



Object Tracking Commands

This chapter describes the Cisco IOS XR software commands used to track objects. For information about how to use these commands to configure object tracking, see *Cisco IOS XR System Management Configuration Guide for the Cisco XR 12000 Series Router*.

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delay

To configure the delay, in seconds, before the track or interface state should be polled for a change in status, use the **delay** command in track configuration mode. To delete the configuration of delay tracking, use the **no** form of this command.

delay {**up**|**down**} *seconds*

no delay {**up**|**down**} [*seconds*]

Syntax Description

delay up <i>seconds</i>	Sets delay of from 1 to 180 seconds before communication of up status of the tracked object or list of objects.
delay down <i>seconds</i>	Sets delay of from 1 to 180 seconds before communication of down status of the tracked object or list of objects.

Command Default

No default behavior or values

Command Modes

Track configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **delay** command can be used in conjunction with all track types:

- [type line-protocol state, on page 20](#)
- [type list boolean, on page 22](#)
- [type route reachability, on page 28](#)

When using the **no** form of the command, the use of the *seconds* argument is optional.

Task ID

Task ID	Operations
sysmgr	read, write

Examples

The following example shows that the tracking process is configured to notify the network administrator that the interface should be polled for its up state in five-second intervals:

```
RP/0/0/CPU0:router# configuration
RP/0/0/CPU0:router(config)# track name1
RP/0/0/CPU0:router(config-track)# delay up 5
```

Related Commands

Command	Description
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.

interface (track)

To select an interface object type for tracking purposes, use the **interface** command in interface configuration mode. To delete the configuration of a track based on a particular interface object type, use the **no** form of this command.

interface *type interface-path-id*

no interface *type interface-path-id*

Syntax Description

<i>type</i>	(Optional) Interface type. For more information, use the question mark (?) online help function.
<i>interface-path-id</i>	(Optional) 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.

Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To access the **interface** command, you must be in line protocol tracking configuration submode.

For information about interface keywords, see *Cisco IOS XR Interface and Hardware Component Command Reference for the Cisco XR 12000 Series Router*.

Task ID

Task ID	Operations
sysmgr	read, write

Examples

The following example shows the **interface** command in the context of object tracking:

```
RP/0/0/CPU0:router# configure
```

```
RP/0/0/CPU0:router(config)# track track12
RP/0/0/CPU0:router(config-track)# type line-protocol state
RP/0/0/CPU0:router(config-track-line-prot)# interface atm 0/2/0/0.1
```

Related Commands

Command	Description
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.
type line-protocol state	Configures tracking of the line protocol state of an interface object.
type list boolean	Configures a tracked list of objects based on a Boolean calculation.
type route reachability	Configures the routing process to notify the tracking process when the route state changes due to a routing update.

line-protocol track

To associate a specific track with an IPsec or GRE interface object, use the **line-protocol track** command in interface configuration mode. To delete the association between the track and the IPsec or GRE interface object, use the **no** form of this command.

line-protocol track *object-name*

no line-protocol track *object-name*

Syntax Description

<i>object-name</i>	Name of object being tracked.
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Command Default

No default behavior or values

Command Modes

Interface configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operations
sysmgr	read, write

Examples

The following example shows how the **line-protocol track** command is used:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track PREFIX1
RP/0/0/CPU0:router(config-track)# type route reachability
RP/0/0/CPU0:router(config-track-route)# route ipv4 7.0.0.0/24
RP/0/0/CPU0:router(config-track-route)# interface service-ipsec 1
RP/0/0/CPU0:router(config-if)# vrf 1
RP/0/0/CPU0:router(config-if)# ipv4 address 70.0.0.2 255.25.255.0
RP/0/0/CPU0:router(config-if)# line-protocol track PREFIX1
```

Related Commands

Command	Description
interface (track)	Selects an interface object type for tracking purposes.

Command	Description
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.

object

To configure an object for tracking, use the **object** command in list tracking configuration mode. To delete a previously configured track based on an object, use the **no** form of this command.

object *object-name* [**not**]

no object *object-name*

Syntax Description

<i>object-name</i>	Name of the object to be tracked.
not	(Optional) Deletes a previously configured track based on whether an interface object is not up or down.

Command Default

No default behavior or values

Command Modes

List tracking configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

To delete a previously configured track based on whether an interface object is *not* up or down, use the **not** keyword together with the **object** command in a list of tracked objects based on a Boolean expression.

The **object** command can be used only for a track based on a Boolean expression.

Task ID

Task ID	Operations
sysmgr	read, write

Examples

The following example shows how to configure an object, using the optional **not** keyword, in a tracked list of objects based on a Boolean calculation:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track connection100
RP/0/0/CPU0:router(config-track-list)# type list boolean and
RP/0/0/CPU0:router(config-track-list)# object obj3 no
```

Related Commands

Command	Description
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.
type list boolean	Configures a tracked list of objects based on a Boolean calculation.

route ipv4

To configure that an IP prefix and subnet mask should be used as the basis to track route reachability, use the **route ipv4** command in route tracking configuration mode. To remove this configuration, use the **no** form of the command.

route ipv4 *IP prefix and subnet mask*

no route ipv4

Syntax Description

IP prefix and subnet mask

Network and subnet mask; for example, 10.56.8.10/16.

Command Default

No default behavior or values

Command Modes

Route tracking configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The *IP prefix and subnet mask* arguments are optional for the **no** form of this command.

Task ID

Task ID	Operations
sysmgr	read, write

Examples

The following example displays use of the **route ipv4** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track track22
RP/0/0/CPU0:router(config-track)# type route reachability
RP/0/0/CPU0:router(config-track-route)# route ipv4 10.56.8.10/16
```

Related Commands

Command	Description
type route reachability	Configures the routing process to notify the tracking process when the route state changes due to a routing update.

Command	Description
vrf (track)	Configures a VRF table to be used as the basis to track route reachability.

show track

To display information about objects that were tracked and to specify the format of the report, use the **show track** command in EXEC mode.

show track [*track-name*] **interface** | **ipv4 route**] [**brief**]

Syntax Description

track-name	(Optional) Name of track used for tracking objects; for example, track1.
brief	(Optional) Displays a single line of information related to the preceding argument or keyword.
interface	(Optional) Displays tracked interface objects.
ipv4 route	(Optional) Displays the tracked IPv4 route objects.

Command Default

No default behavior or values

Command Modes

EXEC

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

Use the **show track** command to display information about objects that are tracked by the tracking process. When no arguments or keywords are specified, information for all objects is displayed.

Task ID

Task ID	Operations
sysmgr	read

Examples

The following sample output illustrates use of the **show track** command:

```
RP/0/0/CPU0:router# show track Track_name3
Track_name3
  List boolean and is DOWN
  1 change, last change 10:26:20 SJC Sun Aug 05 2007
  object name2 not UP
```

```
object name1 UP
```

Related Commands

Command	Description
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.

track

To initiate or identify a tracking process used to track the status of an object or list of objects, use the **track** command in global configuration mode. To remove the tracking process, use the **no** form of this command.

track *track-name*

no track *track-name*

Syntax Description

track <i>track-name</i>	Name of track used for tracking objects; for example, track1.
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Command Default

No default behavior or values

Command Modes

Global configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

When you use the **track** command, you enter track configuration mode.

Task ID

Task ID	Operations
sysmgr	read, write

Examples

This example shows that the tracking process is configured to notify the network administrator about the up state of the tracked object list every five seconds:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track LIST2
RP/0/0/CPU0:router# track LIST2 delay up 5
```

Related Commands

Command	Description
delay	Configures the delay, in seconds, before the track or interface state should be polled for a change in status.

Command	Description
show track	Displays information about objects that were tracked and specifies the format of the report.
type line-protocol state	Configures tracking of the line protocol state of an interface object.
type list boolean	Configures a tracked list of objects based on a Boolean calculation.
type route reachability	Configures the routing process to notify the tracking process when the route state changes due to a routing update.

threshold percentage

To configure tracking threshold values based on percentages, use the **threshold percentage** command in track list threshold configuration mode. To remove a threshold percentage, use the **no** form of the command.

threshold percentage up *weight* [**down** *weight*]

Syntax Description

up	Maximum threshold value for the specific range beyond which a track is set to the DOWN state.
<i>weight</i>	Percentage limit to define the maximum threshold value.
down	Minimum threshold value for the specific range below which a track is set to the DOWN state.
<i>weight</i>	Percentage limit to define the minimum threshold value.

Command Default

None

Command Modes

Tack list threshold configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

Use the **threshold percentage** command to specify the tracking threshold value used to determine the state of a percentage threshold-weighted list.

- A percentage threshold-weighted list is set to the UP state when the percentage of objects is between UP threshold value and DOWN threshold value.
- A percentage threshold-weighted list is set to the DOWN state when the percentage of objects is out of the range in a configuration.

Task ID

Task ID	Operation
sysmgr	read, write

Examples

This example shows how to specify the weight thresholds for a threshold-weighted list:

```
RP/0/0/CPU0:router(config)# track 4
RP/0/0/CPU0:router(config-track)# type list threshold weight
RP/0/0/CPU0:router(config-track-list-threshold)# threshold percentage up 50 down 33
```

Related Commands

Command	Description
type list threshold percentage	Configures a tracked list of objects based on a percentage threshold.

threshold weight

To configure tracking threshold values based on weights, use the **threshold weight** command in track list threshold configuration mode. To remove a threshold weight, use the **no** form of the command.

threshold weight up *weight* [**down** *weight*]

Syntax Description

up	Maximum threshold value for the specific range beyond which a track is set to the DOWN state.
<i>weight</i>	Percentage limit to define the maximum threshold value.
down	Minimum threshold value for the specific range below which a track is set to the DOWN state.
<i>weight</i>	Percentage limit to define the minimum threshold value.

Command Default

None

Command Modes

Track list threshold configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

Use the **threshold weight** command to specify the threshold value used to determine the state of a threshold-weighted list.

- A threshold-weighted list is set to the UP state when the cumulative sum of the weight of objects is between UP threshold value and DOWN threshold value.
- A threshold-weighted list is set to the DOWN state when the cumulative sum of the weight of objects is out of the range in a configuration.

Task ID

Task ID	Operation
sysmgr	read, write

Examples

This example shows how to specify the weight thresholds for a threshold-weighted list:

```
RP/0/0/CPU0:router(config)# track 4
RP/0/0/CPU0:router(config-track)# type list threshold weight
RP/0/0/CPU0:router(config-track-list-threshold)# threshold weight up 18 down 5
```

Related Commands

Command	Description
type list threshold weight	Configures a tracked list of objects based on a weight threshold.

type line-protocol state

To configure tracking of the line protocol state of an interface object, use the **type line-protocol** command in track configuration mode. To delete the configuration of line-protocol tracking, use the **no** form of this command.

type line-protocol state

no type line-protocol state

Command Default No default behavior or values

Command Modes Track configuration

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines The **type line-protocol state** command can be used in conjunction with the **delay** command to configure the delay, in seconds, before the track or interface state should be polled for a change in its status. The **type line-protocol state** command enters line-protocol tracking configuration mode.

Task ID	Task ID	Operations
	sysmgr	read, write

Examples This example shows how to use the **type line-protocol state** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track track12
RP/0/0/CPU0:router(config-track)# type line-protocol state
```

Related Commands	Command	Description
	delay	Configures the delay, in seconds, before the track or interface state should be polled for a change in status.
	interface (track)	Selects an interface object type for tracking purposes.
	show track	Displays information about objects that were tracked and specifies the format of the report.

Command	Description
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.

type list boolean

To configure a tracked list of objects based on a Boolean calculation, use the **type list boolean** command in track configuration mode. To remove an object tracking list based on a Boolean calculation, use the **no** form of the command.

type list boolean {and| or}

no type list boolean {and| or}

Syntax Description

and	Specifies that the list is up if all objects are up, or down if one or more objects are down. For example, when tracking two interfaces, up means that both interfaces are up, and down means that either interface is down.
or	Specifies that the list is up if at least one object is up. For example, when tracking two interfaces, up means that either interface is up, and down means that both interfaces are down.

Command Default

No default behavior or values

Command Modes

Track configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

The **type list boolean** command enters the list tracking configuration mode, and can be used in conjunction with the **delay** command to configure the delay, in seconds, before the track or interface state should be polled for a change in its status.

To remove a track based on whether an interface object is *not* up or down, use the **not** keyword together with the **object** command as shown in the example that follows.

Task ID

Task ID	Operations
sysmgr	read, write

Examples

This example shows how to use the **type list boolean** command in creating a list of objects to be tracked:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track LIST2
RP/0/0/CPU0:router(config-track)# type list boolean and
RP/0/0/CPU0:router(config-track-list)# object IPsec1 not
RP/0/0/CPU0:router(config-track-list)# object IPsec2
RP/0/0/CPU0:router(config-track-list)# object PREFIX1
RP/0/0/CPU0:router(config-track-list)# exit
RP/0/0/CPU0:router(config)# track IPsec1
RP/0/0/CPU0:router(config-track)# type line-protocol state
RP/0/0/CPU0:router(config-track-line-prot)# interface tengige 0/0/0/3
RP/0/0/CPU0:router(config-track-line-prot)# exit
RP/0/0/CPU0:router(config-track)# track IPsec2
RP/0/0/CPU0:router(config-track)# type line-protocol state
RP/0/0/CPU0:router(config-track-line-prot)# interface ATM0/2/0.1
RP/0/0/CPU0:router(config-track-line-prot)# exit
RP/0/0/CPU0:router(config)# track PREFIX1
RP/0/0/CPU0:router(config-track)# type route reachability
RP/0/0/CPU0:router(config-track-route)# route ipv4 7.0.0.0/24
RP/0/0/CPU0:router(config-track-route)# exit
RP/0/0/CPU0:router(config-track)# interface service-ipsec 1
RP/0/0/CPU0:router(config-if)# vrf 1
RP/0/0/CPU0:router(config-if)# ipv4 address 70.0.0.2 255.255.255.0
RP/0/0/CPU0:router(config-if)# profile vrf_1_ipsec
RP/0/0/CPU0:router(config-if)# line-protocol track LIST2
RP/0/0/CPU0:router(config-if)# tunnel source 80.0.0.2
RP/0/0/CPU0:router(config-if)# tunnel destination 80.0.0.1
RP/0/0/CPU0:router(config-if)# service-location preferred-active 0/2/0
RP/0/0/CPU0:router(config-if)# commit
```

Related Commands

Command	Description
delay	Configures the delay, in seconds, before the track or interface state should be polled for a change in status.
line-protocol track	Associates a specific track with an IPsec or GRE interface object.
object	Configures an object for tracking.
show track	Displays information about objects that were tracked and specifies the format of the report.
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.
type line-protocol state	Configures tracking of the line protocol state of an interface object.
type route reachability	Configures the routing process to notify the tracking process when the route state changes due to a routing update.

type list threshold percentage

To configure a tracked list of objects based on a percentage threshold, use the **type list threshold percentage** command in track configuration mode. To remove an object tracking list based on a percentage threshold, use the **no** form of the command.

type list threshold percentage

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes Track configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

Use the **threshold percentage** command to specify the tracking threshold value used to determine the state of a percentage threshold-weighted list. A percentage threshold-weighted list is set to the UP state when the percentage of objects in the UP state is between UP threshold value to DOWN threshold value. A percentage threshold-weighted list is set to the DOWN state when the percentage of objects is out of the range in a configuration.

Use the **object** command to add tracked objects to the threshold-weighted list. A maximum of 200 track objects are allowed.

Task ID

Task ID	Operation
sysmgr	read, write

Examples

This example shows how to add objects to a percentage threshold-weighted list:

```
RP/0/0/CPU0:router(config)# track 4
RP/0/0/CPU0:router(config-track)# type list threshold percentage
RP/0/0/CPU0:router(config-track-list-threshold)# object 1
RP/0/0/CPU0:router(config-track-list-threshold)# object 2
RP/0/0/CPU0:router(config-track-list-threshold)# object 3
```

Related Commands

Command	Description
object	Configures an object for tracking.
threshold percentage	Configures tracking threshold values based on percentages.

type list threshold weight

To configure a tracked list of objects based on a weight threshold, use the **type list threshold weight** command in track configuration mode. To remove an object tracking list based on a weight threshold, use the **no** form of the command.

type list threshold weight

Syntax Description This command has no keywords or arguments.

Command Default None

Command Modes Track configuration

Command History

Release	Modification
Release 4.2.1	This command was introduced.

Usage Guidelines

Use the **threshold weight** command to specify the threshold value used to determine the state of a threshold-weighted list. When the cumulative sum of the weight of objects in the UP state is between UP threshold value to DOWN threshold value, the threshold-weighted list is set to the UP state. A threshold-weighted list is set to the DOWN state when the cumulative sum of the weight of objects in the UP state is out of the range in a configuration.

Use the **object** command to add tracked objects to the threshold-weighted list. A maximum of 200 track objects are allowed.

Task ID

Task ID	Operation
sysmgr	read, write

Examples

This example illustrates how to add objects to a threshold-weighted list:

```
RP/0/0/CPU0:router(config)# track t4
RP/0/0/CPU0:router(config-track)# type list threshold weight
RP/0/0/CPU0:router(config-track-list-threshold)# object 1
RP/0/0/CPU0:router(config-track-list-threshold)# object 1 weight 10
RP/0/0/CPU0:router(config-track-list-threshold)# object 2 weight 5
RP/0/0/CPU0:router(config-track-list-threshold)# object 3 weight 3
```

Related Commands

Command	Description
object	Configures an object for tracking.
threshold weight	Configures tracking threshold values based on weights.

type route reachability

To configure the routing process to notify the tracking process when the route state changes due to a routing update, use the **type route reachability** command in track configuration mode. To remove a track based on route reachability, use the **no** form of this command.

type route reachability

no type route reachability

Syntax Description This command has no keywords or arguments.

Command Default No default behavior or values

Command Modes Track configuration

Command History	Release	Modification
	Release 3.6.0	This command was introduced.

Usage Guidelines A tracked IP-route object is considered up and reachable when a routing-table entry exists for the route and the route is not inaccessible.

The **type route reachability** command can be used in conjunction with the **delay** command to configure the delay, in seconds, before the track or interface state should be polled for a change in its status.

The route reachability tracking process is based on either of the following, depending on your router type:

- **vrf**—A VRF table name.
- **route**—An IPv4 prefix consisting of the network and subnet mask (for example, 10.56.8.10/16).

Task ID	Task ID	Operations
	sysmgr	read, write

Examples This example shows how to track for route reachability:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track track22
RP/0/0/CPU0:router(config-track)# type route reachability
```

Related Commands

Command	Description
delay	Configures the delay, in seconds, before the track or interface state should be polled for a change in status.
show track	Displays information about objects that were tracked and specifies the format of the report.
track	Initiates or identifies a tracking process used to track the status of an object or list of objects.

type rtr

To configure the router to track the return code of IP service level agreement (SLA) operations, use the **type rtr** command in track configuration mode. To remove a track based on IP SLA return code, use the **no** form of this command.

type rtr *ipsla-no* **reachability**

no type rtr

Syntax Description

<i>ipsla-no</i>	IP SLA operation number. Values can range from 1 to 2048.
reachability	Tracks whether the route is reachable or not.

Command Default

None

Command Modes

Track configuration

Command History

Release	Modification
Release 4.0.0	This command was introduced.

Usage Guidelines

Use the **type rtr** command in conjunction with a configuration that uses:

- The **track** keyword in the **permit** command within an ACL definition. For example:

```
ipv4 access-list abf-track
  10 permit any any nexthop track track1 1.2.3.4
```

- An IP service level agreement configuration.

Task ID

Task ID	Operation
sysmgr	read, write

Examples

This example shows how to configure IPSLA object tracking:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track track22
```

```
RP/0/0/CPU0:router(config-track)# type rtr 1 reachability
```

vrf (track)

To configure a VRF table to be used as the basis to track route reachability, use the **vrf** command in route tracking configuration mode. To delete the configuration of a VRF table for the purpose of IP route tracking purposes, use the **no** form of the command.

vrf *vrf-table-name*

no vrf [*vrf-table-name*]

Syntax Description

<i>vrf-table-name</i>	Network and subnet; for example, 10.56.8.10/16.
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Command Default

No default behavior or values

Command Modes

Route tracking configuration

Command History

Release	Modification
Release 3.6.0	This command was introduced.

Usage Guidelines

Task ID

Task ID	Operations
sysmgr	read, write

Examples

The following example displays the use of the **vrf** command:

```
RP/0/0/CPU0:router# configure
RP/0/0/CPU0:router(config)# track track22
RP/0/0/CPU0:router(config-track)# type route reachability
RP/0/0/CPU0:router(config-track-route)# vrf vrf1
```

Related Commands

Command	Description
delay	Configures the delay, in seconds, before the track or interface state should be polled for a change in status.
route ipv4	Configures an IP prefix and subnet mask to be used as the basis to track route reachability.

Command	Description
type route reachability	Configures the routing process to notify the tracking process when the route state changes due to a routing update.

