RCMD Commands

This module describes the commands used to configure and diagnose RCMD.

For detailed information about RCMD concepts, configuration tasks, and examples, see the *Implementing RCMD* module in the *Routing Configuration Guide for Cisco ASR 9000 Series Routers*.

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router-convergence

To configure route convergence monitoring and enter router convergence monitoring and diagnostics (rcmd) configuration mode, use the **router-convergence** command in global configuration mode. To remove all router convergence monitoring configurations and exit the rcmd mode, use the **no** form of this command.

router-convergence [**disable**]
no router-convergence

Syntax Description

disable	[Optional] Disables the monitoring of route convergence on the entire router.

Command Default

RCMD is disabled.

Command Modes

Global configuration

Command History

Release	Modification
Release 4.2.0	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.

Task ID

Task ID	Operation
rcmd	read, write

This example shows how to configure router-convergence command and enable rcmd configuration mode:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#
```

Related Commands

Command	Description
monitor-convergence (IS-IS), on page 3	Enables route convergence monitoring for IS-IS protocol.
monitor-convergence (OSPF), on page 4	Enables OSPF route convergence monitoring.

monitor-convergence (IS-IS)

To enable route convergence monitoring for IS-IS protocol, use the **monitor-convergence** command in address family configuration mode. To disable, route convergence monitoring, use the **no** form of this command.

monitor-convergence
no monitor-convergence

Syntax Description

This command has no keywords or arguments.

Command Default

Route convergence monitoring is disabled.

Command Modes

Address family IPv4 unicast

Address family IPv6 unicast

Address family IPv4 multicast

Address family IPv6 multicast

Command History

Release	Modification
Release 4.2.0	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.

Task ID

Task ID	Operation
isis	read, write

This example shows how to configure route convergence monitoring for IS-IS under IPv6 unicast SAFI:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router isis isp
RP/0/RSP0/CPU0:router(config-isis)#address-family ipv6 unicast
RP/0/RSP0/CPU0:router(config-isis-af)#monitor-convergence
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.
monitor-convergence (OSPF), on page 4	Enables OSPF route convergence monitoring.

monitor-convergence (OSPF)

To enable OSPF route convergence monitoring, use the **monitor-convergence** command in router OSPF configuration mode. To disable OSPF route convergence monitoring, use the **no** form of this command.

monitor-convergence
no monitor-convergence

Syntax Description

This command has no keywords or arguments.

Command Default

Monitor Convergence is disabled.

Command Modes

Router configuration

Command History

Release	Modification
Release 4.2.0	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.

Task ID

Task ID	Operation
ospf	read, write

This example shows how to enable route convergence monitoring for an OSPF process:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router ospf 100
RP/0/RSP0/CPU0:router(config-ospf)#monitor-convergence
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.
monitor-convergence (IS-IS), on page 3	Enables route convergence monitoring for IS-IS protocol.

collect-diagnostics (RCMD)

To collect diagnostics on specified node, use the **collect-diagnostic** command in router-convergence configuration mode. To disable collection of diagnostics, use the **no** form of this command.

collect-diagnostics *location*
no collect-diagnostics *location*

Syntax Description

location	Specifies the line-card location.

Command Default

Diagnostics collection is disabled.

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

For enabling diagnostics collection on specific line-card locations, you can user can specify partially qualified semantics. However, it is not allowed to configure over-lapping locations so as to avoid errors. The following combinations of Rack and Slot are accepted:

- */*/*
- R/*/*
- R/S/*

If a wildcard combination for any location is already disabled, then any other combination that overlaps with it would be rejected. For example,

- If */*/* is disabled, then all other disable commands will be rejected
- If R/*/* is disabled, then disable for */*/* and R/S/* will be rejected
- If R/S/* is disabled, then disable for */*/* and R/*/* will be rejected

Task ID

Task ID	Operation
rcmd	read, write

This example shows how to enable RCMD diagnostics collection on node 0/3/CPU0:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#collect-diagnostics 0/3/CPU0
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

event-buffer-size (RCMD)

To specify event buffer size (in terms of number of events) for storing event traces, use the **event-buffer-size** command in router-convergence configuration mode. To disable buffer size configuration, use the **no** form of this command.

event-buffer-size *number*
no event-buffer-size

Syntax Description

number	Specifies the Specify the number of events. The range is 100 to 500.

Command Default

100 events.

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

The event-buffer-size configuration controls the ltrace buffer size. Ltraces will be stored for only the configured number of events. The default is 100 events and can be set based on the expected churn in the network. Value for event buffer impact memory usage on all RPs and monitored LCs.

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how to configure event buffer size as 500 events:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#event-buffer-size 500
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

max-events-stored (RCMD)

To configure maximum number of events to be stored in the RCMD server, use the **max-events-stored** command in router-convergence configuration mode. To remove the number of events to be stored, use the **no** form of this command.

max-events-stored *number*

Syntax Description

number	Specifies the maximum number of events stored. The range is 10 to 500.

Command Default

100 events.

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

The max-events-stored configuration controls the number of events that are stored in RCMD server, before the older events are deleted. The default is 100 events and can be set based on the expected churn in the network. Value for events stored impact memory usage by RCMD server.

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how to configure 500 number of events to be stored in RCMD server:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#max-events-stored 500
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

monitoring-interval (RCMD)

To configure interval (in minutes) in which to collect logs, use the **monitoring-interval** command in router-convergence configuration mode. To disable monitoring interval configuration, use the **no** form of this command.

monitoring-interval *minutes*
no monitoring-interval *minutes*

Syntax Description

minutes	Specifies the interval (in minutes) for collecting logs. The range is 5 to 120 minutes.

Command Default

Periodic monitoring interval is 15 minutes.

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

The monitoring-interval timer controls the collection, processing, and archival (optional) of convergence data by RCMD server.

Periodic processing can get triggered if number of events detected exceed configured sizing parameters to prevent loss of data . However, this is not guaranteed since the mechanism is throttled.

To collect logs manually, use the **rcmd trigger-data-collect** command. Syslogs are generated when high churn is detected and collection mechanism is getting throttled. This indicates possible loss of data for some events. Throttling mechanism is for one processing every minute.

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how to configure monitoring interval as 5 minutes:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#monitoring-interval 5
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

node disable (RCMD)

To disable monitoring of route convergence on specified location, use the **node disable** command in router-convergence configuration mode. To reinstate, monitoring on specified location, use the **no** form of this command.

node *node-id* **disable**
no node *node-id* **disable**

Syntax Description

node-id	Specifies line card locations for which RCMD monitoring be disabled. Disables RCMD monitoring on the specified node. No data from this node will be available in the reports that are generated. You can enter specific LCs or use wild cards.

Command Default

Update times are gathered and reported for all LCs. Diagnostic mode is disabled on all LCs.

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

Disable monitoring on specific LCs or racks for better scalability. Disable monitoring on LCs whose update times is not going to impact the core IGP/LDP convergence that RCMD is measuring.

On LCs where monitoring is enabled, the diagnostic mode can be enabled (with threshold value) for triggering script using EEM infra for debug data collection from the router. Use diagnostic mode only for debugging purpose since it is more CPU intensive as compared to normal RCMD monitoring.

Only the following combinations of Rack and Slot are acceptable:

- */*/*
- R/*/*
- R/S/*

If a wildcard combination for any location is already disabled, then any other combination that overlaps with it would be rejected. For example,

- If */*/* is disabled, then all other disable commands would be rejected
- If R/*/* is disabled, then disable for */*/* and R/S/* would be rejected
- If R/S/* is disabled, then disable for */*/* and R/*/* would be rejected

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how to disable monitoring on all nodes with Rack 0 and any slot (used wild card *) :

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#node 0/*/* disable
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

prefix-list (monitor-convergence IS-IS)

To enable individual prefix monitoring for IS-IS prefixes, use the prefix-list command in Router IS-IS monitor-convergence configuration mode. To disable individual prefix monitoring, use the no form of this command.

prefix-list *prefix-list-name*
no prefix-list *prefix-list-name*

Syntax Description

prefix-list-name	Specifies the name of an IS-IS prefix-list.

Note Configure a prefix-list under IPv4 or IPv6 using the prefix-list (IP Addresses) command to use for prefix monitoring.

Command Default

All IS-IS prefixes are marked for monitoring, if the prefix-list is not configured

Command Modes

Router IS-IS monitor-convergence

Command History

Release	Modification
Release 4.3.0	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.

To enable monitoring of individual prefixes, first configure a prefix-list using the {ipv4 | ipv6} prefix-list command. Then, use this prefix list with the prefix-list (monitor-convergence IS-IS).

Task ID

Task ID	Operation
isis	read, write

This example shows how to enable IS-IS prefix monitoring:

First, configure a prefix-list:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#ipv4 prefix-list isis_monitor
RP/0/RSP0/CPU0:router(config-ipv4_pfx)#10 permit 35.0.0.0/8 eq 32
RP/0/RSP0/CPU0:router(config-ipv4_pfx)#commit
RP/0/RSP0/CPU0:router(config-ipv4_pfx)#exit
```

Then, configure the prefix list command under Router IS-IS monitor-convergence configuration mode:

```
RP/0/RSP0/CPU0:router(config)#router isis isp
```

```
RP/0/RSP0/CPU0:router(config-isis)#address-family ipv4 unicast
RP/0/RSP0/CPU0:router(config-isis-af)#monitor-convergence
RP/0/RSP0/CPU0:router(config-isis-af-rcmd)#prefix-list isis_monitor
```

prefix-list (monitor-convergence OSPF)

To enable individual prefix monitoring for OSPF prefixes, use the **prefix-list** command in Router OSPF monitor-convergence configuration mode. To disable individual prefix monitoring, use the **no** form of this command.

prefix-list *prefix-list-name*
no prefix-list *prefix-list-name*

Syntax Description

prefix-list-name	Specifies the name of an OSPF prefix-list.

Note Configure a prefix-list under IPv4 or IPv6 using the prefix-list (IP Addresses) command to use for prefix monitoring.

Command Default

All OSPF prefixes are marked for monitoring, if the prefix-list is not configured.

Command Modes

Router OSPF monitor-convergence

Command History

Release	Modification
Release 4.3.0	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.

To enable monitoring of individual prefixes, first configure a prefix-list using the {ipv4 | ipv6} prefix-list command. Then, use this prefix list with the prefix-list (monitor-convergence OSPF).

Task ID

Task ID	Operation
ospf	read, write

This example shows how to enable OSPF prefix monitoring:

First, configure a prefix-list:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#ipv4 prefix-list ospf_monitor
RP/0/RSP0/CPU0:router(config-ipv4_pfx)#10 permit 35.0.0.0/8 eq 32
RP/0/RSP0/CPU0:router(config-ipv4_pfx)#commit
RP/0/RSP0/CPU0:router(config-ipv4_pfx)#exit
```

Then, configure the prefix list command under Router OSPF monitor-convergence configuration mode:

```
RP/0/RSP0/CPU0:router(config)#router ospf 1
```

```
RP/0/RSP0/CPU0:router(config-ospf)#monitor-convergence
RP/0/RSP0/CPU0:router(config-ospf-af-rcmd)#prefix-list ospf_monitor
```

priority (RCMD)

To configure RCMD reporting parameters for low/high/critical/medium priority updates, use the **priority** command in RCMD protocol configuration mode. To disable setting up priority use the **no** form of this command.

priority {**Critical** | **High** | **Low** | **Medium**} [**disable**] [**leaf-network** *leaf-network-number*] [**threshold** *value*]
no priority {**Critical** | **High** | **Low** | **Medium**}

Syntax Description

Critical	Configures the monitoring of route convergence for critical routes.
High	Configures the monitoring of route convergence for high priority routes.
Low	Configures the monitoring of route convergence for low priority routes.
Medium	Configures the monitoring of route convergence for medium priority routes.
disable	Disables the monitoring of route convergence for specified priority.
leaf-network	Configures the monitoring of route convergence for leaf networks. Lists up to 100 leaf networks that were added or deleted as part of SPF.
leaf-network-number	Specifies the maximum number of leaf networks monitored. The range is 10 to 100.
threshold	Sets the threshold value for convergence in milliseconds. If the convergence time exceeds this configured value, diagnostics collection will be triggered.
value	Specifies the threshold value (in msec). The range is 0 to 4294967295.

Command Default

None

Command Modes

Router-convergence protocol configuration

Command History

Release	Modification
Release 4.2.0	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.

Use the **priority** command for collecting data and applying threshold for particular protocol and prefix priority.

Maximum of 100 leaf networks can get logged because of scalability reasons. No default value available for threshold and this needs to be determined with deployment experience for specific network. Threshold specification is required for triggering diagnostics collection. Disable monitoring for medium and or low priority routes to help scale better. No specific order is guaranteed for leaf networks and first N prefixes that change are logged.

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how Configures the monitoring of route convergence for critical routes for 100 leaf networks and at a threshold value of 1 millisecond for OSPF protocol:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#protocol OSPF
RP/0/RSP0/CPU0:router(config-rcmd-proto)#priority high
RP/0/RSP0/CPU0:router(config-rcmd-proto-prio)#leaf-network 100
RP/0/RSP0/CPU0:router(config-rcmd-proto-prio)#threshold 1
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

protocol (RCMD)

To specify the protocol for which to configure RCMD parameters, use the **protocol** command in router-convergence configuration mode. To remove the protocol from RCMD, use the **no** form of this command.

protocol {**ISIS** | **OSPF**}
no protocol {**ISIS** | **OSPF**}

Syntax Description

ISIS	Configures parameters related to OSPF protocol within RCMD
OSPF	Configures parameters related to IS-IS protocol within RCMD

Command Default

None

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

RCMD monitoring needs to be enabled for a specific OSPF or ISIS protocol instance.

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how to enable RCMD parameters for OSPF protocol:

```
RP/0/RSP0/CPU0:router(config)#router
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#protocol OSPF
RP/0/RSP0/CPU0:router(config-rcmd-proto)#priority high
RP/0/RSP0/CPU0:router(config-rcmd-proto-prio)#leaf-network 100
RP/0/RSP0/CPU0:router(config-rcmd-proto-prio)#threshold 1
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

show rcmd isis event prefix

To display the details of the individual IS-IS prefix events, use the show rcmd isis event prefix command in EXEC mode.

show rcmd isis *isis-instance* **event prefix** [{*event-numberprefix* | **after** *event_number* | **last** *event_number* | **priority** {**critical** | **high** | **low** | **medium**} | **threshold-exceeded**}] [**detail**] [**xml**]

Syntax Description

isis-instance	Specifies the name of an IS-IS instance.
event-number	(Optional) Specifies the number of a specific event that is run. Range is 0-4294967295.
prefix	(Optional) Specifies events with a prefix. Specify prefix in *ip-address/length* format.
after	(Optional) Specifies events after a specific event number.
last	(Optional) Specifies the last number of events. Range is 1-500.
priority	(Optional) Specifies to filter events by priority. • **critical**—Event that has critical priority prefixes. • **high**—Event that has high priority prefixes. • **low**—Event that has low priority prefixes. • **medium**—Event that has medium priority prefixex.
threshold-exceeded	(Optional) Specifies events that have exceeded the threshold.
detail	(Optional) Provides detailed output data.
xml	(Optional) Provides output in XML format

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 4.3.0	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.

Task ID

Task ID	Operation
isis	read

This is sample output from the **show rcmd isis event prefix** command:

```
RP/0/RSP0/CPU0:router#show rcmd isis isp event prefix
```

show rcmd ospf event prefix

show rcmd ospf *ospf-instance* **event prefix** [{*event_numberprefix* | **after** *event_number* | **last** *event_number* | **priority** {**critical** | **high** | **low** | **medium**} | **threshold-exceeded**}] [**detail**] [**xml**]

Syntax Description

ospf-instance	Specifies the name of an OSPF instance.
event-number	(Optional) Specifies the number of a specific event that is run. Range is 0-4294967295.
prefix	(Optional) Specifies events with a prefix. Specify prefix in *ip-address/length* format.
after	(Optional) Specifies events after a specific event number.
last	(Optional) Specifies the last number of events. Range is 1-500.
priority	(Optional) Specifies to filter events by priority. • **critical**—Event that has critical priority prefixes. • **high**—Event that has high priority prefixes. • **low**—Event that has low priority prefixes. • **medium**—Event that has medium priority prefixex.
threshold-exceeded	(Optional) Specifies events that have exceeded the threshold.
detail	(Optional) Provides detailed output data.
xml	(Optional) Provides output in XML format

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 4.3.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operation
ospf	read, write

This is sample output from **show rcmd ospf event prefix** command:

```
OSPF process: 1
```

```
Event: 1

    Prefix: 255.255.255.255/32    Cost: 10              Priority: High
    SPF Event No: 0               Route-Type: Intra     Change-Type: Add

    Nexthop: GigabitEthernet-2/0/0/1 Neighbor: 2.2.2.2  Change-Type: Add
             GigabitEthernet-2/0/0/2 Neighbor: 1.1.1.1  Change-Type: Delete

    Start time: Jan 1 05:32:22.118
    Timeline:
        IP Route Program Time:        Min: 40(0/2/CPU0)    Max: 66(0/1/CPU0)
        MPLS Label Program Time:      Min: 173(0/1/CPU0)   Max: 197(0/3/CPU0)
        Details:
              RIBv4-Enter               6     <offset from Start time>
              RIBv4-Exit               12
              RIBv4-Redist              8
              LDP Enter                10
              LDP Exit                 16
              LSD Enter                27
              LSD Exit                 42
              LC Details(IP Path):
                S 0/1/CPU0             66
                F 0/2/CPU0             40
                  0/3/CPU0             56
              LC Details(MPLS Path):
                F 0/1/CPU0            173
                  0/2/CPU0            174
                S 0/3/CPU0            197
```

show rcmd ospf event spf

To display route convergence monitoring and diagnostics information for OSPF shortest path first events, use the **show rcmd ospf event spf** command in EXEC mode.

show rcmd ospf *ospf-instance* **event spf** [{*spf-run* | **after** | **last** | **no-route-change** | **pending** | **route-change** | **threshold-exceeded**}] [**detail**] [**xml**]

Syntax Description

ospf-instance	Specifies the OSPF instance number.
spf-run	(Optional) Specifies a specific OSPF SPF run. Range is 0-4294967295.
after	(Optional) Specifies events after a specific number of events. Range is 0-4294967295.
last	(Optional) Specifies the last "N" events. Range for "N" is 1-500.
no-route-change	(Optional) Displays information about events that have no-route-changes.
pending	(Optional) Displays events that are pending for post processing.
route-change	(Optional) Displays events that have route-change.
threshold-exceed	(Optional Displays that have exceeded the threshold.
detail	Optional) Displays detailed information about the SPF event.
xml	(Optional) Displays information in XML format.

Command Default

None

Command Modes

EXEC

Command History

Release	Modification
Release 4.3.0	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.

Task ID

Task ID	Operation

This is sample output from the show rcmd ospf event spf command:

```
RP/0/RSP0/CPU0:router#show rcmd ospf 1 event spf last 1 detail

Event Status:
^  no route change #  threshold exceeded ~ incomplete data * collection pending


OSPF process: 1

SPF run: 16
    Trigger: Apr 10 23:07:01.614  Start: 0            Duration: 2
    Dijkstra Statistics:          Runs: 1             LSA changes: 0
    IA/Ext Statistics:            Runs: 4             LSA processed: 36
    Timeline Summary:
        Priority: Critical
            Route Count:                 Added: 18          Deleted: 0          Modified:
 0
            FRR Coverage:                Routes: 9/9(100%)             Paths: 18/18(100%)

            IP Route Program Time:       Min: 9(0/2/CPU0)              Max: 11(0/3/CPU0)

            MPLS Label Program Time:     Min: 18(0/1/CPU0)             Max: 22(0/3/CPU0)

        Priority: High
            Route Count:                 Added: 18          Deleted: 0          Modified:
 0
            FRR Coverage:                Routes: 9/9(100%)             Paths: 18/18(100%)

            IP Route Program Time:       Min: 11(0/1/CPU0)             Max: 12(0/2/CPU0)

            MPLS Label Program Time:     Min: 21(0/2/CPU0)             Max: 25(0/3/CPU0)

        Priority: Medium
            Route Count:                 Added: 18          Deleted: 0          Modified:
 0
            FRR Coverage:                Routes: 9/9(100%)             Paths: 18/18(100%)

            IP Route Program Time:       Min: 12(0/3/CPU0)             Max: 15(0/2/CPU0)

            MPLS Label Program Time:     Min: 22(0/2/CPU0)             Max: 26(0/3/CPU0)

        Priority: Low
            Route Count:                 Added: 21          Deleted: 0          Modified:
 0
            FRR Coverage:                Routes: 10/10(100%)           Paths: 21/21(100%)

            IP Route Program Time:       Min: 14(0/1/CPU0)             Max: 19(0/3/CPU0)

            MPLS Label Program Time:     Min: 28(0/1/CPU0)             Max: 33(0/2/CPU0)


Dijkstra Info:
```

```
Area: 0.0.0.0                  Run: 9
Trigger: Apr 10 23:07:01.562   Wait: 0          Start: 52          Duration: 0
```

storage-location

To specify where to store the extended routing-diagnostics that are collected when threshold exceeds, use the **storage-location** command in router-convergence configuration mode. To disable storing routing-diagnostics to a specific location, use the **no** form of this command.

storage-location [{**diagnostics** *directory-path* | **diagnostics-size** *maximum-directory-size* | **reports** *directory-path* | **reports-size** *maximum-directory-size*}]
no storage-location

Syntax Description

diagnostics	Specifies an absolute directory path for storing diagnostic reports.
directory-path	Specifies the path of the absolute directory for storing diagnostic reports.
diagnostics-size	Specifies the maximum size of diagnostics directory.
maximum-directory-size	Specified the size of the diagnostics directory. The range is 5% to 80%.
reports	Specifies an absolute directory path for storing reports.
directory-path	Specifies the path of the absolute directory for storing reports.
reports-size	Specifies the maximum size of the reports directory. The range is 5% to 80%.

Command Default

No default storage location. Mechanism is disabled.

Command Modes

Router-convergence configuration

Command History

Release	Modification
Release 4.2.0	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.

The storage location can be local disk or remote tftp space.

RCMD server can periodically archive reports in XML format for persistency. This mechanism is enabled when archival location is configured. Debug data collected in diagnostics mode is dumped to the configured diagnostic location (else it would get lost). When using local disk, the percentage of disk space to be used can be specified, and RCMD server will delete older reports on reaching the limit. Archival (specifically on local disk) is CPU intensive. Use a remote XML server to periodically collect reports from the router and archive on the server's local storage.

Task ID

Task ID	Operations
rcmd	read, write

Examples

This example shows how to configure storage location as *tftp://202.153.144.25/auto/tftp-chanvija-blr/rcmd/dump/reports* for reports and */harddisk:/rcmd_logs* for diagnostics:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router-convergence
RP/0/RSP0/CPU0:router(config-rcmd)#storage-location
RP/0/RSP0/CPU0:router(config-rcmd-store)#diagnostics /harddisk:/rcmd_logs
RP/0/RSP0/CPU0:router(config-rcmd-store)#reports
tftp://202.153.144.25/auto/tftp-chanvija-blr/rcmd/dump/reports
```

Related Commands

Command	Description
router-convergence, on page 2	Configures route convergence monitoring and enters router convergence monitoring and diagnostics (rcmd) configuration mode.

track-external-routes

To enable tracking of external (Type-3/5/7) LSAs prefix monitoring, use the track-external-routes command in Router OSPF monitor-convergence configuration mode. To disable, tracking of external LSAs prefix monitoring, use the no form of this command.

track-external-routes
no track-external-routes

This command has no keywords or arguments.

Command Default

Route OSPF monitor-convergence

Command Modes

External LSAs prefix monitoring is disabled.

Command History

Release	Modification
Release 4.3.0	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.

Task ID

Task ID	Operation
ospf	read, write

This example shows how to enable tracking of external LSAs prefix monitoring:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router ospf 100
RP/0/RSP0/CPU0:router(config-ospf)#monitor-convergence
RP/0/RSP0/CPU0:router(config-ospf-af-rcmd)#track-external-routes
```

track-summary-routes

To enable tracking of summary (inter-area) routes prefix monitoring, use the track-summary-routes command in Router OSPF monitor-convergence configuration mode. To disable tracking of summary router prefix monitoring, use the no form of this command.

track-summary-routes
no track-summary-routes

This command has no keywords or arguments.

Command Default

Router OSPF monitor-convergence

Command Modes

Summary routes prefix monitoring is disabled.

Command History

Release	Modification
Release 4.3.0	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.

Task ID

Task ID	Operation
ospf	read, write

This example shows how to enable tracking of summary routes prefix monitoring:

```
RP/0/RSP0/CPU0:router#configure
RP/0/RSP0/CPU0:router(config)#router ospf 100
RP/0/RSP0/CPU0:router(config-ospf)#monitor-convergence
RP/0/RSP0/CPU0:router(config-ospf-af-rcmd)#track-summary-routes
```