Example: Configuring a JCS1200 Platform and Multiple T Series Routers

In this configuration example, the JCS1200 platform is connected to multiple T Series routers. The configuration is described in the following sections:

Requirements

This configuration example requires the following hardware and software components:

- JUNOS Release 9.2 or later
- JCS1200 platform with Routing Engines in slots 1 through 12
- T320 router with FPCs in slots 0 through 7
- T640 router with FPCs in slots 0 through 7
- T1600 router with FPCs in slots 0 through 7

Overview

This example configures the JCS1200 platform and three connected T Series routers. For this example, you need to configure a Root System Domain (RSD) for each connected T Series router. Within each RSD, create Protected System Domains (PSDs) and assign Flexible PIC Controllers (FPCs) and Routing Engines to each PSD.

Configuration

First, configure the Routing Engines on the JCS1200 platform using the management module CLI. Then, configure each T Series router using the JUNOS CLI.

JCS1200 Platform Configuration

Step-by-Step Procedure To configure the parameters required for the Routing Engines in the JCS chassis:

1. Log in to the JCS management module.
2. Refer to the data presented in Table 1 for Routing Engine assignments.

Table 1: JCS Chassis Routing Engine Assignments

RSD ID	PSD ID	Primary Routing Engine	Backup Routing Engine	Routing Platform
1	1	01	02	T320
	2	03	04	
2	3	05	06	T640
	4	07	08	
3	5	09	10	T1600
	6	11	12	

3. Assign the Routing Engines in slots 1 (primary) and 2 (backup) to RSD1 and PSD1, which are associated with the T320 router. Assign the Routing Engines in slots 3 (primary) and 4 (backup) to RSD1 and PSD2, which also belong to the T320 router.

```
system> baydata –b 01 –data “V01–JCS01–SD01–PSD01–REP01–REB02–PRDT320”

system> baydata –b 02 –data “V01–JCS01–SD01–PSD01–REP01–REB02–PRDT320”

system> baydata –b 03 –data “V01–JCS01–SD01–PSD02–REP03–REB04–PRDT320”

system> baydata –b 04 –data “V01–JCS01–SD01–PSD02–REP03–REB04–PRDT320”
```

4. Assign the Routing Engines in slots 5 (primary) and 6 (backup) to RSD2 and PSD3, which are associated with the T640 router. Assign the Routing Engines in slots 7 (primary) and 8 (backup) to RSD2 and PSD4, which also belong to the T640 router.

```
system> baydata –b 05 –data “V01–JCS01–SD02–PSD03–REP05–REB06–PRDT640”

system> baydata –b 06 –data “V01–JCS01–SD02–PSD03–REP05–REB06–PRDT640”

system> baydata –b 07 –data “V01–JCS01–SD02–PSD04–REP07–REB08–PRDT640”

system> baydata –b 08 –data “V01–JCS01–SD02–PSD04–REP07–REB08–PRDT640”
```

5. Assign the Routing Engines in slots 9 (primary) and 10 (backup) to RSD3 and PSD5, which are associated with the T1600 router. Assign the Routing Engines in slots 11 (primary) and 12 (backup) to RSD3 and PSD6, which also belong to the T1600 router.

```
system> baydata –b 09 –data “V01–JCS01–SD03–PSD05–REP09–REB10–PRDT1600”
```

```
system> baydata -b 10 -data "V01-JCS01-SD03-PSD05-REP09-REB10-PRDT1600"

system> baydata -b 11 -data "V01-JCS01-SD03-PSD06-REP11-REB12-PRDT1600"

system> baydata -b 12 -data "V01-JCS01-SD03-PSD06-REP11-REB12-PRDT1600"
```

Results Display the results of the configuration:

```
system> baydata

Bay  Status           Definition
1    Supported        V01-JCS01-SD01-PSD01-REP01-REB02-PRDT320
2    Supported        V01-JCS01-SD01-PSD01-REP01-REB02-PRDT320
3    Supported        V01-JCS01-SD01-PSD02-REP03-REB04-PRDT320
4    Supported        V01-JCS01-SD01-PSD02-REP03-REB04-PRDT320
5    Supported        V01-JCS01-SD02-PSD03-REP05-REB06-PRDT640
6    Supported        V01-JCS01-SD02-PSD03-REP05-REB06-PRDT640
7    Supported        V01-JCS01-SD02-PSD04-REP07-REB08-PRDT640
8    Supported        V01-JCS01-SD02-PSD04-REP07-REB08-PRDT640
9    Supported        V01-JCS01-SD03-PSD05-REP09-REB10-PRDT1600
10   Supported        V01-JCS01-SD03-PSD05-REP09-REB10-PRDT1600
11   Supported        V01-JCS01-SD03-PSD06-REP11-REB12-PRDT1600
12   Supported        V01-JCS01-SD03-PSD06-REP11-REB12-PRDT1600
```

T320 Router Configuration

Step-by-Step Procedure To configure the RSD and create the PSDs on the T320 router:

1. Log in to the T320 router.
2. Configure RSD1 and the parameters specified in Table 2.

Table 2: T320 Router Configuration

PSD	FPCs	Redundant Routing Engine Slots
1	0, 1, 2, and 3	1 and 2
2	4, 5, 6, and 7	3 and 4

3. At the [edit chassis system-domains] hierarchy level of the JUNOS CLI, include the root-domain-id 1 statement to identify the RSD.
4. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd1 statement to create PSD1.
5. At the [edit chassis system-domains protected-system-domains psd1] hierarchy level:
   a. Include the fpcs 0 fpcs 1 fpcs 2 fpcs 3 statement to assign the FPCs in slots 0, 1, 2, and 3 to PSD1.

b. Include the control-system-id 1 statement to identify the JCS1200 platform.

c. Include the control-slot-numbers 1 control-slot-numbers 2 statement to assign the Routing Engines in slots 1 and 2 in the JCS chassis to PSD1.

6. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd2 statement to create PSD2.

7. At the [edit chassis system-domains protected-system-domains psd2] hierarchy level:

a. Include the fpcs 4 fpcs 5 fpcs 6 fpcs 7 statement to assign the FPCs in slots 4, 5, 6, and 7 to PSD2.

b. Include the control-system-id 1 statement to identify the JCS1200 platform.

c. Include the control-slot-numbers 3 control-slot-numbers 4 statement to assign the Routing Engines in slots 3 and 4 in the JCS chassis to PSD2.

Results Display the results of the configuration:

```
system-domains {
   root-domain-id 1;
   protected-system-domains {
      psd1 {
         description “psd for customer1”;
         fpcs [ 0 1 2 3];
         control-system-id 1;
         control-slot-numbers [ 1 2 ];
      }
      psd2 {
         description “psd for customer2”;
         fpcs [ 4 5 6 7];
         control-system-id 1;
         control-slot-numbers [ 3 4 ];
      }
   }
}
```

T640 Router Configuration

Step-by-Step Procedure To configure the RSD and create the PSDs on the T640 router:

1. Log in to the T640 router.

2. Configure RSD2 and the parameters specified in Table 3.

Table 3: T640 Router Configuration

PSD	FPCs	Redundant Routing Engine Slots
3	0, 1, 2, and 3	5 and 6
4	4, 5, 6, and 7	7 and 8

3. At the [edit chassis system-domains] hierarchy level of the JUNOS CLI, include the root-domain-id 2 statement to identify the RSD.
4. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd1 statement to create PSD3.
5. At the [edit chassis system-domains protected-system-domains psd3] hierarchy level:
   a. Include the fpcs 0 fpcs 1 fpcs 2 fpcs 3 statement to assign the FPCs in slots 0, 1, 2, and 3 to PSD3.
   b. Include the control-system-id 1 statement to identify the JCS1200 platform.
   c. Include the control-slot-numbers 5 control-slot-numbers 6 statement to assign the Routing Engines in slots 5 and 6 in the JCS chassis to PSD3.
6. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd4 statement to create PSD4.
7. At the [edit chassis system-domains protected-system-domains psd4] hierarchy level:
   a. Include the fpcs 4 fpcs 5 fpcs 6 fpcs 7 statement to assign the FPCs in slots 4, 5, 6, and 7 to PSD4.
   b. Include the control-system-id 1 statement to identify the JCS1200 platform.
   c. Include the control-slot-numbers 7 control-slot-numbers 8 statement to assign the Routing Engines in slots 7 and 8 in the JCS chassis to PSD4.

Results Display the configuration results:

```
system-domains {
   root-domain-id 2;
   protected-system-domains {
      psd3 {
         description “psd for customer3”;
         fpcs [ 0 1 2 3];
         control-system-id 1;
         control-slot-numbers [ 5 6 ];
      }
      psd4 {
         description “psd for customer4”;
         fpcs [ 4 5 6 7];
         control-system-id 1;
         control-slot-numbers [ 7 8 ];
      }
   }
}
```

T1600 Router Configuration

Step-by-Step Procedure To configure the RSD and create the PSDs on the T1600 router:

1. Log in to the T1600 router.
2. Configure RSD3 and the parameters specified in Table 4.

Table 4: T1600 Router Configuration

PSD	FPCs	Redundant Routing Engine Slots
5	0, 1, 2, and 3	9 and 10
6	4, 5, 6, and 7	11 and 12

3. At the [edit chassis system-domains] hierarchy level of the JUNOS CLI, include the root-domain-id 3 statement to identify the RSD.
4. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd5 statement to create PSD5.
5. At the [edit chassis system-domains protected-system-domains psd5] hierarchy level:
   a. Include the fpcs 0 fpcs 1 fpcs 2 fpcs 3 statement to assign the FPCs in slots 0, 1, 2, and 3 to PSD3.
   b. Include the control-system-id 1 statement to identify the JCS1200 platform.
   c. Include the control-slot-numbers 9 control-slot-numbers 10 statement to assign the Routing Engines in slots 9 and 10 in the JCS chassis to PSD5.

6. At the [edit chassis system-domains] hierarchy level, include the protected-system-domains psd6 statement to create PSD6.

7. At the [edit chassis system-domains protected-system-domains psd6] hierarchy level:

   a. Include the fpcs 4 fpcs 5 fpcs 6 fpcs 7 statement to assign the FPCs in slots 4, 5, 6, and 7 to PSD4.

   b. Include the control-system-id 1 statement to identify the JCS1200 platform.

   c. Include the control-slot-numbers 11 control-slot-numbers 12 statement to assign the Routing Engines in slots 11 and 12 in the JCS chassis to PSD6.

Results Display the configuration results:

```
system-domains {
   root-domain-id 3;
   protected-system-domains {
      psd5 {
         description “psd for customer5”;
         fpcs [ 0 1 2 3];
         control-system-id 1;
         control-slot-numbers [ 9 10 ];
      }
      psd6 {
         description “psd for customer6”;
         fpcs [ 4 5 6 7];
         control-system-id 1;
         control-slot-numbers [ 11 12 ];
      }
   }
}
```

Verification

Verifying Configured PSDs

Purpose Verify that the PSDs configured under each RSD are online.

Action On each RSD issue the show chassis psd command:

RSD1

```
user@rsd1> show chassis psd

PSD  Description         State              Uptime
 1   psd for customer1   Online             1 hour, 12 minutes, 15 seconds
 2   psd for customer2   Online             1 hour, 12 minutes, 15 seconds
```

RSD2

```
user@rsd2> show chassis psd

PSD  Description         State               Uptime
 3   psd for customer3   Online              1 hour, 12 minutes, 15 seconds
 4   psd for customer4   Online              1 hour, 12 minutes, 15 seconds
```

RSD3

```
user@rsd3> show chassis psd

PSD  Description         State               Uptime
 5   psd for customer5   Online              1 hour, 12 minutes, 15 seconds
 6   psd for customer6   Online              1 hour, 12 minutes, 15 seconds
```

Meaning RSD1 owns PSD1 and PSD2. RSD2 owns PSD3 and PSD4. RSD3 owns PSD4 and PSD5. All PSDs are online.

Verifying PSD Ownership of FPCs

Purpose Verify that each PSD is assigned the correct FPCs on the T Series router.

Action For each PSD, issue the show chassis fpc command. For example:

```
user@psd1> show chassis fpc

rsd-re0:
--------------------------------------------------------------------------
                     Temp  CPU Utilization (%)   Memory    Utilization (%)
Slot State            (C)  Total  Interrupt      DRAM (MB) Heap     Buffer
  0  Online            34      3          1       256        12         50
  1  Online            52      4          0       2048        3         24
  2  Online            34      3          1       256        12         50
  3  Online            52      4          0       2048        3         24
```

Meaning In this example, PSD1 owns the FPCs in slots 0, 1, 2, and 3 on the T Series router.

Verifying PSD Ownership of Routing Engines

Purpose Verify that each PSD owns the correct Routing Engines on the JCS chassis.

Action On each PSD, issue the show chassis routing-engine command. For example:

```
user@psd2> show chassis routing-engine

Routing Engine status:
  Slot 0:
    Physical Slot                 3
    Current state                 Master
    Election priority             Master (default)
    DRAM                      13312 MB
    Memory utilization           11 percent
    CPU utilization:
      User                        0 percent
      Background                  0 percent
      Kernel                      0 percent
      Interrupt                   0 percent
```

```
      Idle                      100 percent
    Model                         RE-JCS1200-1x2330
    Serial ID                     SNBLBCD001
    Start time                    2008-09-03 13:49:00 PDT
    Uptime                        27 days, 2 hours, 50 minutes, 9 seconds
    Last reboot reason            0x49:power cycle/failure power-button hard
power off thermal shutdown
Routing Engine status:
  Slot 1:
    Physical Slot                 4
    Current state                 Backup
    Election priority             Backup (default)
    DRAM                    13312 MB
    Memory utilization         10 percent
    CPU utilization:
      User                     0 percent
      Background               0 percent
      Kernel                   0 percent
      Interrupt                0 percent
      Idle                   100 percent
    Model                         RE-JCS1200-1x2330
    Serial ID                     SNBLBCD002
    Start time                    2008-09-24 17:04:01 PDT
    Uptime                        5 days, 23 hours, 35 minutes, 18 seconds
    Last reboot reason            0x49:power cycle/failure power-button hard
power off thermal shutdown
    Load averages:                1 minute   5 minute  15 minute
                                      0.00       0.00       0.00
```

Meaning In this example, PSD2 owns the Routing Engines in slots 3 and 4 on the JCS chassis as indicated by the values in the Physical Slot fields. The Routing Engine in slot 3 is the master, whereas the Routing Engine in slot 4 is the backup.

Related Topics

- Configuring an RSD and Creating PSDs

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