



Secure Domain Router Commands

Secure Domain Routers (SDRs) are a means of dividing a single physical system into multiple logically separated routers. SDRs are isolated from each other in terms of their resources, performance, and availability. On NCS-6008 single-chassis, multiple SDRs can be created and each SDR shall be independent of each other. They can be independently upgraded or downgraded and are capable of defining the SDR boundary at the line card level.

For detailed information about secure domain router concepts, configuration tasks, and examples, see the *Configuring Secure Domain Routers on Cisco IOS XR Software* module in *System Management Configuration Guide for Cisco NCS 6000 Series Routers*.

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console attach-sdr location

To create console access to the named-SDRs, use the **console attach-sdr location** command in System Admin Config mode.

console attach-sdr location *node-id* **tty name** *tty-name* **sdr- name** *sdr- name*

Syntax Description

console attach-sdr location <i>node-id</i>	Specifies the location of the RP. Note XR VMs RP can be either RP0 or RP1 based on the RP on which XR VM is active gets created first, similar to default-SDR.
tty name <i>tty-name</i>	Specifies the name of tty. It can either be console1 or console2.
sdr- name <i>sdr- name</i>	Specifies the named-SDR that can be accessed through console. Note The consoles are per node base. They can be assigned to RP or standby RP. With console port assigned to standby RP, the standby console cannot be used for command input, similar to default-SDR.

Command Default

None

Command Modes

System Admin Config mode

Command History

Release	Modification
Release 6.1.1	This command was introduced.

Usage Guidelines

To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.

- With named-SDRs, you can either use console1 or console2 of RP to access XR VM. You can connect up to two named-SDRs at any given time.
- Console attach CLI needs to be configured for both Active and Standby RPs.
- On redundancy switchover, access is seamlessly transferred to the new RP. You need to connect to the new RPs console (similar to default-SDR).
- When all the VMs are created, you need to issue console attach-sdr CLI to get console access to the XR console.

Task ID	Task ID	Operations
	system	read, write

Example

The following example shows how to configure console access to named-SDR.

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# console attach-sdr location 0/RP0 tty-name console1 sdr-name
sdr2
sysadmin-vm:0_RP0(config)# console attach-sdr location 0/RP1 tty-name console1 sdr-name
sdr2
sysadmin-vm:0_RP0(config)# commit
```

placement reoptimize

To reoptimize the placement of processes to provide high availability, use the **placement reoptimize** command in the System Admin EXEC mode.

placement reoptimize

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes System Admin EXEC

Command History	Release	Modification
	Release 6.3.1	This command was introduced.

Usage Guidelines None

This example shows how to initiate a placement reoptimization of processes:

```
sysadmin-vm:0_RP0#placement reoptimize
```

```
Mon Jun 26 21:50:26.030 UTC
```

Group-Name	Current-Placement	Reoptimized-Placement
central-services	0/RP0/CPU1 (0/RP1/CPU1)	0/RP0/CPU1 (0/RP1/CPU1)
v4-routing	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)
netmgmt	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)
mcast-routing	0/RP0/CPU1 (0/RP1/CPU1)	0/RP0/CPU1 (0/RP1/CPU1)
v6-routing	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)
Group_0_1	0/RP0/CPU1 (0/RP1/CPU1)	0/RP0/CPU1 (0/RP1/CPU1)
Group_0_0	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)

```
Do you want to proceed with the reoptimization[y/n]y
```

```
Triggering reoptimize
```

```
Migration running in the background
```

```
Please don't trigger one more migration
```

sdr

To create a secure domain router (SDR) and to enter SDR configuration mode, use the **sdr** command in System Admin Config mode. To remove a secure domain router from the configuration, use the **no** form of this command.

sdr *sdr-name*
no sdr *sdr-name*

Syntax Description	<i>sdr-name</i> Name of the SDR to be created or modified.						
Command Default	The system comes configured as a single secure domain router known as the <i>default-SDR</i> .						
Command Modes	System Admin Config mode						
Command History	<table> <tr> <th>Release</th><th>Modification</th></tr> <tr> <td>Release 5.0.0</td><td>This command was introduced.</td></tr> <tr> <td>Release 6.1.1</td><td>Support for named-SDRs was added.</td></tr> </table>	Release	Modification	Release 5.0.0	This command was introduced.	Release 6.1.1	Support for named-SDRs was added.
Release	Modification						
Release 5.0.0	This command was introduced.						
Release 6.1.1	Support for named-SDRs was added.						
Usage Guidelines	<p>To use this command, you must be in a user group associated with a task group that includes appropriate task IDs. If the user group assignment is preventing you from using a command, contact your AAA administrator for assistance.</p> <p>Use the sdr command to create an SDR or modify an existing SDR.</p>						



Note The *sdr-name* argument creates an SDR if the SDR specified for the *sdr-name* argument does not exist.

By default, a router running Cisco IOS XR software contains one SDR, the default-SDR. You can create multiple SDRs by deleting the default-SDR.

Use the **no** form of the command to remove a the SDR configuration. When an SDR is removed from the router configuration, all nodes included in the SDR configuration are returned to the default SDR inventory.

Maximum Number of SDR Configurations

A maximum of three named-SDRs can be configured.

Task ID	Task ID	Operations
	system	read, write

The following example shows how to delete the default-SDR.

```
sysadmin-vm:0_RP0# configure
Thu Jun 25 09:36:03.496 UTC
Entering configuration mode terminal
sysadmin-vm:0_RP0(config)# no sdr default-sdr
sysadmin-vm:0_RP0(config)# commit
```

The following example shows how enter SDR configuration mode to configure an SDR.

```
sysadmin-vm:0_RP0# configure
sysadmin-vm:0_RP0(config)# sdr sdr1
sysadmin-vm:0_RP0(config-sdr-sdr1)#
```

sdr location

To reload, start, or shutdown a secure domain router (SDR), use the **sdr location** command in the System Admin EXEC mode.

sdr *sdr-name* **location** [*node-id* | **all**] [**reload** [{**coredump** | **force**}] | **shut** | **start**]

Syntax Description	<i>sdr-name</i>	Name of the SDR, default-sdr or named-SDR .
	<i>node-id</i>	Selects the target location. The <i>node-id</i> is expressed in the rack/slot notation.
	all	Selects all the nodes.
	reload	Reloads the XR VM on the node.
	coredump	Performs the VM core dump and then reloads the SDR.
	force	Forces shutdown and does not wait for an orderly system shutdown.
	shut	Shuts down the XR VM on the node.
	start	Starts the XR VM on the node.
Command Default	A single SDR named default-sdr is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.	
Command Modes	System Admin EXEC	
Command History	Release	Modification
	Release 5.0.0	This command was introduced.
Usage Guidelines	None	

This example shows how to reload the SDR:

```
sysadmin-vm:0_RP0#sdr default-sdr location 0/1 reload
```

sdr resources

To allocate resources for a secure domain router (SDR), use the **sdr resources** command in System Admin Config mode. To remove the allocated resources, use the **no** form of this command.

sdr {*sdr-name* | **default-sdr**} **resources** {**card-type** {**lc** | **RP**} [{**vm-cpu** *num-of-cpus* | **vm-memory** *memory-size* }]} [**disk-space-size** *disk-space-size* | **fgid** *fgid* | **mgmt_ext_vlan** *ext-vlan-id*]

Syntax Description	<i>sdr-name</i>	Specifies the name of the SDR. Permitted values are 1 to 30 characters (0-9,a-z,A-Z,-,_).
	default-sdr	Specifies the default SDR.
	card-type	Specifies the type of the card, that is RP or LC.
	vm-cpu <i>num-of-cpus</i>	Specifies the number of VM CPUs.
	vm-memory <i>memory-size</i>	Speicifies the VM memory size in gigabytes.
	disk-space-size <i>disk-space-size</i>	Specifies the size of the SDR disk space, as an unsigned integer.
	fgid <i>fgid</i>	Specifies the fragment ID of the SDR, as an unsigned integer ranging from 25000 to 524288.
	mgmt_ext_vlan <i>ext-vlan-id</i>	Specifies the management external VLAN for the SDR.
Command Default	None	
Command Modes	System Admin Config	
Command History	Release	Modification
	Release 5.0.0	This command was introduced.
Usage Guidelines	This command must be used to fine tune the physical memory resources of each Cisco ASR 9000 High Density 100GE Ethernet line card in order to achieve full scale with Cisco IOS XR 64-bit BNG.	
	This command enforces to reboot the LC XR-VMs to adjust the requested resources like VM memory.	
Task ID	Task ID	Operation
	system	read
This example shows how to fine tune the memory for LC XR-VM by configuring resources for secure domain router:		
<pre>RP/0/RP0/CPU0:router#admin sysadmin-vm:0_RSP1# config</pre>		


```
sysadmin-vm:0_RSPl(config)# sdr default-sdr resources card-type lc vm-memory 21
```

sdr default-sdr re_pair

To initiate re-pairing of RPs in the currently defined secure domain routers (SDRs), use the **sdr default-sdr re_pair** command in the System Admin EXEC mode.

```
sdr default-sdr re_pair
```

Syntax Description	default-sdr	Shows the details of the default SDR.
	re_pair	Activates the re-pairing of RPs in the defined SDR.
Command Default	None	
Command Modes	System Admin EXEC	
Command History	Release	Modification
	Release 6.3.1	This command was introduced.
Usage Guidelines	None	

This example shows how to display the pairing of the default SDR:

```
sysadmin-vm:0_RP0#sdr default-sdr re_pair
Fri May 19 21:22:36.625 UTC
Current Configuration
  0/RP0 1/RP1
  1/RP0 2/RP1
  2/RP0 0/RP1
Re_Paired Configuration
  0/RP0 1/RP1
  1/RP0 0/RP1
Would you like to proceed ? [yes/no]: yes
Proceeding with action
```

sdr default-sdr pairing-mode inter-rack

To enable pairing RPs between racks in a daisy chain algorithm defined secure domain routers (SDRs), use the **sdr default-sdr pairing-mode inter-rack** command in the System Admin EXEC mode. The inter-rack mode of pairing provides high availability against rack failures.

sdrdefault-sdr pairing-modeinter-rack

Syntax Description	default-sdr	Shows the details of the default SDR.
	pairing-mode	Specifies the pairing mode of RPs.
	inter-rack	Enables the pairing of RPs between racks in a configuration.
Command Default	A single SDR named default-sdr is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.	
Command Modes	System Admin EXEC	
Command History	Release	Modification
	Release 6.3.1	This command was introduced.
Usage Guidelines	None	

This example shows how to enable inter-rack pairing:

```
sysadmin-vm:0_RP0#sdr default-sdr pairing-mode inter-rack
```

sdr default-sdr pairing-mode intra-rack

To enable pairing of RPs within a rack, use the **sdr default-sdr pairing-mode intra-rack** command in the System Admin EXEC mode. The intra-rack mode of pairing is the default pairing mechanism as defined in the SDR.

sdr default-sdr pairing-mode intra-rack

Syntax Description	default-sdr	Shows the details of the default SDR.
	pairing-mode	Specifies the pairing mode of RPs.
	intra-rack	Enables the pairing of RPs within a rack in a configuration.
Command Default	A single SDR named default-sdr is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.	
Command Modes	System Admin EXEC	
Command History	Release	Modification
	Release 6.3.1	This command was introduced.
Usage Guidelines	None	

This example shows how to enable inter-rack pairing:

```
sysadmin-vm:0_RP0#sdr default-sdr pairing-mode intra-rack
```

sh placement reoptimize

To show the predictions from reoptimizing the placement of processes to provide high availability, use the **sh placement reoptimize** command in the System Admin EXEC mode.

shplacement reoptimize

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes System Admin EXEC

Command History	Release	Modification
	Release 6.3.1	This command was introduced.

Usage Guidelines None

This example shows how to see the predictions for a placement reoptimization of processes:

```
sysadmin-vm:0_RP0#sh placement reoptimize
```

```
Mon Jun 26 21:49:24.504 UTC
```

Group-Name	Current-Placement	Reoptimized-Placement
central-services	0/RP0/CPU1 (0/RP1/CPU1)	0/RP0/CPU1 (0/RP1/CPU1)
v4-routing	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)
netmgmt	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)
mcast-routing	0/RP0/CPU1 (0/RP1/CPU1)	0/RP0/CPU1 (0/RP1/CPU1)
v6-routing	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)
Group_0_1	0/RP0/CPU1 (0/RP1/CPU1)	0/RP0/CPU1 (0/RP1/CPU1)
Group_0_0	1/RP0/CPU1 (NONE)	0/RP0/CPU1 (0/RP1/CPU1)

show sdr

To display information about the currently defined secure domain routers (SDRs), pairing details, and reboot history, use the **show sdr location** command in the System Admin EXEC mode.

show sdr [**sdr-name** **detail** [{**location** [*node-id*] | **pairing** | **reboot-history** **location** [*node-id*]}]]

Syntax Description	<i>sdr-name</i>	Name of the SDR, default-sdr or named-SDR .
	location <i>node-id</i>	Selects the target location. The <i>node-id</i> is expressed in the <i>rack/slot</i> notation.
	pairing	Displays the detailed information of the SDR.
	pairing	Displays the SDR pairing information.
	reboot-history	Displays the reboot history of the SDR.

Command Default Displays all SDRs in the system.

Command Modes System Admin EXEC

Command History	Release	Modification
	Release 5.0.0	This command was introduced.

Usage Guidelines No specific guidelines impact the use of this command.

This example shows how to display the detailed information of the SDR:

```
sysadmin-vm:0_RP0# show sdr Internet-SDR detail
Sat Aug 27 06:05:36.757 UTC
-----SDR Detail at location 0/RP0/VM1-----
SDR Id                               2
IP Address of VM                     192.0.0.4
MAC address of VM                    64:F6:9D:78:FD:36
Boot Partition                       /dev/panini_vol_grp/xr_lv0
Data Partition                       /dev/pci_disk1/xr_data_lv0
Big Disk Partition                   /dev/pci_disk1/ssd_disk1_xr_2
VM Id                                1
VM CPUs                              4
VM Memory[in MB]                     11264
Card Type                            RP_Card
Card Serial                          SAL19058TGE
Rack Type                            Line_Card_Controller
Chassis Serial                       FLM184073K4
Hardware Version                     0.4
Management External VLAN             12
VM State                             RUNNING
Start Time                           "08/11/2016 00:33:12"
Reboot Count(Since VM Carving)       1
Reboot Count(Since Card Reload)      1
                                08/11/2016 00:33:12 FIRST_BOOT
-----SDR Detail at location 0/RP1/VM1-----
```

```

SDR Id                2
IP Address of VM      192.0.4.4
MAC address of VM     4C:4E:35:B6:94:BC
Boot Partition        /dev/panini_vol_grp/xr_lv0
Data Partition        /dev/pci_disk1/xr_data_lv0
Big Disk Partition    /dev/pci_disk1/ssd_disk1_xr_2
VM Id                 1
VM CPUs               4
VM Memory[in MB]     11264
Card Type             RP_Card
Card Serial           SAL1830XFD5
Rack Type             Line_Card_Controller
Chassis Serial        FLM184073K4
Hardware Version      0.4
Management External VLAN 12
VM State              RUNNING
Start Time            "08/11/2016 00:33:01"
Reboot Count(Since VM Carving) 1
Reboot Count(Since Card Reload) 1
                        08/11/2016 00:33:01 FIRST_BOOT
-----SDR Detail at location 0/6/VM1-----
SDR Id                2
IP Address of VM      192.0.88.3
MAC address of VM     E2:3B:46:4F:8D:05
Boot Partition        /dev/panini_vol_grp/xr_lv0
Data Partition        /dev/panini_vol_grp/xr_data_lv0
Big Disk Partition    (null)
VM Id                 1
VM CPUs               3
VM Memory[in MB]     6383
Card Type             LC_Card
Card Serial           SAD161300T5
Rack Type             Line_Card_Controller
Chassis Serial        FLM184073K4
Hardware Version      0.2
Management External VLAN 12
VM State              RUNNING
Start Time            "08/11/2016 00:32:48"
Reboot Count(Since VM Carving) 1
Reboot Count(Since Card Reload) 1
                        08/11/2016 00:32:48 FIRST_BOOT

```

This example shows how to display the SDR pairing information:

```

sysadmin-vm:0_RP0# show sdr Internet-SDR pairing
Sat Aug 27 06:01:08.174 UTC
Pairing Mode  AUTOMATIC
SDR Lead
  Node 0 0/RP0
  Node 1 0/RP1
Pairs
  Pair Name Pair0
    Node 0 0/RP0
    Node 1 0/RP1

```

This example shows the output of the **show sdr** command:

```

sysadmin-vm:0_RP0# show sdr
Sat Aug 27 06:02:34.910 UTC

SDR: Internet-SDR
Location      IP Address      Status      Boot Count  Time Started
-----
0/RP0/VM1    192.0.0.4      RUNNING    1           08/11/2016 00:33:12

```

show sdr

```

0/RP1/VM1    192.0.4.4      RUNNING      1           08/11/2016 00:33:01
0/6/VM1      192.0.88.3     RUNNING      1           08/11/2016 00:32:48

```

SDR: P-SDR

Location	IP Address	Status	Boot Count	Time Started
0/RP0/VM2	192.0.0.6	RUNNING	2	08/11/2016 03:24:43
0/RP1/VM2	192.0.4.6	RUNNING	2	08/11/2016 03:24:32
0/1/VM1	192.0.68.3	RUNNING	2	08/11/2016 03:25:26

SDR: VRFPE-SDR1

Location	IP Address	Status	Boot Count	Time Started
0/RP0/VM3	192.0.0.8	RUNNING	2	08/11/2016 02:32:15
0/RP1/VM3	192.0.4.8	RUNNING	2	08/11/2016 02:32:23
0/0/VM1	192.0.64.3	RUNNING	1	08/18/2016 22:33:52

This example shows the output of the show sdr <sdr-name> reboot-history

```

sysadmin-vm:0_RP0# show sdr Internet-SDR reboot-history
Sat Aug 27 06:06:42.315 UTC

```

Location	Reboots Since Created	Reason
0/RP0/VM1	1	08/11/2016 00:33:12 FIRST_BOOT
0/RP1/VM1	1	08/11/2016 00:33:01 FIRST_BOOT
0/6/VM1	1	08/11/2016 00:32:48 FIRST_BOOT

show sdr default-sdr pairing

To display information about the pairing details of the currently defined secure domain routers (SDRs), use the **show sdr default-sdr pairing** command in the System Admin EXEC mode.

showsdr **default-sdr**pairing

Syntax Description	default-sdr	Shows the details of the default SDR.
	pairing	Displays the pairing of RPS in the SDR.
Command Default	A single SDR named default-sdr is configured on the router and started. In case of SOST mode, a single SDR named default-sdr is configured on the router and started. In case of SOMT mode, one or more Named-SDRs is/are configured on the router and started.	
Command Modes	System Admin EXEC	
Command History	Release	Modification
	Release 6.3.1	This command was introduced.
Usage Guidelines	None	

This example shows how to display the pairing of the default SDR:

```
sysadmin-vm:0_RP0#show sdr default-sdr pairing
Fri May 19 21:23:039.938 UTC
Pairing Mode  INTER-RACK
SDR Lead
Node 0  0/RP0
Node 1  1/RP1
Pairs
Pair Name Pair0
Node 0    0/RP0
Node 1    1/RP1
Pairs
Pair Name Pair1
Node 0    1/RP0
Node 1    0/RP1
```

show sdr-manager trace

To display SDR manager trace details, use the **show sdr-manager trace** command in the System Admin EXEC mode.

show sdr-manager trace [**all** *trace-name*] **location** *node-id* [{**all** *trace-attribute*}]

Syntax Description	<i>trace-name</i>	Trace buffer name.
	location <i>node-id</i>	Specifies the target location. The <i>node-id</i> argument is expressed in the <i>rack/slot</i> notation.
	<i>trace-attributes</i>	Trace attribute.
	all	Displays all the details.
Command Default	None	
Command Modes	System Admin EXEC	
Command History	Release	Modification
	Release 6.1.2	This command was introduced.
Usage Guidelines	<p>This command displays the SDR manager debug traces that are meant only for diagnostics.</p> <p>This example shows how to display the SDR manager trace details:</p>	

```
sysadmin-vm:0_RP0#show sdr-manager trace all location 0/0 timestamp
```

```
Fri Aug 9 07:02:28.644 UTC
06.55.47.185784448:1376031347185784662:sdr_mgr SDR MGR started
06.55.47.187332096:1376031347187332362: @msc_entity id="0/19581" display_name="sdr_mgr"
06.55.47.187343744:1376031347187344066:msc_event entity_id="0/19581/19581"
time="1376031347187344066" label="requesting connection to syslog (CAPI hdl=0x1bcad60, CIPC
hdl = 0x1bcb0a0)" type="Connection" completed="false"
06.55.47.187395968:1376031347187396272:DS handle 0x1bcad60 instantiated for syslog client
handle
06.55.47.187745024:1376031347187745236: @msc_entity id="0/19581" display_name="sdr_mgr"
06.55.47.188629504:1376031347188629812:msc_event entity_id="0/19581/19581"
time="1376031347188629812"
label="requesting connection to calvados_ds (CAPI hdl=0x1bee4a0, CIPC hdl = 0x1bee8d0)"
type="Connection" completed="false"
06.55.47.188833024:1376031347188833246:msc_event entity_id="0/19581/19581"
time="1376031347188833246" label="connecting to calvados_ds with endpoint (0xf000001, 7400)
hdl=0x0x1bee4a0)" type="Connection" completed="false"
@msc_source pairing_id="0/19581/con_0x1bee4a0" type="Lane"
06.55.47.189353600:1376031347189353766:CIPC:CONN (hdl=0x1bee8d0):cipc_connect():
invoked on endpoint (127.0.0.1, 7400)
06.55.47.189588736:1376031347189588924:CIPC:INFO (hdl=0x1bee8d0):socket_connect():
async socket connection in progress
```

```
06.55.47.190383488:1376031347190383718:SMIL: set 0xlafa8d0 created
06.55.47.190388352:1376031347190388492:DEBUG: sdr_main_fsa_init
```

 `show sdr-manager trace`