

Configuring the JUNOS Software to Upgrade the T1600 Router Chassis to LCC0 of a TX Matrix Plus Routing Platform

This topic provides an overview of the T1600 router configuration in order to upgrade it to the LCC0 of a newly configured TX Matrix Plus routing platform. The TX Matrix Plus routing platform consists of one TX Matrix Plus router that acts as the switch-fabric chassis (SFC) and from one to four T1600 routers that act as the line-card chassis (LCC). To perform the in-service upgrade, manually upgrade the Switch Interface Boards (SIBs), Control Boards (CBs) and Routing Engines of the T1600 router, and connect the upgraded T1600 router to the corresponding components of the TX Matrix Plus router with fiber-optic cables. When the SIBs of the T1600 router are upgraded and the data plane connection between the SFC and LCC is set up, the traffic flows in and out of the TX Matrix Plus routing platform through the data plane. When you upgrade the Routing Engines and CBs, the control plane connectivity between the SFC and LCC is set up. For information about the hardware and the installation requirements, see the *TX Matrix Plus Router Hardware Guide*.

This section discusses the following procedures to upgrade a standalone T1600 router to the LCC0 of a TX Matrix Plus routing platform:

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Preparing the Configuration File and Upgrading the JUNOS Software on the T1600 Router and SFC

To prepare the configuration file and upgrade the JUNOS Software, follow these steps:

1. Save and archive a copy of the active configuration of the T1600 router.
2. Update the active configuration to make it applicable to the LCC.
3. Transfer the file configuration to the SFC (to be applied later).
4. Upgrade the T1600 router and SFC with JUNOS Release 10.1 or later, and reboot.

Configuring the JUNOS Software for Upgrading SIBs on the T1600 Router and Connecting It to the SFC

Upgrade the Control Boards (CBs) and Routing Engines of the T1600 router by replacing the T-CBs with LCC-CBs and RE 2000 with LCC-RE. To configure the T1600 router to support a SIB upgrade and connect it to the SFC, follow these steps:

1. Issue the **fabric upgrade-mode** CLI command at the [edit chassis] hierarchy level and commit the changes to update the configuration. This change in the configuration enables the T1600 chassis to be upgraded with the TXP-T1600 SIBs.

```
[edit]
user@host# set chassis fabric upgrade-mode
user@host# commit
```

You must also modify the configuration of the SFC by including **fabric upgrade-mode** statement at the [edit chassis] hierarchy level and commit the configuration on the SFC.

2. Take the backup SIB-I-T1600 offline by issuing the **request chassis sib slot slot-number offline** command.

```
user@host> request chassis sib slot 0 offline
```

3. Replace the offline SIB-I-T1600 with SIB-TXP-T1600.
4. Bring the replaced SIB-TXP-T1600 online, by issuing the **request chassis sib slot slot-number online** command.

```
user@host> request chassis sib slot 0 online
```

The T1600 router automatically updates the links between the replaced SIB-TXP-T1600 and the Flexible PIC Concentrators (FPCs).

5. Establish the data plane connectivity by connecting the SIB-TXP-T1600 on the T1600 router to the ABS-SIB-F13 on the SFC with fiber-optic cables and configuring both routers (T1600 and SFC) for transmitting and receiving traffic on the TX Matrix Plus routing platform. Use the following CLI commands, to manually update the link between the T1600 router and SFC before the data plane is activated:

- To configure the SFC to receive traffic from the T1600 router, issue the **request chassis sib f13 train-link-receive slot SFC-SIB-F13-slot-num** command.

SFC-SIB-F13-slot-num is the slot in the SFC chassis where the ABS-SIB-F13 must be manually connected to SIB-TXP-T1600 in a slot (from 0 through 4) on the T1600 router. You can configure this for a value of 0, 3, 6, 8, or 11.

- To configure the T1600 router to receive traffic from the SFC, issue the **request chassis sib train-link-receive slot LCC-SIB-ST-SIB-L-slot-num** command.

LCC-SIB-ST-SIB-L-slot-num is the slot in the T1600 router chassis where SIB-TXP-T1600 must be manually connected to ABS-SIB-F13 in a slot (0, 3, 6, 8 or 11) on the SFC. You can configure this to be a value in the range from 0 through 4.

- To configure the SFC to transmit traffic to the T1600 router, issue the **request chassis sib f13 train-link-transmit slot SFC-SIB-F13-slot-num** command.
SFC-SIB-F13-slot-num is the slot in the SFC chassis where the ABS-SIB-F13 must be manually connected to SIB-TXP-T1600 in a slot (from 0 through 4) on the T1600 router. You can configure this for a value of 0, 3, 6, 8, or 11.
 - To configure the T1600 router to transmit traffic to the SFC, issue the **request chassis sib train-link-transmit slot LCC-SIB-ST-SIB-L-slot-num** command.
LCC-SIB-ST-SIB-L-slot-num is the slot in the T1600 router chassis where SIB-TXP-T1600 must be manually connected to ABS-SIB-F13 in a slot (0, 3, 6, 8 or 11) on the SFC. You can configure this to be a value in the range from 0 through 4.
6. Using the SIB LEDs, manually verify the link between the T1600 router and the SFC. The FPCs will send traffic using the SIB-TXP-T1600 and ABS-SIB-F13.
 7. Repeat Steps 2 through 4 for all the SIB-I-T1600s.
 8. When all the SIBs are upgraded, delete the fabric upgrade-mode statement from the configuration hierarchy, and commit the changes on both the T1600 router and the SFC.

```
[edit chassis]
user@host# delete chassis fabric upgrade-mode
user@host# commit
```



WARNING: You must upgrade the CBs and the Routing Engines of the T1600 router before you upgrade the SIBs.

Upgrading CBs and Routing Engines of the T1600 Router for Control Plane Connectivity

The CBs and the Routing Engines of the T1600 router are upgraded by replacing the T-CBs with LCC-CBs and RE-2000 with LCC-RE. To establish the control plane connectivity, connect the Ethernet cables from the T1600 router to the SFC. For more information about hardware requirements, see the *TX Matrix Plus Router Hardware Guide*.

Changing the Management Ethernet Interface Name for the T1600 Router

The JUNOS Software automatically configures management Ethernet interfaces for both the master and the backup Routing Engines, `fxp0`. However, after you upgrade both Routing Engines (master and backup), you must change the management Ethernet interface name to `em0`.

To change the management Ethernet interface name for the master Routing Engine, include the `interfaces em0` statement at the `[edit groups re0]` hierarchy level.

```
[edit groups re0]
user@host# set interfaces em0
user@host# commit
```



WARNING: If you do not change the management Ethernet interface from `fxp0` to `em0` for each upgraded LCC-RE, you cannot access the router remotely through services such as Telnet, SSH, and so on.

Transferring Control of the T1600 Router (LCC0) to the SFC

To transfer control from a T1600 router to the SFC, follow these steps:

1. Manually set the M/S switch on both replaced CBs of the T1600 router to M (multichassis).
2. Configure the T1600 router as LCC0 by including the `lcc number` statement at the [edit chassis] hierarchy level:

```
[edit chassis]
user@host>set lcc number
```



NOTE: When you upgrade the other T1600 routers to LCC, you must set the LCC number from 1 to 3.

3. After you configure the LCC0, reboot it for the changes to take effect. This rebooting process establishes the forwarding state of the new LCC in the TX Matrix Plus routing platform by bringing up the SIBs automatically. For more information on hardware connectivity for the control plane, see the *TX Matrix Plus Router Hardware Guide*.

Adding a New T1600 Router to the TX Matrix Plus Routing Platform

The in-service upgrade of new operational T1600 routers to LCC1, LCC2, and LCC3 using the JUNOS CLI is not supported. To add a second LCC to the TX Matrix Plus routing platform, follow these steps:

1. Upgrade both the CBs and Routing Engines on the T1600 router. For details, see “Upgrading CBs and Routing Engines of the T1600 Router for Control Plane Connectivity” on page 3.
2. Upgrade the T1600 router with the same version of the JUNOS Software as on the SFC.
3. Upgrade the SIBs of the T1600 router and connect the new SIBs to the SFC. For details, see “Configuring the JUNOS Software for Upgrading SIBs on the T1600 Router and Connecting It to the SFC” on page 2.
4. Connect Ethernet links of the control plane from the T1600 router to the SFC.
5. Reboot the T1600 router. After rebooting, the router becomes a part of the TX Matrix Plus routing platform and is connected to the SFC on the control plane.

Downgrading a T1600 Router from the LCC of a TX Matrix Routing Platform to a Standalone T1600 Router

To downgrade any LCC to a standalone T1600 router, follow these steps:

1. Transfer the control to the LCC from the SFC:
 - a. Roll back the configuration of the SFC and LCC to the configuration before the T1600 router was added and commit the configuration. For more information about configuring the T1600 router to LCC, see “Preparing the Configuration File and Upgrading the JUNOS Software on the T1600 Router and SFC” on page 1.
 - b. Manually set the M/S switch to single-chassis on the T1600 router on both CBs.
 - c. Reboot both the master and backup Routing Engines on the T1600.
2. Downgrade the SIBs of the LCC and remove the data plane connections:
 - a. Take the spare SIB-TXP-T1600 on the LCC offline by issuing the **request chassis sib slot *slot-number* offline** command.

```
user@host> request chassis sib slot 0 offline
```
 - b. Remove the data plane connections from the SIB-TXP-T1600 to the SFC.
 - c. Replace the SIB-TXP-T1600 with SIB-I-T1600 and bring it online.
 - d. Repeat these steps for all SIB-TXP-T1600s.
3. Remove the control plane connectivity by disconnecting the Ethernet cables of the control plane from the T1600 router to the SFC.

The LCC becomes a standalone T1600 router out of the TX Matrix Plus routing platform.

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