

Chapter 9

Monitoring VPLS

This chapter describes the commands you can use to monitor and troubleshoot the virtual private LAN service (VPLS) on E-series routers.

This chapter contains the following sections:

- Setting a Baseline for VPLS Statistics on page 566
- Clearing All Dynamic MAC Addresses from the VPLS Forwarding Table on page 567
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- Monitoring Bridging-Related Settings for VPLS on page 569
- Monitoring VPLS Configuration and Statistics for a Specific VPLS Instance on page 570
- Monitoring VPLS Configuration and Statistics for all VPLS Instances on page 571
- Monitoring Configuration, Statistics, and Status for VPLS Network Interfaces on page 573
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NOTE: The E120 router and E320 router output for **monitor** and **show** commands is identical to output from other E-series routers, except that the E120 and E320 router output also includes information about the adapter identifier in the interface specifier (*slot/adapter/port*).

Setting a Baseline for VPLS Statistics

You can use the following **baseline** commands to set a statistics baseline for a VPLS instance, for a network interface associated with a VPLS instance, or for the VPLS virtual core interface associated with a VPLS instance. The router implements the baseline by reading and storing the statistics at the time the baseline is set and then subtracting this baseline whenever baseline-relative statistics are retrieved.

Use the **delta** keyword with the **show bridge** commands display baselined statistics.

Tasks to set a baseline for VPLS statistics are:

- Setting a Baseline for a VPLS Instance on page 566
- Setting a Baseline for a Network Interface Associated with a VPLS Instance on page 566
- Setting a Baseline for the VPLS Virtual Core Interface Associated with a VPLS Instance on page 566

Setting a Baseline for a VPLS Instance

To set a statistics baseline for a VPLS instance:

- Issue the **baseline bridge** command.

```
host1#baseline bridge vplsA
```

There is no **no** version.

Setting a Baseline for a Network Interface Associated with a VPLS Instance

To set a statistics baseline for the VPLS network interface:

- Issue the **baseline bridge interface** command.

```
host1#baseline bridge interface gigabitEthernet 4/1
```

Setting a Baseline for the VPLS Virtual Core Interface Associated with a VPLS Instance

To set a statistics baseline for the VPLS virtual core interface:

- Issue the **baseline bridge interface vpls** command.

```
host1#baseline bridge interface vpls vplsA
```

There is no **no** version.

Related Topics

- **baseline bridge** command
- **baseline bridge interface** command
- **baseline bridge interface vpls** command

Clearing Dynamic MAC Addresses from the VPLS Forwarding Table

You can use the following **clear** commands to remove all dynamic (learned) MAC address entries or a specific dynamic MAC address entry from the forwarding table for a VPLS instance.

Tasks to clear the VPLS forwarding table are:

- Clearing All Dynamic MAC Addresses from the VPLS Forwarding Table on page 567
- Clearing a Specific Dynamic MAC Address from the VPLS Forwarding Table on page 567
- Clearing All Dynamic MAC Addresses for a Network Interface Associated with a VPLS Instance from the VPLS Forwarding Table on page 568
- Clearing All Dynamic MAC Addresses for the VPLS Virtual Core Interface Associated with A VPLS Instance on page 568

Clearing All Dynamic MAC Addresses from the VPLS Forwarding Table

To clear all dynamic MAC address entries for the VPLS instance:

- Issue the **clear bridge** command.

```
host1#clear bridge vplsB
```

There is no **no** version.

Clearing a Specific Dynamic MAC Address from the VPLS Forwarding Table

To clear a specific dynamic MAC address entry for the VPLS instance:

- Issue the **clear bridge address** command.

```
host1#clear bridge vplsB address 0090.1a40.9992
```

There is no **no** version.

Clearing All Dynamic MAC Addresses for a Network Interface Associated with a VPLS Instance from the VPLS Forwarding Table

To clear all dynamic MAC address entries for a network interface associated with a VPLS instance:

- Issue the **clear bridge interface** command.

```
host1#clear bridge interface atm 3/3.2
```

There is no **no** version.

Clearing All Dynamic MAC Addresses for the VPLS Virtual Core Interface Associated with A VPLS Instance

To clear all dynamic MAC address entries for the VPLS virtual core interface associated with a VPLS instance:

- Issue the **clear bridge interface vpls** command.

```
host1#clear bridge interface vpls vplsA
```

There is no **no** version.

Related Topics

- **clear bridge** command
- **clear bridge address** command
- **clear bridge interface** command
- **clear bridge interface vpls** command

Clearing BGP Attributes for VPLS

You can use the following **clear ip bgp** commands to remove specific BGP attributes for the L2VPN address family, and in one case, for the VPLS address family associated with a specific VPLS instance.

Clearing BGP Reachability Information for the L2VPN Address Family

To clear BGP reachability information for the L2VPN address family:

- Issue the **clear ip bgp** command.

```
host1#clear ip bgp l2vpn soft in
```

Use the **soft in** keywords to trigger inbound soft reconfiguration. There is no **no** version.

Clearing BGP Route Flap Dampening Information for the L2VPN Address Family

To clear route flap dampening information for the L2VPN address family:

- Issue the **clear ip bgp dampening** command.

host1#**clear ip bgp l2vpn dampening**

There is no **no** version.

Clearing BGP Route Flap Dampening Information for the VPWS Address Family

To clear route flap dampening information for the VPLS address family associated with the specified VPLS instance:

- Issue the **clear ip bgp dampening** command.

host1#**clear ip bgp vpls vplsA dampening**

There is no **no** version.

Clearing the Wait for the End-of-RIB Marker for the L2VPN Address Family

To clear the wait for receiving an End-of-RIB marker from the peer for the L2VPN address family:

- Issue the **clear ip bgp wait-end-of-rib** command.

host1#**clear ip bgp l2vpn wait-end-of-rib**

Related Topics

- **clear ip bgp** command
- **clear ip bgp dampening** command
- **clear ip bgp wait-end-of-rib** command
- *Chapter 1, Configuring BGP Routing*

Monitoring Bridging-Related Settings for VPLS

You can use the **show** commands listed in Table 54 to display VPLS settings related to transparent bridging. Except for the **show bridge interface vpls** command, which is only for VPLS instances, you can use these commands to monitor both VPLS instances and standard bridge groups for transparent bridging.

Table 54: Commands for Monitoring VPLS Bridging Settings

show bridge	show bridge port
show bridge groups	show bridge table
show bridge interface	show subscriber-policy
show bridge interface vpls	

Related Topics

- Monitoring VPLS Configuration and Statistics for a Specific VPLS Instance on page 570
- Monitoring VPLS Configuration and Statistics for all VPLS Instances on page 571
- Monitoring Configuration, Statistics, and Status for VPLS Network Interfaces on page 573
- Monitoring Configuration, Statistics, and Status for VPLS Core Interfaces on page 576
- Monitoring Configuration, Statistics, and Status for VPLS Ports on page 577
- Monitoring MAC Address Entries for a Specific VPLS Instance on page 580
- Monitoring Subscriber Policy Rules on page 580
- For more information about using these commands, see *Monitoring Transparent Bridging* in *JUNOS Link Layer Configuration Guide, Chapter 13, Configuring Transparent Bridging*.

Monitoring VPLS Configuration and Statistics for a Specific VPLS Instance

Purpose Display configuration and statistics information for the specified VPLS instance.

Action To display configuration information for a specified VPLS (vplsA):

```
host1#show bridge vplsA

BridgeGroup: vplsA(vpls)

      Bridge Mode:          default
      Aging Time:           300 secs
      Learning:             Enabled
      Max Learn:            Unlimited
      Link Status Snmp Traps: Disabled
      Subscriber Policy:    default Subscriber
      Port Count:           2
      Interface Count:      1
      Transport Virtual Rtr: default
      Route Distinguisher:  1.1.1.1:10
      SiteName:             boston
      SiteId:               1
      SiteRange:            10
      VPLS Route Targets
        Route Target: RT:100:1 (both)
        Route Target: RT:100:2 (both)
      Flood Next Hop: Index 1048577
```

Use the **all** keyword to display address table and statistics information for all network interfaces associated with the VPLS instance.

Meaning Table 55 lists the **show bridge** command output fields.

Table 55: show bridge Output Fields

Field Name	Field Description
BridgeGroup	Name of the VPLS instance for which information is displayed
Bridge Mode	Bridging capability currently enabled; for a VPLS instance, this field always displays default
Aging Time	Length of time, in seconds, that a MAC address entry can remain in the forwarding table before expiring
Learning	Whether acquisition of dynamically learned MAC addresses is enabled or disabled
Max Learn	Maximum number of dynamic MAC addresses that the VPLS instance can learn
Link Status Snmp Traps	Whether SNMP link status processing is enabled or disabled
Subscriber Policy	Name of the subscriber policy currently in effect
Port Count	Number of ports currently configured for the VPLS instance, including network interfaces and the VPLS virtual core interface
Interface Count	Number of network interfaces currently configured for the VPLS instance
Transport Virtual Rtr	Name of the transport virtual router configured for the VPLS instance
Route Distinguisher	Unique route distinguisher configured for the VPLS instance
SiteName	Site name configured for the VPLS instance
SiteId	Numerical site identifier configured for the VPLS instance
SiteRange	Maximum number of sites that can participate in the VPLS domain associated with the VPLS instance
VPLS Route Targets	Extended community identifiers, also known as route targets, for each VPLS instance configured on the router
Flood Next Hop	Index of the MPLS next hop to which the router floods packets with unknown destination addresses. For more information about displaying MPLS next hops and any available next-hop statistics, see show mpls next-hop on page 346.

Related Topics

- **show bridge** command

Monitoring VPLS Configuration and Statistics for all VPLS Instances

Purpose Display configuration and statistics information for all VPLS instances configured on the router.

Action To display the names of all VPLS instances configured on the router:

```
host1#show bridge groups

BridgeGroup: vplsA(vpls)

BridgeGroup: vplsB(vpls)
```

To display configuration settings for all VPLS instances on the router:

```
host1#show bridge groups details
```

```
BridgeGroup: vplsA(vpls)
```

```

Bridge Mode:          default
Aging Time:           300 secs
Learning:             Enabled
Max Learn:            Unlimited
Link Status Snmp Traps: Disabled
Subscriber Policy:    default Subscriber
Port Count:           2
Interface Count:      1
Transport Virtual Rtr: default
Route Distinguisher:  1.1.1.1:10
SiteName:             boston
SiteId:               1
SiteRange:            10
VPLS Route Targets
  Route Target: RT:100:1 (both)
  Route Target: RT:100:2 (both)
Flood Next Hop: Index 1048577

```

```
BridgeGroup: vplsB(vpls)
```

```

Bridge Mode:          default
Aging Time:           300 secs
Learning:             Enabled
Max Learn:            Unlimited
Link Status Snmp Traps: Disabled
Subscriber Policy:    default Subscriber
Port Count:           2
Interface Count:      1
Transport Virtual Rtr: default
Route Distinguisher:  1.1.1.1:11
SiteName:             boston
SiteId:               1
SiteRange:            20
VPLS Route Targets
  No Route Targets configured
Flood Next Hop: Index 1048578

```

Meaning Table 56 lists the **show bridge group details** command output fields.

Table 56: show bridge groups details Output Fields

Field Name	Field Description
BridgeGroup	Name of the VPLS instance for which information is displayed
Bridge Mode	Bridging capability currently enabled; for a VPLS instance, this field always displays default
Aging Time	Length of time, in seconds, that a MAC address entry can remain in the forwarding table before expiring
Learning	Whether acquisition of dynamically learned MAC addresses is enabled or disabled
Max Learn	Maximum number of dynamic MAC addresses that the VPLS instance can learn

Table 56: show bridge groups details Output Fields (continued)

Field Name	Field Description
Link Status Snmp Traps	Whether SNMP link status processing is enabled or disabled
Subscriber Policy	Name of the subscriber policy currently in effect
Port Count	Number of ports currently configured for the VPLS instance, including network interfaces and the VPLS virtual core interface
Interface Count	Number of network interfaces currently configured for the VPLS instance
Transport Virtual Rtr	Name of the transport virtual router configured for the VPLS instance
Route Distinguisher	Unique route distinguisher configured for the VPLS instance
SiteName	Site name configured for the VPLS instance
SiteId	Numerical site identifier configured for the VPLS instance
SiteRange	Maximum number of sites that can participate in the VPLS domain associated with the VPLS instance
VPLS Route Targets	Extended community identifiers, also known as route targets, for each VPLS instance configured on the router
Flood Next Hop	Index of the MPLS next hop to which the router floods packets with unknown destination addresses. For more information about displaying MPLS next hops and any available next-hop statistics, see show mpls next-hop on page 346.

Related Topics

- [show bridge groups](#) command

Monitoring Configuration, Statistics, and Status for VPLS Network Interfaces

Purpose Display configuration, statistics, and status information for a specified network interface or for all interfaces assigned to a VPLS instance.

Action To display information for a specified network interface:

```

host1#show bridge interface atm 3/1.10

atm3/1.10
  BridgeGroup: vplsB
  Port Number: 1
  Operational Status: Up
  Admin Status: Up
  Snmp Link Status Trap: Disabled
  Max Learn: Unlimited
  Subscriber Policy: default Trunk
  Statistics:
    In Octets:    1958
    In Frames:    14
    In Discards:  1
    In Errors:    0
    Out Octets:   1930
    Out Frames:   14
    Out Discards: 1
    Out Errors:   0

```

Time since counters last reset: 00:14:32

```
queue 0: traffic class best-effort, bound to bridge ATM3/1.10
Queue length 0 bytes
Forwarded packets 14, bytes 2238
Dropped committed packets 0, bytes 0
Dropped conformed packets 0, bytes 0
Dropped exceeded packets 0, bytes 0
```

To display information about all interfaces in a VPLS instance, including the VPLS virtual core interface (vplsB):

host1#show bridge vplsB interface

```
FastEthernet1/1.1
Port Number: 1
Operational Status: Up
Admin Status: Up
Snmp Link Status Trap: Disabled
Max Learn: Unlimited
Subscriber Policy: samplepolicy
Statistics:
  In Octets:    3770
  In Frames:    27
  In Discards:  0
  In Errors:    0
  Out Octets:   3682
  Out Frames:   27
  Out Discards: 0
  Out Errors:   0
Time since counters last reset: 01:07:08

queue 0: traffic class best-effort, bound to bridge FastEthernet1/1.1
Queue length 0 bytes
Forwarded packets 27, bytes 3898
Dropped committed packets 0, bytes 0
Dropped conformed packets 0, bytes 0
Dropped exceeded packets 0, bytes 0

vpls vplsB
Port Number: 2
Operational Status: Down
Admin Status: Up
Snmp Link Status Trap: Disabled
Max Learn: Unlimited
Subscriber Policy: default Trunk
Statistics:
  In Octets:    0
  In Frames:    0
  In Discards:  0
  In Errors:    0
  Out Octets:   0
  Out Frames:   0
  Out Discards: 40
  Out Errors:   0
Time since counters last reset: 01:04:10
```

To display a summary of all interfaces configured for the specified VPLS instance:

```

host1#show bridge vplsB interface brief
-----
Interface          Port      Status
-----
FastEthernet1/1.1   1         Up
ATM10/1.1.1         2         Up
vpls vplsB          3         Up

```

Meaning Table 57 lists the **show bridge interface** command output fields.

Table 57: show bridge interface Output Fields

Field Name	Field Description
BridgeGroup	Name of the VPLS instance to which the interface belongs
Port Number	Port number on which this interface resides
Operational Status	Operational status of the physical interface: Up, Down, LowerLayerDown, NotPresent
Admin Status	State of the physical interface: Up, Down
Snmp Link Status Trap	Whether SNMP link status processing is enabled or disabled for the specified interface
Max Learn	Maximum number of dynamic MAC addresses that the interface can learn
Subscriber Policy	Name of the subscriber policy currently in effect for the interface
Statistics	Displays statistics information for the specified port
In Octets	Number of octets received on this interface
In Frames	Number of frames received on this interface
In Discards	Number of incoming packets discarded on this interface
In Errors	Number of incoming errors received on this interface
Out Octets	Number of octets transmitted on this interface
Out Frames	Number of frames transmitted on this interface
Out Discards	Number of outgoing packets discarded on this interface
Out Errors	Number of outgoing errors on this interface
Time since counters last reset	Elapsed time since statistics counters were last reset
queue	Hardware packet queue associated with the specified traffic class and interface
Queue length	Length of the queue, in bytes
Forwarded packets, bytes	Number of packets and bytes forwarded on this queue
Dropped committed packets, bytes	Number of committed packets and bytes that were dropped
Dropped conformed packets, bytes	Number of conformed packets and bytes that were dropped
Dropped exceeded packets, bytes	Number of exceeded packets and bytes that were dropped
vpls vplsName	Identifies the VPLS virtual core interface for the VPLS instance

Table 58 lists the **show bridge interface brief** command output fields.

Table 58: show bridge interface Output Fields

Field Name	Field Description
Interface	Interface type and specifier associated with the port
Port	Port number on which this interface resides
Status	Operational status of the physical interface: Up, Down, LowerLayerDown, NotPresent

Related Topics

- **show bridge interface** command

Monitoring Configuration, Statistics, and Status for VPLS Core Interfaces

Purpose Display configuration, statistics, and status information for the VPLS virtual core interface associated with a VPLS instance.

Action To display information for the VPLS virtual core interface:

```
host1#show bridge interface vpls vplsB

vpls vplsB
  BridgeGroup: vplsB
  Port Number: 2
  Operational Status: Up
  Admin Status: Up
  Snmp Link Status Trap: Disabled
  Max Learn: Unlimited
  Subscriber Policy: default Trunk
  Statistics:
    In Octets: 0
    In Frames: 0
    In Discards: 0
    In Errors: 0
    Out Octets: 0
    Out Frames: 0
    Out Discards: 0
    Out Errors: 0
  Time since counters last reset: 00:12:53
```

Meaning Table 59 lists the **show bridge interface vpls** command output fields.

Table 59: show bridge interface vpls Output Fields

Field Name	Field Description
BridgeGroup	Name of the VPLS instance to which the interface belongs
Port Number	Port number on which this interface resides
Operational Status	Operational status of the physical interface: Up, Down, LowerLayerDown, NotPresent
Admin Status	State of the physical interface: Up, Down
Snmp Link Status Trap	Whether SNMP link status processing is enabled or disabled for the specified interface

Table 59: show bridge interface vpls Output Fields (continued)

Field Name	Field Description
Max Learn	Maximum number of dynamic MAC addresses that the interface can learn
Subscriber Policy	Name of the subscriber policy currently in effect for the interface
Statistics	Displays statistics information for the specified port
In Octets	Number of octets received on this interface
In Frames	Number of frames received on this interface
In Discards	Number of incoming packets discarded on this interface
In Errors	Number of incoming errors received on this interface
Out Octets	Number of octets transmitted on this interface
Out Frames	Number of frames transmitted on this interface
Out Discards	Number of outgoing packets discarded on this interface
Out Errors	Number of outgoing errors on this interface
Time since counters last reset	Elapsed time since statistics counters were last reset
queue	Hardware packet queue associated with the specified traffic class and interface
Queue length	Length of the queue, in bytes
Forwarded packets, bytes	Number of packets and bytes forwarded on this queue
Dropped committed packets, bytes	Number of committed packets and bytes that were dropped
Dropped conformed packets, bytes	Number of conformed packets and bytes that were dropped
Dropped exceeded packets, bytes	Number of exceeded packets and bytes that were dropped
vpls <i>vplsName</i>	Identifies the VPLS virtual core interface for the VPLS instance

Related Topics

- [show bridge interface vpls command](#)

Monitoring Configuration, Statistics, and Status for VPLS Ports

Purpose Display configuration, statistics, and status information for ports (interfaces) associated with a VPLS instance.

Action To display information for VPLS ports:

```
host1#show bridge vplsC port
FastEthernet1/1.1
Port Number: 1
Operational Status: Up
Admin Status: Up
Snmp Link Status Trap: Disabled
Max Learn: Unlimited
Subscriber Policy: samplepolicy
```

```

Statistics:
  In Octets:    2018
  In Frames:    15
  In Discards:  0
  In Errors:    0
  Out Octets:   1930
  Out Frames:   14
  Out Discards: 0
  Out Errors:   0
Time since counters last reset: 00:10:55

queue 0: traffic class best-effort, bound to bridge FastEthernet1/1.1
Queue length 0 bytes
Forwarded packets 14, bytes 2042
Dropped committed packets 0, bytes 0
Dropped conformed packets 0, bytes 0
Dropped exceeded packets 0, bytes 0

vpls vplsC
Port Number: 2
Operational Status: Up
Admin Status: Up
Snmp Link Status Trap: Disabled
Max Learn: Unlimited
Subscriber Policy: default Trunk
Statistics:
  In Octets:    0
  In Frames:    0
  In Discards:  0
  In Errors:    0
  Out Octets:   0
  Out Frames:   0
  Out Discards: 0
  Out Errors:   0
Time since counters last reset: 00:07:07

```

To display a summary of all ports configured for the specified VPLS instance:

```

host1#show bridge vplsTest port brief

```

Port	Interface	Status
1	FastEthernet1/1.1	Up
2	ATM10/1.1.1	Up
3	vpls vplsTest	Up

Meaning Table 60 lists the **show bridge port** command output fields.

Table 60: show bridge port Output Fields

Field Name	Field Description
BridgeGroup	Name of the VPLS instance to which the interface belongs
Port Number	Port number on which this interface resides
Operational Status	Operational status of the physical interface: Up, Down, LowerLayerDown, NotPresent
Admin Status	State of the physical interface: Up, Down
Snmp Link Status Trap	Whether SNMP link status processing is enabled or disabled for the specified interface

Table 60: show bridge port Output Fields (continued)

Field Name	Field Description
Max Learn	Maximum number of dynamic MAC addresses that the interface can learn
Subscriber Policy	Name of the subscriber policy currently in effect for the interface
Statistics	Displays statistics information for the specified port
In Octets	Number of octets received on this interface
In Frames	Number of frames received on this interface
In Discards	Number of incoming packets discarded on this interface
In Errors	Number of incoming errors received on this interface
Out Octets	Number of octets transmitted on this interface
Out Frames	Number of frames transmitted on this interface
Out Discards	Number of outgoing packets discarded on this interface
Out Errors	Number of outgoing errors on this interface
Time since counters last reset	Elapsed time since statistics counters were last reset
queue	Hardware packet queue associated with the specified traffic class and interface
Queue length	Length of the queue, in bytes
Forwarded packets, bytes	Number of packets and bytes forwarded on this queue
Dropped committed packets, bytes	Number of committed packets and bytes that were dropped
Dropped conformed packets, bytes	Number of conformed packets and bytes that were dropped
Dropped exceeded packets, bytes	Number of exceeded packets and bytes that were dropped
vpls <i>vplsName</i>	Identifies the VPLS virtual core interface for the VPLS instance

Table 61 lists the **show bridge port brief** command output fields.

Table 61: show bridge interface Output Fields

Field Name	Field Description
Port	Port number on which this interface resides
Interface	Interface type and specifier associated with the port
Status	Operational status of the physical interface: Up, Down, LowerLayerDown, NotPresent

Related Topics

- **show bridge port** command

Monitoring MAC Address Entries for a Specific VPLS Instance

Purpose Display information about the MAC address entries in the forwarding table for the specified VPLS instance.

Action To display information about the MAC address entries:

```
host1#show bridge vpls1 table
Bridge: vpls1 MAC Address Table
```

Address	Action	Interface	Age
0009.01a0.002e	forward	ATM10/1.1.1	0
0090.1a41.3aca	forward	vpls (10)	0

Meaning Table 62 lists the **show bridge table** command output fields.

Table 62: show bridge table Output Fields

Field Name	Field Description
Bridge	Name of the VPLS instance for which the MAC address table is displayed
Address	MAC address of the entry
Action	Specifies how the VPLS instance handles this entry: forward or discard
Interface	Interface type and specifier on which the entry is forwarded; this value does not appear for entries that are discarded; vpls identifies the VPLS virtual core interface
Age	Length of time that a dynamic entry has been in the forwarding table; this value does not appear for static entries

Related Topics

- **show bridge table** command

Monitoring Subscriber Policy Rules

Purpose Display the set of forwarding and filtering rules for all subscriber policies configured on the router, or for a specified subscriber policy.

Action To display the rules for a specified subscriber policy:

```
host1#show subscriber-policy client01
Subscriber: client01
ARP : Permit
Broadcast : Permit
Multicast : Deny
Unknown Destination : Deny
IP : Permit
Unknown Protocol : Permit
Unicast : Permit
PPPoE : Permit
Relearn : Deny
Mpls : Permit
```


To display the rules for all default and nondefault subscriber policies configured on the router:

```
host1#show subscriber-policy

Subscriber: default Subscriber
  ARP          : Permit
  Broadcast    : Deny
  Multicast    : Permit
  Unknown Destination : Deny
  IP           : Permit
  Unknown Protocol : Permit
  Unicast      : Permit
  PPPoE        : Permit
  Relearn      : Permit
  Mpls         : Permit

Subscriber: default Trunk
  ARP          : Permit
  Broadcast    : Permit
  Multicast    : Permit
  Unknown Destination : Permit
  IP           : Permit
  Unknown Protocol : Permit
  Unicast      : Permit
  PPPoE        : Permit
  Relearn      : Permit
  Mpls         : Permit

Subscriber: client01
  ARP          : Permit
  Broadcast    : Permit
  Multicast    : Deny
  Unknown Destination : Deny
  IP           : Permit
  Unknown Protocol : Permit
  Unicast      : Permit
  PPPoE        : Permit
  Relearn      : Deny
  Mpls         : Permit
```

Meaning Table 63 lists the **show subscriber-policy** command output fields.

Table 63: show subscriber-policy Output Fields

Field Name	Field Description
Subscriber	Name of the subscriber policy
Permit	Indicates that the subscriber interface forwards packets of the specified type. For the relearn attribute, specifies that relearning a MAC address entry on a different interface from the one initially associated with this entry in the forwarding table is allowed on this interface
Deny	Indicates that the subscriber interface filters packets of the specified type. For the relearn attribute, specifies that relearning is prohibited on this interface

Related Topics

- `show subscriber-policy` command

Monitoring BGP-Related Settings for VPLS

You can use the **show ip bgp** commands listed in Table 64 to display BGP-related settings for VPLS instances in the L2VPN address family or in the VPLS address family.

Table 64: Commands for Monitoring VPLS BGP Settings

<code>show ip bgp</code>	<code>show ip bgp neighbors paths</code>
<code>show ip bgp advertised-routes</code>	<code>show ip bgp neighbors received-routes</code>
<code>show ip bgp community</code>	<code>show ip bgp neighbors routes</code>
<code>show ip bgp community-list</code>	<code>show ip bgp network</code>
<code>show ip bgp dampened-paths</code>	<code>show ip bgp next-hops</code>
<code>show ip bgp filter-list</code>	<code>show ip bgp paths</code>
<code>show ip bgp flap-statistics</code>	<code>show ip bgp peer-group</code>
<code>show ip bgp l2vpn</code>	<code>show ip bgp quote-regexp</code>
<code>show ip bgp l2vpn vpls</code>	<code>show ip bgp regexp</code>
<code>show ip bgp neighbors</code>	<code>show ip bgp summary</code>
<code>show ip bgp neighbors dampened-routes</code>	–

Related Topics

- Monitoring Layer 2 NLRI for VPLS Instances on page 582
- Monitoring BGP Next Hops for VPLS on page 585
- For more information about using these commands, see *Chapter 1, Configuring BGP Routing* and *Chapter 3, Configuring BGP-MPLS Applications*.

Monitoring Layer 2 NLRI for VPLS Instances

Purpose Display layer 2 NLRI for all VPLS instances in the L2VPN address family, for a particular VPLS instance in the L2VPN address family, or for a particular VPLS instance in the VPLS address family.

To display layer 2 NLRI for the route that matches a specified prefix (site ID and block offset) in the L2VPN address family or in the VPLS address family, use the **site-id** and **block-offset** keywords.

Action To display information for all VPLS instances in the L2VPN address family:

```
host1#show ip bgp l2vpn all
```

```
Local BGP identifier 1.1.1.1, local AS 100
 4 routes (264 bytes)
 4 destinations (288 bytes) of which 4 have a route
 0 routes selected for route tables installation
```

```

0 unicast/multicast routes selected for route table installation
0 unicast/multicast tunnel-usable routes selected for route table installation
0 tunnel-only routes selected for tunnel-route table installation
4 path attribute entries (608 bytes)
Local-RIB version 11. FIB version 11.

```

Status codes: > best, * invalid, s suppressed, d dampened, r rejected,
a auto-summarized

Prefix	Peer	Next-hop	MED	LocPrf	Weight	Origin
> 1:1	0.0.0.0	self			0	IGP
> 1:1	0.0.0.0	self			0	IGP
> 2:1	2.2.2.2	2.2.2.2		100	0	IGP
> 2:1	2.2.2.2	2.2.2.2		100	0	IGP

To display summary information for the L2VPN address family:

```
host1#show ip bgp l2vpn all summary
```

```

Display summary information for the l2vpn address-family
Local router ID 1.1.1.1, local AS 100
Administrative state is Start
BGP Operational state is Up
Shutdown in overload state is disabled
Default local preference is 100
IGP synchronization is enabled
Default originate is disabled
Always compare MED is disabled
Compare MED within confederation is disabled
Advertise inactive routes is disabled
Advertise best external route to internal peers is disabled
Enforce first AS is disabled
Missing MED as worst is disabled
Route flap dampening is disabled
Log neighbor changes is disabled
Fast External Fallover is disabled
No maximum received AS-path length
BGP administrative distances are 20 (ext), 200 (int), and 200 (local)
Client-to-client reflection is enabled
Cluster ID is 1.1.1.1
Route-target filter is enabled
Default IPv4-unicast is enabled
Check next-hops of vpn routes is disabled
Redistribution of iBGP routes is disabled
Graceful restart is globally disabled
Global graceful-restart restart time is 120 seconds
Global graceful-restart stale paths time is 360 seconds
Graceful-restart path selection defer time is 360 seconds
Graceful-restart is not ready to switch to the standby SRP
The last restart was not graceful
Local-RIB version 11. FIB version 11.

```

Neighbor	AS State	Up/down time	Messages Sent	Messages Received	Prefixes Received
2.2.2.2	100 Established	00:30:35	65	65	2

To display information for the route that matches the specified prefix (2:1) for a VPLS instance named customer1 in the VPLS address family:

```
host1#show ip bgp l2vpn vpls customer1 site-id 2 block-offset 1
```

```
BGP route information for prefix 2:1
```

```

Received route learned from internal peer 2.2.2.2 (best route)
  Leaked route
  Route placed in IP forwarding table
  Best to advertise to external peers
  Address Family Identifier (AFI) is layer2
  Subsequent Address Family Identifier (SAFI) is unicast
  Route Distinguisher (RD) is 100:11
  Original Route Distinguisher (RD) is 100:21
  MPLS in-label is none
  MPLS in-label block size is 0
  MPLS out-label is 46
  MPLS out-label block size is 20
  Next hop IP address is 2.2.2.2 (metric 3)
  Multi-exit discriminator is not present
  Local preference is 100
  Weight is 0
  Origin is IGP
  AS path is empty
  Extended communities RT:100:1 Layer 2:19:00:0

```

Meaning Table 65 lists the **show ip bgp l2vpn** command output fields.

Table 65: show ip bgp l2vpn Output Fields

Field Name	Field Description
Local BGP identifier	IP address of the local VE router
local AS	Autonomous system number
Local-RIB version	Version number of the local routing information base
FIB version	Version number of the forwarding information base
Status codes	Status codes for the route
Prefix	Route prefix in the format <i>siteID:blockOffset</i>
Peer	IP address of the peer from which the route was learned
Next-hop (or Next hop IP address)	IP address of the next router that is used when a packet is forwarded to the destination network
MED	Multixit discriminator for the route
LocPrf	Local preference for the route
Weight	Weight of the route
Origin	Origin of the route
AS path	AS path through which this route has been advertised
Extended communities	Route targets of the communities associated with this route

Related Topics

- **show ip bgp l2vpn** command
- **show ip bgp l2vpn vpls** command

Monitoring BGP Next Hops for VPLS

Purpose Display information about BGP next hops in the L2VPN address family or in the VPLS address family.

Action To display next hop information that matches the specified indirect next-hop address (2.2.2.2) in the L2VPN address family:

```
host1#show ip bgp l2vpn all next-hops 2.2.2.2
Indirect next-hop 2.2.2.2
  Resolution in IP route table of VR
    IP indirect next-hop index 2
    Reachable (metric 3)
    Number of direct next-hops is 1
      Direct next-hop ATM2/0.10 (10.10.10.2)
  Resolution in IP tunnel-route table of VR
    MPLS indirect next-hop index 19
    Reachable (metric 3)
    Number of direct next-hops is 1
      Direct next-hop 0000000c
  Reference count is 2
```

Meaning Table 66 lists the **show ip bgp next-hops** command output fields.

Table 66: show ip bgp next-hops Output Fields

Field Name	Field Description
Indirect next-hop	BGP next-hop attribute received in the BGP update message
Resolution	Describes where the indirect next hop is resolved (the IP routing table, the IP tunnel routing table, or both) and whether this is in a VR or VRF
IP indirect next-hop index	Index number of the IP indirect next hop that corresponds to the BGP indirect next hop and its resolution
MPLS indirect next-hop index	Index number of the MPLS indirect next hop that corresponds to the BGP indirect next hop and its resolution
Reachable	Indicates whether or not the indirect next hop is reachable. For more information about the reachability rules that apply for various route types, see the command description for show ip bgp next-hops on page 471.
metric	Metric number of the BGP indirect next hop
Number of direct next-hops	Number of the equal-cost legs of direct next hops to which this indirect next hop resolves
Direct next-hop	MPLS next-hop index that resolves the MPLS indirect next hop
Reference count	Number of label mappings of BGP routes that use this next hop

Related Topics

- **show ip bgp next-hops** command

Monitoring LDP-Related Settings for VPLS

Purpose Display MPLS configuration information for a VPLS instance that uses LDP as the signaling protocol.

Action To display information for all VPLS instances configured on the virtual router:

```
host1:ve1#show ldp vpls
Vpls      Vpls      Remote
Instance  Id         PE
-----
vpls1     1         2.2.2.2
vpls2     2         2.2.2.2
In-label  Out-label
-----
25        27
26        28
```

Meaning Table 67 lists the **show ldp vpls** command output fields.

Table 67: show ldp vpls Output Fields

Field Name	Field Description
Vpls Instance	Name of the VPLS instance for which the configuration information is displayed
Vpls Id	Globally unique identifier for the VPLS domain
Remote PE	IP address of the remote VE (also known as the PE) router
In-label	Incoming MPLS label from the remote site
Out-label	Outgoing MPLS label used to reach the remote site

Related Topics

- [show ldp vpls command](#)

Monitoring MPLS-Related Settings for VPLS

Purpose Display MPLS-related settings for VPLS instances.

Action To display information for a specific MPLS label being used for forwarding:

```
host1:ve1#show mpls forwarding label 17
In label: 17
Label space: platform label space
Owner: bgp
Spoof check: router pe1
Action:
MPLS next-hop: 3, Forward to bridge-group customer1
Statistics:
0 in pkts
0 in Octets
0 in errors
0 in discard pkts
```

To display summary information for all MPLS labels being used for forwarding:

```
host1:ve1#show mpls forwarding brief
```

In-label	Owner	Action
17	bgp	Forward to bridge-group customer1
27	bgp	Forward to bridge-group customer2

Meaning Table 68 lists the **show mpls forwarding** command output fields.

Table 68: show mpls forwarding Output Fields

Field Name	Field Description
In label	Label sent to upstream neighbor for route
Out label	Label received from downstream neighbor for route
Label space	Label space in which the label is assigned
Owner	Signaling protocol that placed the label in the forwarding table: BGP, LDP, or RSVP-TE
Spoof check	Type and location of spoof checking performed on the MPLS packet, router, or interface
Action	Action taken for MPLS packets arriving with that label
in pkts	Number of packets sent with the label
in Octets	Number of octets sent with the label
in errors	Number of packets that are dropped for some reason before being sent
in discardPkts	Number of packets that are discarded due to lack of buffer space before being sent

Related Topics

- **show mpls forwarding** command

Monitoring VPLS-Specific Settings

Purpose Display configuration and status information for VPLS connections configured on the router.

Action To display detailed information about all VPLS instances configured on the router:

```
host1#show vpls connections details
```

```
BridgeGroup: vpls1(vpls)
```

Bridge Mode:	default
Aging Time:	300 secs
Learning:	Enabled
Max Learn:	Unlimited
Link Status Snmp Traps:	Disabled
Subscriber Policy:	default Subscriber
Port Count:	2
Interface Count:	1
Transport Virtual Rtr:	pe1

```

Route Distinguisher: 1.1.1.1:10
SiteName: westford
SiteId: 1
SiteRange: 10
VPLS Route Targets
Route Target: RT:100:1 (both)
Flood Next Hop: Index 1048577
MPLS next-hop: 20, label 46, resolved by MPLS next-hop 19
MPLS next-hop: 19, resolved by MPLS next-hop 17, peer 2.2.2.2
MPLS next-hop: 17, label 82 on ATM2/0.10, nbr 10.10.10.2

```

Interface	Port	Status
FastEthernet3/1	1	Up
vpls vpls1	2	Up

Connections status code:

UP = Operational

SC = Local and Remote Site Identifier Collision

EM = Encapsulation Mismatch

OR = Out of Range

DN = VC Down because Remote PE Unreachable

LD = Local Site Down

RD = Remote Site Down

AS = Max BGP AS path length exceeded

OL = No Out Label

Site	State	Remote PE	In-label	Out-label	MPLS NH Idx	Up-down Time
2	UP	2.2.2.2	17	46	20	00:02:56

BridgeGroup: vpls2(vpls)

```

Bridge Mode: default
Aging Time: 300 secs
Learning: Enabled
Max Learn: Unlimited
Link Status Snmp Traps: Disabled
Subscriber Policy: default Subscriber
Port Count: 2
Interface Count: 1
Transport Virtual Rtr: pe1
Route Distinguisher: 1.1.1.1:10
SiteName: westford
SiteId: 1
SiteRange: 20
VPLS Route Targets
Route Target: RT:100:2 (both)
Flood Next Hop: Index 1048578
MPLS next-hop: 21, label 56, resolved by MPLS next-hop 19
MPLS next-hop: 19, resolved by MPLS next-hop 17, peer 2.2.2.2
MPLS next-hop: 17, label 82 on ATM2/0.10, nbr 10.10.10.2

```

Interface	Port	Status
ATM2/0.12	1	Up
vpls vpls2	2	Up

Connections status code:

UP = Operational

SC = Local and Remote Site Identifier Collision

EM = Encapsulation Mismatch

OR = Out of Range

DN = VC Down because Remote PE Unreachable
 LD = Local Site Down
 RD = Remote Site Down
 AS = Max BGP AS path length exceeded
 OL = No Out Label

Site	State	Remote PE	In-label	Out-label	MPLS NH Idx	Up-down Time
2	UP	2.2.2.2	27	56	21	00:02:56

Meaning Table 69 lists the **show vpls connections** command output fields.

Table 69: show cpls connections Output Fields

Field Name	Field Description
BridgeGroup	Name of the VPLS instance for which information is displayed
Bridge Mode	Bridging capability currently enabled; for a VPLS instance, this field always displays default
Aging Time	Length of time, in seconds, that a MAC address entry can remain in the forwarding table before expiring
Learning	Whether acquisition of dynamically learned MAC addresses is enabled or disabled
Max Learn	Maximum number of dynamic MAC addresses that the VPLS instance can learn
Link Status Snmp Traps	Whether SNMP link status processing is enabled or disabled
Subscriber Policy	Name of the subscriber policy currently in effect
Port Count	Number of ports currently configured for the VPLS instance, including network interfaces and the VPLS virtual core interface
Interface Count	Number of network interfaces currently configured for the VPLS instance
Transport Virtual Rtr	Name of the transport virtual router configured for the VPLS instance
Route Distinguisher	Unique route distinguisher configured for the VPLS instance
SiteName	Site name configured for the VPLS instance
SiteId	Numerical site identifier configured for the VPLS instance
SiteRange	Maximum number of sites that can participate in the VPLS domain associated with the VPLS instance
VPLS Route Targets	Extended community identifiers, also known as route targets, for each VPLS instance configured on the router
Flood Next Hop	Index number of the MPLS next hop to which the router floods packets with unknown destination addresses. For more information about displaying MPLS next hops and any available next-hop statistics, see the show mpls next-hop command description in <i>Chapter 2, Configuring MPLS</i> .
Interface	Type and specifier of the network interfaces and VPLS virtual core interface associated with the VPLS instance; vpls vplsName in this field identifies the VPLS virtual core interface
Port	Port number of the module on which the network interface or VPLS virtual core interface resides
Status	Operational status of the physical interface: Up, Down, LowerLayerDown, NotPresent

Table 69: show cpls connections Output Fields (continued)

Field Name	Field Description
Connections status code	Possible status codes for the VPLS connection that appear in the State field
Site	Remote site identifier
State	Status of the connection with the remote VPLS instance; possible values for this field appear in the Connections status code legend in the command display
Remote PE	IP address of the remote VPLS edge (VE) router, which is analogous to the remote provider edge (PE) router in a BGP/MPLS VPN configuration
In-label	Incoming MPLS label from the remote site
Out-label	Outgoing MPLS label used to reach the remote site
MPLS NH Idx	MPLS next-hop index number that corresponds to the outgoing MPLS label
Up-down Time	Time since the last state change for this VPLS connection

Related Topics

- **show vpls connections** command