

## Chapter 17

# Summary of VPLS Configuration Statements

The following sections explain the major routing-instances and interfaces configuration statements that apply specifically to virtual private LAN service (VPLS). The statements are organized alphabetically. The routing instance statements at the [edit routing-instances *routing-instance-name*] hierarchy level are explained in the *JUNOS Routing Protocols Configuration Guide*. The interface statements at the [edit interfaces *interface-name*] hierarchy level are explained in the *JUNOS Network Interfaces Configuration Guide*.

### active-interface

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<b>Syntax</b>	active-interface { any; primary <i>interface-name</i> ; }
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> ]
<b>Release Information</b>	Statement introduced in JUNOS Release 7.5.
<b>Description</b>	Specifies a multihomed interface as the primary interface for the VPLS site. If there are multiple interfaces, the remaining interfaces are activated only when the primary interface goes down. If no active interfaces are configured at the site level, it is assumed that all traffic for a VPLS site travels through a single, non-multihomed PE router.
<b>Options</b>	any—One configured interface is randomly designated as the active interface for the VPLS site.  primary—Specify the name of the multihomed interface to be used as the primary interface by the VPLS site.
<b>Usage Guidelines</b>	See “Specifying an Interface as the Active Interface” on page 406.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## encapsulation

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<b>Syntax</b>	encapsulation (ethernet-vpls   ether-vpls-over-atm-llc   extended-vlan-vpls   vlan-vpls);
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> interfaces <i>interface-name</i> ]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Physical link-layer encapsulation type for VPLS interfaces. This statement summary for the <b>encapsulation</b> statement describes encapsulations supported for VPLS only. For a full description of the <b>encapsulation</b> statement, see <b>encapsulation</b> on page 106.
<b>Options</b>	<p><b>ethernet-vpls</b>—Use Ethernet VPLS encapsulation on Ethernet interfaces that have VPLS enabled and that must accept packets carrying standard Tag Protocol ID (TPID) values. On M-series routing platforms, except the M320, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.</p> <p><b>ether-vpls-over-atm-llc</b>—For ATM intelligent queuing (IQ) interfaces only, use the Ethernet virtual private LAN service (VPLS) over ATM LLC encapsulation to bridge Ethernet interfaces and ATM interfaces over a VPLS routing instance (as described in RFC 2684, <i>Multiprotocol Encapsulation over ATM Adaptation Layer 5</i>). Packets from the ATM interfaces are converted to standard ENET2/802.3 encapsulated Ethernet frames with the frame check sequence (FCS) field removed.</p> <p><b>extended-vlan-vpls</b>—Use extended virtual local area network (VLAN) VPLS encapsulation on Ethernet interfaces that have VLAN 802.1Q tagging and VPLS enabled and that must accept packets carrying TPIDs 0x8100, 0x9100, and 0x9901. On M-series routing platforms, except the M320, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.</p> <p><b>vlan-vpls</b>—Use VLAN VPLS encapsulation on Ethernet interfaces with VLAN tagging and VPLS enabled. Interfaces with VLAN VPLS encapsulation accept packets carrying standard TPID values only. On M-series routing platforms, except the M320, the 4-port Fast Ethernet TX PIC and the 1-port, 2-port, and 4-port, 4-slot Gigabit Ethernet PICs can use the Ethernet VPLS encapsulation type.</p>
<b>Usage Guidelines</b>	See “Configuring the Interface Encapsulation” on page 388.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## interface

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<b>Syntax</b>	interface <i>interface-name</i> { interface-mac-limit <i>limit</i> ; }
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specify the Layer 2 circuits configured for a VPLS site as logical interfaces within the VPLS site configuration.
<b>Options</b>	<i>interface-name</i> —Specify the name of the interface used by the VPLS site.  The other option is explained separately.
<b>Usage Guidelines</b>	See “Configuring the VPLS Site Interfaces” on page 392.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## interface-mac-limit

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<b>Syntax</b>	interface-mac-limit <i>limit</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> interfaces <i>interface-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> interfaces <i>interface-name</i> ]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specify the maximum number of media access control (MAC) addresses that can be learned by the VPLS routing instance. You can configure the same limit for all interfaces configured for a routing instance. You can also configure a limit for a specific interface.
<b>Options</b>	<i>limit</i> —Specify the number of MAC addresses that can be learned from each interface.  <b>Range:</b> 16 through 65,536 MAC addresses <b>Default:</b> 512 addresses
<b>Usage Guidelines</b>	See “Limiting the Number of MAC Addresses Learned from an Interface” on page 394.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.
<b>See also</b>	mac-table-size on page 413

## mac-table-aging-time

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<b>Syntax</b>	mac-table-aging-time <i>time</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls]
<b>Release Information</b>	Statement introduced in JUNOS Release 7.4.
<b>Description</b>	Modify the timeout interval for the VPLS table.
<b>Options</b>	<i>time</i> —Specify the number of seconds to wait between VPLS table clearings.  <b>Range:</b> 10 through 1,000,000 seconds <b>Default:</b> 300 seconds
<b>Usage Guidelines</b>	See “Configuring the VPLS MAC Table Timeout Interval” on page 393.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

**mac-table-size**

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<b>Syntax</b>	mac-table-size size;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Modify the size of the VPLS MAC address table.
<b>Options</b>	size—Specify the size of the MAC address table.  <b>Range:</b> 16 through 65,536 MAC addresses <b>Default:</b> 512 MAC addresses
<b>Usage Guidelines</b>	See “Configuring the Size of the VPLS MAC Address Table” on page 394.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

**multi-homing**

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<b>Syntax</b>	multi-homing;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> ]
<b>Release Information</b>	Statement introduced in JUNOS Release 7.5.
<b>Description</b>	Specifies the PE router as being a part of a multihomed VPLS site. Include this statement on all PE routers associated with a particular VPLS site. Configuration of this statement tracks BGP peers. If no BGP peer is available, VPLS deactivates all active interfaces for a site.
<b>Usage Guidelines</b>	See “Configuring Multihoming on the PE Router” on page 406.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## no-tunnel-services

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<b>Syntax</b>	no-tunnel-services;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls]
<b>Release Information</b>	Statement introduced in JUNOS Release 7.6.
<b>Description</b>	Allows you to configure VPLS on a router without a Tunnel Services PIC.
<b>Usage Guidelines</b>	See “Configuring VPLS Without a Tunnel Services PIC” on page 385.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## site

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<b>Syntax</b>	<pre>site <i>site-name</i> {     interface <i>interface-name</i> {         interface-mac-limit <i>limit</i>;     }     site-identifier <i>identifier</i>; }</pre>
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specify the site name and site identifier for a site. Allows you to configure a remote site ID for remote sites.
<b>Options</b>	<i>site-name</i> —Name of the site.  The remaining statements are explained separately.
<b>Usage Guidelines</b>	See “Configuring the VPLS Site Name and Site Identifier” on page 392.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## site-identifier

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<b>Syntax</b>	site-identifier <i>identifier</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> ], [edit routing-instances <i>routing-instance-name</i> protocols vpls site <i>site-name</i> ]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specify the numerical identifier for the site used as a default reference for the remote site ID. It is an unsigned 16-bit number greater than zero.
<b>Usage Guidelines</b>	See “Configuring the VPLS Site Name and Site Identifier” on page 392.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## site-range

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<b>Syntax</b>	site-range <i>number</i> ;
<b>Hierarchy Level</b>	[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls], [edit routing-instances <i>routing-instance-name</i> protocols vpls]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specify the maximum number of sites allowed for the VPLS domain. The value must be between 1 and 65,534.
<b>Usage Guidelines</b>	See “Configuring the Site Range” on page 393.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

## traceoptions

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**Syntax** traceoptions {  
     file *filename* <replace> <size *size*> <files *number*> <no-stamp>  
         (<world-readable> | <no-world-readable>);  
     flag *flag* <flag-modifier> <disable>;  
 }

**Hierarchy Level** [edit logical-routers *logical-router-name* routing-instances *routing-instance-name*  
 protocols vpls]  
 [edit routing-instances *routing-instance-name* protocols vpls]

**Release Information** Statement introduced before JUNOS Release 7.4.

**Description** Trace traffic flowing through a VPLS.

**Options** **disable**—(Optional) Disable the tracing operation. You can use this option to disable a single operation when you have defined a broad group of tracing operations, such as **all**.

**file *filename***—Name of the file to receive the output of the tracing operation. Enclose the name in quotation marks (" ").

**files *number***—(Optional) Maximum number of trace files. When a trace file named *trace-file* reaches this size, it is renamed *trace-file.0*. When *trace-file* again reaches its maximum size, *trace-file.0* is renamed *trace-file.1* and *trace-file* is renamed *trace-file.0*. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum number of files, you also must specify a maximum file size with the **size** option.

**Range:** 2 through 1000 files

**Default:** 2 files

**flag *flag***—Tracing operation to perform. To specify more than one tracing operation, include multiple **flag** statements.

- **all**—All VPLS tracing options
- **connections**—VPLS connections (events and state changes)
- **error**—Error conditions
- **nlri**—VPLS advertisements received or sent by means of the Border Gateway Protocol (BGP)
- **route**—Routing information
- **topology**—VPLS topology changes caused by reconfiguration or advertisements received from other provider edge (PE) routers using BGP

*flag-modifier*—(Optional) Modifier for the tracing flag. You can specify the following modifier:

- *detail*—Provide detailed trace information

*no-stamp*—(Optional) Do not place timestamp information at the beginning of each line in the trace file.

**Default:** If you do not include this option, timestamp information is placed at the beginning of each line of the tracing output.

*no-world-readable*—Do not allow any user to read the log file.

*replace*—(Optional) Replace an existing trace file if there is one.

**Default:** If you do not include this option, tracing output is appended to an existing trace file.

*size size*—(Optional) Maximum size of each trace file, in kilobytes (KB), megabytes (MB), or gigabytes (GB). When a trace file named *trace-file* reaches this size, it is renamed *trace-file.0*. When *trace-file* again reaches its maximum size, *trace-file.0* is renamed *trace-file.1* and *trace-file* is renamed *trace-file.0*. This renaming scheme continues until the maximum number of trace files is reached. Then the oldest trace file is overwritten.

If you specify a maximum file size, you also must specify a maximum number of trace files with the *files* option.

**Syntax:** *xk* to specify kilobytes, *xm* to specify megabytes, or *xg* to specify gigabytes

**Range:** 10 KB through the maximum file size supported on your system

**Default:** 1 MB

*world-readable*—Allow any user to read the log file.

**Usage Guidelines** See “Tracing VPLS Traffic and Operations” on page 407.

**Required Privilege Level** *routing*—To view this statement in the configuration.  
*routing-control*—To add this statement to the configuration.

## tunnel-services

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<b>Syntax</b>	<pre>tunnel-services {     devices <i>device-names</i>;     primary <i>primary-device-name</i>; }</pre>
<b>Hierarchy Level</b>	<p>[edit logical-routers <i>logical-router-name</i> routing-instances <i>routing-instance-name</i> protocols vpls]</p> <p>[edit routing-instances <i>routing-instance-name</i> protocols vpls]</p>
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specifies that traffic for particular VPLS routing instances be forwarded to specific virtual tunnel (VT) interfaces, allowing you to load-balance VPLS traffic among all the available VT interfaces on the router.
<b>Options</b>	<p><b>devices</b>—Specifies the VT interfaces acceptable for use by the VPLS routing instance. If you do not configure this option, all VT interfaces available to the router can be used for de-encapsulating traffic for this instance.</p> <p><b>primary</b>—Specifies the primary VT interface to be used by the VPLS routing instance. The VT interface specified is used to de-encapsulate all VPLS traffic from the MPLS core network for this routing instance. If the VT interface specified is unavailable, then one of the other acceptable VT interfaces is used for handling the VPLS traffic. If you do not configure this option, any acceptable VT interface can be used to de-encapsulate VPLS traffic from the core.</p>
<b>Usage Guidelines</b>	See “Specifying the VT Interfaces Used by VPLS Routing Instances” on page 403.
<b>Required Privilege Level</b>	<p>routing—To view this statement in the configuration.</p> <p>routing-control—To add this statement to the configuration.</p>

## vlan-id

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<b>Syntax</b>	vlan-id <i>number</i> ;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ], [edit logical-routers <i>logical-router-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> ]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	For Fast Ethernet and Gigabit Ethernet interfaces only, bind an 802.1Q VLAN tag ID to a logical interface.
<b>Options</b>	<i>number</i> —A valid VLAN identifier.  <b>Range:</b> For 4-port Fast Ethernet PICs configured to handle VPLS traffic, 512 through 1023.  For 1-port and 10-port Gigabit Ethernet PICs configured to handle VPLS traffic, 512 through 4094.
<b>Usage Guidelines</b>	See “Enabling VLAN Tagging” on page 390.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## vlan-tagging

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<b>Syntax</b>	vlan-tagging;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> ], [edit logical-routers <i>logical-router-name</i> interfaces <i>interface-name</i> ]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	For Fast Ethernet and Gigabit Ethernet interfaces only, enable the reception and transmission of 802.1Q VLAN-tagged frames on the interface.
<b>Usage Guidelines</b>	See “Enabling VLAN Tagging” on page 390.
<b>Required Privilege Level</b>	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.

## vpls

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See the following sections:

- vpls (Interfaces) on page 420
- vpls (Routing Instance) on page 421

## **vpls (Interfaces)**

<b>Syntax</b>	vpls;
<b>Hierarchy Level</b>	[edit interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family], [edit logical-routers <i>logical-router-name</i> interfaces <i>interface-name</i> unit <i>logical-unit-number</i> family]
<b>Release Information</b>	Statement introduced before JUNOS Release 7.4.
<b>Description</b>	Specify the VPLS protocol family information for the logical interface.
<b>Usage Guidelines</b>	See “Configuring Interfaces for VPLS Routing” on page 386.
<b>Required Privilege Level</b>	routing—To view this statement in the configuration. routing-control—To add this statement to the configuration.

**vpls (Routing Instance)**

```

Syntax vpls {
    active-interface {
        any;
        primary interface-name;
    }
    interface-mac-limit limit;
    mac-table-size size;
    multi-homing;
    no-tunnel-services;
    site site-name {
        interface interface-name {
            interface-mac-limit limit;
        }
    }
    site-range number;
    traceoptions {
        file filename <replace> <size size> <files number> <nostamp>;
        flag flag <flag-modifier> <disable>;
    }
    tunnel-services {
        devices device-names;
        primary primary-device-name;
    }
}

```

**Hierarchy Level** [edit logical-routers *logical-router-name* routing-instances *routing-instance-name* protocols],  
[edit routing-instances *routing-instance-name* protocols]

**Release Information** Statement introduced before JUNOS Release 7.4.

**Description** Configure a VPLS routing instance.  
  
The remaining statements are explained separately.

**Usage Guidelines** See “Configuring the VPLS Routing Instance” on page 391.

**Required Privilege Level** routing—To view this statement in the configuration.  
routing-control—To add this statement to the configuration.

