

PPPoE Session Limiting on Inner QinQ VLAN

The PPPoE Session Limiting on Inner QinQ VLAN feature allows a service provider to limit each customer to one PPP over Ethernet (PPPoE) client in use by providing the ability to limit the number of PPPoE over QinQ (IEEE 802.1Q VLAN tunnel) sessions based on the inner VLAN ID configured under a subinterface. This capability eliminates the need to configure large numbers of subinterfaces.

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Prerequisites for PPPoE Session Limiting on Inner QinQ VLAN

- PPPoE server functionality must be configured.
- The PPPoE over IEEE 802.1Q VLANs feature must be configured.

Restrictions for PPPoE Session Limiting on Inner QinQ VLAN

- Do not configure the inner VLAN session limit to be greater than the outer session limit.

Information About PPPoE Session Limiting on Inner QinQ VLAN

Benefits of PPPoE Session Limiting on Inner QinQ VLAN

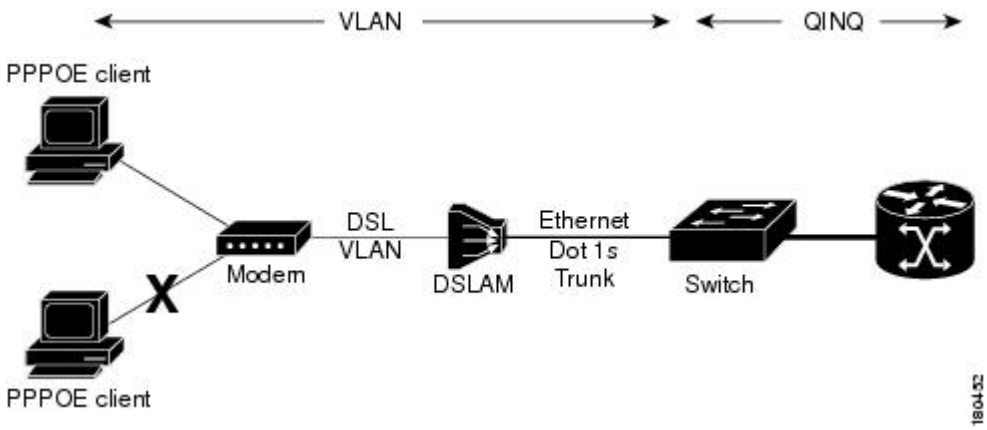
- Facilitates the ability to provision thousands of PPPoE over QinQ sessions having unique inner VLANs using simpler and easier to manage configurations.
- Allows service providers to limit PPPoE sessions based on the QinQ inner VLAN ID.

Feature Design of PPPoE Session Limiting on Inner QinQ VLAN

Prior to the PPPoE Session Limiting on Inner QinQ VLAN feature, PPPoE session limiting required a QinQ subinterface to be configured for each QinQ inner VLAN to be session limited, resulting in configuration requirements that did not scale to large numbers of QinQ VLAN ID pairs. The PPPoE Session Limiting on Inner QinQ VLAN feature adds broadband remote access server (BRAS) capability for configuring a single subinterface for all the unique inner VLAN IDs per outer VLAN while limiting one session per inner VLAN.

The figure below shows a typical implementation of the PPPoE Session Limiting on Inner QinQ VLAN feature.

Figure 1: PPPoE over QinQ Session Limiting



How to Configure PPPoE Session Limiting on Inner QinQ VLAN

Configuring PPPoE Session Limiting on Inner QinQ VLAN

Perform this task to configure PPPoE over QinQ session limiting and allows limiting, which allows you to limit the number of QinQ inner VLAN connections for each customer.

SUMMARY STEPS

1. **enable**
2. **configure terminal**
3. **bba-group pppoe group-name**
4. **sessions per-vlan limit outer-per-vlan-limit inner inner-per-vlan-limit**
5. **end**

DETAILED STEPS

Procedure

	Command or Action	Purpose
Step 1	**enable**	Enables privileged EXEC mode.

	Command or Action	Purpose
	Example: `Router> enable`	• Enter your password if prompted.
Step 2	**configure terminal** **Example:** `Router# configure terminal`	Enters global configuration mode.
Step 3	**bba-group pppoe group-name** **Example:** `Router(config)# bba-group pppoe group 1`	Creates a PPPoE profile and enters the bba-group configuration mode.
Step 4	**sessions per-vlan limit outer-per-vlan-limit inner inner-per-vlan-limit** **Example:** `Router(config-bba-group)# sessions per-vlan-limit 400 inner 1`	Configures inner and outer VLAN limits.
Step 5	**end** **Example:** `Router(config-bba-group)# end`	(Optional) Exits the current configuration mode and enters the privileged EXEC mode.

Troubleshooting Tips

The following commands can help troubleshoot PPPoE session limiting:

- debug pppoe error
- show pppoe session
- show pppoe summary

Configuration Examples for PPPoE Session Limiting on Inner QinQ VLAN

PPPoE Session Limiting on Inner QinQ VLAN Example

The following example shows how to enable PPPoE over QinQ session limiting on Fast Ethernet interface 1/0/0.1 with outer VLAN ID 10 and a unique inner VLAN ID for each session.

```
Router(config)# bba-group pppoe group1
```

```
Router(config-bba-group)# virtual-template 1
Router(config-bba-group)# sessions per-vlan limit 1000 inner 1
Router(config)#interface eth1/0/0.1
Router(config-subif)# encapsulation dot1q 10 second-dot1q any
Router(config-subif)# enable group group1
```

Additional References

The following sections provide references related to the PPPoE Session Limiting on Inner QinQ VLAN feature.

Related Documents

Related Topic	Document Title
Broadband access aggregation concepts	*Cisco IOS XE Broadband Access Aggregation and DSL Configuration Guide*
Broadband access commands	*Cisco IOS Broadband Access Aggregation and DSL Command Reference*

Standards

Standard	Title
IEEE Standard 802.1Q	Virtual Bridged Local Area Networks

MIBs

MIB	MIBs Link
No new or modified MIBs are supported by this feature.	To locate and download MIBs for selected platforms, Cisco IOS XE software releases, and feature sets, use Cisco MIB Locator found at the following URL: http://www.cisco.com/go/mibs

RFCs

RFC	Title
RFC 2516	*PPP over Ethernet*

Technical Assistance

Description	Link
The Cisco Support website provides extensive online resources, including documentation and tools for troubleshooting and resolving technical issues with Cisco products and technologies. To receive security and technical information about your products, you can subscribe to various services, such as the Product Alert Tool (accessed from Field Notices), the Cisco Technical Services Newsletter, and Really Simple Syndication (RSS) Feeds. Access to most tools on the Cisco Support website requires a Cisco.com user ID and password.	http://www.cisco.com/techsupport

Feature Information for PPPoE Session Limiting on Inner QinQ VLAN

The following table provides release information about the feature or features described in this module. This table lists only the software release that introduced support for a given feature in a given software release train. Unless noted otherwise, subsequent releases of that software release train also support that feature.

Use Cisco Feature Navigator to find information about platform support and Cisco software image support. To access Cisco Feature Navigator, go to www.cisco.com/go/cfn. An account on Cisco.com is not required.

Table 1: Feature Information for PPPoE Session Limiting on Inner QinQ VLAN

Feature Name	Releases	Feature Information
PPPoE Session Limiting on Inner QinQ VLAN	Cisco IOS XE Release 2.1	The PPPoE Session Limiting on Inner QinQ VLAN feature provides the ability to limit the number of PPPoE over QinQ, (IEEE 802.1Q VLAN tunnel) sessions based on the inner VLAN ID configured under a subinterface. In 12.2(31)SB2, this feature was introduced on the Cisco 10000 router. The following command was modified by this feature: **session per-vlan limit**.