RIB Commands

Note

- Starting with Cisco IOS XR Release 6.6.25, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 560 Series Routers.
- Starting with Cisco IOS XR Release 6.3.2, all commands applicable for the Cisco NCS 5500 Series Router are also supported on the Cisco NCS 540 Series Router.
- References to releases before Cisco IOS XR Release 6.3.2 apply to only the Cisco NCS 5500 Series Router.
- Cisco IOS XR Software Release 7.0.1 specific updates are not applicable for the following variants of Cisco NCS 540 Series Routers:
  - N540-28Z4C-SYS-A
  - N540-28Z4C-SYS-D
  - N540X-16Z4G8Q2C-A
  - N540X-16Z4G8Q2C-D
  - N540X-16Z8Q2C-D
  - N540-12Z20G-SYS-A
  - N540-12Z20G-SYS-D
  - N540X-12Z16G-SYS-A
  - N540X-12Z16G-SYS-D

This module describes the commands used to display and clear information in the Routing Information Base (RIB).

For detailed information about RIB concepts, configuration tasks, and examples, see the Implementing RIB on Cisco NCS 5000 Series Routers module in *Routing Configuration Guide for Cisco NCS 5000 Series Routers*.

Note Currently, only default VRF is supported. VPNv4, VPNv6 and VPN routing and forwarding (VRF) address families will be supported in a future release.

address-family next-hop dampening disable

To disable Routing Information Base (RIB) next-hop dampening, use the **address-family next-hop dampening disable** command in XR Config mode. To enable RIB next-hop dampening, use the **no** form of this command.

address-family {**ipv4** | **ipv6**} **next-hop dampening disable**
no address-family {**ipv4** | **ipv6**} **next-hop dampening disable**

Syntax Description

ipv4	Specifies IP Version 4 (IPv4) address prefixes.
ipv6	Specifies IP Version 6 (IPv6) address prefixes.

Command Default

RIB next-hop dampening is enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
rib	read, write

Examples

The following example shows how to disable RIB next-hop dampening for IPv6 address families:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# router rib
RP/0/RP0/CPU0:router(config-rib)# address-family ipv6 next-hop dampening disable
```

clear route

To clear routes from the IP routing table, use the **clear route** command in XR EXEC mode.

clear route {**ipv4** | **ipv6** | **afi-all** | **safi-all**} {**unicast** | **safi-all**} [**topology** *topo-name*] [*ip-address mask*]

Syntax Description

ipv4	Specifies IP Version 4 address prefixes.
ipv6	Specifies IP Version 6 address prefixes.
afi -all **safi -all**	Specifies IP Version 4 and IP Version 6 address prefixes.
safiunicast	Specifies unicast address prefixes.
safi-all	Specifies unicast and multicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
ip-address node-id	(Optional) Clears hardware resource counters from the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.
ip-address	Network IP address about which routing information should be displayed.
mask	Network mask specified in either of two ways: Network mask can be a four-part, dotted-decimal address. For example, 255.0.0.0 indicates that each bit equal to 1 means the corresponding address bit is a network address. Network mask can be indicated as a slash (/) and number. For example, /8 indicates that the first 8 bits of the mask are 1s, and the corresponding bits of the address are the network address.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **clear route** command to clear routes from an IP routing table to a specific network, a matching subnet address, or all routes.

Task ID

Task ID	Operations
rib	read, write

Examples

The following example shows how to remove all routes matching the subnet address 192.168.2.0 and mask 255.255.255.0 from the IPv4 unicast routing table:

```
RP/0/RP0/CPU0:router# clear route ipv4 unicast 192.168.2.0 255.255.255.0
```

The following example shows how to remove all routes from the IPv4 unicast routing table:

```
RP/0/RP0/CPU0:router# clear route ipv4 unicast
```

maximum prefix (RIB)

To set the prefix limit for the VPN routing and forwarding (VRF) instance, use the **maximum prefix** command in global VRF address family configuration mode. To set the prefix limits to the default values, use the **no** form of this command.

maximum prefix *maximum* [*mid-threshold*]
no maximum prefix

Syntax Description

maximum	Maximum number of prefixes allowed in the VRF instance. Range is 32 to 2000000.
mid-threshold	(Optional) Integer specifying at what percentage of the *maximum* argument value the software starts to generate a Simple Network Management Protocol (SNMP) trap. Range is 1 to 100.

Command Default

No default behavior or values

Command Modes

Global VRF address family configuration

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **maximum prefix** command to configure a maximum number of prefixes that a VRF instance is allowed to receive.

Task ID

Task ID	Operations
rib	read, write

Examples

The following example shows how to set the maximum number of prefixes allowed to 1000:

```
RP/0/RP0/CPU0:router(config)# vrf vrf-A
RP/0/RP0/CPU0:router(config-vrf)# address-family ipv4 unicast
RP/0/RP0/CPU0:router(config-vrf-af)#  maximum prefix 1000
```

A maximum number of routes is applicable to dynamic routing protocols as well as static or connected routes. When maximum prefix is configured, an **syslog** message is generated in the following conditions:

1. if the number of routes is above the threshold when“maximum prefix” configuration has been committed
2. if the number routes reaches the configured “maximum prefix” values for the VRF

lcc

To enable Label Consistency Checker (lcc) background scan for IPv6 or IPv4 labels, use the **lcc enable** command in XR Config mode. To disable lcc background scan, use the **no** for of this command.

lcc {**ipv4** | **ipv6**} **unicast** {**enable** | **period** *milliseconds*}
no lcc {**ipv4** | **ipv6**} **unicast** {**enable** | **period** *milliseconds*}

Syntax Description

ipv4	Specifies IP Version 4 address prefixes.
ipv6	Specifies IP Version 6 address prefixes.
unicast	Specifies unicast address prefixes.
period *milliseconds*	Specifies the period between scans in milliseconds. Range is 100 to 600000 milliseconds.

Command Default

Label consistency checker is disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
ipv4	read, write
ipv6	read, write

This example shows how to enbale lcc for IPv6 lables:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#lcc ipv6 unicast enable
```

rcc

To enable Route Consistency Checker (rcc) background scan for IPv6 or IPv4 routes, use the **rcc enable** command in XR Config mode. To disable rcc background scan, use the **no** form of this command.

rcc {**ipv4** | **ipv6**} **unicast** {**enable** | **period** *milliseconds*}
no rcc {**ipv4** | **ipv6**} **unicast** {**enable** | **period** *milliseconds*}

Syntax Description

ipv4	Specifies IP Version 4 address prefixes.
ipv6	Specifies IP Version 6 address prefixes.
unicast	Specifies unicast address prefixes.
period *milliseconds*	Specifies the period between scans in milliseconds. Range is 100 to 600000 milliseconds.

Command Default

Route consistency checker is disabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **period** option to control how often the scan be triggered. Each time the scan is triggered, the background scan process resumes verification from where it was left out and sends one buffer's worth of routes to the forwarding information base (FIB).

Task ID

Task ID	Operation
ipv4	read, write
ipv6	read, write

This example shows how to configure rcc for IPv6 unicast:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#rcc ipv6 unicast enable
```

This example shows how to enable rcc with a scan period of 500 milliseconds for IPv6 unicast:

```
RP/0/RP0/CPU0:router#configure
RP/0/RP0/CPU0:router(config)#rcc ipv6 unicast period 500
```

recursion-depth-max

To set the maximum depth for route recursion checks, use the **recursion-depth-max** command in XR Config mode. To set the recursion checks to the default value, use the **no** form of this command.

recursion-depth-max *maximum*
no recursion-depth-max *maximum*

Syntax Description

maximum	Maximum depth for recursion checks. Range is 5 to 16.

Command Default

The default recursion depth is 128.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **recursion-depth-max** command to configure a specific maximum number of recursion checks in the range of 5 to 16.

Task ID

Task ID	Operations
rib	read, write

Examples

The following example shows how to set the maximum depth for route recursion checks to 12:

```
RP/0/RP0/CPU0:router# configure
RP/0/RP0/CPU0:router(config)# router rib
RP/0/RP0/CPU0:router(config-rib)# recursion-depth-max 12
```

router rib

To enter Routing Information Base (RIB) configuration mode, use the **router rib** command in XR Config mode. To remove all RIB configurations and terminate the RIB routing process, use the **no** form of this command.

router rib
no router rib

Syntax Description

This command has no arguments or keywords.

Command Default

Router configuration mode is not enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
bgp	read, write
ospf	read, write
hsrp	read, write
isis	read, write

Examples

The following example shows how to enter RIB configuration mode:

```
RP/0/RP0/CPU0:router(config)# router rib
```

rump always-replicate

To enable replication from uRIB to muRIB as usual even after features such as MTR are configured, use the **rump always-replicate** command in XR Config mode. To diable replication from uRIB to muRIB, use the **no** form of this command.

rump always-replicate [*access-list*]
no rump always-replicate [*access-list*]

Syntax Description

access-list-name	(Optional) Name of the access list.

Command Default

Replication from uRIB to muRIB is enabled.

Command Modes

XR Config mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Configuring the **rump always-replicate** command allows routers in a network to be upgraded to multitopology routing gradually without a flag day where all routers need to be configured at the same time without major service disruption. When **rump always-replicate** is configured, replicated routes are added into the muRIB with the lowest admin distance. So if protocols are populating the muRIB, they continue to do so. For the same route, protocol routes win over replicated routes because of higher admin distance.

If an unwanted more specific route comes from the uRIB, optionally provide an access list through which the replicated routes are run. If the route passes the access list, the route is replicated by RUMP.

Task ID

Task ID	Operations
rib	read, write

Examples

The following example shows how to enale replication from uRIB to muRIB:

```
RP/0/RP0/CPU0:router(config)# router rib
RP/0/RP0/CPU0:router(config-rib)# address-family ipv4
RP/0/RP0/CPU0:router(config-rib-afi)# rump always-replicate
```

show lcc statistics

To view results of a label consistency checker (lcc) background scan, use the **show lcc statistics** command in XR EXEC mode.

show lcc {**ipv4** | **ipv6**} **unicast statistics** {**scan-id** | **summary**}

Syntax Description

ipv4	IPv4 address prefix.
ipv6	IPv6 address prefix.
unicast	Specifies unicast address prefix.
scan-id *scan-id-value*	Specifies the scan ID value. The range is between <0-100000>.
summary	Displays a summary of the BG route consistency check statistics.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
ipv4	read
ipv6	read

This example shows background scan statistics for AFI-SAFI mplsv6-unicast:

```
RP/0/RP0/CPU0:router#show lcc ipv6 unicast statistics

Background Scan Statistics for AFI-SAFI mplsv6-unicast:
=======================================================

Scan enabled:           False
Current scan-id:        0               Scan triggered:        False
Configured period:      60              Current period:        0

Paused by range scan: False
Paused by route churn: False
Paused by error scan: False

Last data sent: 0 entries               Damping percent:       70
Default route churn:    10              Current route churn:   0
Route churn last calculated at          Dec 31 16:00:00.000
```

```
Logs stored for background scan ids:

Log for AFI-SAFI mplsv6-unicast:
================================

End Of Logs
```

This example shows background scan statistics for AFI-SAFI mplsv4-unicast:

```
RP/0/RP0/CPU0:router#show lcc ipv4 unicast statistics


Background Scan Statistics for AFI-SAFI mplsv4-unicast:
=======================================================

Scan enabled:           False
Current scan-id:        0               Scan triggered:        False
Configured period:      60              Current period:        0

Paused by range scan: False
Paused by route churn: False
Paused by error scan: False

Last data sent: 0 entries               Damping percent:       70
Default route churn:    10              Current route churn:   0
Route churn last calculated at          Dec 31 16:00:00.000

Logs stored for background scan ids:

Log for AFI-SAFI mplsv4-unicast:
================================

End Of Logs
```

show rcc

To display route consistency checker (RCC) information, use the **show rcc** command in XR EXEC mode.

show rcc {**ipv4** | **ipv6**} **unicast** [{*prefix netmask* }]

Syntax Description

ipv4	Specifies IP Version 4 address prefixes.
ipv6	Specifies IP Version 6 address prefixes.
unicast	Specifies unicast address prefixes.
prefix	(Optional) Starting prefix.
netmask	(Optional) Network mask.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
ipv4	read

Examples

The following is sample output from the **show rcc** command:

```
  RP/0/RP0/CPU0:router# show rcc ipv4 unicast statistics
Thu Mar 26 13:47:28.391 IST

Background Scan Summary
=======================

Scan enabled:          False            Last scan-id:  0
Configured period:     15000            Current period:        0

Paused By:
  route churn:False  on-demand scan:False  error scan:False

Last data sent: 0 entries                Damping percent:     69
Default route churn:    100              Current route churn: 0
Route churn last calculated at           Never
Logs last cleared at                     Never

Scan paused by ISSU                      False
```

```
Logs stored for background scan ids:

Scan Logs
=========
Legend:
        ? - Currently Inactive Node, ! - Non-standard SVD Role
        * - Node did not reply

End of Logs
```

show rcc statistics

To view results of a route consistency checker (rcc) background scan, use the **show rcc statistics** command in XR EXEC mode.

show rcc {**ipv4** | **ipv6**} **unicast statistics** {**scan-id** | **summary**}

Syntax Description

ipv4	IPv4 address prefix.
ipv6	IPv6 address prefix.
unicast	Specifies unicast address prefixes.
scan-id *scan-id-value*	Specifies the scan ID value. The range is between <0-100000>.
summary	Displays a summary of the BG route consistency check statistics.

Command Default

None

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operation
ipv4	read
ipv6	read

This example shows background scan statistics for AFI-SAFI IPv6 unicast:

```
RP/0/RP0/CPU0:router#show rcc ipv6 unicast statistics

Background Scan Statistics for AFI-SAFI ipv6-unicast:
=====================================================

Scan enabled:           False
Current scan-id:        0               Scan triggered:        False
Configured period:      60              Current period:        0

Paused by range scan: False
Paused by route churn: False
Paused by error scan: False

Last data sent: 0 entries               Damping percent:       70
Default route churn:    10              Current route churn:   0
Route churn last calculated at          Dec 31 16:00:00.000
```

```
Logs stored for background scan ids:

Log for AFI-SAFI ipv6-unicast:
================================

End Of Logs
```

This example shows background scan statistics for AFI-SAFI Ipv4 unicast:

```
RP/0/RP0/CPU0:router#show rcc ipv4 unicast statistics

Background Scan Statistics for AFI-SAFI ipv4-unicast:
=====================================================

Scan enabled:           False
Current scan-id:        0               Scan triggered:        False
Configured period:      60              Current period:        0

Paused by range scan: False
Paused by route churn: False
Paused by error scan: False

Last data sent: 0 entries               Damping percent:       70
Default route churn:    10              Current route churn:   0
Route churn last calculated at          Dec 31 16:00:00.000

Logs stored for background scan ids:

Log for AFI-SAFI ipv4-unicast:
================================

End Of Logs
```

show rib

To display Routing Information Base (RIB) data, use the **show rib** command in XR EXEC mode.

show rib {**ipv4** | **ipv6**} {**unicast**}[{**firsthop** | [{ *type interface-path-id*}] | **next-hop** | [{ *type interface-path-id*}] | **opaques** | {**attribute** | **ip-nexthop** | **summary** } | **protocols** | [{**standby**}] | **statistics** | [{*name*}] | [{**standby**}] | **topology** | {*topo-name* | **all**}}]

Syntax Description

ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
firsthop	(Optional) Specifies registered first-hop notification addresses.
type	Interface type. For more information, use the question mark (?) online help function.
interface-path-id	Identifies a physical interface or a virtual interface. **Note** Use the show interfaces command to see a list of all possible interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (?) online help function.
next-hop	(Optional) Specifies registered next-hop notification addresses.
opaques	(Optional) Specifies opaque data installed in the RIB.
attribute	(Optional) Specifies opaque attributes installed in the RIB.
ip-nexthop	(Optional) Specifies P next-hop data installed in the RIB.
summary	(Optional) Specifies a summary of opaque data installed in the RIB.
protocols	(Optional) Specifies registered protocols.
statistics *name*	(Optional) Specifies RIB statistics of a given name.
standby	(Optional) Specifies standby information.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
all	(Optional) Specifies that all topology table information should be displayed.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
ipv4	read

Examples

The following example illustrates the **show rib** command:

```
RP/0/RSP0RP0/CPU0:router# show rib

            ipv4 multicast


            topology
          BLUE

RP/0/RSP0RP0/CPU0:router# show rib topology BLUE ipv4 multicast protocols
Protocol   Handle   Instance
isis         0      mt
```

show rib afi-all

To display Routing Information Base (RIB) data for both IPv4 and IPv6 address families, use the **show rib afi-all** command in XR EXEC mode.

show rib afi-all [**attributes**] [**client-id**] [**clients**] [**extcomms**] [**firsthop**] [**history**] [**next-hop**] [**opaques**] [**protocols**] [**recursion-depth-max**] [**safi-all**] [**statistics**] [**tables**] [**trace**] [**unicast**]

Syntax Description

attributes	(Optional) Displays all BGP attributes installed in RIB.
client-id	(Optional) Displays RIB client ID for longer history of redistributed routes sent to the client.
clients	(Optional) Displays RIB clients.
extcomms	(Optional) Displays all extended communities installed in RIB.
firsthop	(Optional) Displays registered firsthop notification addresses.
history	(Optional) Displays redistributed routes sent to RIB clients.
next-hop	(Optional) Displays registered next-hop notification addresses.
opaques	(Optional) Displays opaquae data installed in RIB.
protocols	(Optional) Displays registered protocols.
recursion-depth-max	(Optional) Displays maximum recursion depth in RIB.
safi-all	(Optional) Displays unicast and multicast commands.
statistics	(Optional) Displays RIB statistics.
tables	(Optional) Displays a list of tables known to RIB.
trace	(Optional) Displays RIB trace entries.
unicast	(Optional) Displays unicast commands.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
ipv4	read

Examples

The following example illustrates the **show rib afi-all attributes** command:

```
RP/0/RP0/CPU0:router# show rib afi-all attributes

BGP attribute data in IPv4 RIB:

0 Attributes, for a total of 0 bytes.

BGP attribute data in IPv6 RIB:

0 Attributes, for a total of 0 bytes.
```

show rib attributes

To display Border Gateway Protocol (BGP) attributes installed in the Routing Information Base (RIB), use the **show rib attributes** command in XR EXEC mode.

show rib attributes [**summary**] [**standby**]

Syntax Description

summary	(Optional) Displays a summary of BGP attribute data installed in the RIB.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib attributes** command:

```
RP/0/RP0/CPU0:router# show rib attributes

BGP attribute data in IPv4 RIB:

Attribute ID (0x2):size (68)
Attribute ID (0x3):size (52)
Attribute ID (0x4):size (68)
Attribute ID (0x5):size (52)

4 Attributes, for a total of 240 bytes.

Attribute ID : ID assigned for the attribute by BGP
size : size of the attribute data.
```

show rib client-id

To display Routing Information Base (RIB) redistribution histories, use the **show rib client-id** command in XR EXEC mode.

show rib client-id *id* **redistribution history** [**standby**]

Syntax Description

id	ID of the client. Range is 0 to 4294967295.
redistribution history	Displays longer history of redistributed routes sent to RIB clients.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib client-id** command to display a history of the route additions, deletions, and updates sent from RIB to the client .

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib client-id** command:

```
RP/0/RP0/CPU0:router# show rib client-id 13 redistribution history

PID     JID   Client             Location
151630  113   bcdl_agent         node0_5_CPU0
  Table ID: 0xe0000000
     S 80.80.80.0/24[1/0]            update, 5 path(s), 0x0   Jan 31 09:54:57.224
     S 80.80.80.0/24[1/0]            update, 6 path(s), 0x0   Jan 31 09:53:39.736
     S 140.140.140.0/24[1/0]         update, 1 path(s), 0x0   Jan 31 09:53:39.729
     S 80.80.80.0/24[1/0]            update, 5 path(s), 0x0   Jan 30 22:08:38.551
     S 140.140.140.0/24              deleted,                 Jan 30 22:08:38.543
     S 80.80.80.0/24[1/0]            update, 6 path(s), 0x0   Jan 30 22:03:05.889
     S 100.100.100.0/24[1/0]         update, 1 path(s), 0x0   Jan 30 22:03:05.880
```

This table describes the significant fields shown in the display.

Table 1: show rib client-id Field Descriptions

Field	Description
PID	Process ID of the client.
JID	Job ID of the client.
Client	Client name.
Location	Location node on which the client is present.

show rib clients

To display Routing Information Base (RIB) clients, use the **show rib clients** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **clients** [{**protocols** | **redistribution** [**history**]}] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
protocols	(Optional) Specifies client protocols.
redistribution	(Optional) Specifies protocols redistributed by clients
history	(Optional) Specifies redistributed routes sent to RIB clients.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib clients** command to display the list of clients who have registered with RIB, what protocol routes they are redistributing, and a history of the routes sent to the client.

The maximum number of redistribution entries is 5000 for Bulk Content Downloader (BCDL) and 500 for other protocols.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib clients** command:

```
RP/0/RP0/CPU0:router# show rib clients

Process             Location         Client ID  Redist   Proto
isis                node0_5_CPU0     0           insync   insync
ospf                node0_5_CPU0       2         insync   insync

RP/0/RP0/CPU0:router# show rib clients redistribution

isis node0_5_CPU0
```

```
   ipv4  uni        vrf default   insync         route
      static                      insync
ospf node0_5_CPU0
   ipv4  uni        vrf default   insync         route
      static                      insync
      local                       insync
bgp node0_5_CPU0
   ipv4  uni        vrf abc       insync         route
      static                      insync
bcdl_agent node0_5_CPU0
   ipv4  uni        vrf default   insync         rib_fib
   ipv4  uni        vrf bar       insync         rib_fib
   ipv4  uni        vrf abc       insync         rib_fib
   ipv4  uni        vrf test      insync         rib_fib
```

This table describes the significant fields shown in the display.

Table 2: show rib clients Field Descriptions

Field	Description
Process	Client process name.
Location	Location where the client process in running.
Client ID	ID assigned to the client by RIB.
Redist	Whether the client is redistributing any protocols or not and whether it has read all routes from RIB or not. • insync—read • outsync—not read.
Proto	Whether the protocol has sent all its routes to RIB and signaled update complete or not. • insync—read • outsync—not read.

show rib extcomms

To display all extended communities installed in the Routing Information Base (RIB), use the **show rib extcomms** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **extcomms** [**summary**] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
summary	(Optional) Specifies a summary of all extended communities in the RIB.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

System Admin EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib extcomms** command:

```
RP/0/RP0/CPU0:router# show rib extcomms

Extended community data in RIB:

Extended community                        Ref count
COST:128:128:41984                           1
```

This table describes the significant fields shown in the display.

Table 3: show rib extcomms Field Descriptions

Field	Description
Extended Community	Type of extended communities. Different protocols can add different extended communities.
Ref Count	Number of routes referring to the Extended community.

show rib firsthop

To display registered first-hop notification addresses, use the **show rib firsthop** command in System Admin EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | **safi-all**}] **firsthop** [*client-name*] [{*type interface-path-id* | *ip-address* */prefix-length* | *ip-address mask* | **resolved** | **unresolved** | **damped**}] [**summary**] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
client-name	(Optional) Name of the RIB client.
type	Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
ip-address	(Optional) Network that BGP advertises.
/ *prefix-length*	(Optional) Length of the IP address prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.
ip-address mask	(Optional) Network mask applied to the *ip-address* argument.
resolved	(Optional) Specifies resolved next-hops.
unresolved	(Optional) Specifies unresolved next-hops.
damped	(Optional) Specifies next-hops that are damped.
summary	(Optional) Specifies a summary of the next-hop information.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

System Admin EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib firsthop** command to display the list of first hops registered by various clients with RIB and the address and interface through which they are resolved.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib firsthop** command:

```
RP/0/RP0/CPU0:router# show rib firsthop

Registered firsthop notifications:
0.0.0.0/0 via 1.1.0.1 - MgmtEth0/5/CPU0/0, ospf/node0_5_CPU0
1.1.0.1/32 via 1.1.0.1 - MgmtEth0/5/CPU0/0, ipv4_static/node0_5_CPU0
1.1.1.1/32 via 1.1.1.1 - MgmtEth0/5/CPU0/0, ipv4_static/node0_5_CPU0
10.10.10.1/32 via 10.10.10.1 - Loopback0, ipv4_static/node0_5_CPU0
10.10.10.3/32 via 10.10.10.3 - Loopback0, ipv4_static/node0_5_CPU0
15.15.15.1/32 via 10.10.10.1 - Loopback0, ipv4_static/node0_5_CPU0
20.20.20.1/32 via 1.1.1.1 - MgmtEth0/5/CPU0/0, ipv4_static/node0_5_CPU0
30.30.30.1/32 via 1.1.1.2 - MgmtEth0/5/CPU0/0, ipv4_static/node0_5_CPU0
```

show rib history

To display history information for Routing Information Base (RIB) clients, use the **show rib history** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **history** [**client-id** *client-id*] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
client-id *client-id*	(Optional) Specifies the ID of the client. Range for *client-id* argument is 0 to 4294967295.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib history** command to display the list of routes that RIB has sent to various clients.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib history** command:

```
RP/0/RP0/CPU0:router# show rib history

JID   Client             Location
229   isis               node0_5_CPU0
  Table ID: 0xe0000000
     S 80.80.80.0/24[1/0]        update, 6 path(s),     04:32:09
     S 100.100.100.0/24[1/0]     update, 1 path(s),     04:32:09
     S 40.40.40.0/24[1/0]        update, 1 path(s),     04:32:09
     S 15.15.15.0/24[1/0]        update, 1 path(s),     04:32:09
JID   Client             Location
260   ospf               node0_5_CPU0
  Table ID: 0xe0000000
     S 80.80.80.0/24[1/0]        update, 6 path(s),     04:32:09
     S 100.100.100.0/24[1/0]     update, 1 path(s),     04:32:09
     S 40.40.40.0/24[1/0]        update, 1 path(s),     04:32:09
     S 15.15.15.0/24[1/0]        update, 1 path(s),     04:32:09
```

This table describes the significant fields shown in the display.

Table 4: show rib history Field Descriptions

Field	Description
JID	Job ID of the client process.
Client	Name of the client process.
Location	Information about where the client process is running.

show rib next-hop

To display registered next-hop notification addresses, use the **show rib next-hop** command in XR EXEC mode.

show rib [**vrf** {*vrf-name* | **all**}] [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | **multicast** | **safi-all**}] **next-hop** [*client-name*] [{*type interface-path-id* | *ip-address* / *prefix-length* | *ip-address mask* | **resolved** | **unresolved** | **damped**}] [**summary**] [**standby**]

Syntax Description

vrf { *vrf-name* | **all** }	(Optional) Specifies a particular VPN routing and forwarding (VRF) instance or all VRF instances.
afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
multicast	(Optional) Specifies multicast address prefixes.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
client-name	(Optional) Name of the RIB client.
type	Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
ip-address	(Optional) Network IP address about which routing information should be displayed.
mask	(Optional) Network mask specified in either of two ways: • Network mask can be a four-part, dotted-decimal address. For example, 255.0.0.0 indicates that each bit equal to 1 means the corresponding address bit is a network address. • Network mask can be indicated as a slash (/) and number. For example, /8 indicates that the first 8 bits of the mask are 1s, and the corresponding bits of the address are the network address.
/ *prefix-length*	(Optional) Length of the IP address prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.
resolved	(Optional) Specifies resolved next-hops.

unresolved	(Optional) Specifies unresolved next-hops.
damped	(Optional) Specifies next-hops that are damped.
summary	(Optional) Specifies a summary of the next-hop information.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib next-hop** command to display the list of next-hops registered by various clients with the RIB and the address and interface through which they are resolved.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib next-hop** command:

```
RP/0/RP0/CPU0:router# show rib next-hop

Registered nexthop notifications:

0.0.0.0/0 via 172.29.52.1 - MgmtEth0/RP1/CPU0/0, ospf/node0_RP0_CPU0
172.29.52.1/32 via 172.29.52.1 - MgmtEth0/RP1/CPU0/0, ipv4_static/node0_RP0_CPU0
```

show rib opaques

To display opaque data installed in the Routing Information Base (RIB), use the **show rib opaques** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | **safi-all**}] **opaques** {**attribute** | **ip-nexthop** | **summary** | **tunnel-nexthop**} [*rib-client-name*] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
attribute	Displays opaque attributes installed in the RIB.
ip-nexthop	Displays IP next-hop data installed in the RIB.
summary	Displays a summary of opaque data installed in the RIB.
tunnel-nexthop	Displays tunnel next-hop opaque data installed in the RIB.
rib-client-name	(Optional) Name of the RIB client.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

If information is not used by the RIB server process, it is viewed as opaque data. Use the **show rib opaques** command to display opaque data installed in the RIB.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib opaques** command:

```
RP/0/RP0/CPU0:router# show rib opaques safi-tunnel
```

```
  Summary of safi tunnel opaque data in IPv4 RIB:

  Opaque key: 1:10.1.0.2
  Opaque data:
  Tunnel Encap - ifhandle=0x1000180, type=L2TPv3, Params=[Session-id=0x1EB1127C, `
Cookielen=8, Cookie=0xA73A3E0AFCD419A6] Opaque key: 65535:10.0.101.1 Opaque data:


  RP/0/RP0/CPU0:router# show rib ipv6 opaques tunnel-nexthop

  Summary of 6PE/6VPE IP over tunnel nexthop opaque data in IPv6 RIB:

  Opaque key: 1:::ffff:10.1.0.2
  Opaque key: 65535:::ffff:10.0.101.1
  Opaque key: 65535:::ffff:10.0.101.2
  Opaque key: 65535:::ffff:10.0.101.3
  Opaque key: 65535:::ffff:10.0.101.4
  Opaque key: 65535:::ffff:10.0.101.5
```

Note safi-tunnel keyword is not supported.

This table describes the significant fields shown in the display.

Table 5: show rib opaques Field Descriptions

Field	Description
Opaque key	Unique key for the opaque data as populated by the protocol client.
Opaque data	Data for the given key.

show rib protocols

To display protocols registered for route addition, use the **show rib protocols** command in XR EXEC mode.

show rib [**vrf** {*vrf-name* | **all**}] [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | **multicast** | **safi-all**}] **protocols** [**standby**]

Syntax Description

vrf { *vrf-name* | **all** }	(Optional) Specifies a particular VPN routing and forwarding (VRF) instance or all VRF instances.
afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
multicast	(Optional) Specifies multicast address prefixes.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib protocols** command:

```
RP/0/RP0/CPU0:router# show rib protocols

Protocol   Handle   Instance
isis         0       rib
connected    1
static       2
local        3
bgp          4       102
ospf         5       1
```

This table describes the significant fields shown in the display.

Table 6: show rib protocols Field Descriptions

Field	Description
Protocol	Name of the protocol.
Handle	Handle assigned to the protocol instance.
Instance	Protocol instance.

show rib recursion-depth-max

To display the maximum recursion depth in the Routing Information Base (RIB), use the **show rib recursion-depth-max** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **recursion-depth-max** [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib recursion-depth-max** command to display the maximum recursion depth for RIB. Recursion depth is the number of next-hops that can be specified.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib recursion-depth-max** command:

```
RP/0/RP0/CPU0:router# show rib recursion-depth-max

IPv4:
-----
Maximum recursion depth in RIB:

    Configured: 12
        In Use: 128



IPv6:
-----
Maximum recursion depth in RIB:

    Configured: 12
        In Use: 128
```

This table describes the significant fields shown in the display.

Table 7: show rib recursion-depth-max Field Descriptions

Field	Description
Configured	Value of maximum recursion depth currently configured.
In Use	Value of maximum recursion depth RIB is using. This value can be different from the configured value because RIB has to be restarted after the configuration is changed for the new configuration to be effective.

show rib statistics

To display Routing Information Base (RIB) statistics, use the **show rib statistics** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | **safi-all**}] **statistics** [*client-name*] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
client-name	(Optional) Name of the RIB client.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib statistics** command to display RIB statistics. The statistics include requests sent from the clients to the RIB and the information redistributed to the client.

RIB maintains counters for all requests sent from a client including:

- Route operations
- Table registrations
- Next-hop registrations
- Redistribution registrations
- Attribute registrations
- Synchronization completion

RIB also maintains the results of the requests.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib statistics** command:

```
RP/0/RP0/CPU0:router# show rib statistics

RIB Statistics:
 Received 142 batch messages
          137 route operations, 0 attribute operations
          0 opaque operations
          11 complete operations, 0 convergent operations
  Results of the batch message received:
   142 successes
   0 forward references, 0 invalid client id, 0 unknown errors
   0 memory allocation errors, 0 client lookup errors, table lookup errors 0
   0 proto lookup errors, 0 client proto lookup errors
   ipv4_connected/node0_RP0_CPU0 last performed route operation
    with status BATCH_SUCESS at Jun 26 21:43:33.601

 Received 217422 light weight messages
  4 route add requests, 2 route delete requests
  10 protocol registered, 1 protocol unregistered
  0 protocol modify, 0 protocol purged
  14 protocol redistributions, 0 unregistered protocol redistributions
  0 reset protocol redistributions
  3 first hop registered, 1 first hop unregistered
  3 advertisements, 0 unregistered advertisement
  57 bind data, 97 update completes, 217230 other requests
   udp/node0_RP0_CPU0 last performed firsthop lookup operation
    with status success at Jun 27 10:09:59.990

 Received 0 nexthop batch messages
    0 successes
    0 inits
    0 registers, 0 unregisters
    0 register complete, 0 sync unregistered, 0 batch finished
```

This table describes the significant fields shown in the display.

Table 8: show rib statistics Field Descriptions

Field	Description
Received	Statistics received including batch messages and route, attribute, complete, and convergent operations.
Results of the batch message received	Batch message results.
Received *n* light weight messages	Number of lightweight API messages sent from RIB clients.
Received *n* nexthop batch messages	Number of batch API messages sent from RIB clients received by the RIB.

show rib tables

To display all tables known to the Routing Information Base (RIB), use the **show rib tables** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **tables** [**summary**] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
summary	(Optional) Displays summary table information.
standby	(Optional) Displays standby information.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show rib tables** command to display all tables known to the RIB, including table attributes. Attributes include address family, and maximum prefix information.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib tables** command when entered without an address:

```
RP/0/RP0/CPU0:router# show rib tables

Codes: N - Prefix Limit Notified, F - Forward Referenced
       D - Table Deleted, C - Table Reached Convergence

VRF             SAFI  Table ID     PrfxLmt   PrfxCnt TblVersion  N F D C
default         uni   0xe0000000   2000000        72        137  N N N Y
default         multi 0xe0100000   2000000         0          0  N N N Y
```

This table describes the significant fields shown in the display.

Table 9: show rib tables Field Descriptions

Field	Description
SAFI	Subaddress family instance.
Table ID	ID of the RIB table.
PrfxLmt	Configured prefix limit for the RIB table.
PrfxCnt	Number of configured prefixes in the RIB table.
TblVersion	Tables version number.
N	Message sent when prefix limit is exceeded.
F	Forward referenced. If Y is indicated, a table has been created by RIB because a client has registered for the table, but RIB has not heard from the router space infrastructure (RSI) about the table. RSI manages the tables.
D	If Y is indicated, the table has been deleted in the RSI but RIB has not cleared the information.
C	Table reached convergence.

show rib trace

To display all Routing Information Base (RIB) library call tracer (ltrace) entries, use the **show rib trace** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **trace** [{**clear** | **counts** | **event-manager** | **startup** | **sync** | **timing**}] [{**unique** | **wrapping**}] [**last** *entries*] [**hexdump**] [**reverse**] [**tailif**] [**stats**] [**verbose**] [{**file** *name* **original location** *node-id* | **location** {**all***node-id*}}]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
counts clear	(Optional) Displays route clear trace entries.
counts	(Optional) Displays counts trace entries.
event-manager	(Optional) Displays RIB event manager trace entries.
startup	(Optional) Displays RIB startup trace entries.
sync	(Optional) Displays client synchronization trace entries.
timing	(Optional) Displays timing trace entries.
unique	(Optional) Displays unique entries with counts.
wrapping	(Optional) Displays wrapping entries.
last *entries*	(Optional) Displays a specified number of the last entries. Range is 1 to 4294967295.
hexdump	(Optional) Displays traces in hexadecimal format.
reverse	(Optional) Displays the latest traces first.
tailif	(Optional) Displays new traces as they are added.
stats	(Optional) Displays statistics.
verbose	(Optional) Displays internal debugging information.
file *name* **original location** *node-id*	(Optional) Displays trace entries for a specific file for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation.
location { **all** | *node-id* }	(Optional) Displays ltrace entries for the designated node. The *node-id* argument is entered in the *rack/slot/module* notation. The **all** keyword displays ltrace entries for all nodes.

Command Default

No default behavior or values

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib trace** command

```
  RP/0/RP0/CPU0:router# show rib trace

  1784 wrapping entries (13312 possible, 0 filtered, 1784 total)
  Mar 16 14:59:27.947 rib/ipv4_rib/rib-startup 0/RSP0RP0/CPU0 t1  Create: Management thread

  Mar 16 14:59:27.959 rib/ipv4_rib/rib-startup 0/RSP0RP0/CPU0 t2  Create: Management event
 manager
  Mar 16 14:59:28.346 rib/ipv4_rib/rib-io 0/RSP0RP0/CPU0 t1  Initialise: RIB server
  Mar 16 14:59:28.346 rib/ipv4_rib/rib-io 0/RSP0RP0/CPU0 t1  Initialise: Client collection
  Mar 16 14:59:28.676 rib/ipv4_rib/rib-io 0/RSP0RP0/CPU0 t1  Initialise: DB collection
  Mar 16 14:59:28.693 rib/ipv4_rib/rib-io 0/RSP0RP0/CPU0 t1  Initialise: Timer tree
  Mar 16 14:59:28.694 rib/ipv4_rib/rib-io 0/RSP0RP0/CPU0 t1  RUMP: Bind to sysdb
/ipc/gl/ipv4-rib/ for protocol notification
  Mar 16 14:59:29.102 rib/ipv4_rib/rib-startup 0/RSP0RP0/CPU0 t2  Initialise: Debugging
routine
  Mar 16 14:59:29.128 rib/ipv4_rib/rib-io 0/RSP0RP0/CPU0 t1  Register: read, select cb
functions
  Mar 16 14:59:29.137 rib/ipv4_rib/rib-startup 0/RSP0RP0/CPU0 t1  Register: cerrno DLL name
 lib_rib_error.dll
  .
  .
  .
```

show rib vpn-attributes

To display all VPN attributes installed in the Routing Information Base (RIB), use the **show rib vpn-attributes** command in XR EXEC mode.

show rib [{**afi-all** | **ipv4** | **ipv6**}] **vpn-attributes** [**summary**] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
summary	(Optional) Displays VPN attribute information.
standby	(Optional) Displays standby information.

Command Default

The default is IPv4 address prefixes.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

No specific guidelines impact the use of this command.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show rib vpn-attributes** command:

```
RP/0/RP0/CPU0:router# show rib vpn-attributes

Extended community data in RIB:

Extended community                                Ref count
COST:128:128:41984                                        2
COST:128:129:42240                                        2
COST:128:129:44544                                        1
COST:128:129:169984                                       2
COST:128:129:307200                                       1

MVPN attribute data in RIB:

MVPN Attribute                                        Ref count
0:0:1:f4:0:0:0:1:1:1:1:1                                      1
0:0:2:bc:0:0:0:1:3:3:3:3                                     10
```

```
0:0:2:bc:0:0:0:1:3:3:3:4                                2
```

This table describes the significant fields shown in the display.

Table 10: show rib vpn-attributes Field Descriptions

Field	Description
Extended Community	Extended community added by the protocol clients.
Ref Count	Number of routes referring to the same extended community.
MVPN Attribute	Connector attribute added by BGP to support MVPNs.
Ref Count	Number of routes referring to the same extended community.

show route

To display the current routes in the Routing Information Base (RIB), use the **show route** command in XR EXEC mode.

show route [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | **topology** *topo-name* | **safi-all**}] [{**protocol** [*instance*] | *ip-address* [*mask*] | *ip-address/prefix-length*}] [**standby**] [**detail**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes. This is the default.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes. This is the default.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicastand multicast address prefixes.
protocol	(Optional) Name of a routing protocol. If you specify a routing protocol, use one of the following keywords: • **bgp** • **isis** • **ospf** • **rip** • **static** • **local** • **connected**
instance	(Optional) Number or name used to identify an instance of the specified protocol.
ip-address	(Optional) Network IP address about which routing information should be displayed.
mask	(Optional) Network mask specified in either of two ways: • Network mask can be a four-part, dotted-decimal address. For example, 255.0.0.0 indicates that each bit equal to 1 means the corresponding address bit is a network address. • Network mask can be indicated as a slash (/) and number. For example, /8 indicates that the first 8 bits of the mask are 1s, and the corresponding bits of the address are the network address.
/prefix-length	(Optional) Length of the IP address prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.
standby	(Optional) Displays standby information.
detail	(Optional) Displays detailed information for the specified prefix.

Command Default Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines When the **afi-all** keyword is used, the *ip-address* and *mask* arguments are not available.

Task ID

Task ID	Operations
rib	read

Examples The following is sample output from the **show route** command when entered without an address:

```
RP/0/RP0/CPU0:router# show route

 Codes: C - connected, S - static, R - RIP, B - BGP
      O - OSPF, IA - OSPF inter area
      N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
      E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
      i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
      ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
      U - per-user static route, o - ODR, L - local, G  - DAGR
      A - access/subscriber, (!) - FRR Backup path

 Gateway of last resort is 1.0.0.1 to network 0.0.0.0

 S*   0.0.0.0/0 [1/0] via 1.0.0.1, 13:14:59
 C    1.0.0.0/16 is directly connected, 13:14:59, MgmtEth0/5/CPU0/0
 L    1.0.14.15/32 is directly connected, 13:14:59, MgmtEth0/5/CPU0/0
 C    3.2.3.0/24 is directly connected, 00:04:39, tenGigE 0/3/0/0
 L    3.2.3.2/32 is directly connected, 00:04:39, tenGigE 0/3/0/0
 O E2 5.2.5.0/24 [110/20] via 3.3.3.1, 00:04:20, tenGigE 0/3/0/0
 O E2 6.2.6.0/24 [110/20] via 3.3.3.1, 00:04:20, tenGigE 0/3/0/0
 C    7.2.7.0/24 is directly connected, 00:04:20, tenGigE 0/3/0/7
 L    7.2.7.2/32 is directly connected, 00:04:20, tenGigE 0/3/0/7
 O E2 8.2.8.0/24 [110/20] via 3.3.3.1, 00:04:20, tenGigE 0/3/0/0

 C    10.3.0.0/16 is directly connected, 13:14:59, tenGigE 0/0/0/0
 L    10.3.0.2/32 is directly connected, 13:14:59, tenGigE 0/0/0/0
```

This table describes the significant fields shown in the display.

Table 11: show route Field Descriptions

Field	Description
S*	Code indicating how the route was derived. See the code legend preceding the output. In this case, the route was derived from a static (candidate default).

Field	Description
[1/0]	First number in the brackets is the administrative distance of the information source; the second number is the metric for the route.
1.0.0.0/16	Address and prefix length of the remote network.
MgmtEthernet 0/5/CPU0/0	Specifies the interface through which the specified network can be reached.
C	Code indicating how the route was derived. See the code legend preceding the output. In this case, the route was connected.
L	Code indicating how the route was derived. See the code legend preceding the output. In this case, the route was local.
O	Code indicating how the route was derived. See the code legend preceding the output. In this case, the route was on-demand routing (ODR).
E2	Code indicating how the route was derived. See the code legend preceding the output. In this case, the route was OSPF external type 2.
8.2.8.0/24	Address and prefix length of the remote network connected to the static route.
via 3.3.3.1	Specifies the address of the next router to the remote network.
13:14:59	Specifies the last time the route was updated.
(!)	Code indicating fast re-route (FRR) backup path information.

When you specify that you want information about a particular network, more detailed statistics are displayed. The following is sample output from the **show route** command when entered with an IP address:

```
RP/0/RP0/CPU0:router# show route 10.0.0.0

 Routing entry for 10.0.0.0/16
   Known via "connected", distance 0, metric 0 (connected)
   Installed Mar 22 22:10:20.906
   Routing Descriptor Blocks
     directly connected, via tenGigE 0/0/0/0
       Route metric is 0
   No advertising protos.
```

Intermediate System-to-Intermediate System (IS-IS) includes an IP address typed length value (TLV) in its link-state packet (LSP) that helps identify the node injecting the route into the network. The IS-IS node uses one of its own interface addresses in this TLV. A loopback address is preferred among interfaces configured under IS-IS. When other networking devices calculate IP routes, they can store the IP address as the originator address with each route in the routing table.

The following example shows the output from the **show route** command for a specific IP address on a router configured with IS-IS. Each path that is shown under the Routing Descriptor Blocks report displays two IP addresses. The first address (10.0.0.9) is the next-hop address; the second is the originator IP address from the advertising IS-IS router.

```
RP/0/RP0/CPU0:router# show route 10.0.0.1

 Routing entry for 10.0.0.0/8
 Known via "isis", distance 115, metric 10, type level-2
      Installed Jan 22 09:26:56.210
      Routing Descriptor Blocks:
      * 10.0.0.9, from 10.0.0.9, via tenGigE 2/1
       Route metric is 10
    No advertising protos.
```

This table describes the significant fields shown in the display.

Table 12: show route with IP Address Field Descriptions

Field	Description
Routing entry for	Network address and mask.
Known via	Indicates how the route was derived.
distance	Administrative distance of the information source.
metric	Route value assigned by the routing protocol.
type	IS-IS type level.
Routing Descriptor Blocks:	Displays the next-hop IP address followed by the information source.
from ... via ...	First address is the next-hop IP address, and the other is the information source. This report is followed by the interface for this route.
Route metric	Best metric for this Routing Descriptor Block.

No advertising protos.	Indicates that no other protocols are advertising the route to their redistribution consumers. If the route is being advertised, protocols are listed in the following manner:
	
	`Redist Advertisers:`
	`isis p`
	`ospf 43`

The following example illustrates the **show route** command with the **topology** *topo-name* keyword and argument specified:

```
RP/0/RP0/CPU0:router# show route ipv4 multicast topology green

  Codes: C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
       U - per-user static route, o - ODR, L - local, G  - DAGR
       A - access/subscriber, (!) - FRR Backup path

  Gateway of last resort is not set
```

```
  i L1 10.1.102.0/24 [115/20] via 10.1.102.41, 1w4d, tenGigE 0/1/0/0.1
  i L1 10.3.3.0/24 [115/20] via 10.1.102.41, 1w4d, tenGigE 0/1/0/0.1
  i L1 192.168.0.40/32 [115/20] via 10.1.102.41, 1w4d, tenGigE 0/1/0/0.1
```

Note multicast keyword is not supported.

This example is a sample **show route summary** command output that displays fast-reroute (FRR) Backup path information. The FRR Backup paths are indicated with a (!).

```
RP/0/RP0/CPU0:router#show route summary

Codes: C - connected, S - static, R - RIP, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
       U - per-user static route, o - ODR, L - local, G  - DAGR
       A - access/subscriber, (!) - FRR Backup path

Gateway of last resort is not set

B    1.2.3.4/32 [200/0] via 10.10.1.3, 00:01:40
C    2.0.0.0/30 is directly connected, 03:28:47, ServiceApp40
L    2.0.0.1/32 is directly connected, 03:28:47, ServiceApp40
C    2.0.1.0/30 is directly connected, 03:13:05, ServiceApp43
L    2.0.1.1/32 is directly connected, 03:13:05, ServiceApp43
C    2.4.1.0/24 is directly connected, 03:11:35, tenGigE 0/4/0/0
L    2.4.1.2/32 is directly connected, 03:11:35, tenGigE 0/4/0/0
C    3.1.0.0/30 is directly connected, 03:33:48, ServiceInfra1
L    3.1.0.2/32 is directly connected, 03:33:48, ServiceInfra1
C    3.1.3.0/30 is directly connected, 03:18:14, ServiceInfra2
L    3.1.3.2/32 is directly connected, 03:18:14, ServiceInfra2
C    5.3.0.0/16 is directly connected, 03:58:29, MgmtEth0/RP0/CPU0/0
                is directly connected, 03:58:29, MgmtEth0/RP1/CPU0/0
L    5.3.16.10/32 is directly connected, 03:59:07, MgmtEth0/RP1/CPU0/0
L    5.3.16.12/32 [0/0] via 5.3.16.12, 03:58:29, MgmtEth0/RP0/CPU0/0
L    5.3.16.16/32 is directly connected, 03:58:29, MgmtEth0/RP0/CPU0/0
B    5.4.0.0/16 [200/0] via 10.1.1.10, 00:01:36
S    5.10.0.0/16 [1/0] via 5.3.0.1, 03:59:07
O    10.1.1.3/32 [110/11] via 40.1.10.1, 00:00:17, Bundle-Ether10
                 [110/11] via 200.40.1.101, 00:00:17, Bundle-Ether1.1
                 [110/0] via 100.100.2.1, 00:00:17, tenGigE 0/2/0/3.1 (!)
L    10.1.1.6/32 is directly connected, 03:58:29, Loopback0
O    10.1.1.9/32 [110/22] via 40.1.10.1, 00:00:17, Bundle-Ether10
                 [110/22] via 200.40.1.101, 00:00:17, Bundle-Ether1.1
                 [110/0] via 100.100.2.1, 00:00:17, tenGigE 0/2/0/3.1 (!)
O    10.1.1.10/32 [110/111] via 40.1.10.1, 00:00:17, Bundle-Ether10
                  [110/111] via 200.40.1.101, 00:00:17, Bundle-Ether1.1
                  [110/0] via 100.100.2.1, 00:00:17, tenGigE 0/2/0/3.1 (!)
O    10.1.1.11/32 [110/0] via 40.1.1.1, 00:01:33, Bundle-Ether1 (!)
                  [110/101] via 40.3.3.2, 00:01:33, tenGigE 0/5/0/9
O    10.1.1.12/32 [110/111] via 40.1.10.1, 00:00:17, Bundle-Ether10
                  [110/111] via 200.40.1.101, 00:00:17, Bundle-Ether1.1
                  [110/0] via 100.100.2.1, 00:00:17, tenGigE 0/2/0/3.1 (!)
O    10.1.1.16/32 [110/21] via 40.1.10.1, 00:00:17, Bundle-Ether10
                  [110/21] via 200.40.1.101, 00:00:17, Bundle-Ether1.1
```

```
                    [110/0] via 100.100.2.1, 00:00:17, tenGigE 0/2/0/3.1 (!)
```

This example is a sample **show route detail** command output that displays path ID and backup-path ID information:

```
RP/0/RP0/CPU0:router#show route 10.1.1.3 detail
Routing entry for 10.1.1.16/32
  Known via "ospf 2", distance 110, metric 21, type intra area
  Installed Oct 28 16:07:05.752 for 00:01:56
  Routing Descriptor Blocks
    40.1.10.1, from 10.1.1.16, via Bundle-Ether10, Protected
      Route metric is 21
      Label: None
      Tunnel ID: None
      Extended communities count: 0
      Path id:2       Path ref count:0
      Backup path id:33
    200.40.1.101, from 10.1.1.16, via Bundle-Ether1.1, Protected
      Route metric is 21
      Label: None
      Tunnel ID: None
      Extended communities count: 0
      Path id:1       Path ref count:0
      Backup path id:33
    100.100.2.1, from 10.1.1.16, via tenGigE 0/2/0/3.1, Backup
      Route metric is 0
      Label: None
      Tunnel ID: None
      Extended communities count: 0
      Path id:33       Path ref count:2
  Route version is 0xe (14)
  No local label
  IP Precedence: Not Set
  QoS Group ID: Not Set
  Route Priority: RIB_PRIORITY_NON_RECURSIVE_LOW (6) SVD Type RIB_SVD_TYPE_LOCAL
  No advertising protos.
```

This example is a sample **show route ipv6** command output:

```
RP/0/RP0/CPU0:router#show route ipv6
Fri May 18 14:00:10.996 EDT
Codes: C - connected, S - static, R - RIP, B - BGP
O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
U - per-user static route, o - ODR, L - local, G - DAGR
A - access/subscriber, (!) - FRR Backup path
Gateway of last resort is not set
C 1111:2222::abcd/128 is directly connected,
06:20:02, tenGigE 0/0/0/4
```

This example is a sample **show route ipv6 detail** command output:

```
RP/0/RP0/CPU0:router#show route ipv6 1111:2222::abcd/128 detail
Fri May 18 14:00:20.798 EDT
Routing entry for 1111:2222::abcd/128
Known via "connected l2tpv3_xconnect", distance 0, metric 0 (connected)
Installed May 18 07:40:08.522 for 06:20:12
Routing Descriptor Blocks
```

```
1111:2222::abcd directly connected, via tenGigE 0/0/0/4
Route metric is 0
Label: 0x2 (2)
Tunnel ID: None
Extended communities count: 0
Route version is 0xd (13)
No local label
IP Precedence: Not Set
QoS Group ID: Not Set
Route Priority: RIB_PRIORITY_CONNECTED (2) SVD Type RIB_SVD_TYPE_LOCAL
Download Priority 0, Download Version 13
No advertising protos.
```

This example is a sample **show route ipv6 summary** command output:

```
RP/0/RP0/CPU0:router#show route ipv6 summary
Fri May 18 14:00:28.988 EDT
Route Source Routes Backup Deleted Memory (bytes)
local 0 0 0 0
connected l2tpv3_xconnect 1 0 0 160
connected 0 0 0 0
Total 1 0 0 160
```

show route backup

To display backup routes from the Routing Information Base (RIB), use the **show route backup** command in XR EXEC mode.

show route [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **backup** [{*ip-address [mask] ip-address /prefix-length]* }][**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-allsafi-all	(Optional) Specifies unicast and multicast address prefixes.
ip-address	(Optional) Network IP address about which backup routing information should be displayed.
mask	(Optional) Network mask specified in either of two ways: • Network mask can be a four-part, dotted decimal address. For example, 255.0.0.0 indicates that each bit equal to 1 means the corresponding address bit is a network address. • Network mask can be indicated as a slash (/) and number. For example, /8 indicates that the first 8 bits of the mask are ones, and the corresponding bits of the address are the network address.
/prefix-length	(Optional) Length of the IP address prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route backup** command to display information about routes that have been installed into the RIB as backup routes. This command also displays information about the currently selected active route for which there is a backup.

When the **afi-all** keyword is used, the *ip-address* and *mask* arguments are not available.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route backup** command:

```
RP/0/RP0/CPU0:router# show route backup

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
       U - per-user static route, o - ODR, L - local
S    172.73.51.0/24 is directly connected, 2d20h, tenGigE 4/0/0/1
                Backup  O E2 [110/1] via 10.12.12.2, tenGigE 3/0/0/1
```

This table describes the significant fields shown in the display.

Table 13: show route backup Field Descriptions

Field	Description
S	Code indicating how the route was derived. See the legend of the codes preceding the output.
172.73.51.0/24	IP address and length of the route.
2d20h	Time (in hh:mm:ss) since the route was installed in the RIB.
tenGigE4/0/0/1	Outbound interface for the route.
Backup	Identifies the entry as a backup version of the route, typically installed by a different routing protocol.
O	Code indicating how the route was derived. See the code legend preceding the output.

Field	Description
E2	Code for the type of route. This code is relevant only for OSPF and IS-IS routes. The codes for an OSPF route can be: none—intra-area route IA—interarea route E1—external type 1 E2—external type 2 N1—NSSA external type 1 N2—NSSA external type 2 The codes for an IS-IS route can be: L1—level 1 L2—level 2 ia—interarea su—summary route
[110/1]	Distance and metric for the route.
10.12.12.2	IP address of next-hop on the route.
tenGigE 3/0/0/1	Outbound interface for the OSPF version of the route.

show route best-local

To display the best local address to use for return packets from the given destination, use the **show route best-local** command in XR EXEC mode.

show route [{**ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **best-local** *ip-address* [**standby**]

Syntax Description

ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
ip-address	IP address about which best local information should be displayed.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route best-local** command to display information about the best local routes in the routing table.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route best-local** command:

```
RP/0/RP0/CPU0:router# show route best-local 10.12.12.1/32

Routing entry for 10.12.12.1/32
  Known via "local", distance 0, metric 0 (connected)
  Routing Descriptor Blocks
    10.12.12.1 directly connected, via tenGigE 3/0/0/1
      Route metric is 0
```

This table describes the significant fields shown in the display.

Table 14: show route best-local Field Descriptions

Field	Description
Routing entry for	Identifies the requested IP address.
Known via	Indicates how the route was derived.
distance	Administrative distance of the information source.
metric	Route value assigned by the routing protocol.
Routing Descriptor Blocks:	Displays the next-hop IP address followed by the information source.
10.12.12.1 Directly connected ... via ...	First address is the next-hop IP address, followed by a report that it is directly connected. This report is followed by the interface for this route.

show route connected

To display the current connected routes of the routing table, use the **show route connected** command in XR EXEC mode.

show route [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **connected** [**standby**]

Syntax Description

afi-all		(Optional) Specifies all address families.
ipv4		(Optional) Specifies IP Version 4 address prefixes.
ipv6		(Optional) Specifies IP Version 6 address prefixes.
unicast		(Optional) Specifies unicast address prefixes.
topology	*topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all		(Optional) Specifies unicast and multicast address prefixes.
standby		(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route connected** command to display information about connected routes in the routing table.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route connected** command:

```
RP/0/RP0/CPU0:router# show route connected

C    1.68.0.0/16 is directly connected, 13:43:40, MgmtEth0/5/CPU0/0
C    3.3.3.0/24 is directly connected, 00:23:23, tenGigE 0/3/0/0
C    7.7.7.0/24 is directly connected, 00:33:00, tenGigE 0/3/0/7
C    10.0.0.0/16 is directly connected, 13:43:40, tenGigE 0/0/0/0
C    10.10.10.0/30 is directly connected, 13:43:40, Loopback0
C    11.11.11.0/24 is directly connected, 13:43:40, Loopback11
```

This table describes the significant fields shown in the display.

Table 15: show route connected Field Descriptions

Field	Description
C	Code to indicate the route is connected.
1.68.0.0/16	IP address and length of the route.
13:43:40	Time (in hh:mm:ss) since the route was installed in the RIB.
MgmtEth0/5/CPU0/0	Outbound interface for the route.

show route local

To display local routes receiving routing updates from the Routing Information Base (RIB), use the **show route local** command in XR EXEC mode.

show route [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **local** [{*type interface-path-id*}] [**standby**]

Syntax Description

afi-all	(Optional) Specifies all address families.
ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
type	Interface type. For more information, use the question mark (**?**) online help function.
interface-path-id	Physical interface or virtual interface. **Note** Use the **show interfaces** command to see a list of all interfaces currently configured on the router. For more information about the syntax for the router, use the question mark (**?**) online help function.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route local** command to display information about local routes in the routing table.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route local** command:

```
RP/0/RP0/CPU0:router# show route local

L    10.10.10.1/32 is directly connected, 00:14:36, Loopback0
L    10.91.36.98/32 is directly connected, 00:14:32, tenGigE6/0/0/1
L    172.22.12.1/32 is directly connected, 00:13:35, tenGigE3/0/0/1
L    192.168.20.2/32 is directly connected, 00:13:27, tenGigE4/0/0/1
L    10.254.254.1/32 is directly connected, 00:13:26, tenGigE5/0/0/1
```

This table describes the significant fields shown in the display.

Table 16: show route local Field Descriptions

Field	Description
L	Code to indicate the route is local.
10.10.10.1/32	IP address and length of the route.
00:14:36	Time (in hh:mm:ss) since the route was installed in the RIB.
Loopback0	Outbound interface for the route.

show route longer-prefixes

To display the current routes in the Routing Information Base (RIB) that share a given number of bits with a given network, use the **show route longer-prefixes** command in XR EXEC mode.

show route [{**ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **longer-prefixes** {*ip-address mask ip-address/prefix-length*} [**standby**]

Syntax Description

ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
ip-address	Network IP address about which routing information should be displayed.
mask	Network mask specified in either of two ways: • Network mask can be a four-part, dotted-decimal address. For example, 255.0.0.0 indicates that each bit equal to 1 means the corresponding address bit is a network address. • Network mask can be indicated as a slash (/) and number. For example, /8 indicates that the first 8 bits of the mask are 1s, and the corresponding bits of the address are the network address.
/ *prefix-length*	Length of the IP address prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route longer-prefixes** command to troubleshoot forwarding problems whose cause may be a long prefix.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route longer-prefixes** command:

```
RP/0/RP0/CPU0:router# show route longer-prefixes 172.16.0.0/8

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
       U - per-user static route, o - ODR, L - local

L    172.29.52.70/32 is directly connected, 4d15h, MgmtEth0/RSP0RP0/CPU0/0
L    172.29.52.71/32 is directly connected, 4d15h, MgmtEth0/RP1/CPU0/0
L    172.29.52.72/32 [0/0] via 172.29.52.72, 4d15h, MgmtEth0/RSP0RP0/CPU0/0
```

This table describes the significant fields shown in the display.

Table 17: show route longer-prefixes Field Descriptions

Field	Description
172.29.52.70/32	IP address and length of the route.
4d15h	Time (in hh:mm:ss or *n*d*n*h) since the route was installed in the RIB.
MgmtEth0/RSP0 RP0/CPU0/0	Outbound interface for the route.

show route next-hop

To filter routes by the next-hop address or interface, use the **show route next-hop** command in XR EXEC mode.

show route [{**ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **next-hop** [*ip-address*][{[**standby**]}]

Syntax Description

ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
ip-address	(Optional) IP address about which next-hop information is to be displayed.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route next-hop** command to find all routes going through a next-hop address or interface.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route next-hop** command filtering routes on the next-hop address:

```
RP/0/RP0/CPU0:router# show route next-hop  1.68.0.1

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
U - per-user static route, o - ODR, L - local
```

```
Gateway of last resort is 1.68.0.1 to network 0.0.0.0

S* 0.0.0.0/0 [1/0] via 1.68.0.1, 15:01:49
S 223.255.254.254/32 [1/0] via 1.68.0.1, 15:01:49
```

The following is sample output from the **show route next-hop** command filtering routes on the next-hop interface:

```
RP/0/RP0/CPU0:router# show route next-hop tenGigE 0/1/0/2

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
O - OSPF, IA - OSPF inter area
N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
U - per-user static route, o - ODR, L - local

Gateway of last resort is 1.68.0.1 to network 0.0.0.0

C 11.1.1.0/24 is directly connected, 15:01:46, tenGigE 0/1/0/2
L 11.1.1.2/32 is directly connected, 15:01:46, tenGigE 0/1/0/2
```

This table describes the significant fields shown in the display.

Table 18: show route next-hop Field Descriptions

Field	Description
11.1.1.0/24	IP address and length of the route.
15:01:46	Time (in hh:mm:ss or *n*d*n*h) since the route was installed in the RIB.
tenGigE0/1/0/2	Outbound interface for the route.

show route quarantined

To display mutually recursive (looping) routes, use the **show route quarantined** command in XR EXEC mode.

show route [{**ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **quarantined** [{*ip-address/prefix-length]ip-address mask*}] [**standby**]

Syntax Description

ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
ip-address	(Optional) IP address about which looping routes information is to be displayed.
/ *prefix-length*	(Optional) Length of the IP address prefix. A decimal value that indicates how many of the high-order contiguous bits of the address compose the prefix (the network portion of the address). A slash (/) must precede the decimal value.
ip-address mask	(Optional) Network mask applied to the *ip-address* argument.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

RIB quarantining detects mutually recursive routes and quarantines the last route that actually completes the mutual recursion. The quarantined route is periodically evaluated to see if the mutual recursion has gone away. If the recursion still exists, the route remains quarantined. If the recursion has gone away, the route is released from quarantine.

Use the **show route quarantined** command to display mutually recursive (looping) routes.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route quarantined** command:

```
RP/0/RP0/CPU0:routerr# show route quarantined

Codes: C - connected, S - static, R - RIP, M - mobile, B - BGP
       O - OSPF, IA - OSPF inter area
       N1 - OSPF NSSA external type 1, N2 - OSPF NSSA external type 2
       E1 - OSPF external type 1, E2 - OSPF external type 2, E - EGP
       i - ISIS, L1 - IS-IS level-1, L2 - IS-IS level-2
       ia - IS-IS inter area, su - IS-IS summary null, * - candidate default
       U - per-user static route, o - ODR, L - local

S    10.10.109.1/32 [1/0] via 10.10.34.1, 00:00:01 (quarantined)
                    [1/0] via 10.10.37.1, 00:00:01 (quarantined)
                    [1/0] via 10.10.60.1, 00:00:01 (quarantined)
                    [1/0] via 10.10.68.1, 00:00:01 (quarantined)
                    [1/0] via 10.10.91.1, 00:00:01 (quarantined)
                    [1/0] via 10.10.93.1, 00:00:01 (quarantined)
                    [1/0] via 10.10.97.1, 00:00:01 (quarantined)
S    10.0.0.0/8 [1/0] via 11.11.11.11, 00:01:29 (quarantined)
S    10.10.0.0/16 [1/0] via 11.11.11.11, 00:01:29 (quarantined)
S    10.10.10.0/24 [1/0] via 11.11.11.11, 00:01:29 (quarantined)
S    10.10.10.10/32 [1/0] via 11.11.11.11, 00:00:09 (quarantined)
```

This table describes the significant fields shown in the display.

Table 19: show route quarantined Field Descriptions

Field	Description
10.10.109.1/32	IP address and length of the route.
[1/0]	Distance and metric for the route.
via 10.10.34.1	IP address of next-hop on the route.
00:00:01	Time (in hh:mm:ss or *n*d*n*h) since the route was installed in the RIB.
(quarantined)	Shows that the route is quarantined.

show route resolving-next-hop

To display the next-hop gateway or host to a destination address, use the **show route resolving-next-hop** command in XR EXEC mode.

show route [{**ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **resolving-next-hop** *ip-address* [**standby**]

Syntax Description

ipv4	(Optional) Specifies IP Version 4 address prefixes.
ipv6	(Optional) Specifies IP Version 6 address prefixes.
unicast	(Optional) Specifies unicast address prefixes.
topology *topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all	(Optional) Specifies unicast and multicast address prefixes.
ip-address	IP address about which resolved next-hop information is to be displayed.
standby	(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route resolving-next-hop** command to perform a recursive route lookup on the supplied destination address and return information on the next immediate router (next hop) to the destination.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route resolving-next-hop** command:

```
RP/0/RP0/CPU0:router# show route resolving-next-hop 10.1.1.1

Nexthop matches 10.1.1.1/32
  Known via "local", distance 0, metric 0 (connected)
  Installed Aug 22 01:57:08.514
  Directly connected nexthops
    10.1.1.1 directly connected, via Loopback0
      Route metric is 0
```

This table describes the significant fields shown in the display.

Table 20: show route resolving-next-hop Field Descriptions

Field	Description
Known via	Name of the routing protocol that installed the matching route.
Route metric is	Metric of the route.

show route static

To display the current static routes of the Routing Information Base (RIB), use the **show route static** command in XR EXEC mode.

show route [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **static** [**standby**]

Syntax Description

afi-all		(Optional) Specifies all address families.
ipv4		(Optional) Specifies IP Version 4 address prefixes.
ipv6		(Optional) Specifies IP Version 6 address prefixes.
unicast		(Optional) Specifies unicast address prefixes.
topology	*topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all		(Optional) Specifies unicast and multicast address prefixes.
standby		(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route static** command to display information about static routes in the routing table.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route static** command:

```
RP/0/RP0/CPU0:router# show route static

S    10.1.1.0/24 is directly connected, 00:54:05, tenGigE3/0/0/1
S    192.168.99.99/32 [1/0] via 10.12.12.2, 00:54:04
```

This table describes the significant fields shown in the display.

Table 21: show route static Field Descriptions

Field	Description
S	Code to indicate the route is static.
10.1.1.0/24	IP address and distance for the route.
00:54:05	Time (in hh:mm:ss) since the route was installed in the RIB.
tenGigE3/0/0/1	Outbound interface for the route.
[1/0]	Distance and metric for the route.

show route summary

To display the current contents of the Routing Information Base (RIB), use the **show route summary** command in XR EXEC mode mode.

show route [{**afi-all** | **ipv4** | **ipv6**}] [{**unicast** | {**topology** *topo-name*} | **safi-all**}] **summary** [**detail**] [**standby**]

Syntax Description

afi-all		(Optional) Specifies all address families.
ipv4		(Optional) Specifies IP Version 4 address prefixes.
ipv6		(Optional) Specifies IP Version 6 address prefixes.
unicast		(Optional) Specifies unicast address prefixes.
topology	*topo-name*	(Optional) Specifies topology table information and name of the topology table.
safi-all		(Optional) Specifies unicast and multicast address prefixes.
detail		(Optional) Displays a detailed summary of the contents of the RIB, including the number of paths and some protocol-specific route attributes.
standby		(Optional) Displays standby information.

Command Default

Local routes received from RIB are displayed for default ipv4 unicast vrf.

Command Modes

XR EXEC mode

Command History

Release	Modification
Release 6.0	This command was introduced.

Usage Guidelines

Use the **show route summary** command to display information about routes in the routing information base.

When a route summary is needed frequently—for instance, in a polling situation—use the **show route summary** command without the **detail** keyword. The **detail** keyword is used less frequently for verification purposes, because it is much more expensive (in bandwidth), requiring a scan of the entire routing database.

Task ID

Task ID	Operations
rib	read

Examples

The following is sample output from the **show route summary** command:

```
RP/0/RP0/CPU0:router# show route summary

Route Source    Routes      Backup      Deleted      Memory (bytes)
```

```
static          1           0           0           136
connected       2           1           0           408
local           3           0           0           408
ospf            1673        2           0           272
isis            2           0           0           272
Total           10          1           0           1496
```

This table explains fields in the output of the **show route summary** command.

Table 22: show route summary Field Descriptions

Field	Description
Route Source	Routing protocol name.
Routes	Number of selected routes that are present in the routing table for each route source.
Backup	Number of routes that are not selected (are backup to a selected route).
Deleted	Number of routes that have been marked for deletion in the RIB, but have not yet been purged.
Memory	Number of bytes allocated to maintain all routes for the particular route source.

The following is sample output from the **show route summary** command with the **detail** keyword:

```
RP/0/RP0/CPU0:router# show route summary detail

Route Source    Active Route     Active Path     Backup Route     Backup Path
static          1                1               0                0
connected       2                2               1                1
local           3                3               0                0
isis            1                1               1                1
Level 1:        0                0               1                1
Level 2:        1                1               0                0
ospf 1673       6                12              0                0
Intra-Area:     3                6               0                0
Inter-Area:     3                6               0                0
External-1:     0                0               0                0
External-2:     0                0               0                0
bgp 100         10               20              4                8
External:       5                10              4                8
Internal:       5                10              0                0
local:          0                0               0                0
Total           7                7               2                2
```

This table explains fields in the output of the **show route summary detail** command.

Table 23: show route summary detail Field Descriptions

Field	Description
Route Source	Source of the route. Routing protocol name and type.
Active Route	Number of active routes present in the routing table for each route source.

Field	Description
Active Path	Number of active paths present in the routing table for each route source.
Backup Route	Number of routes that are backup to a selected route for each route source.
Backup Path	Number of paths that are backup to a selected path for each route source.