Do not remove the wrist strap until the installation is complete

Figure 11 Shows the front door open with 3 BBUs mounted in the door.

To swap the BBUs on the chassis door, perform the following:

1. Remove the outermost BBU by loosening the 6 screws at a torque of 8 lbs-in. Refer to [Figure 12](#) for the proper order.
Note: Screws are captive type and do not come off of the BBU.
2. Unplug the BBU from the BBU stack. Please do not touch the torx screws.
3. Remove the 2nd and 3rd BBU by the same process as in **Step 1**.
4. Once the last BBU has been released from the cover, unplug the cable harness on the side of BBU. Refer to [Figure 13](#).
5. Install the last BBU into the new chassis by plugging in the cable harness, then attach the BBU to the cover and tighten the 6 captive screws at a torque of 8 lbs-in. Refer to [Figure 12](#) for the proper order.
6. Plug the 2nd BBU into the 1st one attached to the chassis, and tighten the 6 screws at the same torque as the first BBU installed. Repeat this step for the final BBU. When plugging BBUs into each other, they are rotated 180 degrees from each other.

Figure 11 Battery Backup Units Mounted on Router Door

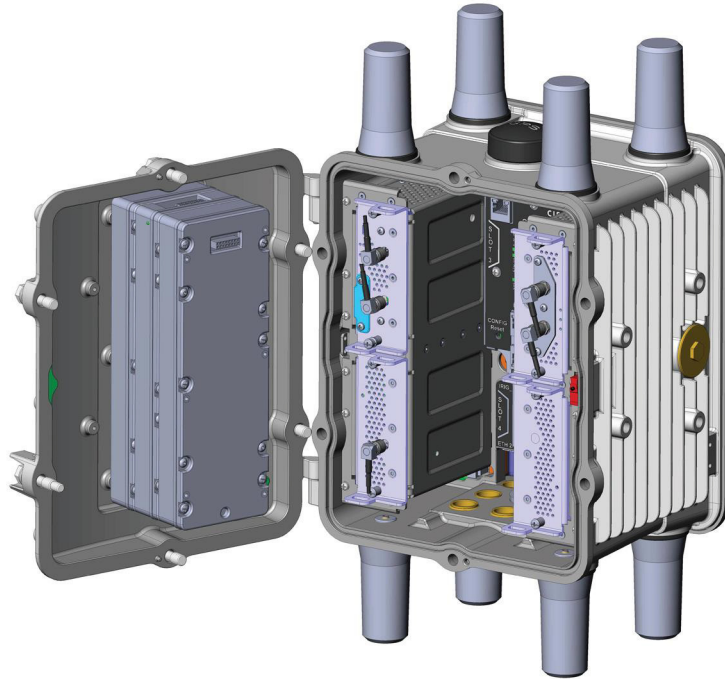


Figure 12 Sequence of Tightening and Loosening BBU Screws



Figure 13 Battery Cable Connection to BBU Connector



Step 5. SD Card Replacement.

Discard the SD card that you were previously using. The new SD card ships in the spare chassis

For additional detail about SD Card replacement, see the related section in the CGR 1240 Hardware Installation Guide:

<https://www.cisco.com/c/en/us/td/docs/routers/connectedgrid/cgr1000/hardware/cgr1240/installation/sd.html>

Step 6. Final Checks

Ensure that all RF cables are tied down per instructions and that no RF cables are on the cover faying surface or draped across BBU cavity. Power up the chassis and ensure that the device comes up correctly. All LEDs on the module should show green.

Step 7. Close the Chassis Door

Follow these instructions to ensure the door is properly sealed.

The 6 captive M8 bolts, located at the rim of the front of the router will need to be tightened with a 1/2-inch (13 mm) socket wrench. Refer to [Figure 4](#) earlier in this document. When closing the door, do not tighten the bolts on the hinge side first since that can place too much pressure on the door hinges. Instead, tighten the bolts at a torque of 3-4 lbs-ft based on the sequence in [Figure 14](#). Evenly tighten the bolts again, in the same order, with a torque of 6-7 lbs-ft.

Ensure that the SD Card plug and Console port plug are installed and torqued to 6-7 in-lbs using a 1/2" (13mm) torque wrench.

Figure 14 Recommended Order of Tightening Bolts

