VYATTA, INC. | Vyatta System

PPP-Based Encapsulations

REFERENCE GUIDE

PPP
PPPoE
PPPoA
Multilink PPP

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RELEASE DATE: July 2011

DOCUMENT REVISION. R6.3 v01

RELEASED WITH: R6.3.0

PART NO. A0-0228-10-0008

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Quick Reference to Commands

Use this section to help you quickly locate a command.

Quick List of Examples

Use this list to help you locate examples you'd like to try or look at.

Preface

This document describes the various deployment, installation, and upgrade options for Vyatta software.

This preface provides information about using this guide. The following topics are presented:

Intended Audience

This guide is intended for experienced system and network administrators. Depending on the functionality to be used, readers should have specific knowledge in the following areas:

- Networking and data communications
- TCP/IP protocols
- General router configuration
- Routing protocols
- Network administration
- Network security
- IP services

Organization of This Guide

This guide has the following aid to help you find the information you are looking for:

- Quick Reference to Commands

  Use this list to help you quickly locate commands.

- Quick List of Examples

  Use this list to help you locate examples you'd like to try or look at.

This guide has the following chapters:

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Chapter 1: PPP	This chapter describes commands for configuring and using PPP encapsulation on the Vyatta system. PPP encapsulation is supported on serial interfaces.	1
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Document Conventions

This guide uses the following advisory paragraphs, as follows.

WARNING *Warnings alert you to situations that may pose a threat to personal safety.*

CAUTION *Cautions alert you to situations that might cause harm to your system or damage to equipment, or that may affect service.*

NOTE *Notes provide information you might need to avoid problems or configuration errors.*

This document uses the following typographic conventions.

`Monospace`	Examples, command-line output, and representations of configuration nodes.
`bold Monospace`	Your input: something you type at a command line.
bold	Commands, keywords, and file names, when mentioned inline. Objects in the user interface, such as tabs, buttons, screens, and panes.
italics	An argument or variable where you supply a value.
<key>	A key on your keyboard, such as <Enter>. Combinations of keys are joined by plus signs (“+”), as in <Ctrl>+c.
[key1 | key2]	Enumerated options for completing a syntax. An example is [enable | disable].
num1–numN	A inclusive range of numbers. An example is 1–65535, which means 1 through 65535, inclusive.
arg1..argN	A range of enumerated values. An example is eth0..eth3, which means eth0, eth1, eth2, or eth3.
arg[*arg*...] *arg*[,*arg*...]	A value that can optionally represent a list of elements (a space-separated list and a comma-separated list, respectively).

Vyatta Publications

Full product documentation is provided in the Vyatta technical library. To see what documentation is available for your release, see the *Guide to Vyatta Documentation*. This guide is posted with every release of Vyatta software and provides a great starting point for finding the information you need.

Additional information is available on www.vyatta.com and www.vyatta.org.

Chapter 1: PPP

This chapter describes commands for configuring and using PPP encapsulation on the Vyatta system. PPP encapsulation is supported on serial interfaces.

This chapter presents the following topics:

PPP Commands

This chapter contains the following commands.

Configuration Commands	
interfaces serial <wanx> encapsulation ppp	Sets PPP as the encapsulation type for a serial interface.
interfaces serial <wanx> ppp	Defines the characteristics of PPP encapsulation on a serial interface.
interfaces serial <wanx> ppp authentication	Specifies the authentication parameters for a PPP interface.
interfaces serial <wanx> ppp lcp-echo-failure <value>	Specifies the LCP echo failure threshold for a PPP serial interface.
interfaces serial <wanx> ppp lcp-echo-interval <interval>	Specifies the LCP echo interval for a PPP serial interface.
interfaces serial <wanx> ppp logging <state>	Specifies whether to enable or disable logging of debugging messages for the PPP process.
interfaces serial <wanx> ppp mru <mru>	Specify the Maximum Receive Unit (MRU) size for a PPP serial interface.
interfaces serial <wanx> ppp mtu <mtu>	Specify the Maximum Transmit Unit (MTU) size for a PPP serial interface.
interfaces serial <wanx> ppp multilink <bundle>	Assigns a PPP serial link to a multilink PPP bundle.
interfaces serial <wanx> ppp vif 1 address local-address <ipv4>	Specify the IP address for this virtual interface.
interfaces serial <wanx> ppp vif 1 address prefix-length <prefix>	Specifies the prefix defining the network served by a virtual interface on a PPPP serial interface.
interfaces serial <wanx> ppp vif 1 address remote-address <ipv4>	Specifies the IP address of the remote endpoint on a PPP serial connection.
interfaces serial <wanx> ppp vif 1 description <desc>	Specifies a description for a virtual interface on a PPP serial interface.
Operational Commands	
clear interfaces serial <wanx> counters ppp	Clears counters for PPP-encapsulated serial interfaces
clear interfaces connection <wanx.1>	Brings a PPP-encapsulated interface down then up.

connect interface <wanx.1>	Brings a PPP-encapsulated interface up.
disconnect interface <wanx.1>	Brings a PPP-encapsulated interface down.
show interfaces serial <wanx> ppp	Displays PPP serial interface information.

Commands for using other system features with PPP–encapsulated interfaces can be found in the following locations.

Related Commands Documented Elsewhere	
Serial interfaces	Commands for clearing and configuring serial interfaces and displaying serial interface information are described in the *Vyatta WAN Interfaces Reference Guide*.
Firewall	Commands for configuring firewall on serial interfaces are described in the *Vyatta Firewall Reference Guide*.
OSPF	Commands for configuring the Open Shortest Path First routing protocol on serial interfaces are described in the *Vyatta OSPF Reference Guide*.
RIP	Commands for configuring the Routing Information Protocol on serial interfaces are described in the *Vyatta RIP Reference Guide*.
QoS	Commands for configuring quality of service on serial interfaces are described in the *Vyatta QoS Reference Guide*.
System interfaces	Commands for showing the physical interfaces available on your system are described in the *Vyatta Basic System Reference Guide*.
VRRP	Commands for configuring Virtual Router Redundancy Protocol on serial interfaces are described in the *Vyatta High Availability Reference Guide*.

clear interfaces serial <wanx> counters ppp

Clears counters for PPP-encapsulated serial interfaces

Syntax

clear interfaces serial *wanx* **counters ppp**

Command Mode

Operational mode.

Parameters

wanx	The identifier of a configured serial interface.

Usage Guidelines

Use this command to clear statistics for a Point-to-Point Protocol (PPP) serial interface.

clear interfaces connection <wanx.1>

Brings a PPP-encapsulated interface down then up.

Syntax

clear interfaces connection *wanx.1*

Command Mode

Operational mode.

Parameters

wanx.1	Mandatory. The interface to be operationally brought down, then up. The interface is the name of a PPP- encapsulated interface; that is the interface name is **wan*x*.1** where **wan*x*** is the serial interface that the PPP encapsulation is running over.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol interface down and then up.

connect interface <wanx.1>

Brings a PPP-encapsulated interface up.

Syntax

connect interface *wanx.1*

Command Mode

Operational mode.

Parameters

wanx.1	Mandatory. The interface to be operationally brought up. The interface is the name of a PPP- encapsulated interface; that is the interface name is **wan*x*.1** where **wan*x*** is the serial interface that the PPP encapsulation is running over.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol interface up.

disconnect interface <wanx.1>

Brings a PPP-encapsulated interface down.

Syntax

disconnect interface *wanx.1*

Command Mode

Operational mode.

Parameters

wanx.1	Mandatory. The interface to be operationally brought down. The interface is the name of a PPP- encapsulated interface; that is the interface name is **wan*x*.1** where **wan*x*** is the serial interface that the PPP encapsulation is running over.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol interface down.

interfaces serial <wanx> encapsulation ppp

Sets PPP as the encapsulation type for a serial interface.

Syntax

set interfaces serial *wanx* **encapsulation ppp**

delete interfaces serial *wanx* **encapsulation**

show interfaces serial *wanx* **encapsulation**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        encapsulation ppp
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.

Default

None.

Usage Guidelines

Use this command to specify Point-to-Point Protocol (PPP) as the encapsulation type for a serial interface.

Use the **set** form of this command to set the encapsulation type.

Use the **delete** form of this command to remove encapsulation type configuration.

Use the **show** form of this command to view encapsulation type configuration.

interfaces serial <wanx> ppp

Defines the characteristics of PPP encapsulation on a serial interface.

Syntax

set interfaces serial *wanx* **ppp**

delete interfaces serial *wanx* **ppp**

show interfaces serial *wanx* **ppp**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.

Default

None.

Usage Guidelines

Use this command to define Point-to-Point Protocol (PPP) settings on an interface.

The full identifier of a PPP interface is *int* **ppp vif** *vif*. For example, the full identifier of the PPP vif on wan1 is **wan1 ppp vif 1**. Note that subsequent to initial definition, the notation for referring to this is *int.vif*—that is, **wan1.1**.

PPP connections can be “bundled” to form a multilink PPP connection. To do this, use the **multilink** option to specify the identifier of the multilink bundle to which the connection will belong.

When PPP connections are bundled into a multilink, the settings on the multilink override the settings on the individual PPP link. The exceptions is authentication (authentication settings specified for individual PPP links override authentication settings for the multilink) and MTU/MRU/MRRU.

A transmitted packet may not be larger than the remote device is willing to receive. The actual MTU is the smaller of the configured MTU of the local device and the configured MRU of the remote device; this value is determined by MRU negotiation when the link is established.

The interaction between MTU/MRU in PPP links and MTU/MRRU in a multilink bundle is as follows:

If MTU is unconfigured in both the member PPP link and the multilink bundle, the default for member links is used.

If MTU is set in member links but not in the multilink bundle, the configured value for member links is used. These must match for every PPP link in the bundle.

If MTU is set in the multilink bundle, it overrides any value (default or configured) for member links.

MRRU (for the multilink bundle) and MRU (for member links) are configured independently and used separately during MRU negotiation. If neither is set, the MRU default value is used for MRU and the MRRU default value is used for MRRU.

LCP echo is a heartbeat-like mechanism for determining the operational status of a peer. This feature can be used to terminate a connection after the physical connection has been broken (for example, if the modem has hung up) in situations where no hardware modem control lines are available.

Use the **set** form of this command to define Point-to-Point Protocol (PPP) settings on an interface.

Use the **delete** form of this command to remove all configuration for a PPP serial interface.

Use the **show** form of this command to view a PPP serial interface configuration.

interfaces serial <wanx> ppp authentication

Specifies the authentication parameters for a PPP interface.

Syntax

set interfaces serial *wanx* **ppp authentication** [**password** *password* | **peer-password** *password* | **peer-system-name** *name* | **peer-user-id** *user-id* | **refuse-type** *type* | **system-name** *name* | **type** *type* | **user-id** *user-id*]

delete interfaces serial *wanx* **ppp authentication**

show interfaces serial *wanx* **ppp authentication**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            authentication {
                password password
                peer-password password
                peer-system-name name
                peer-user-id user-id
                refuse-type type
                system-name name
                type type
                user-id user-id
            }
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.

password *password*	Optional. Sets the password this system will use when authenticating itself to a peer.
peer-password *password*	Optional. Sets the password this system will accept from a peer.
peer-system-name *name*	Optional. The system name this system will accept from a peer.
peer-user-id *user-id*	Optional. The user ID this system will accept from a peer.
refuse-type *type*	Defines authentication types that will be refused during authentication negotiations. Used when the Vyatta system is acting as the client side of the communication. **none**: Does not refuse any type of authentication; that is, the system will authenticate to the peer any type of authentication requested, including not using authentication. **chap**: Refuses CHAP authentication if offered by the remote peer. **pap**: Refuses PAP authentication if offered by the remote peer. **papchap**: Refuses PAP or CHAP authentication if offered by the remote peer. **mschap**: Refuses MS-CHAP authentication if offered by the remote peer. **mschap-v2**: Refuses MS-CHAP v2 authentication if offered by the remote peer. **eap**: Refuses EAP authentication if offered by the remote peer. The default is none.
system-name *name*	Optional. The system name this system will use when authenticating itself to a peer.

type *type*	Optional. Sets the authentication required from the remote peer. Used when the Vyatta system is acting as the server side of the communication. Supported values are as follows: **none**: The remote peer is not required to authenticate itself. **chap**: The remote peer must authenticate using the Challenge Handshake Authentication Protocol (CHAP), as defined in RFC 1994. **pap**: The remote peer must authenticate using the Password Authentication Protocol (PAP). The client authenticates itself by sending a user ID and a password to the server, which the server compares to the password in its internal database. **papchap**: The remote peer must authenticate using either PAP or CHAP as the authentication method. **mschap**: The remote peer must authenticate using the Microsoft Challenge Handshake Authentication Protocol (MS-CHAP), which is the Microsoft version of CHAP and is an extension to RFC 1994. **mschap-v2**: The remote peer must authenticate using version 2 of MS-CHAP. **eap**: The remote peer must authenticate using Extensible Authentication Protocol (EAP), which is an authentication framework frequently used in mobile networks and point-to-point connections. **any**: The peer is required to authenticate itself (that is, **none** is refused), but any supported method of authentication offered by the remote peer is accepted. The default is none.
user-id *user-id*	Optional. The user ID this system will use when authenticating itself to a peer.

Default

None.

Usage Guidelines

Use this command to set the authentication parameters for a Point-to-Point protocol (PPP) serial interface. These authentication requirements must be satisfied before network packets are sent or received.

Use the **set** form of this command to set the authentication parameters.

Use the **delete** form of this command to remove authentication configuration or restore default information.

Use the **show** form of this command to view authentication configuration.

interfaces serial <wanx> ppp lcp-echo-failure <value>

Specifies the LCP echo failure threshold for a PPP serial interface.

Syntax

set interfaces serial *wanx* **ppp lcp-echo-failure** *value*

delete interfaces serial *wanx* **ppp lcp-echo-failure**

show interfaces serial *wanx* **ppp lcp-echo-failure**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            lcp-echo-failure value
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
value	Optional. Sets the LCP echo failure threshold. The failure threshold is the maximum number of LCP echo-requests that can be sent without receiving a valid LCP echo-reply. If this threshold is met, the peer is considered to be dead and the connection is terminated. The default is 3. If this parameter is set, the **lcp-echo-interval** parameter must also be set.

Default

A maximum of 3 LCP echo-requests can be sent without receiving a valid LCP echo-reply.

Usage Guidelines

Use this command to specify the LCP echo failure threshold for a Point-to-Point Protocol (PPP) serial interface.

Use the **set** form of this command to set the LCP echo failure threshold.

Use the **delete** form of this command to restore the default LCP echo failure threshold configuration.

Use the **show** form of this command to view LCP echo failure threshold configuration.

interfaces serial <wanx> ppp lcp-echo-interval <interval>

Specifies the LCP echo interval for a PPP serial interface.

Syntax

set interfaces serial *wanx* **ppp lcp-echo-interval** *interval*

delete interfaces serial *wanx* **ppp lcp-echo-interval**

show interfaces serial *wanx* **ppp lcp-echo-interval**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            lcp-echo-interval interval
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
interval	Optional. Sets the LCP echo interval, in seconds. This is the number of seconds between LCP echo-requests. LCP echoes are used to determine whether the connection is still operational. The default is 3. Specifying a low value for this parameter allows fast detection of failed links. The value set for this parameter must match the value set on the peer.

Default

LCP echo-requests are sent at 3-second intervals.

Usage Guidelines

Use this command to specify the LCP echo interval for a Point-to-Point Protocol (PPP serial interface.

Use the **set** form of this command to set the LCP echo interval.

Use the **delete** form of this command to remove LCP echo interval configuration.

Use the **show** form of this command to view LCP echo interval configuration.

interfaces serial <wanx> ppp logging <state>

Specifies whether to enable or disable logging of debugging messages for the PPP process.

Syntax

set interfaces serial *wanx* **ppp logging** *state*

delete interfaces serial *wanx* **ppp logging**

show interfaces serial *wanx* **ppp logging**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            authentication {
                logging state
            }
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
state	Enables logging of debugging messages for the PPP process. Supported values are as follows: **on**: Enables debugging for PPP connections. Trace-level messages are sent from the PPP process to the system log. **off**: Disables debugging for PPP connections. Note that logging creates additional system load and may degrade performance.

Default

Logging of debugging messages is disabled.

Usage Guidelines

Use this command to enable or disable logging of debugging messages for the Point-to-Point protocol (PPP) process.

Use the **set** form of this command to specify whether to enable or disable debugging on a PPP serial interface.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to view PPP logging configuration.

interfaces serial <wanx> ppp mru <mru>

Specify the Maximum Receive Unit (MRU) size for a PPP serial interface.

Syntax

set interfaces serial *wanx* **ppp mru** *mru*

delete interfaces serial *wanx* **ppp mru**

show interfaces serial *wanx* **ppp mru**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            mru mru
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
mru	The maximum packet size that the interface is willing to receive. The range is 8 to 8188. The default is 1500.

Default

The default is 1500.

Usage Guidelines

Use this command to specify the Maximum Receive Unit (MRU) for a Point-to-Point Protocol (PPP) serial interface. This is the maximum packet size the interface is willing to receive.

Use the **set** form of this command to set the MRU.

Use the **delete** form of this command to restore the default MRU value.

Use the **show** form of this command to view MRU configuration.

interfaces serial <wanx> ppp mtu <mtu>

Specify the Maximum Transmit Unit (MTU) size for a PPP serial interface.

Syntax

set interfaces serial *wanx* **ppp mtu** *mtu*

delete interfaces serial *wanx* **ppp mtu**

show interfaces serial *wanx* **ppp mtu**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            mtu mtu
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
mtu	The maximum packet size that the interface will send. The range is 8 to 8188. The default is 1500.

Default

The default is 1500.

Usage Guidelines

Use this command to specify the Maximum Transmit Unit (MTU) for a Point-to-Point Protocol (PPP) serial interface. This is the maximum packet size the interface will send.

Use the **set** form of this command to set the MTU.

Use the **delete** form of this command to restore the default MTU value.

Use the **show** form of this command to view MTU configuration.

interfaces serial <wanx> ppp multilink <bundle>

Assigns a PPP serial link to a multilink PPP bundle.

Syntax

set interfaces serial *wanx* **ppp multilink** *bundle*

delete interfaces serial *wanx* **ppp multilink**

show interfaces serial *wanx* **ppp multilink**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            multilink bundle
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
bundle	The multilink bundle to which to assign this PPP link. The multilink interface must already be defined.

Default

None.

Usage Guidelines

Use this command to assign a Point-to-Point Protocol (PPP) link to a multilink PPP (MLPPP) bundle. For information about defining MLPPP interfaces, see "Chapter 4: Multilink PPP Interfaces."

All options defined on the multilink interface override those specified for an individual link, except for authentication.

Use the **set** form of this command to assign this PPP link to the specified multilink bundle.

Use the **delete** form of this command to remove MLPPP configuration.

Use the **show** form of this command to view MLPPP configuration.

interfaces serial <wanx> ppp vif 1 address local-address <ipv4>

Specify the IP address for this virtual interface.

Syntax

set interfaces serial *wanx* **ppp vif 1 address local-address** *ipv4*

delete interfaces serial *wanx* **ppp vif 1 address local-address**

show interfaces serial *wanx* **ppp vif 1 address local-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            vif 1 {
                address {
                    local-address ipv4
                }
            }
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
1	The identifier of the virtual interface. Currently, only one vif is supported for PPP interfaces, and the identifier must be **1**.
ipv4	Mandatory. The IPv4 address for this vif. Each serial vif can support exactly one IP address.

Default

None.

Usage Guidelines

Use this command to specify an IP address for a virtual interface on a Point-to-Point Protocol (PPP) serial interface.

Use the **set** form of this command to set the IP address.

Use the **delete** form of this command to remove IP address configuration.

Use the **show** form of this command to view IP address configuration.

interfaces serial <wanx> ppp vif 1 address prefix-length <prefix>

Specifies the prefix defining the network served by a virtual interface on a PPPP serial interface.

Syntax

set interfaces serial *wanx* **ppp vif 1 address prefix-length** *prefix*

delete interfaces serial *wanx* **ppp vif 1 address prefix-length**

show interfaces serial *wanx* **ppp vif 1 address prefix-length**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            vif 1 {
                address {
                    prefix-length prefix
                }
            }
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
1	The identifier of the virtual interface. Currently, only one vif is supported for PPP interfaces, and the identifier must be **1**.
prefix	Mandatory. The prefix defining the network served by this interface. The range is 0 to 32.

Default

None.

Usage Guidelines

Use this command to specify the prefix defining the network served by a virtual interface on a Point-to-Point Protocol (PPP) serial interface.

Use the **set** form of this command to specify the network prefix.

Use the **delete** form of this command to remove network prefix configuration.

Use the **show** form of this command to view network prefix configuration.

interfaces serial <wanx> ppp vif 1 address remote-address <ipv4>

Specifies the IP address of the remote endpoint on a PPP serial connection.

Syntax

set interfaces serial *wanx* **ppp vif 1 address remote-address** *ipv4*

delete interfaces serial *wanx* **ppp vif 1 address remote-address**

show interfaces serial *wanx* **ppp vif 1 address remote-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            vif 1 {
                address {
                    remote-address ipv4
                }
            }
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
1	The identifier of the virtual interface. Currently, only one vif is supported for PPP interfaces, and the identifier must be **1**.
ipv4	Mandatory. The IP address of the remote endpoint.

Default

None.

Usage Guidelines

Use this command to specify the IP address of the remote endpoint in a Point-to-Point Protocol link.

Use the **set** form of this command to set the remote address.

Use the **delete** form of this command to remove remote address configuration.

Use the **show** form of this command to view remote address configuration.

interfaces serial <wanx> ppp vif 1 description <desc>

Specifies a description for a virtual interface on a PPP serial interface.

Syntax

set interfaces serial *wanx* **ppp vif 1 description** *desc*

delete interfaces serial *wanx* **ppp vif 1 description**

show interfaces serial *wanx* **ppp vif 1 description**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    serial wanx {
        ppp {
            vif 1 {
                description desc
            }
        }
    }
}
```

Parameters

wanx	Mandatory. Multi-node. The identifier for the serial interface you are defining. This may be **wan0** to **wan23**, depending on what serial interfaces that are actually available on the system.
1	The identifier of the virtual interface. Currently, only one vif is supported for PPP interfaces, and the identifier must be **1**.
desc	Optional. A brief description for the virtual interface. If the description contains spaces, it must be enclosed in double quotes.

Default

None.

Usage Guidelines

Use this command to specify a description for a virtual interface on a Point-to-Point Protocol (PPP) serial interface.

Use the **set** form of this command to set the description.

Use the **delete** form of this command to remove description configuration.

Use the **show** form of this command to view description configuration.

show interfaces serial <wanx> ppp

Displays PPP serial interface information.

Syntax

show interfaces serial *wanx* **ppp**

Command Mode

Operational mode.

Parameters

wanx	The name of a serial interface. If an interface is specified, you must also specify one of the **cisco-hdlc**, **frame-relay**, **physical**, **ppp**, or **trace** options.

Default

Information is shown for all available serial interfaces.

Usage Guidelines

Use this command to view the operational status of a serial interface.

Examples

Example 1-1 shows the output for **show interfaces serial** *wanx* **ppp**.

Example 1-1 "show interfaces serial *wanx* ppp"

```
vyatta@ppp> show interfaces serial wan0 ppp
   ---------------------------------
      wan0: ROUTER UP TIME
   ---------------------------------
    Router UP Time:  14 minute(s),  6 seconds

PPP data:
IN.BYTES  :          0
IN.PACK   :          0
IN.VJCOMP :          0
```

```
IN.VJUNC  :          0
IN.VJERR  :          0
OUT.BYTES :          0
OUT.PACK  :          0
OUT.VJCOMP:          0
OUT.VJUNC :          0
OUT.NON-VJ:          0
```

Chapter 2: PPPoE

This chapter describes the commands for configuring and using PPPoE encapsulation on the Vyatta system. PPPoE encapsulation is supported on ADSL and Ethernet interfaces.

This chapter presents the following topics:

PPPoE Configuration

This section presents the following topics:

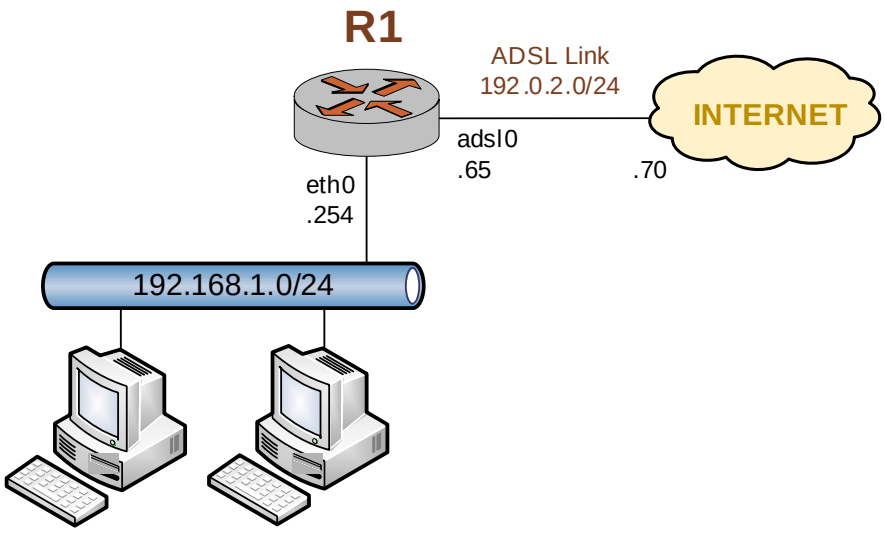
PPPoE Overview

The Point-to-Point Protocol over Ethernet (PPPoE) encapsulation for a PVC on an ADSL interface is defined in RFC 2516. This type of interface is modeled as point-to-point and is used to connect to an PPPoE endpoint.

PPPoE Configuration Example

Figure 2-1 shows a typical ADSL configuration as an access protocol between a customer premesis and an Internet Service Provider. In this example, the ADSL interface is configured using Point-to-Point Protocol over Ethernet (PPPoE). PPPoE links typically include authentication, so a user ID and password are configured in this example.

Figure 2-1 Typical ADSL network configuration



With PPPoE encapsulation the local and remote IP addresses can be automatically negotiated instead of explicitly specified. This is the default: auto-negotiation is performed automatically if the addresses are not specified.

PPPoE encapsulation also allows for “on-demand” connection, in which the interface establishes the PPPoE connection when traffic is sent. On-demand connection is enabled using the **connect-on-demand** option.

Example 2-1 sets up a PPPoE encapsulation on interface adsl0. In this example:

- A Sangoma S518 ADSL NIC is connected to the interface.
- The interface has one PVC. The PVC identifier is automatically detected.
- The PPPoE unit number is 0.
- The local IP address is 192.0.2.65. This is in the public IP range, since this interface will connect over the wide-area network.
- The IP address of the far end is 192.0.2.70. This is on the same network as this interface.
- The user id is set to “customerA”.
- The password is set to “Aremotsuc”.

Tip: Where public IP addresses would normally be used, the example uses RFC 3330 “TEST-NET” IP addresses (192.0.2.0/24)

To create and configure this ADSL interface, perform the following steps in configuration mode:

Example 2-1 Creating and configuring an ADSL interface for PPPoE encapsulation

Step	Command
Specify that the system should auto-detect an identifier for the pvc.	`vyatta@R1# set interfaces adsl adsl0 pvc auto`
Set the line encapsulation to PPPoE using unit number 0.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoe 0`
Assign the local IP address to the interface.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoe 0 local-address 192.0.2.65`
Set the IP address of the far end of the connection.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoe 0 remote-address 192.0.2.70`
Set the user id for the link.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoe 0 user-id customerA`
Set the password for the link.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoe 0 password Aremotsuc`
Commit the configuration.	`vyatta@R1# commit`

Example 2-1 Creating and configuring an ADSL interface for PPPoE encapsulation

View the configuration.	vyatta@R1# show interfaces adsl adsl0
	  pvc auto {
	  pppoe 0 {
	  local-address 192.0.2.65
	  remote-address 192.0.2.70
	  user-id customerA
	  password Aremotsuc
	  }
	  }
	vyatta@R1#

PPPoE Commands

This chapter contains the following commands.

Configuration Commands	
PPPoE on ADSL	
interfaces adsl <adslx> pvc <pvc-id> pppoe <num>	Enables or disables a PPPoE unit on a PVC with PPPoE encapsulation on an ADSL interface.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> access-concentrator <name>	Allows you to restrict ADSL PPPoE sessions to one specific access concentrator.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> connect-on-demand	Enables or disables on-demand PPPoE connection on an ADSL PPPoE unit.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> default-route <param>	Enables or disables automatically adding a default route when an ADSL PPPoE link is brought up.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> idle-timeout <timeout>	Specifies the length of time in seconds to wait before disconnecting an idle on-demand ADSL PPPoE session.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> local-address <ipv4>	Sets the IP address of the local endpoint of an ADSL PPPoE link.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> mtu <mtu>	Specifies the MTU for an ADSL PPPoE interface.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> name-server <param>	Specifies whether an ADSL PPPoE interface should obtain name server entries from the remote peer interface.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> password <password>	Specifies the password to use to authenticate with a remote ADSL PPPoE endpoint.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> remote-address <ipv4>	Sets the IP address of the remote end of an ADSL PPPoE link.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> service-name <name>	Allows an ADSL PPPoE interface to restrict connections to access concentrators by service name.
interfaces adsl <adslx> pvc <pvc-id> pppoe <num> user-id <user-id>	Specifies the user ID to use to authenticate with a remote ADSL PPPoE endpoint.
PPPoE on Ethernet	
interfaces ethernet <ethx> pppoe <num>	Enables or disables a PPPoE unit on an Ethernet interface.
interfaces ethernet <ethx> pppoe <num> access-concentrator <name>	Allows you to restrict Ethernet PPPoE sessions to one specific access concentrator.

interfaces ethernet <ethx> pppoe <num> connect-on-demand	Enables or disables on-demand PPPoE connection on an Ethernet PPPoE unit.
interfaces ethernet <ethx> pppoe <num> default-route <param>	Enables or disables automatically adding a default route when an Ethernet PPPoE link is brought up.
interfaces ethernet <ethx> pppoe <num> idle-timeout <timeout>	Specifies the length of time in seconds to wait before disconnecting an idle on-demand Ethernet PPPoE session.
interfaces ethernet <ethx> pppoe <num> local-address <ipv4>	Sets the IP address of the local endpoint of an Ethernet PPPoE link.
interfaces ethernet <ethx> pppoe <num> mtu <mtu>	Specifies the MTU for an Ethernet PPPoE interface.
interfaces ethernet <ethx> pppoe <num> name-server <param>	Specifies whether an Ethernet PPPoE interface should obtain name server entries from the remote peer interface.
interfaces ethernet <ethx> pppoe <num> password <password>	Specifies the password to use to authenticate with a remote Ethernet PPPoE endpoint.
interfaces ethernet <ethx> pppoe <num> remote-address <ipv4>	Sets the IP address of the remote end of an Ethernet PPPoE link.
interfaces ethernet <ethx> pppoe <num> service-name <name>	Allows an Ethernet PPPoE interface to restrict connections to access concentrators by service name.
interfaces ethernet <ethx> pppoe <num> user-id <user-id>	Specifies the user ID to use to authenticate with a remote Ethernet PPPoE endpoint.
Operational Commands	
clear interfaces connection <pppoex>	Brings a PPPoE-encapsulated DSL interface down then up.
connect interface <pppoex>	Brings a PPPoE-encapsulated DSL interface up.
disconnect interface <pppoex>	Brings a PPPoE-encapsulated DSL interface down.
show interfaces pppoe	Displays information about all PPPoE interfaces.
show interfaces pppoe <num>	Displays information about a PPPoE interface.
show interfaces pppoe <num> capture	Displays traffic on a PPPoE interface.
show interfaces pppoe <num> log	Displays log information for a PPPoE interface.
show interfaces pppoe <num> queue	Displays queue information for a PPPoE interface.

Commands for using other system features with PPPoE–encapsulated interfaces can be found in the following locations.

Related Commands Documented Elsewhere	
Serial interfaces	Commands for clearing and configuring serial interfaces and displaying serial interface information are described in the *Vyatta WAN Interfaces Reference Guide*.
Firewall	Commands for configuring firewall on PPPoE interfaces are described in the *Vyatta Firewall Reference Guide*.
OSPF	Commands for configuring the Open Shortest Path First routing protocol on PPPoE interfaces are described in the *Vyatta OSPF Reference Guide*.
RIP	Commands for configuring the Routing Information Protocol on PPPoE interfaces are described in the *Vyatta RIP Reference Guide*.
QoS	Commands for configuring quality of service on PPPoE interfaces are described in the *Vyatta QoS Reference Guide*.
System interfaces	Commands for showing the physical interfaces available on your system are described in the *Vyatta High Availability Reference Guide*.

clear interfaces connection <pppoex>

Brings a PPPoE-encapsulated DSL interface down then up.

Syntax

clear interfaces connection *pppoex*

Command Mode

Operational mode.

Parameters

pppoex	Mandatory. The interface to be operationally brought down, then up. The interface is the name of a PPPoE- encapsulated DSL interface; that is the interface name is **pppoe***x*.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol over Ethernet (PPPoE) interface down and then up.

connect interface <pppoex>

Brings a PPPoE-encapsulated DSL interface up.

Syntax

connect interface *pppoex*

Command Mode

Operational mode.

Parameters

pppoex	Mandatory. The name of the interface. This is the name of a PPPoE-encapsulated DSL interface; that is the interface name is **pppoe***x*.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol over Ethernet (PPPoE) interface up.

disconnect interface <pppoex>

Brings a PPPoE-encapsulated DSL interface down.

Syntax

disconnect interface *pppoex*

Command Mode

Operational mode.

Parameters

pppoex	Mandatory. The name of the interface. This is the name of a PPPoE-encapsulated DSL interface; that is the interface name is **pppoe***x*.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol over Ethernet (PPPoE), DSL interface down.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num>

Enables or disables a PPPoE unit on a PVC with PPPoE encapsulation on an ADSL interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num*

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoE unit number. This number must be unique for a given ADSL interface but need not be globally unique (for example, a PPPoE unit number 3 can be defined on on both adsl0 and adsl2). The PPPoE interface will be named **pppoe***unit* (e.g. pppoe7). The range of values is 0 to 15.The range of values is 0 to 15.

Default

None.

Usage Guidelines

Use this command to configure a Point-to-Point Protocol over Ethernet (PPPoE) unit on a PVC with PPPoE encapsulation on an ADSL interface.

A PPPoE interface comes into being on the system only when the PPPoE session is established. So, a PPPoE interface could be defined but not be “present” on a running system.

Use the **set** form of this command to create the PPPoE unit on an interface.

Use the **delete** form of this command to remove a PPPoE unit from an interface.

Use the **show** form of this command to display PPPoE configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> access-concentrator <name>

Allows you to restrict ADSL PPPoE sessions to one specific access concentrator.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **access-concentrator** *name*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **access-concentrator**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **access-concentrator**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                access-concentrator name
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

name	The name of the access concentrator for this PPPoE unit to use exclusively for PPPoE sessions.

Default

None.

Usage Guidelines

Use this command to restrict the Point-to-Point Protocol over Ethernet (PPPoE) sessions of a given ADSL PPPoE unit to one access concentrator.

Normally, when a host issues a PPPoE initiation packet to start the PPPoE discovery process, a number of access concentrators respond with offer packets and the host selects one of the responding access concentrators to request the PPPoE session. This command allows you to forego the discovery process and send PPPoE session requests directly to the specified access concentrator.

Use the **set** form of this command to specify an access concentrator to use for ADSL PPPoE sessions.

Use the **delete** form of this command to remove access concentrator configuration. If no access concentrator is specified, the PPPoE discover process will proceed as outlined in RFC 2516.

Use the **show** form of this command to show access concentrator configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> connect-on-demand

Enables or disables on-demand PPPoE connection on an ADSL PPPoE unit.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **connect-on-demand**

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **connect-on-demand**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                connect-on-demand
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

Default

On-demand PPPoE connection is disabled.

Usage Guidelines

Use this command to direct the system to establish ADSL Point-to-Point Protocol over Ethernet (PPPoE) connections automatically just when traffic is sent.

When on-demand PPPoE connection is disabled, PPPoE links are created at boot time and remain up. If the link fails for any reason, the system brings the link back up immediately.

When on-demand PPPoE connection is enabled, the PPPoE link is brought up only when IP traffic needs to be sent on the link. If the link fails for any reason, it is brought back up again the next time traffic needs to be sent.

If you configure an on-demand PPPoE connection, you must also configure the idle timeout period, after which an idle PPPoE link will be disconnected. If a non-zero idle timeout period is not configured, the on-demand link will never be disconnected after the first time it is brought up. To configure the idle timeout period, use interfaces adsl <adslx> pvc <pvc-id> pppoe <num> idle-timeout <timeout> command.

If you configure an on-demand PPPoE connection, you must also configure remote-address. To configure the remote address, use interfaces adsl <adslx> pvc <pvc-id> pppoe <num> remote-address <ipv4> command.

Use the **set** form of this command to enable on-demand PPPoE connections.

Use the **delete** form of this command to disable on-demand PPPoE connections.

Use the **show** form of this command to show PPPoE connection configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> default-route <param>

Enables or disables automatically adding a default route when an ADSL PPPoE link is brought up.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **default-route** *param*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **default-route**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                param
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

param	Mandatory. Specifies whether a default route is automatically added when the PPP link comes up. **auto**: The PPP process automatically adds a default route to the remote end of the link. **none**: No default route is added.

Default

A default route to the remote endpoint is automatically added when the link comes up (i.e. **auto**).

Usage Guidelines

Use this command to specify whether to automatically add a default route pointing to the endpoint of an ADSL Point-to-Point Protocol over Ethernet (PPPoE) link when the link comes up.

The default route is only added if no other default route already exists in the system.

Use the **set** form of this command to enable or disable adding the default route.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to show configuration for the PPPoE unit.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> idle-timeout <timeout>

Specifies the length of time in seconds to wait before disconnecting an idle on-demand ADSL PPPoE session.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **idle-timeout** *timeout*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **idle-timeout**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **idle-timeout**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                idle-timeout timeout
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

timeout	Mandatory. The amount of time, in seconds, after which an idle connection will be closed. The range is 0 to 4294967295, where 0 means the connection is never closed.

Default

Idle connections are never disconnected.

Usage Guidelines

Use this command to set the idle timeout interval to be used with on-demand ADSL Point-to-Point Protocol over Ethernet (PPPoE) connections.

When on-demand PPPoE link connection is enabled, the link is brought up only when traffic is to be sent and is disabled when the link is idle for the interval specified by this command. On-demand PPPoE connection is enabled using interfaces adsl <adslx> pvc <pvc-id> pppoe <num> connect-on-demand command.

If this parameter is not set or is set to 0, an on-demand link will not be taken down when it is idle and after the initial establishment of the connection will behave like an ordinary PPPoE link.

Use the **set** form of this command to specify the idle timeout value.

Use the **delete** form of this command to restore default behavior for idle timeout.

Use the **show** form of this command to display idle timeout configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> local-address <ipv4>

Sets the IP address of the local endpoint of an ADSL PPPoE link.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **local-address** *ipv4*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **local-address**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **local-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                local-address ipv4
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

ipv4	Mandatory. The IP address of the local end of the PPPoE link. Only one local address can be specified.

Default

None.

Usage Guidelines

Use this command to set the IP address of the local endpoint of an ADSL Point-to-Point Protocol over Ethernet (PPPoE) connection. If not set it will be negotiated.

Use the **set** form of this command to specify the local address.

Use the **delete** form of this command to remove the local address.

Use the **show** form of this command to display local address configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> mtu <mtu>

Specifies the MTU for an ADSL PPPoE interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **mtu** *mtu*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **mtu**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **mtu**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                mtu mtu
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

mtu	Sets the MTU for the PPPoE interface. Packets larger that this value are fragmented. The range is 68 to 1492.

Default

The default MTU is 1492 bytes.

Usage Guidelines

Use this command to set the Maximum Transfer Unit (MTU) of an ADSL Point-to-Point Protocol over Ethernet (PPPoE) unit. Packets larger than the MTU are fragmented.

Use the **set** form of this command to specify the MTU value.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to display MTU configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> name-server <param>

Specifies whether an ADSL PPPoE interface should obtain name server entries from the remote peer interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **name-server** *param*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **name-server**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                name-server param
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

param	Mandatory. Specifies whether the local PPPoE endpoint should obtain name server entries from the remote endpoint. Supported values are as follows: **auto**: The endpoint obtains name server entries from its peer. **none**: The endpoint uses the name server(s) configured for the local system.

Default

The interface obtains name server entries from its peer (i.e. **auto**).

Usage Guidelines

Use this command to define how a name server is defined when an ADSL Point-to-Point Protocol over Ethernet (PPPoE) link is brought up.

Use the **set** form of this command to set the way that name server entries are obtained by the PPPoE endpoint.

Use the **delete** form of this command to restore the default behavior for obtaining name server entries.

Use the **show** form of this command to show the PPPoE name server configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> password <password>

Specifies the password to use to authenticate with a remote ADSL PPPoE endpoint.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **password** *password*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **password**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **password**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                password password
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

password	Mandatory. The password used to authenticate the local endpoint with the remote PPPoE server.

Default

None.

Usage Guidelines

Use this command to set the authentication password for an ADSL Point-to-Point Protocol over Ethernet (PPPoE) endpoint.

Authentication is optional from the system's point of view; however, most service providers require it.

The password is used in conjunction with the user ID to authenticate the local system to the remote endpoint. The user ID is set by using interfaces adsl <adslx> pvc <pvc-id> pppoe <num> user-id <user-id> command. The authentication protocol is determined by the remote endpoint. Use the **set** form of this command to set the password.

Use the **delete** form of this command to remove the password.

Use the **show** form of this command to display password configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> remote-address <ipv4>

Sets the IP address of the remote end of an ADSL PPPoE link.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **remote-address** *ipv4*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **remote-address**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **remote-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                remote-address ipv4
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

ipv4	Mandatory. The IP address of the remote end of the PPPoE link. Only one remote address can be specified.

Default

None.

Usage Guidelines

Use this command to set the IP address of the remote endpoint of an ADSL Point-to-Point Protocol over Ethernet (PPPoE) connection. This address will be negotiated if not set.

Use the **set** form of this command to specify the remote address.

Use the **delete** form of this command to remove the remote address.

Use the **show** form of this command to display remote address configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> service-name <name>

Allows an ADSL PPPoE interface to restrict connections to access concentrators by service name.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **service-name** *name*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **service-name**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **service-name**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                service-name name
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

name	Mandatory. A service name. The local endpoint will send session requests only to access concentrators advertising this service name

Default

None.

Usage Guidelines

Use this command to specify a service name by which the local ADSL Point-to-Point Protocol over Ethernet (PPPoE) interface can select access concentrators to connect with. It will connect to any access concentrator if not set.

Use the **set** form of this command to specify a service name.

Use the **delete** form of this command to remove a service name.

Use the **show** form of this command to show service name configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoe <num> user-id <user-id>

Specifies the user ID to use to authenticate with a remote ADSL PPPoE endpoint.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **user-id** *user-id*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **user-id**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoe** *num* **user-id**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoe num {
                user-id user-id
            }
        }
    }
}
```

Parameters

adslx	Mandatory. The identifier for the ADSL interface. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoE unit number. The range of values is 0 to 15.

user-id	Optional. The user ID to be used by the local endpoint to authenticate itself to the remote endpoint.

Default

None.

Usage Guidelines

Use this command to set the user ID for authenticating with a remote ADSL Point-to-Point Protocol over Ethernet (PPPoE) endpoint.

Authentication is optional from the system's point of view; however, most service providers require it.

The user ID is used in conjunction with the password to authenticate the local system to the remote endpoint. The password is set by using interfaces adsl <adslx> pvc <pvc-id> pppoe <num> password <password> command. The authentication protocol is determined by the remote endpoint. Use the **set** form of this command to set the user ID.

Use the **delete** form of this command to remove the user ID.

Use the **show** form of this command to display user ID configuration.

interfaces ethernet <ethx> pppoe <num>

Enables or disables a PPPoE unit on an Ethernet interface.

Syntax

set interfaces ethernet *ethx* **pppoe** *num*

delete interfaces ethernet *ethx* **pppoe** *num*

show interfaces ethernet *ethx* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The PPPoE unit number. This number must be unique for a given Ethernet interface but need not be globally unique (for example, a PPPoE unit number 3 can be defined on on both eth0 and eth2). The PPPoE interface will be named **pppoe***unit* (e.g. **pppoe7**). The range of values is 0 to 15.

Default

None.

Usage Guidelines

Use this command to configure a Point-to-Point Protocol over Ethernet (PPPoE) unit on an Ethernet interface.

A PPPoE interface comes into being on the system only when the PPPoE session is established. So, a PPPoE interface could be defined but not be “present” on a running system.

Use the **set** form of this command to create the PPPoE unit on an interface.

Use the **delete** form of this command to remove a PPPoE unit from an interface.

Use the **show** form of this command to display PPPoE configuration.

interfaces ethernet <ethx> pppoe <num> access-concentrator <name>

Allows you to restrict Ethernet PPPoE sessions to one specific access concentrator.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **access-concentrator** *name*

delete interfaces ethernet *ethx* **pppoe** *num* **access-concentrator**

show interfaces ethernet *ethx* **pppoe** *num* **access-concentrator**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            access-concentrator name
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
name	The name of the access concentrator for this PPPoE unit to use exclusively for PPPoE sessions.

Default

None.

Usage Guidelines

Use this command to restrict the Point-to-Point Protocol over Ethernet (PPPoE) sessions of a given Ethernet PPPoE unit to one access concentrator.

Normally, when a host issues a PPPoE initiation packet to start the PPPoE discovery process, a number of access concentrators respond with offer packets and the host selects one of the responding access concentrators to request the PPPoE session. This command allows you to forego the discovery process and send PPPoE session requests directly to the specified access concentrator.

Use the **set** form of this command to specify an access concentrator to use for PPPoE sessions.

Use the **delete** form of this command to remove access concentrator configuration. If no access concentrator is specified, the PPPoE discover process will proceed as outlined in RFC 2516.

Use the **show** form of this command to show access concentrator configuration.

interfaces ethernet <ethx> pppoe <num> connect-on-demand

Enables or disables on-demand PPPoE connection on an Ethernet PPPoE unit.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **connect-on-demand**

delete interfaces ethernet *ethx* **pppoe** *num* **connect-on-demand**

show interfaces ethernet *ethx* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            connect-on-demand
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.

Default

On-demand PPPoE connection is disabled.

Usage Guidelines

Use this command to direct the system to establish Point-to-Point Protocol over Ethernet (PPPoE) connections automatically just when traffic is sent.

When on-demand PPPoE connection is disabled, PPPoE links are created at boot time and remain up. If the link fails for any reason, the system brings the link back up immediately.

When on-demand PPPoE connection is enabled, the PPPoE link is brought up only when IP traffic needs to be sent on the link. If the link fails for any reason, it is brought back up again the next time traffic needs to be sent.

If you configure an on-demand PPPoE connection, you must also configure the idle timeout period, after which an idle PPPoE link will be disconnected. If a non-zero idle timeout period is not configured, the on-demand link will never be disconnected after the first time it is brought up. To configure the idle timeout period, use interfaces ethernet <ethx> pppoe <num> idle-timeout <timeout> command.

If you configure an on-demand PPPoE connection, you must also configure remote-address. To configure the remote address, use interfaces ethernet <ethx> pppoe <num> remote-address <ipv4> command.

Use the **set** form of this command to enable on-demand PPPoE connections.

Use the **delete** form of this command to disable on-demand PPPoE connections.

Use the **show** form of this command to show PPPoE connection configuration.

interfaces ethernet <ethx> pppoe <num> default-route <param>

Enables or disables automatically adding a default route when an Ethernet PPPoE link is brought up.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **default-route** *param*

delete interfaces ethernet *ethx* **pppoe** *num* **default-route**

show interfaces ethernet *ethx* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            default-route param
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
param	Mandatory. Specifies whether a default route is automatically added when the PPP link comes up. **auto**: The PPP process automatically adds a default route to the remote end of the link. **none**: No default route is added.

Default

A default route to the remote endpoint is automatically added when the link comes up (i.e. **auto**).

Usage Guidelines

Use this command to specify whether to automatically add a default route pointing to the endpoint of the when a Point-to-Point Protocol over Ethernet (PPPoE) link comes up.

The default route is only added if no other default route already exists in the system.

Use the **set** form of this command to enable or disable adding the default route.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to show configuration for the PPPoE unit.

interfaces ethernet <ethx> pppoe <num> idle-timeout <timeout>

Specifies the length of time in seconds to wait before disconnecting an idle on-demand Ethernet PPPoE session.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **idle-timeout** *timeout*

delete interfaces ethernet *ethx* **pppoe** *num* **idle-timeout**

show interfaces ethernet *ethx* **pppoe** *num* **idle-timeout**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            idle-timeout timeout
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
timeout	Mandatory. The amount of time, in seconds, after which an idle connection will be closed. The range is 0 to 4294967295, where 0 means the connection is never closed.

Default

Idle connections are never disconnected.

Usage Guidelines

Use this command to set the idle timeout interval to be used with on-demand Point-to-Point Protocol over Ethernet (PPPoE) connections.

When on-demand PPPoE link connection is enabled, the link is brought up only when traffic is to be sent and is disabled when the link is idle for the interval specified by this command. On-demand PPPoE connection is enabled using interfaces ethernet <ethx> pppoe <num> connect-on-demand command.

If this parameter is not set or is set to 0, an on-demand link will not be taken down when it is idle and after the initial establishment of the connection will behave like an ordinary PPPoE link.

Use the **set** form of this command to specify the idle timeout value.

Use the **delete** form of this command to restore default behavior for idle timeout.

Use the **show** form of this command to display idle timeout configuration.

interfaces ethernet <ethx> pppoe <num> local-address <ipv4>

Sets the IP address of the local endpoint of an Ethernet PPPoE link.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **local-address** *ipv4*

delete interfaces ethernet *ethx* **pppoe** *num* **local-address**

show interfaces ethernet *ethx* **pppoe** *num* **local-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            local-address ipv4
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
ipv4	Mandatory. The IP address of the local end of the PPPoE link. Only one local address can be specified.

Default

None.

Usage Guidelines

Use this command to set the IP address of the local endpoint of a Point-to-Point Protocol over Ethernet (PPPoE) connection. If not set it will be negotiated.

Use the **set** form of this command to specify the local address.

Use the **delete** form of this command to remove the local address.

Use the **show** form of this command to display local address configuration.

interfaces ethernet <ethx> pppoe <num> mtu <mtu>

Specifies the MTU for an Ethernet PPPoE interface.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **mtu** *mtu*

delete interfaces ethernet *ethx* **pppoe** *num* **mtu**

show interfaces ethernet *ethx* **pppoe** *num* **mtu**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            mtu mtu
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
mtu	Sets the MTU for the PPPoE interface. Packets larger that this value are fragmented. The range is 68 to 1492.

Default

If not set, the MTU for the PPPoE interface will be set to the MTU for the Ethernet interface minus 8 bytes.

Usage Guidelines

Use this command to set the Maximum Transfer Unit (MTU) of a Point-to-Point Protocol over Ethernet (PPPoE) unit. Packets larger than the MTU are fragmented.

Use the **set** form of this command to specify the MTU value.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to display MTU configuration.

interfaces ethernet <ethx> pppoe <num> name-server <param>

Specifies whether an Ethernet PPPoE interface should obtain name server entries from the remote peer interface.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **name-server** *param*

delete interfaces ethernet *ethx* **pppoe** *num* **name-server**

show interfaces ethernet *ethx* **pppoe** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            name-server param
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
param	Mandatory. Specifies whether the local PPPoE endpoint should obtain name server entries from the remote endpoint. Supported values are as follows: **auto**: The endpoint obtains name server entries from its peer. **none**: The endpoint uses the name server(s) configured for the local system.

Default

The interface obtains name server entries from its peer.

Usage Guidelines

Use this command to define how a name server is defined when an Point-to-Point Protocol over Ethernet (PPPoE) link is brought up.

Use the **set** form of this command to set the way that name server entries are obtained by the PPPoE endpoint.

Use the **delete** form of this command to restore the default behavior for obtaining name server entries.

Use the **show** form of this command to show the PPPoE name server configuration.

interfaces ethernet <ethx> pppoe <num> password <password>

Specifies the password to use to authenticate with a remote Ethernet PPPoE endpoint.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **password** *password*

delete interfaces ethernet *ethx* **pppoe** *num* **password**

show interfaces ethernet *ethx* **pppoe** *num* **password**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            password password
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
password	Mandatory. The password used to authenticate the local endpoint with the remote PPPoE server.

Default

None.

Usage Guidelines

Use this command to set the authentication password for an Point-to-Point Protocol over Ethernet (PPPoE) endpoint.

Authentication is optional from the system's point of view; however, most service providers require it.

The password is used in conjunction with the user ID to authenticate the local system to the remote endpoint. The user ID is set by using interfaces ethernet <ethx> pppoe <num> user-id <user-id> command. The authentication protocol is determined by the remote endpoint. Use the **set** form of this command to set the password.

Use the **delete** form of this command to remove the password.

Use the **show** form of this command to display password configuration.

interfaces ethernet <ethx> pppoe <num> remote-address <ipv4>

Sets the IP address of the remote end of an Ethernet PPPoE link.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **remote-address** *ipv4*

delete interfaces ethernet *ethx* **pppoe** *num* **remote-address**

show interfaces ethernet *ethx* **pppoe** *num* **remote-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            remote-address ipv4
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
ipv4	Mandatory. The IP address of the remote end of the PPPoE link. Only one remote address can be specified.

Default

None.

Usage Guidelines

Use this command to set the IP address of the remote endpoint of an Point-to-Point Protocol over Ethernet (PPPoE) connection. This address will be negotiated if not set.

Use the **set** form of this command to specify the remote address.

Use the **delete** form of this command to remove the remote address.

Use the **show** form of this command to display remote address configuration.

interfaces ethernet <ethx> pppoe <num> service-name <name>

Allows an Ethernet PPPoE interface to restrict connections to access concentrators by service name.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **service-name** *name*

delete interfaces ethernet *ethx* **pppoe** *num* **service-name**

show interfaces ethernet *ethx* **pppoe** *num* **service-name**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            service-name name
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
name	Mandatory. A service name. The local endpoint will send session requests only to access concentrators advertising this service name

Default

None.

Usage Guidelines

Use this command to specify a service name by which the local Point-to-Point Protocol over Ethernet (PPPoE) interface can select access concentrators to connect with. It will connect to any access concentrator if not set.

Use the **set** form of this command to specify a service name.

Use the **delete** form of this command to remove a service name.

Use the **show** form of this command to show service name configuration.

interfaces ethernet <ethx> pppoe <num> user-id <user-id>

Specifies the user ID to use to authenticate with a remote Ethernet PPPoE endpoint.

Syntax

set interfaces ethernet *ethx* **pppoe** *num* **user-id** *user-id*

delete interfaces ethernet *ethx* **pppoe** *num* **user-id**

show interfaces ethernet *ethx* **pppoe** *num* **user-id**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    ethernet ethx {
        pppoe num {
            user-id user-id
        }
    }
}
```

Parameters

ethx	Mandatory. The name of a defined Ethernet interface. The range is **eth0** to **eth23**.
num	Mandatory. The name of a defined PPPoE unit. The range of values is 0 to 15.
user-id	Optional. The user ID to be used by the local endpoint to authenticate itself to the remote endpoint.

Default

None.

Usage Guidelines

Use this command to set the user ID for authenticating with a remote Point-to-Point Protocol over Ethernet (PPPoE) endpoint.

Authentication is optional from the system's point of view; however, most service providers require it.

The user ID is used in conjunction with the password to authenticate the local system to the remote endpoint. The password is set by using interfaces ethernet <ethx> pppoe <num> password <password> command. The authentication protocol is determined by the remote endpoint. Use the **set** form of this command to set the user ID.

Use the **delete** form of this command to remove the user ID.

Use the **show** form of this command to display user ID configuration.

show interfaces pppoe

Displays information about all PPPoE interfaces.

Syntax

show interfaces pppoe

Command Mode

Operational mode.

Parameters

None.

Default

Displays information for all PPPoE interfaces.

Usage Guidelines

Use this command to display Point-to-Point Protocol over Ethernet (PPPoE) interface information.

show interfaces pppoe <num>

Displays information about a PPPoE interface.

Syntax

show interfaces pppoe *num*

Command Mode

Operational mode.

Parameters

num	The PPPoE unit number.

Default

None..

Usage Guidelines

Use this command to display Point-to-Point Protocol over Ethernet (PPPoE) interface information for a specific interface.

show interfaces pppoe <num> capture

Displays traffic on a PPPoE interface.

Syntax

show interfaces pppoe *num* **capture** [**not port** *port* | **port** *port*]

Command Mode

Operational mode.

Parameters

num	The PPPoE unit number.
not port *port*	Show captured traffic on all but this port.
port *port*	Show captured traffic on this port only.

Default

Captured traffic for all ports on the specified interface is shown.

Usage Guidelines

Use this command to view PPPoE traffic on the specified interface. Type Ctrl-C to stop the output.

show interfaces pppoe <num> log

Displays log information for a PPPoE interface.

Syntax

show interfaces pppoe *num* **log** [**tail**]

Command Mode

Operational mode.

Parameters

num	The PPPoE unit number.
tail	Show log messages as they are added to the log file. Type Ctrl-C to stop the output.

Default

None.

Usage Guidelines

Use this command to view log information for a PPPoE interface.

show interfaces pppoe <num> queue

Displays queue information for a PPPoE interface.

Syntax

show interfaces pppoe *num* **queue**

Command Mode

Operational mode.

Parameters

num	The PPPoE unit number.

Default

None.

Usage Guidelines

Use this command to view queue information for a PPPoE interface.

Chapter 3: PPPoA

This chapter describes the commands for configuring and using PPPoA encapsulation on the Vyatta system. PPPoA encapsulation is supported on ADSL interfaces.

This feature is available only in the Vyatta Subscription Edition.

This chapter presents the following topics:

PPPoA Configuration

This section presents the following topics:

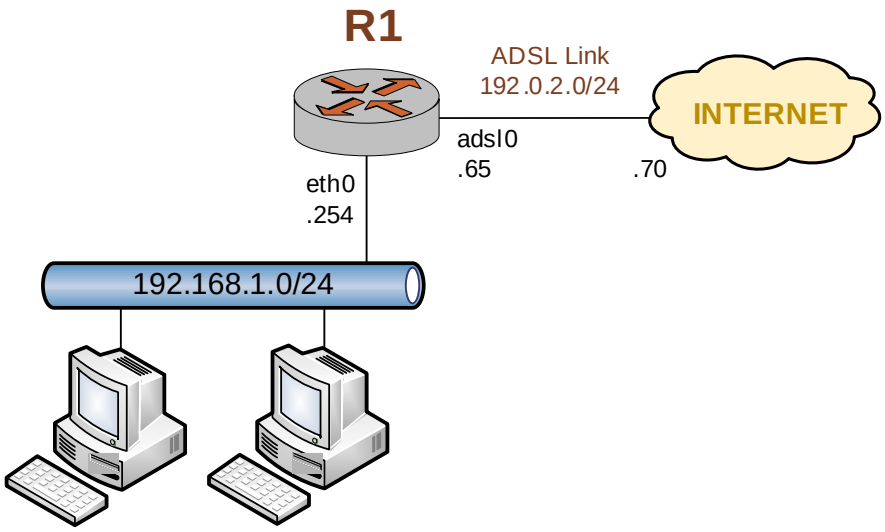
PPPoA Overview

The Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) encapsulation for a permanent virtual circuit (PVC) on an ADSL interface is defined in RFC 2364. This type of interface is modeled as point-to-point and is used to connect to a PPPoA endpoint.

PPPoA Configuration Example

Figure 3-1 shows a typical ADSL configuration, where ADSL is used as an access protocol between a customer premise and an Internet Service Provider (ISP). In this example, the ADSL interface is encapsulated with PPPoA. PPPoA links typically include authentication, so a user ID and password are configured in this example.

Figure 3-1 Typical ADSL network configuration



With PPPoA encapsulation, the local and remote IP addresses can be automatically negotiated instead of explicitly specified. If addresses are not specified, the default behavior is to autonegotiate the addresses.

Example 3-1 sets up a PPPoA encapsulation on interface adsl0. In this example:

- A Sangoma S518 ADSL NIC is connected to the interface.
- The interface has one PVC. The PVC identifier is automatically detected.
- The PPPoA unit number is 0.
- The local IP address is 192.0.2.65. This is in the public IP range, since this interface will connect over the wide area network.
- The IP address of the far end is 192.0.2.70. This address resides on the same network as local interface.
- The user ID is set to "customerA".
- The password is set to "Aremotsuc".

Tip: Where public IP addresses would normally be used, the example uses RFC 3330 "TEST-NET" IP addresses (192.0.2.0/24)

To create and configure this ADSL interface, perform the following steps in configuration mode:

Example 3-1 Creating and configuring an ADSL interface for PPPoA encapsulation

Step	Command
Specify that the system should auto-detect an identifier for the pvc.	`vyatta@R1# set interfaces adsl adsl0 pvc auto`
Set the line encapsulation to PPPoA using unit number 0.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoa 0`
Assign the local IP address to the interface.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoa 0 local-address 192.0.2.65`
Set the IP address of the far end of the connection.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoa 0 remote-address 192.0.2.70`
Set the user id for the link.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoa 0 user-id customerA`
Set the password for the link.	`vyatta@R1# set interfaces adsl adsl0 pvc auto pppoa 0 password Aremotsuc`
Commit the configuration.	`vyatta@R1# commit`

View the configuration.	`vyatta@R1# show interfaces adsl adsl0`
	`  pvc auto {`
	`  pppoa 0 {`
	`  local-address 192.0.2.65`
	`  remote-address 192.0.2.70`
	`  user-id customerA`
	`  password Aremotsuc`
	`  }`
	`  }`
	`vyatta@R1#`

PPPoA Commands

This chapter contains the following commands.

Configuration Commands	
interfaces adsl <adslx> pvc <pvc-id> pppoa <num>	Specifies PPPoA encapsulation for a PVC on an ADSL interface.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> connect-on-demand	Enables or disables on-demand PPPoA connection on an ADSL interface.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> default-route <param>	Enables or disables automatically adding a default route when a PPPoA link is brought up.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> idle-timeout <timeout>	Specifies the length of time in seconds to wait before disconnecting an idle on-demand ADSL PPPoA session.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> local-address <ipv4>	Assign an IP address to a PVC with PPPoA encapsulation on an ADSL interface.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> mtu <mtu>	Specify the Maximum Transmit Unit (MTU) size for a PVC with PPPoA encapsulation on an ADSL interface.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> name-server <param>	Specifies whether an ADSL PPPoA interface should obtain name server entries from the remote peer interface.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> password <password>	Specifies the password to use to authenticate with the remote PPPoA endpoint.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> remote-address <ipv4>	Sets the IP address of the remote end of a PPPoA-encapsulated link on an ADSL interface.
interfaces adsl <adslx> pvc <pvc-id> pppoa <num> user-id <user-id>	Specifies the user ID to use to authenticate with the remote PPPoA endpoint.
Operational Commands	
clear interfaces connection <pppoax>	Brings a PPPoA-encapsulated DSL interface down then up.
connect interface <pppoax>	Brings a PPPoA-encapsulated DSL interface up.
disconnect interface <pppoax>	Brings a PPPoA-encapsulated DSL interface down.
show interfaces pppoa	Displays IP layer information about PPPoA interfaces.
show interfaces pppoa <num>	Displays information about a PPPoA interface.
show interfaces pppoa <num> capture	Displays traffic on a PPPoA interface.

show interfaces pppoa <num> log	Displays log information for a PPPoA interface.

Commands for using other system features with PPPoA–encapsulated interfaces can be found in the following locations.

Related Commands Documented Elsewhere	
Serial interfaces	Commands for clearing and configuring serial interfaces and displaying serial interface information are described in the *Vyatta WAN Interfaces Reference Guide*.
Firewall	Commands for configuring firewall on PPPoA-encapsulated interfaces are described in the *Vyatta Firewall Reference Guide*.
OSPF	Commands for configuring the Open Shortest Path First routing protocol on PPPoA-encapsulated interfaces are described in the *Vyatta OSPF Reference Guide*.
RIP	Commands for configuring the Routing Information Protocol on PPPoA-encapsulated interfaces are described in the *Vyatta RIP Reference Guide*.
QoS	Commands for configuring quality of service on PPPoA-encapsulated interfaces are described in the *Vyatta QoS Reference Guide*.

clear interfaces connection <pppoax>

Brings a PPPoA-encapsulated DSL interface down then up.

Syntax

clear interfaces connection *pppoax*

Command Mode

Operational mode.

Parameters

pppoax	Mandatory. The interface to be operationally brought down, then up. The interface is the name of a PPPoA-encapsulated DSL interface; that is the interface name is **pppoa***x*.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) interface down and then up.

connect interface <pppoax>

Brings a PPPoA-encapsulated DSL interface up.

Syntax

connect interface *pppoax*

Command Mode

Operational mode.

Parameters

pppoax	Mandatory. The name of the interface. This is the name of a PPPoA-encapsulated DSL interface; that is the interface name is **pppoa***x*.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) interface up.

disconnect interface <pppoax>

Brings a PPPoA-encapsulated DSL interface down.

Syntax

disconnect interface *pppoax*

Command Mode

Operational mode.

Parameters

pppoax	Mandatory. The name of the interface. This is the name of a PPPoA-encapsulated DSL interface; that is the interface name is **pppoa***x*.

Default

None.

Usage Guidelines

Use this command to operationally bring a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) DSL interface down.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num>

Specifies PPPoA encapsulation for a PVC on an ADSL interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num*

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.
num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.

Default

None.

Usage Guidelines

Use this command to specify PPPoA (Point-to-Point Protocol over Asynchronous Transfer Mode) encapsulation.

Use the **set** form of this command to apply PPPoA encapsulation.

Use the **delete** form of this command to remove all PPPoA configuration.

Use the **show** form of this command to view PPPoA configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> connect-on-demand

Enables or disables on-demand PPPoA connection on an ADSL interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **connect-on-demand**

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **connect-on-demand**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                connect-on-demand
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.

Default

On-demand PPPoA connection is disabled.

Usage Guidelines

Use this command to direct the system to establish ADSL Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) connections automatically just when traffic is sent.

When on-demand PPPoA connection is disabled, PPPoA links are created at boot time and remain up. If the link fails for any reason, the system brings the link back up immediately.

When on-demand PPPoA connection is enabled, the PPPoA link is brought up only when IP traffic needs to be sent on the link. If the link fails for any reason, it is brought back up again the next time traffic needs to be sent.

If you configure an on-demand PPPoA connection, you must also configure the idle timeout period, after which an idle PPPoA link will be disconnected. If a non-zero idle timeout period is not configured, the on-demand link will never be disconnected after the first time it is brought up. To configure the idle timeout period, use interfaces adsl <adslx> pvc <pvc-id> pppoa <num> idle-timeout <timeout> command.

If you configure an on-demand PPPoA connection, you must also configure remote-address. To configure the remote address, use interfaces adsl <adslx> pvc <pvc-id> pppoa <num> remote-address <ipv4> command.

Use the **set** form of this command to enable on-demand PPPoA connections.

Use the **delete** form of this command to disable on-demand PPPoA connections.

Use the **show** form of this command to show PPPoA connection configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> default-route <param>

Enables or disables automatically adding a default route when a PPPoA link is brought up.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **default-route** *param*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **default-route**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                default-route param
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
param	Mandatory. Specifies whether a default route is automatically added when the PPP link comes up. **auto**: The PPP process automatically adds a default route to the remote end of the link. **none**: No default route is added.

Default

A default route to the remote endpoint is automatically added when the link comes up.

Usage Guidelines

Use this command to specify whether a default route pointing to the remote endpoint of a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) ADSL link is automatically added when the link comes up. The default route is only added if no other default route already exists in the system.

Use the **set** form of this command to enable or disable adding the default route.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to show the default route configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> idle-timeout <timeout>

Specifies the length of time in seconds to wait before disconnecting an idle on-demand ADSL PPPoA session.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **idle-timeout** *timeout*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **idle-timeout**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **idle-timeout**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                idle-timeout timeout
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
timeout	Mandatory. The amount of time, in seconds, after which an idle connection will be closed. The range is 0 to 4294967295, where 0 means the connection is never closed.

Default

Idle connections are never disconnected.

Usage Guidelines

Use this command to set the idle timeout interval to be used with on-demand ADSL Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) connections.

When on-demand PPPoA link connection is enabled, the link is brought up only when traffic is to be sent and is disabled when the link is idle for the interval specified by this command. On-demand PPPoA connection is enabled using interfaces adsl <adslx> pvc <pvc-id> pppoa <num> connect-on-demand command.

If this parameter is not set or is set to 0, an on-demand link will not be taken down when it is idle and after the initial establishment of the connection will behave like an ordinary PPPoA link.

Use the **set** form of this command to specify the idle timeout value.

Use the **delete** form of this command to restore default behavior for idle timeout.

Use the **show** form of this command to display idle timeout configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> local-address <ipv4>

Assign an IP address to a PVC with PPPoA encapsulation on an ADSL interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **local-address** *ipv4*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **local-address**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **local-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                local-address ipv4
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
ipv4	Optional. The IPv4 address for the link.

Default

If not set, the local address is negotiated.

Usage Guidelines

Use this command to specify an IP address for an ADSL PVC with Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) encapsulation.

Use the **set** form of this command to set the IP address.

Use the **delete** form of this command to remove IP address configuration.

Use the **show** form of this command to view IP address configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> mtu <mtu>

Specify the Maximum Transmit Unit (MTU) size for a PVC with PPPoA encapsulation on an ADSL interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **mtu** *mtu*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **mtu**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **mtu**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                mtu mtu
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
mtu	Optional. The maximum packet size that the interface will send. The range is 8 to 8188.

Default

The default MTU is 1500.

Usage Guidelines

Use this command to specify the Maximum Transmit Unit for a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) ADSL interface. This is the maximum packet size the interface will send.

Use the **set** form of this command to specify the MTU.

Use the **delete** form of this command to restore the default MTU.

Use the **show** form of this command to view MTU configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> name-server <param>

Specifies whether an ADSL PPPoA interface should obtain name server entries from the remote peer interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **name-server** *param*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **name-server**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                name-server param
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
param	Mandatory. Specifies whether the local PPPoA endpoint should obtain name server entries from the remote endpoint. Supported values are as follows: **auto**: The endpoint obtains name server entries from its peer. **none**: The endpoint uses the name server(s) configured for the local system.

Default

The interface obtains name server entries from its peer (i.e. **auto**).

Usage Guidelines

Use this command to define how a name server is defined when an ADSL Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) link is brought up.

Use the **set** form of this command to set the way that name server entries are obtained by the PPPoA endpoint.

Use the **delete** form of this command to restore the default behavior for obtaining name server entries.

Use the **show** form of this command to show the PPPoA name server configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> password <password>

Specifies the password to use to authenticate with the remote PPPoA endpoint.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **password** *password*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **password**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **password**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                password password
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
password	Mandatory. The password used to authenticate the local endpoint with the remote PPPoA server.

Default

None.

Usage Guidelines

Use this command to set the authentication password for a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) ADSL endpoint.

Authentication is optional from the system's point of view; however, most service providers require it.

The password is used in conjunction with the user ID to authenticate the local system to the remote endpoint. The user ID is set by using interfaces adsl <adslx> pvc <pvc-id> pppoa <num> remote-address <ipv4> command. The authentication protocol is determined by the remote endpoint. Use the **set** form of this command to set the password.

Use the **delete** form of this command to remove the password.

Use the **show** form of this command to display password configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> remote-address <ipv4>

Sets the IP address of the remote end of a PPPoA-encapsulated link on an ADSL interface.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **remote-address** *ipv4*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **remote-address**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **remote-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                remote-address ipv4
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
ipv4	Mandatory. The IP address of the remote end of the PPPoA link. Only one remote address can be specified.

Default

If not set, the remote address is negotiated.

Usage Guidelines

Use this command to set the IP address of the remote endpoint of a Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) connection on an ADSL interface.

Use the **set** form of this command to specify the remote address.

Use the **delete** form of this command to remove the remote address.

Use the **show** form of this command to display remote address configuration.

interfaces adsl <adslx> pvc <pvc-id> pppoa <num> user-id <user-id>

Specifies the user ID to use to authenticate with the remote PPPoA endpoint.

Syntax

set interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **user-id** *user-id*

delete interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **user-id**

show interfaces adsl *adslx* **pvc** *pvc-id* **pppoa** *num* **user-id**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    adsl adslx {
        pvc pvc-id {
            pppoa num {
                user-id user-id
            }
        }
    }
}
```

Parameters

adslx	Mandatory. Multi-node. The identifier for the ADSL interface you are defining. This may be **adsl0** to **adsl***x*, depending on what physical ADSL ports are actually available on the system.
pvc-id	Mandatory. The identifier for the PVC. It can either be the *vpi*/*vci* pair or the keyword **auto**, where *vpi* is a Virtual Path Index from 0 to 255, *vci* is a Virtual Circuit Index from from 0 to 65535, and **auto** directs the system to detect the Virtual Path Index and Virtual Circuit Index automatically.

num	Mandatory. The PPPoA unit number. This number must be unique across all PPPoA interfaces. In addition, only one PPPoA instance can be configured on a PVC. PPPoA units range from 0 to 15 and the resulting interfaces are named **pppoa0** to **pppoa15**.
user-id	Optional. The user ID to be used by the local endpoint to authenticate itself to the remote endpoint.

Default

None.

Usage Guidelines

Use this command to set the user ID for authenticating with the remote PPPoA endpoint.

Authentication is optional from the system's point of view; however, most service providers require it.

The user ID is used in conjunction with the password to authenticate the local system to the remote endpoint. The password is set by using interfaces adsl <adslx> pvc <pvc-id> pppoa <num> password <password> command. The authentication protocol is determined by the remote endpoint. Use the **set** form of this command to set the user ID.

Use the **delete** form of this command to remove the user ID.

Use the **show** form of this command to display user ID configuration.

show interfaces pppoa

Displays IP layer information about PPPoA interfaces.

Syntax

show interfaces pppoa

Command Mode

Operational mode.

Parameters

None.

Default

Displays information for all PPPoA interfaces.

Usage Guidelines

Use this command to display IP-layer information about PPPoA interfaces.

show interfaces pppoa <num>

Displays information about a PPPoA interface.

Syntax

show interfaces pppoa *num*

Command Mode

Operational mode.

Parameters

num	The PPPoA unit number.

Default

None..

Usage Guidelines

Use this command to display Point-to-Point Protocol over Asynchronous Transfer Mode (PPPoA) interface information for a specific interface.

show interfaces pppoa <num> capture

Displays traffic on a PPPoA interface.

Syntax

show interfaces pppoa *num* **capture** [**not port** *port* | **port** *port*]

Command Mode

Operational mode.

Parameters

num	The PPPoA unit number.
not port *port*	Show captured traffic on all but this port.
port *port*	Show captured traffic on this port only.

Default

Captured traffic for all ports on the specified interface is shown.

Usage Guidelines

Use this command to view PPPoA traffic on the specified interface. Type Ctrl-C to stop the output.

show interfaces pppoa <num> log

Displays log information for a PPPoA interface.

Syntax

show interfaces pppoa *num* **log** [**tail**]

Command Mode

Operational mode.

Parameters

num	The PPPoA unit number.
tail	Show log messages as they are added to the log file. Type Ctrl-C to stop the output.

Default

None.

Usage Guidelines

Use this command to view log information for a PPPoA interface.

Chapter 4: Multilink PPP Interfaces

This chapter describes commands for working with multilink PPP interfaces.

This chapter presents the following topics:

Configuring Multilink Interfaces

Point-to-Point Protocol (PPP) links can be combined into a a multilink PPP (MLPPP) bundle.

When PPP connections are bundled into a multilink, the settings on the multilink override the settings on the individual PPP link. The exceptions is authentication (authentication settings specified for individual PPP links override authentication settings for the multilink) and MTU/MRU/MRRU.

A transmitted packet may not be larger than the remote device is willing to receive. The actual MTU is the smaller of the configured MTU of the local device and the configured MRU of the remote device; this value is determined by MRU negotiation when the link is established.

The interaction between MTU/MRU in PPP links and MTU/MRRU in a multilink bundle is as follows:

If MTU is unconfigured in both the member PPP link and the multilink bundle, the default for member links is used.

If MTU is set in member links but not in the multilink bundle, the configured value for member links is used. These must match for every PPP link in the bundle.

If MTU is set in the multilink bundle, it overrides any value (default or configured) for member links.

MRRU (for the multilink bundle) and MRU (for member links) are configured independently and used separately during MRU negotiation. If neither is set, the MRU default value is used for MRU and the MRRU default value is used for MRRU.

Multilink Interface Commands

This chapter contains the following commands.

Configuration Commands	
interfaces multilink <mlx>	Defines the characteristics of a multilink bundle.
interfaces multilink <mlx> authentication	Specifies the authentication parameters for a multilink interface.
interfaces multilink <mlx> description <desc>	Specifies a description for a virtual interface on a multilink interface.
interfaces multilink <mlx> disable-protocol-compression	Disables protocol field compression on all multilink interfaces.
interfaces multilink <mlx> lcp-echo-failure <value>	Specifies the LCP echo failure threshold for a multilink interface.
interfaces multilink <mlx> lcp-echo-interval <interval>	Specifies the LCP echo interval for a multilink interface.
interfaces multilink <mlx> logging <state>	Specifies whether to enable or disable logging of debugging messages for the multilink process.
interfaces multilink <mlx> mrru <mrru>	Specify the MRRU size for a multilink interface.
interfaces multilink <mlx> mtu <mtu>	Specify the MTU size for a multilink interface.
interfaces multilink <mlx> vif 1 address local-address <ipv4>	Sets the IP address for a virtual interface on a multilink interface.
interfaces multilink <mlx> vif 1 address prefix-length <prefix>	Specifies the prefix defining the network served by a virtual interface on a multilink interface.
interfaces multilink <mlx> vif 1 address remote-address <ipv4>	Specifies the IP address of the remote endpoint on a multilink connection.
interfaces multilink <mlx> vif 1 description <desc>	Sets the description for a virtual interface on a multilink interface.
Operational Commands	
clear interfaces multilink	Clears counters for multilink interfaces
clear interfaces connection <mlx>	Brings a multilink interface down then up.
connect interface <mlx>	Brings a multilink bundle up.
disconnect interface <mlx>	Brings a multilink bundle down.

show interfaces multilink	Displays information about multilink interfaces.

Commands for using other system features with multilink interfaces can be found in the following locations.

Related Commands Documented Elsewhere	
Firewall	Commands for configuring firewall on multilink interfaces are described in the *Vyatta Firewall Reference Guide*.
OSPF	Commands for configuring the Open Shortest Path First routing protocol on multilink interfaces are described in the *Vyatta OSPF Reference Guide*.
QoS	Commands for configuring qulaity of service on multilink interfaces are described in the *Vyatta QoS Reference Guide*.
RIP	Commands for configuring the Routing Information Protocol on multilink interfaces are described in the *Vyatta RIP Reference Guide*.

clear interfaces multilink

Clears counters for multilink interfaces

Syntax

clear interfaces multilink [*ml0..ml23*]

Command Mode

Operational mode.

Parameters

ml0..ml23	Clears the statistics on the specified multilink interface. Multilink interfaces are numbered ml0 (“em ell zero”) through ml23 (“em ell twenty-three”)

Usage Guidelines

Use this command to clear statistics for a specified multilink interface.

If no multilink interface is specified then statistics are cleared on all multilink interfaces.

Examples

Example 4-1 clears statistics on all multilink interfaces.

Example 4-1 “clear interfaces multilink”: Clearing multilink statistics

```
vyatta@R1> clear interfaces multilink
PPP statistics flushed
PPP statistics flushed
vyatta@R1>
```

Example 4-2 clears statistics on a specific multilink interface.

Example 4-2 “clear interfaces multilink”: Clearing multilink statistics on one interface

```
vyatta@R1> clear interfaces multilink ml0
```

```
PPP statistics flushed
vyatta@R1>
```

clear interfaces connection <mlx>

Brings a multilink interface down then up.

Syntax

clear interfaces connection *mlx*

Command Mode

Operational mode.

Parameters

mlx	Mandatory. The identifier of the multilink bundle to be operationally brought down, then up. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).

Default

None.

Usage Guidelines

Use this command to operationally bring a multilink bundle down and then up.

connect interface <mlx>

Brings a multilink bundle up.

Syntax

connect interface *mlx*

Command Mode

Operational mode.

Parameters

mlx	Mandatory. The identifier of the multilink bundle to be operationally brought up. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).

Default

None.

Usage Guidelines

Use this command to operationally bring a multilink bundle up.

disconnect interface <mlx>

Brings a multilink bundle down.

Syntax

disconnect interface *mlx*

Command Mode

Operational mode.

Parameters

mlx	Mandatory. The identifier of the multilink bundle to be operationally brought up. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).

Default

None.

Usage Guidelines

Use this command to operationally bring a multilink bundle down.

interfaces multilink <mlx>

Defines the characteristics of a multilink bundle.

Syntax

set interfaces multilink *mlx*

delete interfaces multilink *mlx*

show interfaces multilink *mlx*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).

Default

None.

Usage Guidelines

Use this command to define a multilink bundle. A multilink bundle allows the bandwidth of individual links to be combined into a single virtual link.

Multilink bundling is currently supported only for point-to-point protocol (PPP) links. You can create up to two multilink bundles and each bundle can include eight individual PPP links.

To combine multiple serial interfaces into a single multilink bundle you create both the multilink interface and the individual serial interfaces. Individual links are assigned to the bundle using the **multilink** parameter of interfaces serial <wanx> ppp authentication command.

When PPP connections are bundled into a multilink, the settings on the multilink override the settings on the individual PPP link. The exceptions is authentication (authentication settings specified for individual PPP links override authentication settings for the multilink) and MTU/MRU/MRRU.

A transmitted packet may not be larger than the remote device is willing to receive. The actual MTU is the smaller of the configured MTU of the local device and the configured MRU of the remote device; this value is determined by MRU negotiation when the link is established.

The interaction between MTU/MRU in PPP links and MTU/MRRU in a multilink bundle is as follows:

If MTU is unconfigured in both the member PPP link and the multilink bundle, the default for member links is used.

If MTU is set in member links but not in the multilink bundle, the configured value for member links is used. These must match for every PPP link in the bundle.

If MTU is set in the multilink bundle, it overrides any value (default or configured) for member links.

MRRU (for the multilink bundle) and MRU (for member links) are configured independently and used separately during MRU negotiation. If neither is set, the MRU default value is used for MRU and the MRRU default value is used for MRRU.

In multilink bundles, if an individual member link goes down, the multilink bundle remains up, and if the member link becomes operational again it will become a member of the same bundle. If all member links fail, the multilink bundle will also fail, but will become operational again if any of the member links comes back up.

Use the **set** form of this command to define multilink settings on an interface.

Use the **delete** form of this command to remove all configuration for a multilink interface.

Use the **show** form of this command to view a multilink interface configuration.

interfaces multilink <mlx> authentication

Specifies the authentication parameters for a multilink interface.

Syntax

set interfaces multilink *mlx* **authentication** [**password** *password* | **peer-password** *password* | **peer-system-name** *name* | **peer-user-id** *user-id* | **refuse-type** *type* | **system-name** *name* | **type** *type* | **user-id** *user-id*]

delete interfaces multilink *mlx* **authentication**

show interfaces multilink *mlx* **authentication**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        authentication {
            password password
            peer-password password
            peer-system-name name
            peer-user-id user-id
            refuse-type type
            system-name name
            type type
            user-id user-id
        }
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
password *password*	Optional. Sets the password this system will use when authenticating itself to a peer.

peer-password *password*	Optional. Sets the password this system will accept from a peer.
peer-system-name *name*	Optional. The system name this system will accept from a peer.
peer-user-id *user-id*	Optional. The user ID this system will accept from a peer.
refuse-type *type*	Defines authentication types that will be refused during authentication negotiations. Used when the Vyatta system is acting as the client side of the communication. **none**: Does not refuse any type of authentication; that is, the system will authenticate to the peer any type of authentication requested, including not using authentication. **chap**: Refuses CHAP authentication if offered by the remote peer. **pap**: Refuses PAP authentication if offered by the remote peer. **papchap**: Refuses PAP or CHAP authentication if offered by the remote peer. **mschap**: Refuses MS-CHAP authentication if offered by the remote peer. **mschap-v2**: Refuses MS-CHAP v2 authentication if offered by the remote peer. **eap**: Refuses EAP authentication if offered by the remote peer. The default is none.
system-name *name*	Optional. The system name this system will use when authenticating itself to a peer.

type *type*	Optional. Sets the authentication required from the remote peer. Used when the Vyatta system is acting as the server side of the communication. Supported values are as follows: **none**: The remote peer is not required to authenticate itself. **chap**: The remote peer must authenticate using the Challenge Handshake Authentication Protocol (CHAP), as defined in RFC 1994. **pap**: The remote peer must authenticate using the Password Authentication Protocol (PAP). The client authenticates itself by sending a user ID and a password to the server, which the server compares to the password in its internal database. **papchap**: The remote peer must authenticate using either PAP or CHAP as the authentication method. **mschap**: The remote peer must authenticate using the Microsoft Challenge Handshake Authentication Protocol (MS-CHAP), which is the Microsoft version of CHAP and is an extension to RFC 1994. **mschap-v2**: The remote peer must authenticate using version 2 of MS-CHAP. **eap**: The remote peer must authenticate using Extensible Authentication Protocol (EAP), which is an authentication framework frequently used in mobile networks and point-to-point connections. **any**: The peer is required to authenticate itself (that is, **none** is refused), but any supported method of authentication offered by the remote peer is accepted. The default is none.
user-id *user-id*	Optional. The user ID this system will use when authenticating itself to a peer.

Default

None.

Usage Guidelines

Use this command to set the authentication parameters for a multilink interface. These authentication requirements must be satisfied before network packets are sent or received.

Use the **set** form of this command to set the authentication parameters.

Use the **delete** form of this command to remove authentication configuration or restore default information.

Use the **show** form of this command to view authentication configuration.

interfaces multilink <mlx> description <desc>

Specifies a description for a virtual interface on a multilink interface.

Syntax

set interfaces multilink *mlx* **description** *desc*

delete interfaces multilink *mlx* **description**

show interfaces multilink *mlx* **description**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        description desc
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
desc	Optional. A brief description for the virtual interface. If the description contains spaces, it must be enclosed in double quotes.

Default

None.

Usage Guidelines

Use this command to specify a description for a virtual interface on a multilink interface.

Use the **set** form of this command to set the description.

Use the **delete** form of this command to remove description configuration.

Use the **show** form of this command to view description configuration.

interfaces multilink <mlx> disable-protocol-compression

Disables protocol field compression on all multilink interfaces.

Syntax

set interfaces multilink *mlx* **disable-protocol-compression**

delete interfaces multilink *mlx* **disable-protocol-compression**

show interfaces multilink *mlx*

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        disable-protocol-compression
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).

Default

Protocol field compression is enabled on all multilink PPP interfaces.

Usage Guidelines

Use this command to disable protocol field compression on all multilink interfaces. Most multilink PPP implementations support use of the protocol field compression feature. Vyatta enables this feature by default. If you are connecting to a multilink PPP implementation that does not support the protocol field compression feature, you can disable it by setting this parameter. Note that disabling protocol field compression for one multilink PPP interface will disable it for all multilink PPP interfaces on the system.

Use the **set** form of this command to disable protocol field compression on all multilink interfaces.

Use the **delete** form of this command to return protocol field compression to all multilink PPP interfaces on the system.

Use the **show** form of this command to view multilink PPP configuration for the interface.

interfaces multilink <mlx> lcp-echo-failure <value>

Specifies the LCP echo failure threshold for a multilink interface.

Syntax

set interfaces multilink *mlx* **lcp-echo-failure** *value*

delete interfaces multilink *mlx* **lcp-echo-failure**

show interfaces multilink *mlx* **lcp-echo-failure**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        lcp-echo-failure value
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
value	Optional. Sets the LCP echo failure threshold. The failure threshold is the maximum number of LCP echo-requests that can be sent without receiving a valid LCP echo-reply. If this threshold is exceeded, the peer is considered to be dead and the connection is terminated. The value specified must be a non-zero number. The default is 3. Deleting this value does not disable LCP echoes, but instead restores the default value. If this parameter is set, the **lcp-echo-interval** parameter must also be set.

Default

A maximum of 3 LCP echo-requests can be sent without receiving a valid LCP echo-reply.

Usage Guidelines

Use this command to specify the LCP echo failure threshold for a multilink interface.

Use the **set** form of this command to set the LCP echo failure threshold.

Use the **delete** form of this command to restore the default LCP echo failure threshold configuration.

Use the **show** form of this command to view LCP echo failure threshold configuration.

interfaces multilink <mlx> lcp-echo-interval <interval>

Specifies the LCP echo interval for a multilink interface.

Syntax

set interfaces multilink *mlx* **lcp-echo-interval** *interval*

delete interfaces multilink *mlx* **lcp-echo-interval**

show interfaces multilink *mlx* **lcp-echo-interval**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        lcp-echo-interval interval
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
interval	Optional. Sets the LCP echo interval, which is the number of seconds between LCP echoes. LCP echoes are used to determine whether the connection is still operational. The value specified must be a non-zero number. The default is 3. Deleting this value does not disable LCP echoes, but instead restores the default value. Specifying a low value for this parameter allows fast detection of failed links. The value set for this parameter must match the value set on the peer.

Default

LCP echo-requests are sent at 3-second intervals.

Usage Guidelines

Use this command to specify the LCP echo interval for a multilink interface.

Use the **set** form of this command to set the LCP echo interval.

Use the **delete** form of this command to remove LCP echo interval configuration.

Use the **show** form of this command to view LCP echo interval configuration.

interfaces multilink <mlx> logging <state>

Specifies whether to enable or disable logging of debugging messages for the multilink process.

Syntax

set interfaces multilink *mlx* **logging** *state*

delete interfaces multilink *mlx* **logging**

show interfaces multilink *mlx* **logging**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        authentication {
            logging state
        }
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** ("em ell zero") through **ml23** ("em ell twenty-three").
state	Enables logging of debugging messages for the PPP process. Supported values are as follows: **on**: Enables debugging for PPP connections. Trace-level messages are sent from the PPP process to the system log. **off**: Disables debugging for PPP connections. Note that logging creates additional system load and may degrade performance.

Default

Logging of debugging messages is disabled.

Usage Guidelines

Use this command to enable or disable logging of debugging messages for the multilink process.

Use the **set** form of this command to specify whether to enable or disable debugging on a multilink interface.

Use the **delete** form of this command to restore the default behavior.

Use the **show** form of this command to view multilink logging configuration.

interfaces multilink <mlx> mrru <mrru>

Specify the MRRU size for a multilink interface.

Syntax

set interfaces multilink *mlx* **mrru** *mrru*

delete interfaces multilink *mlx* **mrru**

show interfaces multilink *mlx* **mrru**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        mrru mrru
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
mrru	Optional. Sets the Maximum Reconstructed Receive Unit (MRRU). This is the maximum size for a received packet on a multilink bundle, analogous to the MRU for individual links. The range is 8 to 8188. The default is 1600. A value of 296 (40 bytes for the TCP/IP header + 256 bytes of data) works well on very slow links. Note that for IPv6 connections, the MRRU must be at least 1280.

Default

The default is 1600.

Usage Guidelines

Use this command to specify the Maximum Reconstructed Receive Unit (MRRU) for a multilink interface. This is the maximum packet size the interface is willing to receive.

Use the **set** form of this command to set the MRRU.

Use the **delete** form of this command to restore the default MRRU value.

Use the **show** form of this command to view MRRU configuration.

interfaces multilink <mlx> mtu <mtu>

Specify the MTU size for a multilink interface.

Syntax

set interfaces multilink *mlx* **mtu** *mtu*

delete interfaces multilink *mlx* **mtu**

show interfaces multilink *mlx* **mtu**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        mtu mtu
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
mtu	Optional. Sets the Maximum Transmit Unit (MTU). Unless the peer requests a smaller value (by means of MRU negotiation), packets larger than this number are fragmented. The range is 8 to 8188. The default is 1500. Note that for IPv6 connections, the MTU must be at least 1280.

Default

The default is 1500.

Usage Guidelines

Use this command to specify the Maximum Transmit Unit (MTU) for a Point-to-Point Protocol (PPP) serial interface. This is the maximum packet size the interface will send.

Use the **set** form of this command to set the MTU.

Use the **delete** form of this command to restore the default MTU value.

Use the **show** form of this command to view MTU configuration.

interfaces multilink <mlx> vif 1 address local-address <ipv4>

Sets the IP address for a virtual interface on a multilink interface.

Syntax

set interfaces multilink *mlx* **vif 1 address local-address** *ipv4*

delete interfaces multilink *mlx* **vif 1 address local-address**

show interfaces multilink *mlx* **vif 1 address local-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        vif 1 {
            address {
                local-address ipv4
            }
        }
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
1	The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be **1**.

ipv4	Optional if specified on the peer; mandatory otherwise. The IPv4 address for this vif. If multiple PPP interfaces are all endpoints for a multi-link PPP bundle, all links in the bundle must share the same IP addresses. If an interface is to form part of a multi-link bundle, the IP address need not be explicitly assigned. In this case, the IP address must be received from the remote PPP peer.

Default

None.

Usage Guidelines

Use this command to specify an IP address for a virtual interface on a multilink interface.

Use the **set** form of this command to set the IP address.

Use the **delete** form of this command to remove IP address configuration.

Use the **show** form of this command to view IP address configuration.

interfaces multilink <mlx> vif 1 address prefix-length <prefix>

Specifies the prefix defining the network served by a virtual interface on a multilink interface.

Syntax

set interfaces multilink *mlx* **vif 1 address prefix-length** *prefix*

delete interfaces multilink *mlx* **vif 1 address prefix-length**

show interfaces multilink *mlx* **vif 1 address prefix-length**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        vif 1 {
            address {
                prefix-length prefix
            }
        }
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
1	The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be **1**.
prefix	Optional if specified on the peer; mandatory otherwise. The prefix defining the network served by this interface. The range is 0 to 32.

Default

None.

Usage Guidelines

Use this command to specify the prefix defining the network served by a virtual interface on a multilink interface.

Use the **set** form of this command to specify the network prefix.

Use the **delete** form of this command to remove network prefix configuration.

Use the **show** form of this command to view network prefix configuration.

interfaces multilink <mlx> vif 1 address remote-address <ipv4>

Specifies the IP address of the remote endpoint on a multilink connection.

Syntax

set interfaces multilink *mlx* **vif 1 address remote-address** *ipv4*

delete interfaces multilink *mlx* **vif 1 address remote-address**

show interfaces multilink *mlx* **vif 1 address remote-address**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        vif 1 {
            address {
                remote-address ipv4
            }
        }
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
1	The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be **1**.
ipv4	Optional if specified on the peer; mandatory otherwise. An IPv4 address representing the network address of the remote peer.

Default

None.

Usage Guidelines

Use this command to specify the IP address of the remote endpoint in a multilink link.

Use the **set** form of this command to set the remote address.

Use the **delete** form of this command to remove remote address configuration.

Use the **show** form of this command to view remote address configuration.

interfaces multilink <mlx> vif 1 description <desc>

Sets the description for a virtual interface on a multilink interface.

Syntax

set interfaces multilink *mlx* **vif 1 description** *desc*

delete interfaces multilink *mlx* **vif 1 description**

show interfaces multilink *mlx* **vif 1 description**

Command Mode

Configuration mode.

Configuration Statement

```
interfaces {
    multilink mlx {
        vif 1 {
            description desc
        }
    }
}
```

Parameters

mlx	Mandatory. The identifier of the multilink bundle. You can create up to two multilink bundles. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).
1	The identifier of the virtual interface. Currently, only one vif is supported for multilink interfaces, and the identifier must be **1**.
desc	Optional. A brief description for the virtual interface. If the description contains spaces, it must be enclosed in double quotes.

Default

None.

Usage Guidelines

Use this command to specify a description for a virtual interface on a multilink interface.

Use the **set** form of this command to set the description.

Use the **delete** form of this command to remove description configuration.

Use the **show** form of this command to view description configuration.

show interfaces multilink

Displays information about multilink interfaces.

Syntax

show interfaces multilink [*ml0..ml23*]

Command Mode

Operational mode.

Parameters

ml0..ml23	Shows detailed information for the specified multilink interface. Supported values are **ml0** (“em ell zero”) through **ml23** (“em ell twenty-three”).

Usage Guidelines

Use this command to view the operational status of a multilink interface.

When used with no option, this command displays summary information for all available multilink interfaces.

Note that an MLPPP link that is negotiating is considered to be in an “active” state.

Examples

Example 4-3 shows summary information for all configured multilink bundles.

Example 4-3 “show interfaces multilink”: Displaying summary multilink information

```
vyatta@R1> show interfaces multilink
ml0: <POINTOPOINT,MULTICAST,NOARP,UP,10000> mtu 1540 qdisc pfifo_fast
qlen 3
    link/ppp
    inet 3.3.3.1 peer 3.3.3.2/32 scope global ml0
    mrru 1560
RX:  bytes    packets     errors    dropped    overrun      mcast
        78          5          1          1          0          0
TX:  bytes    packets     errors    dropped    carrier collisions
        72          5          0          0          0          0
```

```
    Multilink members:
    wan0  : active

ml1: <POINTOPOINT,MULTICAST,NOARP,UP,10000> mtu 1540 qdisc pfifo_fast
qlen 3
    link/ppp
    inet 3.3.3.2 peer 3.3.3.1/32 scope global ml1
    mrru 1560
RX:  bytes    packets     errors    dropped    overrun      mcast
        72          5          0          0          0          0
TX:  bytes    packets     errors    dropped    carrier collisions
       109          7          0          0          0          0

    Multilink members:
    wan1  : active
```

Example 4-4 shows information for a single multilink bundle.

Example 4-4 "show interfaces multilink": Displaying detailed information for a multilink bundle

```
vyatta@R1> show interfaces multilink ml0
ml0: <POINTOPOINT,MULTICAST,NOARP,UP,10000> mtu 1540 qdisc pfifo_fast
qlen 3
    link/ppp
    inet 3.3.3.1 peer 3.3.3.2/32 scope global ml0
    mrru 1560
RX:  bytes    packets     errors    dropped    overrun      mcast
        78          5          1          1          0          0
TX:  bytes    packets     errors    dropped    carrier collisions
        72          5          0          0          0          0

    Multilink members:
    wan0  : active

wan0: <POINTOPOINT,NOARP,UP,10000> mtu 1450 qdisc pfifo_fast qlen 100
    link/ppp
    multilink ml0
RX:  bytes    packets     errors    dropped    overrun      mcast
       367         16          0          0          0          0
TX:  bytes    packets     errors    dropped    carrier collisions
       343         15          0          0          0          0


PPP data:
IN.BYTES  :         78
```

```
IN.PACK   :          5
IN.VJCOMP :          0
IN.VJUNC  :          0
IN.VJERR  :          0
OUT.BYTES :         72
OUT.PACK  :          5
OUT.VJCOMP:          0
OUT.VJUNC :          0
OUT.NON-VJ:          5
```

Glossary of Acronyms

ACL	access control list
ADSL	Asymmetric Digital Subscriber Line
API	Application Programming Interface
AS	autonomous system
ARP	Address Resolution Protocol
BGP	Border Gateway Protocol
BIOS	Basic Input Output System
BPDU	Bridge Protocol Data Unit
CA	certificate authority
CCMP	AES in counter mode with CBC-MAC
CHAP	Challenge Handshake Authentication Protocol
CLI	command-line interface
DDNS	dynamic DNS
DHCP	Dynamic Host Configuration Protocol
DHCPv6	Dynamic Host Configuration Protocol version 6
DLCI	data-link connection identifier
DMI	desktop management interface

DMZ	demilitarized zone
DN	distinguished name
DNS	Domain Name System
DSCP	Differentiated Services Code Point
DSL	Digital Subscriber Line
eBGP	external BGP
EGP	Exterior Gateway Protocol
ECMP	equal-cost multipath
ESP	Encapsulating Security Payload
FIB	Forwarding Information Base
FTP	File Transfer Protocol
GRE	Generic Routing Encapsulation
HDLC	High-Level Data Link Control
I/O	Input/Ouput
ICMP	Internet Control Message Protocol
IDS	Intrusion Detection System
IEEE	Institute of Electrical and Electronics Engineers
IGP	Interior Gateway Protocol
IPS	Intrusion Protection System
IKE	Internet Key Exchange
IP	Internet Protocol
IPOA	IP over ATM
IPsec	IP security
IPv4	IP Version 4
IPv6	IP Version 6
ISP	Internet Service Provider

L2TP	Layer 2 Tunneling Protocol
LACP	Link Aggregation Control Protocol
LAN	local area network
LDAP	Lightweight Directory Access Protocol
LLDP	Link Layer Discovery Protocol
MAC	medium access control
MIB	Management Information Base
MLPPP	multilink PPP
MRRU	maximum received reconstructed unit
MTU	maximum transmission unit
NAT	Network Address Translation
ND	Neighbor Discovery
NIC	network interface card
NTP	Network Time Protocol
OSPF	Open Shortest Path First
OSPFv2	OSPF Version 2
OSPFv3	OSPF Version 3
PAM	Pluggable Authentication Module
PAP	Password Authentication Protocol
PAT	Port Address Translation
PCI	peripheral component interconnect
PKI	Public Key Infrastructure
PPP	Point-to-Point Protocol
PPPoA	PPP over ATM
PPPoE	PPP over Ethernet
PPTP	Point-to-Point Tunneling Protocol

PVC	permanent virtual circuit
QoS	quality of service
RADIUS	Remote Authentication Dial-In User Service
RIB	Routing Information Base
RIP	Routing Information Protocol
RIPng	RIP next generation
Rx	receive
SLAAC	Stateless Address Auto-Configuration
SNMP	Simple Network Management Protocol
SMTP	Simple Mail Transfer Protocol
SONET	Synchronous Optical Network
SSH	Secure Shell
SSID	Service Set Identifier
STP	Spanning Tree Protocol
TACACS+	Terminal Access Controller Access Control System Plus
TCP	Transmission Control Protocol
TKIP	Temporal Key Integrity Protocol
ToS	Type of Service
Tx	transmit
UDP	User Datagram Protocol
vif	virtual interface
VLAN	virtual LAN
VPN	Virtual Private Network
VRRP	Virtual Router Redundancy Protocol
WAN	wide area network
WAP	wireless access point

WPA	Wired Protected Access