REP Command Reference

This chapter describes commands to configure Resilient Ethernet Protocol (REP).

rep admin vlan

To configure a Resilient Ethernet Protocol (REP) administrative VLAN for REP to transmit hardware flood layer (HFL) messages, use the **rep admin vlan** command in global configuration mode. To return to the default configuration with VLAN 1 as the administrative VLAN, use the **no** form of this command.

rep admin vlan *vlan-id*

no rep admin vlan

Syntax Description

vlan-id	The 48-bit static MAC address.

Command Default

The default value of the administrative VLAN is VLAN 1.

Command Modes

Global configuration (config)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

The range of the REP administrative VLAN is from 2 to 4094.

If you do not configure an administrative VLAN, the default VLAN is VLAN 1. The default VLAN 1 is always configured. There can be only one administrative VLAN on a router and on a segment.

You can verify your settings by entering the **show interfaces rep detail** privileged EXEC command.

Examples

The following example shows how to configure VLAN 100 as the REP administrative VLAN:

```
Router(config)# rep admin vlan 100
```

Related Commands

Command	Description
show interfaces rep detail	Displays detailed REP configuration and status for all interfaces or the specified interface, including the administrative VLAN.

rep block port

To configure a REP VLAN load balancing on the REP primary edge port, use the **rep block port** command in interface configuration mode. To return to the default configuration, use the **no** form of this command.

rep block port {**id** *port-id* | *neighbor-offset* | **preferred**} **vlan** {*vlan-list* | **all**}
no rep block port {**id** *port-id* | *neighbor-offset* | **preferred**}

Syntax Description

id *port-id*	Specifies the VLAN blocking alternate port by entering the unique port ID, which is automatically generated when REP is enabled. The REP port ID is a 16-character hexadecimal value. You can display the port ID for an interface by entering the **show interface** *interface-id* **rep detail** command in privileged EXEC mode.
neighbor-offset	Identifies the VLAN blocking alternate port by entering the offset number of a neighbor. The range is from –256 to +256; a value of 0 is invalid.
preferred	Selects the regular segment port previously identified as the preferred alternate port for VLAN load balancing.
vlan	Identifies the VLANs to be blocked.
vlan-list	VLAN ID or range of VLAN IDs to be displayed. Enter a VLAN ID from 1 to 4094 or a range or sequence of VLANs (such as 1-3, 22, 41-44) to be blocked.
all	Blocks all the VLANs.

Command Default

The default behavior after you enter the **rep preempt segment** command in privileged EXEC (for manual preemption) is to block all VLANs at the primary edge port. This behavior remains until you configure the **rep block port** command.

If the primary edge port cannot determine which port is to be the alternate port, the default action is no preemption and no VLAN load balancing.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

You must enter this command on the REP primary edge port.

When you select an alternate port by entering an offset number, this number identifies the downstream neighbor port of an edge port. The primary edge port has an offset number of 1; positive numbers above 1 identify downstream neighbors of the primary edge port. Negative numbers identify the secondary edge port (offset

number –1) and its downstream neighbors. Do not enter an offset value of 1 because that is the offset number of the primary edge port itself.

If you have configured a preempt delay time by entering the **rep preempt delay seconds** command in interface configuration mode and a link failure and recovery occurs, VLAN load balancing begins after the configured preemption time period elapses without another link failure. The alternate port specified in the load-balancing configuration blocks the configured VLANs and unblocks all other segment ports. If the primary edge port cannot determine the alternate port for VLAN balancing, the default action is no preemption.

Each port in a segment has a unique port ID. To determine the port ID of a port, enter the **show interfaces** *interface-id* **rep detail** command in privileged EXEC mode.

Examples

The following example shows how to configure REP VLAN load balancing.

```
Router# configure terminal
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep block port id 0009001818D68700 vlan 1-100
Router(config-if)# end
```

Related Commands

Command	Description
rep preempt delay	Configures a waiting period after a segment port failure and recovery before REP VLAN load balancing is triggered.
rep preempt segment	Manually starts REP VLAN load balancing on a segment.
show interfaces rep detail	Displays REP detailed configuration and status for all the interfaces or the specified interface, including the administrative VLAN.

rep lsl-age-timer

To configure the REP link status layer (LSL) age-out timer value, use the **rep lsl-age-timer** command in interface configuration mode. To restore the default age-out timer value, use the **no** form of this command.

rep lsl-age-timer *milliseconds*

no rep lsl-age-timer *milliseconds*

Syntax Description

milliseconds	REP LSL age-out timer value in milliseconds (ms). The range is from 120 ms to 10000 ms in multiples of 40 ms.

Command Default

The default LSL age-out timer value is 5 ms.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

The **rep lsl-age-timer** command is used to configure the REP LSL age-out timer value. While configuring REP configurable timers, we recommend that you configure the REP LSL number of retries first and then configure the REP LSL age-out timer value.

Examples

The following example shows how to configure REP LSL age-out timer value.

```
Router# enable
Router# configure terminal
Router(config)# interface TenGigabitEthernet4/1
Router(config-if)# rep segment 1 edge primary
Router(config-if)# rep lsl-age-timer 2000
Router(config-if)# end
```

Related Commands

Command	Description
rep lsl-retries	Configures the number of retries before the REP link is disabled.

rep lsl-retries

To configure the REP link status layer (LSL) number of retries, use the **rep lsl-retries** command in interface configuration mode. To restore the default number of retries, use the **no** form of this command.

rep lsl-retries *number-of-retries*

no rep lsl-retries *number-of-retries*

Syntax Description

number-of-retries	Number of LSL retries. The range of retries is from 3 to 10.

Command Default

The default number of LSL retries is 5.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

The **rep lsl-retries** command is used to configure the number of retries before the REP link is disabled. While configuring REP configurable timers, we recommend that you configure the REP LSL number of retries first and then configure the REP LSL age-out timer value.

Examples

The following example shows how to configure REP LSL retries.

```
Router# enable
Router# configure terminal
Router(config)# interface TenGigabitEthernet4/1
Router(config-if)# rep segment 2 edge primary
Router(config-if)# rep lsl-retries 4
Router(config-if)# end
```

Related Commands

Command	Description
rep lsl-age-timer	Configures the REP link status layer age-out timer value.

rep preempt delay

To configure a waiting period after a segment port failure and recovery before REP VLAN load balancing is triggered, use the **rep preempt delay** command in interface configuration mode. To remove the configured delay, use the **no** form of this command.

rep preempt delay *seconds*

no rep preempt delay

Syntax Description

seconds	Number of seconds to delay REP preemption. The range is from 15 to 300 seconds. The default is manual preemption without delay.

Command Default

REP preemption delay is not set. The default is manual preemption without delay.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

You must enter this command on the REP primary edge port.

You must enter this command and configure a preempt time delay if you want VLAN load balancing to automatically trigger after a link failure and recovery.

If VLAN load balancing is configured, after a segment port failure and recovery, the REP primary edge port starts a delay timer before VLAN load balancing occurs. Note that the timer restarts after each link failure. When the timer expires, the REP primary edge alerts the alternate port to perform VLAN load balancing (configured by using the **rep block port** interface configuration command) and prepares the segment for the new topology. The configured VLAN list is blocked at the alternate port, and all other VLANs are blocked at the primary edge port.

You can verify your settings by entering the **show interfaces rep** privileged EXEC command.

Examples

The following example shows how to configure a REP preemption time delay of 100 seconds on the primary edge port.

```
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep preempt delay 100
Router(config-if)# exit
```

Related Commands

Command	Description
rep block port	Configures VLAN load balancing.
rep preempt segment	Manually starts REP VLAN load balancing on a segment.
show interfaces rep detail	Displays REP configuration and status for all interfaces or the specified interface.

rep preempt segment

To manually start REP VLAN load balancing on a segment, use the **rep preempt segment** command in privileged EXEC mode.

rep preempt segment *segment-id*

Syntax Description

segment-id	ID of the REP segment. The range is from 1 to 1024.

Command Default

Manual preemption is the default behavior.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

Enter this command on the segment, which has the primary edge port on the router.

Ensure that all the other segment configuration is completed before setting preemption for VLAN load balancing. When you enter the **rep preempt segment** *segment-id* command, a confirmation message appears before the command is executed because preemption for VLAN load balancing can disrupt the network.

If you do not enter the **rep preempt delay** *seconds* command in interface configuration mode on the primary edge port to configure a preemption time delay, the default configuration is to manually trigger VLAN load balancing on the segment. Use the **show rep topology** privileged EXEC command to see which port in the segment is the primary edge port.

If you do not configure VLAN load balancing, entering this command results in the default behavior—the primary edge port blocks all VLANs.

You configure VLAN load balancing by entering the **rep block port** command in interface configuration mode on the REP primary edge port before you manually start preemption.

Examples

The following example shows how to manually trigger REP preemption on segment 100.

```
Router# rep preempt segment 100
```

Related Commands

Command	Description
rep block port	Configures VLAN load balancing.

Command	Description
rep preempt delay	Configures a waiting period after a segment port failure and recovery before REP VLAN load balancing is triggered.
show interfaces rep detail	Displays REP configuration and status for all interfaces or the specified interface.
show rep topology	Displays REP topology information for a segment or for all segments.

rep segment

To enable REP on the interface and to assign a segment ID to the interface, use the **rep segment** command in interface configuration mode. To disable REP on the interface, use the **no** form of this command.

rep segment *segment-id* [**edge** [**no-neighbor**] [**primary**]] [**preferred**]
no rep segment

Syntax Description

segment-id	Segment for which REP is enabled. Assign a segment ID to the interface. The range is from 1 to 1024.
edge	(Optional) Configures the port as an edge port. Each segment has only two edge ports.
no-neighbor	(Optional) Specifies the segment edge as one with no external REP neighbor.
primary	(Optional) Specifies that the port is the primary edge port where you can configure VLAN load balancing. A segment has only one primary edge port.
preferred	(Optional) Specifies that the port is the preferred alternate port or the preferred port for VLAN load balancing. **Note** Configuring a port as preferred does not guarantee that it becomes the alternate port; it merely gives it a slight edge among equal contenders. The alternate port is usually a previously failed port.

Command Default

REP is disabled on the interface.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

REP ports must be a Layer 2 IEEE 802.1Q port or 802.1AD port. You must configure two edge ports on each REP segment, a primary edge port and a port to act as a secondary edge port.

If REP is enabled on two ports on a router, both ports must be either regular segment ports or edge ports. REP ports follow these rules:

- If only one port on a router is configured in a segment, the port should be an edge port.
- If two ports on a router belong to the same segment, both ports must be regular segment ports.
- If two ports on a router belong to the same segment and one is configured as an edge port and one as a regular segment port (a misconfiguration), the edge port is treated as a regular segment port.

REP interfaces come up in a blocked state and remain in a blocked state until notified that it is safe to unblock. Be aware of this to avoid sudden connection losses.

When REP is enabled on an interface, the default is for the port to be a regular segment port.

Examples

The following example shows how to enable REP on a regular (nonedge) segment port.

```
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep segment 100
```

The following example shows how to enable REP on a port and identify the port as the REP primary edge port.

```
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep segment 100 edge primary
```

The following example shows how to enable REP on a port and identify the port as the REP secondary edge port.

```
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep segment 100 edge
```

The following example shows how to enable REP as an edge no-neighbor port.

```
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep segment 1 edge no-neighbor primary
```

Related Commands

Command	Description
show interfaces rep detail	Displays REP configuration and status for all the interfaces or the specified interface.
show rep topology	Displays information about all the ports in the segment, including the one that was configured and selected as the primary edge port.

rep stcn

To configure a REP edge port to send segment topology change notifications (STCNs) to another interface or to other segments, use the **rep stcn** command in interface configuration mode. To disable the sending of STCNs to the interface or to the segment, use the **no** form of this command.

rep stcn {**interface** *interface-id* | **segment** *segment-id-list*}
no rep stcn {**interface** | **segment**}

Syntax Description

interface *interface-id*	Specifies a physical interface or port channel to receive STCNs.
segment *segment-id-list*	Specifies one REP segment or a list of segments to receive STCNs. The segment range is from 1 to 1024. You can also configure a sequence of segments (for example 3 to 5, 77, 100).

Command Default

Transmission of STCNs to other interfaces or segments is disabled.

Command Modes

Interface configuration (config-if)

Command History

Release	Modification
9.3.0	This command was introduced.

Usage Guidelines

Enter this command on a segment edge port to send STCNs to one or more segments or to an interface. You can verify your settings by entering the **show interfaces rep detail** privileged EXEC command.

Examples

The following example shows how to configure a REP edge port to send STCNs to segments 25 to 50.

```
Router(config)# interface TenGigabitEthernet 4/1
Router(config-if)# rep stcn segment 25-50
Router(config-if)# end
```

Related Commands

Command	Description
show interfaces rep detail	Displays REP configuration and status for all the interfaces or the specified interface.

show interfaces rep detail

To display detailed REP configuration and status for all the interfaces or the specified interface, including the administrative VLAN, use the **show interfaces rep detail** command in privileged EXEC mode.

show interfaces [*interface-id*] **rep detail**

Syntax Description

interface-id	(Optional) Physical interface used to display the port ID.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.3.0	This command was introduced.

Examples

The following example shows how to display the REP configuration and status for a specified interface.

```
Router# show interfaces TenGigabitEthernet4/1 rep detail
```

```
TenGigabitEthernet4/1 REP enabled
Segment-id: 3 (Primary Edge)
PortID: 03010015FA66FF80
Preferred flag: No
Operational Link Status: TWO_WAY
Current Key: 02040015FA66FF804050
Port Role: Open
Blocked VLAN: <empty>
Admin-vlan: 1
Preempt Delay Timer: disabled
Configured Load-balancing Block Port: none
Configured Load-balancing Block VLAN: none
STCN Propagate to: none
LSL PDU rx: 999, tx: 652
HFL PDU rx: 0, tx: 0
BPA TLV rx: 500, tx: 4
BPA (STCN, LSL) TLV rx: 0, tx: 0
BPA (STCN, HFL) TLV rx: 0, tx: 0
EPA-ELECTION TLV rx: 6, tx: 5
EPA-COMMAND TLV rx: 0, tx: 0
EPA-INFO TLV rx: 135, tx: 136
```

Related Commands

Command	Description
rep admin vlan	Configures a REP administrative VLAN for REP to transmit HFL messages.
rep block port	Configures REP VLAN load balancing on the REP primary edge port.
rep preempt delay	Configures a waiting period after a segment port failure and recovery before REP VLAN load balancing is triggered.
rep reempt segment	Manually starts REP VLAN load balancing on a segment.
rep stcn	Configure a REP edge port to send STCNs to another interface or to other segments.

show rep topology

To display REP topology information for a segment or for all segments, including the primary and secondary edge ports in the segment, use the **show rep topology** command in privileged EXEC mode.

show rep topology [**segment** *segment-id*] [**archive**] [**detail**]

Syntax Description

segment *segment-id*	(Optional) Specifies the segment for which to display REP topology information. The ID range is from 1 to 1024.
archive	(Optional) Displays the previous topology of the segment. This keyword is useful for troubleshooting a link failure.
detail	(Optional) Displays detailed REP topology information.

Command Modes

Privileged EXEC (#)

Command History

Release	Modification
9.3.0	This command was introduced.

Examples

The following is sample output from the **show rep topology** command.

```
Router# show rep topology
```

```
REP Segment 1
BridgeName        PortName   Edge Role
----------------- ---------- ---- ----
10.64.106.63      Te5/4      Pri  Open
10.64.106.228     Te3/4           Open
10.64.106.228     Te3/3           Open
10.64.106.67      Te4/3           Open
10.64.106.67      Te4/4           Alt
10.64.106.63      Te4/4      Sec  Open

REP Segment 3
BridgeName        PortName   Edge Role
----------------- ---------- ---- ----
10.64.106.63      Gi50/1     Pri  Open
SVT_3400_2        Gi0/3           Open
SVT_3400_2        Gi0/4           Open
10.64.106.68      Gi40/2          Open
10.64.106.68      Gi40/1          Open
10.64.106.63      Gi50/2     Sec  Alt
```

The following is sample output from the **show rep topology detail** command.

```
Router# show rep topology detail
```

```
REP Segment 1
10.64.106.63, Te5/4 (Primary Edge)
  Open Port, all vlans forwarding
  Bridge MAC: 0005.9b2e.1700
  Port Number: 010
  Port Priority: 000
  Neighbor Number: 1 / [-6]
10.64.106.228, Te3/4 (Intermediate)
  Open Port, all vlans forwarding
  Bridge MAC: 0005.9b1b.1f20
  Port Number: 010
  Port Priority: 000
  Neighbor Number: 2 / [-5]
10.64.106.228, Te3/3 (Intermediate)
  Open Port, all vlans forwarding
  Bridge MAC: 0005.9b1b.1f20
  Port Number: 00E
  Port Priority: 000
  Neighbor Number: 3 / [-4]
10.64.106.67, Te4/3 (Intermediate)
  Open Port, all vlans forwarding
  Bridge MAC: 0005.9b2e.1800
  Port Number: 008
  Port Priority: 000
  Neighbor Number: 4 / [-3]
10.64.106.67, Te4/4 (Intermediate)
  Alternate Port, some vlans blocked
  Bridge MAC: 0005.9b2e.1800
  Port Number: 00A
  Port Priority: 000
  Neighbor Number: 5 / [-2]
10.64.106.63, Te4/4 (Secondary Edge)
  Open Port, all vlans forwarding
  Bridge MAC: 0005.9b2e.1700
  Port Number: 00A
  Port Priority: 000
  Neighbor Number: 6 / [-1]
```

Related Commands

Command	Description
rep preempt segment	Manually starts REP VLAN load balancing on a segment.
rep segment	Enables REP on an interface and assigns a segment ID.