



Junos[®] OS

Layer 2 Network Access Protocols Feature Guide for Routing Devices



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Junos® OS Layer 2 Network Access Protocols Feature Guide for Routing Devices
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About the Documentation

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- [Supported Platforms on page ix](#)
- [Using the Examples in This Manual on page ix](#)
- [Documentation Conventions on page xi](#)
- [Documentation Feedback on page xiii](#)
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Documentation and Release Notes

To obtain the most current version of all Juniper Networks® technical documentation, see the product documentation page on the Juniper Networks website at <http://www.juniper.net/techpubs/>.

If the information in the latest release notes differs from the information in the documentation, follow the product Release Notes.

Juniper Networks Books publishes books by Juniper Networks engineers and subject matter experts. These books go beyond the technical documentation to explore the nuances of network architecture, deployment, and administration. The current list can be viewed at <http://www.juniper.net/books>.

Supported Platforms

For the features described in this document, the following platforms are supported:

- [M Series](#)
- [MX Series](#)
- [T Series](#)
- [PTX Series](#)

Using the Examples in This Manual

If you want to use the examples in this manual, you can use the **load merge** or the **load merge relative** command. These commands cause the software to merge the incoming configuration into the current candidate configuration. The example does not become active until you commit the candidate configuration.

If the example configuration contains the top level of the hierarchy (or multiple hierarchies), the example is a *full example*. In this case, use the **load merge** command.

If the example configuration does not start at the top level of the hierarchy, the example is a *snippet*. In this case, use the **load merge relative** command. These procedures are described in the following sections.

Merging a Full Example

To merge a full example, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration example into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following configuration to a file and name the file **ex-script.conf**. Copy the **ex-script.conf** file to the **/var/tmp** directory on your routing platform.

```
system {
  scripts {
    commit {
      file ex-script.xml;
    }
  }
}
interfaces {
  fxp0 {
    disable;
    unit 0 {
      family inet {
        address 10.0.0.1/24;
      }
    }
  }
}
```

2. Merge the contents of the file into your routing platform configuration by issuing the **load merge** configuration mode command:

```
[edit]
user@host# load merge /var/tmp/ex-script.conf
load complete
```

Merging a Snippet

To merge a snippet, follow these steps:

1. From the HTML or PDF version of the manual, copy a configuration snippet into a text file, save the file with a name, and copy the file to a directory on your routing platform.

For example, copy the following snippet to a file and name the file **ex-script-snippet.conf**. Copy the **ex-script-snippet.conf** file to the **/var/tmp** directory on your routing platform.

```
commit {
```

```
file ex-script-snippet.xml; }
```

2. Move to the hierarchy level that is relevant for this snippet by issuing the following configuration mode command:

```
[edit]
user@host# edit system scripts
[edit system scripts]
```

3. Merge the contents of the file into your routing platform configuration by issuing the **load merge relative** configuration mode command:







```
[edit system scripts]
user@host# load merge relative /var/tmp/ex-script-snippet.conf
load complete
```

For more information about the **load** command, see [CLI Explorer](#).

Documentation Conventions

[Table 1 on page xi](#) defines notice icons used in this guide.

Table 1: Notice Icons

Icon	Meaning	Description
	Informational note	Indicates important features or instructions.
	Caution	Indicates a situation that might result in loss of data or hardware damage.
	Warning	Alerts you to the risk of personal injury or death.
	Laser warning	Alerts you to the risk of personal injury from a laser.
	Tip	Indicates helpful information.
	Best practice	Alerts you to a recommended use or implementation.

[Table 2 on page xii](#) defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: user@host> configure
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> show chassis alarms No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces or emphasizes important new terms. Identifies guide names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS CLI User Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Encloses optional keywords or variables.	stub <default-metric <i>metric</i> >;
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	broadcast multicast (<i>string1</i> <i>string2</i> <i>string3</i>)
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	rsvp { # Required for dynamic MPLS only
[] (square brackets)	Encloses a variable for which you can substitute one or more values.	community name members [community-ids]
Indentation and braces ({ })	Identifies a level in the configuration hierarchy.	[edit] routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	

GUI Conventions

Table 2: Text and Syntax Conventions (*continued*)

Convention	Description	Examples
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> In the Logical Interfaces box, select All Interfaces. To cancel the configuration, click Cancel.
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select Protocols>Ospf .

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can provide feedback by using either of the following methods:

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- E-mail—Send your comments to techpubs-comments@juniper.net. Include the document or topic name, URL or page number, and software version (if applicable).

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or Partner Support Service support contract, or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

- JTAC policies—For a complete understanding of our JTAC procedures and policies, review the *JTAC User Guide* located at <http://www.juniper.net/us/en/local/pdf/resource-guides/7100059-en.pdf>.
- Product warranties—For product warranty information, visit <http://www.juniper.net/support/warranty/>.
- JTAC hours of operation—The JTAC centers have resources available 24 hours a day, 7 days a week, 365 days a year.

Self-Help Online Tools and Resources

For quick and easy problem resolution, Juniper Networks has designed an online self-service portal called the Customer Support Center (CSC) that provides you with the following features:

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- Search for known bugs: <http://www2.juniper.net/kb/>
- Find product documentation: <http://www.juniper.net/techpubs/>
- Find solutions and answer questions using our Knowledge Base: <http://kb.juniper.net/>
- Download the latest versions of software and review release notes:
<http://www.juniper.net/customers/csc/software/>
- Search technical bulletins for relevant hardware and software notifications:
<http://kb.juniper.net/InfoCenter/>
- Join and participate in the Juniper Networks Community Forum:
<http://www.juniper.net/company/communities/>
- Open a case online in the CSC Case Management tool: <http://www.juniper.net/cm/>

To verify service entitlement by product serial number, use our Serial Number Entitlement (SNE) Tool: <https://tools.juniper.net/SerialNumberEntitlementSearch/>

Opening a Case with JTAC

You can open a case with JTAC on the Web or by telephone.

- Use the Case Management tool in the CSC at <http://www.juniper.net/cm/>.
- Call 1-888-314-JTAC (1-888-314-5822 toll-free in the USA, Canada, and Mexico).

For international or direct-dial options in countries without toll-free numbers, see <http://www.juniper.net/support/requesting-support.html>.

PART 1

Overview

- [Network Access Configuration Overview on page 3](#)

CHAPTER 1

Network Access Configuration Overview

- [Network Access Configuration Overview on page 3](#)

Network Access Configuration Overview

The Junos operating system (Junos OS) enables you to configure network access features for the device at the **[edit access]** hierarchy level. This includes Layer 2 Tunneling Protocol (L2TP), Point-to-Point Protocol (PPP), and Subscriber Access configuration.

The PPP is an encapsulation protocol for transporting IP traffic across point-to-point links. For M7i, M10i, and M120 routers, you can configure L2TP tunneling security services on an Adaptive Services or a MultiServices Physical Interface Card (PIC).

The L2TP protocol allows PPP to be tunneled within a network.

For a complete hierarchy of access configuration statements, see [“Access Configuration Statements” on page 58](#).

For information about configuring Subscriber Access, see *Broadband Subscriber Sessions Feature Guide*

Related Documentation

- [Access Configuration Statements on page 58](#)
- [Configuring the PPP Authentication Protocol on page 8](#)
- [Configuring L2TP for Enabling PPP Tunneling Within a Network on page 12](#)
- [Defining the Minimum L2TP Configuration on page 13](#)
- [Configuring the Address Pool for L2TP Network Server IP Address Allocation on page 14](#)
- [Configuring the Group Profile for Defining L2TP Attributes on page 16](#)
- [Configuring Access Profiles for L2TP or PPP Parameters on page 19](#)

PART 2

Configuration

- [Configuring PPP and L2TP on page 7](#)
- [Configuring RADIUS Authentication for L2TP on page 37](#)
- [Configuration Statements on page 55](#)

CHAPTER 2

Configuring PPP and L2TP

- [Configuring the PPP Authentication Protocol on page 8](#)
- [Example: Configuring PPP CHAP on page 8](#)
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- [Configuring L2TP for Enabling PPP Tunneling Within a Network on page 12](#)
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Configuring the PPP Authentication Protocol

The Point-to-Point Protocol (PPP) is an encapsulation protocol for transporting IP traffic across point-to-point links. To configure PPP, you can configure the Challenge Handshake Authentication Protocol (CHAP). CHAP allows each end of a PPP link to authenticate its peer, as defined in RFC 1994. The authenticator sends its peer a randomly-generated challenge that the peer must encrypt using a one-way hash; the peer must then respond with that encrypted result. The key to the hash is a secret known only to the authenticator and authenticated. When the response is received, the authenticator compares its calculated result with the peer's response. If they match, the peer is authenticated.

Each end of the link identifies itself to its peer by including its name in the CHAP challenge and response packets it sends to the peer. This name defaults to the local hostname, or you can explicitly set it using the **local-name** option. When a host receives a CHAP challenge or CHAP response packet on a particular interface, it uses the peer identity to look up the CHAP secret key to use.

To configure CHAP, include the **profile** statement at the **[edit access]** hierarchy level:

```
[edit access]
profile profile-name {
  client client-name chap-secret chap-secret;
}
```

Then reference the CHAP profile name at the **[edit interfaces]** hierarchy level.

You can configure multiple CHAP profiles, and configure multiple clients for each profile.

Definitions:

- **profile** is the mapping between peer identifiers and CHAP secret keys. The identity of the peer contained in the CHAP challenge or response queries the profile for the secret key to use.
- **client** is the peer identity.
- **chap-secret** is the secret key associated with that peer.

Related Documentation

- [Example: Configuring PPP CHAP on page 8](#)
- [Example: Configuring CHAP Authentication with RADIUS on page 9](#)

Example: Configuring PPP CHAP

The following example shows how to configure the profile **pe-A-ppp-clients** at the **[edit access]** hierarchy level; then reference it at the **[edit interfaces]** hierarchy level:

```
[edit]
access {
  profile pe-A-ppp-clients {
    client cpe-1 chap-secret "$1$dQYsZ$B5oJueUjDsUo.yKwcCZ0";
    # SECRET-DATA
  }
}
```

```

        client cpe-2 chap-secret "$1$kdAsfaDAfkdjDsASxfafdKdFKJ";
        # SECRET-DATA
    }
}
interfaces {
    so-1/1/1 {
        encapsulation ppp;
        ppp-options {
            chap {
                access-profile pe-A-ppp-clients;
                local-name "pe-A-so-1/1/1";
            }
        }
    }
    so-1/1/2 {
        encapsulation ppp;
        ppp-options {
            chap {
                passive;
                access-profile pe-A-ppp-clients;
                local-name "pe-A-so-1/1/2";
            }
        }
    }
}

```

Related Documentation

- [Configuring the PPP Authentication Protocol on page 8](#)

Example: Configuring CHAP Authentication with RADIUS

You can send RADIUS messages through a routing instance to customer RADIUS servers in a private network. To configure the routing instance to send packets to a RADIUS server, include the **routing-instance** statement at the **[edit access profile profile-name radius-server]** hierarchy level and apply the profile to an interface with the **access-profile** statement at the **[edit interfaces interface-name unit logical-unit-number ppp-options chap]** hierarchy level.

In this example, PPP peers of interfaces **at-0/0/0.0** and **at-0/0/0.1** are authenticated by a RADIUS server reachable via routing instance **A**. PPP peers of interfaces **at-0/0/0.2** and **at-0/0/0.3** are authenticated by a RADIUS server reachable via routing instance **B**.

For more information about RADIUS authentication, see *Configuring RADIUS Server Authentication*.

```

system {
    radius-server {
        1.1.1.1 secret $9$dalkfj;
        2.2.2.2 secret $9$adsfaszx;
    }
}
routing-instances {
    A {
        instance-type vrf;
    }
}

```

```
...
}
B {
  instance-type vrf;
  ...
}
}
access {
  profile A-PPP-clients {
    authentication-order radius;
    radius-server {
      3.3.3.3 {
        port 3333;
        secret "$9$LO/7NbDjqmPQGDmT"; # # SECRET-DATA
        timeout 3;
        retry 3;
        source-address 99.99.99.99;
        routing-instance A;
      }
      4.4.4.4 {
        routing-instance A;
        secret $9$adsfaszx;
      }
    }
  }
  profile B-PPP-clients {
    authentication-order radius;
    radius-server {
      5.5.5.5 {
        routing-instance B;
        secret $9$kljhlkhl;
      }
      6.6.6.6 {
        routing-instance B;
        secret $9$kljhlkhl;
      }
    }
  }
}
interfaces {
  at-0/0/0 {
    atm-options {
      vpi 0;
    }
    unit 0 {
      encapsulation atm-ppp-llc;
      ppp-options {
        chap {
          access-profile A-PPP-clients;
        }
      }
      keepalives {
        interval 20;
        up-count 5;
        down-count 5;
      }
    }
  }
}
```



```

vci 0.128;
family inet {
    address 21.21.21.21/32 {
        destination 21.21.21.22;
    }
}
}
unit 1 {
    encapsulation atm-ppp-llc;
    ...
    ppp-options {
        chap {
            access-profile A-PPP-clients;
        }
    }
    ...
}
unit 2 {
    encapsulation atm-ppp-llc;
    ...
    ppp-options {
        chap {
            access-profile B-PPP-clients;
        }
    }
    ...
}
unit 3 {
    encapsulation atm-ppp-llc;
    ...
    ppp-options {
        chap {
            access-profile B-PPP-clients;
        }
    }
    ...
}
...
}
...
}

```

Users who log in to the router with telnet or SSH connections are authenticated by the RADIUS server 1.1.1.1. The backup RADIUS server for these users is 2.2.2.2.

Each profile may contain one or more backup RADIUS servers. In this example, PPP peers are CHAP authenticated by the RADIUS server 3.3.3.3 (with 4.4.4.4 as the backup server) or RADIUS server 5.5.5.5 (with 6.6.6.6 as the backup server).

Related Documentation

- [Configuring the Authentication Order on page 21](#)
- [Example: Configuring PPP CHAP on page 8](#)
- [Configuring the PPP Authentication Protocol on page 8](#)

Configuring L2TP for Enabling PPP Tunneling Within a Network

For M7i and M10i routers, you can configure Layer 2 Tunneling Protocol (L2TP) tunneling security services on an Adaptive Services Physical Interface Card (PIC) or a MultiServices PIC. The L2TP protocol allows Point-to-Point Protocol (PPP) to be tunneled within a network.



NOTE: For information about how to configure L2TP service, see the *Junos OS Services Interfaces Library for Routing Devices* and the *Junos OS Network Interfaces Library for Routing Devices*.

To configure L2TP, include the following statements at the **[edit access]** hierarchy level:

```
[edit access]
address-pool pool-name {
  address address-or-prefix;
  address-range low <lower-limit> high <upper-limit>;
}
group-profile profile-name {
  l2tp {
    interface-id interface-id;
    lcp-renegotiation;
    local-chap;
    maximum-sessions-per-tunnel number;
    ppp {
      cell-overhead;
      encapsulation-overhead bytes;
      framed-pool pool-id;
      idle-timeout seconds;
      interface-id interface-id;
      keepalive seconds;
      primary-dns primary-dns;
      primary-wins primary-wins;
      secondary-dns secondary-dns;
      secondary-wins secondary-wins;
    }
  }
}
profile profile-name {
  authentication-order [ authentication-methods ];
  accounting-order radius;
  client client-name {
    chap-secret chap-secret;
    group-profile profile-name;
    l2tp {
      interface-id interface-id;
      lcp-renegotiation;
      local-chap;
      maximum-sessions-per-tunnel number;
      ppp-authentication (chap | pap);
      shared-secret shared-secret;
    }
  }
  pap-password pap-password;
```

```
ppp {
  cell-overhead;
  encapsulation-overhead bytes;
  framed-ip-address ip-address;
  framed-pool framed-pool;
  idle-timeout seconds;
  interface-id interface-id;
  keepalive seconds;
  primary-dns primary-dns;
  primary-wins primary-wins;
  secondary-dns secondary-dns;
  secondary-wins secondary-wins;
}
user-group-profile profile-name;
}
}
radius-disconnect-port port-number {
  radius-disconnect {
    client-address {
      secret password;
    }
  }
}
radius-server server-address {
  accounting-port port-number;
  port port-number;
  retry attempts;
  routing-instance routing-instance-name;
  secret password;
  source-address source-address;
  timeout seconds;
}
}
```

- Related Documentation**
- [Defining the Minimum L2TP Configuration on page 13](#)
 - [Configuring RADIUS Authentication for L2TP on page 37](#)

Defining the Minimum L2TP Configuration

To define the minimum configuration for the Layer 2 Tunneling Protocol (L2TP), include at least the following statements at the **[edit access]** hierarchy level:

```
[edit access]
address-pool pool-name {
  address address-or-prefix;
  address-range low <lower-limit> high <upper-limit>;
}
profile profile-name {
  authentication-order [ authentication-methods ];
  client client-name {
    chap-secret chap-secret;
    l2tp {
      interface-id interface-id;
```

```

maximum-sessions-per-tunnel number;
ppp-authentication (chap | pap);
shared-secret shared-secret;
}
pap-password pap-password;
ppp {
    framed-ip-address ip-address;
    framed-pool framed-pool;
    interface-id interface-id;
    primary-dns primary-dns;
    primary-wins primary-wins;
    secondary-dns secondary-dns;
    secondary-wins secondary-wins;
}
}
radius-server server-address {
    accounting-port port-number;
    port port-number;
    retry attempts;
    secret password;
}

```



NOTE: When the L2TP network server (LNS) is configured with RADIUS authentication, the default behavior is to accept the preferred RADIUS-assigned IP address. Previously, the default behavior was to accept and install the nonzero peer IP address received in the Internet Protocol Control Protocol (IPCP) configuration request packet.

Related Documentation

- [Configuring the Address Pool for L2TP Network Server IP Address Allocation on page 14](#)

Configuring the Address Pool for L2TP Network Server IP Address Allocation

With an address pool, you configure an address or address range. When you define an address pool for a client, the L2TP network server (LNS) allocates IP addresses for clients from an address pool. If you do not want to use an address pool, you can specify an IP address by means of the **framed-ip-address** statement at the **[edit access profile *profile-name* client *client-name* ppp]** hierarchy level. For information about specifying an IP address, see “[Configuring PPP Properties for a Client-Specific Profile](#)” on page 31.



NOTE: When an address pool is modified or deleted, all the sessions using that pool are deleted.

To define an address or a range of addresses, include the **address-pool** statement at the **[edit access]** hierarchy level:

```

[edit access]
address-pool pool-name;

```

pool-name is the name assigned to the address pool.

To configure an address, include the **address** statement at the **[edit access address-pool pool-name]** hierarchy level:

```
[edit access address-pool pool-name]
address address-or-prefix;
```

address-or-prefix is one address or a prefix value.

When you specify an address range, it cannot exceed 65,535 IP addresses.

To configure the address range, include the **address-range** statement at the **[edit access address-pool pool-name]** hierarchy level:

```
[edit access address-pool pool-name]
address-range <low lower-limit> <high upper-limit>;
```

- **low lower-limit**—The lower limit of an address range.
- **high upper-limit**—The upper limit of an address range.



NOTE: The address pools for user access and Network Address Translation (NAT) can overlap. When you configure an address pool at the **[edit access address-pool pool-name]** hierarchy level, you can also configure an address pool at the **[edit services nat pool pool-name]** hierarchy level.

Related Documentation

- [Configuring the Group Profile for Defining L2TP Attributes on page 16](#)
- [Defining the Minimum L2TP Configuration on page 13](#)

Example: Configuring an Address-Assignment Pool

This example shows an address-assignment pool configuration that creates two pools, one for IPv4 DHCP clients (**isp_1**), and a second pool (**chi-fiber-ra**) that is used for router advertisement.

```
[edit access]
address-assignment {
  network-discovery-router-advertisement chi-fiber-ra;
  pool isp_1 {
    family inet {
      network 192.168.0.0/16;
      range southeast {
        low 192.168.102.2 high 192.168.102.254;
      }
      range northeast {
        low 192.168.119.2 high 192.168.119.250;
      }
    }
    host svale6.boston.example.net {
      hardware-address 00:00:5E:00:53:90;
      ip-address 192.168.44.12;
```

```

    }
    dhcp-attributes {
      option-match {
        option-82 {
          circuit-id fiber range northeast;
        }
        option-82 {
          circuit-id cable_net range southeast;
        }
      }
      boot-file boot.client;
      boot-server 192.168.200.100;
      grace-period 3600;
      maximum-lease-time 18000;
      netbios-node-type p-node;
      router 192.168.44.44 192.168.44.45;
    }
  }
}
pool chi-fiber-ra {
  family inet6 {
    prefix 2001:db8:2008:2009:2010::/48;
    range fiber3 {
      low 2001:db8:2008:2009:2010::1/64;
      high 2001:db8:2008:2009:2010::5/64;
    }
  }
}
}

```

This example creates an IPv4 address-assignment pool named **isp-1**, which contains two named address ranges, **southeast** and **northeast**. The address-assignment pool also contains a static binding for client **host sval6.boston.example.net**. The **ISP_1** pool configuration also includes the **dhcp-attributes** statement, indicating that the pool is used for DHCP clients. If the option 82 **circuit-id** entry matches the string **fiber**, then DHCP assigns the client an address from the **northeast** range. If the option 82 **circuit-id** matches the string **cable_net**, DHCP assigns an address from the **southeast** range.

The second address-assignment pool created in this example is **chi-fiber-ra**. The **neighbor-discovery-router-advertisement** statement at the beginning of the syntax specifies that this named address-assignment pool is used for router advertisement. The syntax at the end of the example configures the address-assignment pool named **chi-fiber-ra**.

- Related Documentation**
- *Address-Assignment Pools Overview*
 - *Configuring Address-Assignment Pools*

Configuring the Group Profile for Defining L2TP Attributes

Optionally, you can configure the group profile to define the Point-to-Point Protocol (PPP) or Layer 2 Tunneling Protocol (L2TP) attributes. Any client referencing the configured group profile inherits all the group profile attributes.



NOTE: The `group-profile` statement overrides the `user-group-profile` statement, which is configured at the `[edit access profile profile-name]` hierarchy level. The `profile` statement overrides the attributes configured at the `[edit access group-profile profile-name]` hierarchy level. For information about the `user-group-profile` statement, see “Applying a Configured PPP Group Profile to a Tunnel” on page 33.

Tasks for configuring the group profile are:

1. [Configuring L2TP for a Group Profile on page 17](#)
2. [Configuring the PPP Attributes for a Group Profile on page 17](#)

Configuring L2TP for a Group Profile

To configure the Layer 2 Tunneling Protocol (L2TP) for the group profile, include the following statements at the `[edit access group-profile profile-name l2tp]` hierarchy level:

```
[edit access group-profile profile-name l2tp]
interface-id interface-id;
lcp-renegotiation;
local-chap;
maximum-sessions-per-tunnel number;
```

interface-id is the identifier for the interface representing an L2TP session configured at the `[edit interfaces interface-name unit local-unit-number dial-options]` hierarchy level.

You can configure the LNS so that it renegotiates the link control protocol (LCP) with the PPP client (in the `renegotiation` statement). By default, the PPP client negotiates the LCP with the L2TP access concentrator (LAC). When you do this, the LNS discards the last sent and the last received LCP configuration request attribute value pairs (AVPs) from the LAC; for example, the LCP negotiated between the PPP client and the LAC.

You can configure the Junos OS so that the LNS ignores proxy authentication AVPs from the LAC and reauthenticates the PPP client using a CHAP challenge (in the `local-chap` statement). When you do this, the LNS directly authenticates the PPP client. By default, the PPP client is not reauthenticated by the LNS.

number is the maximum number of sessions per L2TP tunnel.

Configuring the PPP Attributes for a Group Profile

To configure the Point-to-Point Protocol (PPP) attributes for a group profile, include the following statements at the `[edit access group-profile profile-name ppp]` hierarchy level:

```
[edit access group-profile profile-name ppp]
cell-overhead;
encapsulation-overhead bytes;
framed-pool pool-id;
idle-timeout seconds;
interface-id interface-id;
keepalive seconds;
primary-dns primary-dns;
```

```
primary-wins primary-wins;  
secondary-dns secondary-dns;  
secondary-wins secondary-wins;
```

The **cell-overhead** statement configures the session to use Asynchronous Transfer Mode (ATM)-aware egress shaping on the IQ2 PIC.

bytes (in the **encapsulation-overhead** statement) configures the number of bytes used as overhead for class-of-service calculations.

pool-id (in the **framed-pool** statement) is the name assigned to the address pool.

seconds (in the **idle-timeout** statement) is the number of seconds a user can remain idle before the session is terminated. By default, idle timeout is set to 0. You can configure this to be a value in the range from 0 through 4,294,967,295.

interface-id (in the **interface-id** statement) is the identifier for the interface representing an L2TP session configured at the **[edit interfaces interface-name unit local-unit-number dial-options]** hierarchy level.

seconds (in the **keepalive** statement) is the time period that must elapse before the Junos OS checks the status of the PPP session by sending an echo request to the peer. For each session, Junos OS sends out three keepalives at 10-second intervals and the session is close if there is no response. By default, the time to send a keepalive message is set to 10 seconds. You configure this to be a value in the range from 0 through 32,767.

primary-dns (in the **primary-dns** statement) is an IP version 4 (IPv4) address.

secondary-dns (in the **secondary-dns** statement) is an IPv4 address.

primary-wins (in the **primary-wins** statement) is an IPv4 address.

secondary-wins (in the **secondary-wins** statement) is an IPv4 address.

Example: Group Profile Configuration

The following example shows how to configure an L2TP and PPP group profile:

```
[edit access]  
group-profile westcoast_users {  
  ppp {  
    framed-pool customer_a;  
    keepalive 15;  
    primary-dns 192.120.65.1;  
    secondary-dns 192.120.65.2;  
    primary-wins 192.120.65.3;  
    secondary-wins 192.120.65.4;  
    interface-id west  
  }  
}  
group-profile eastcoast_users {  
  ppp {  
    framed-pool customer_b;  
    keepalive 15;  
    primary-dns 192.120.65.5;
```



```
secondary-dns 192.120.65.6;
primary-wins 192.120.65.7;
secondary-wins 192.120.65.8;
interface-id east;
}
}
group-profile westcoast_tunnel {
  l2tp {
    maximum-sessions-per-tunnel 100;
  }
}
group-profile east_tunnel {
  l2tp {
    maximum-sessions-per-tunnel 125;
  }
}
```

- Related Documentation**
- [Configuring the Group Profile for Defining L2TP Attributes on page 16](#)
 - [Defining the Minimum L2TP Configuration on page 13](#)
 - [Referencing the Group Profile from the L2TP Profile on page 27](#)

Configuring Access Profiles for L2TP or PPP Parameters

To validate Layer 2 Tunneling Protocol (L2TP) connections and session requests, you set up access profiles by configuring the profile statement at the **[edit access]** hierarchy level. You can configure multiple profiles. You can also configure multiple clients for each profile.

Tasks for configuring the access profile are:

1. [Configuring the Access Profile on page 19](#)
2. [Configuring the L2TP Properties for a Profile on page 20](#)
3. [Configuring the PPP Properties for a Profile on page 20](#)
4. [Configuring the Authentication Order on page 21](#)
5. [Configuring the Accounting Order on page 21](#)
6. [Example: Access Profile Configuration on page 22](#)

Configuring the Access Profile

To configure the profile, include the **profile** statement at the **[edit access]** hierarchy level:

```
[edit access]
profile profile-name;
```

profile-name is the name assigned to the profile.



NOTE: The `group-profile` statement overrides the `user-group-profile` statement, which is configured at the `[edit access profile profile-name]` hierarchy level. The `profile` statement overrides the attributes configured at the `[edit access group-profile profile-name]` hierarchy level. For information about the `user-group-profile` statement, see [“Applying a Configured PPP Group Profile to a Tunnel” on page 33](#).

When you configure a profile, you can only configure either L2TP or PPP parameters. You cannot configure both at the same time.

Configuring the L2TP Properties for a Profile

To configure the Layer 2 Tunneling Protocol (L2TP) properties for a profile, include the following statements at the `[edit access profile profile-name]` hierarchy level:

```
[edit access profile profile-name]
authentication-order [ authentication-methods ];
accounting-order radius;
client client-name {
  group-profile profile-name;
  l2tp {
    interface-id interface-id;
    lcp-renegotiation;
    local-chap;
    maximum-sessions-per-tunnel number;
    ppp-authentication (chap | pap);
    shared-secret shared-secret;
  }
}
```

Configuring the PPP Properties for a Profile

To configure the PPP properties for a profile, include the following statements at the `[edit access profile profile-name]` hierarchy level:

```
[edit access profile profile-name]
authentication-order [ authentication-methods ];
client client-name {
  chap-secret chap-secret;
  group-profile profile-name;
  pap-password pap-password;
  ppp {
    cell-overhead;
    encapsulation-overhead bytes;
    framed-ip-address ip-address;
    framed-pool framed-pool;
    idle-timeout seconds;
    interface-id interface-id;
    keepalive seconds;
    primary-dns primary-dns;
    primary-wins primary-wins;
    secondary-dns secondary-dns;
  }
}
```

```

secondary-wins secondary-wins;
}
}

```



NOTE: When you configure PPP properties for a profile, you typically configure the `chap-secret` statement or `pap-password` statement.

Configuring the Authentication Order

You can configure the order in which the Junos OS tries different authentication methods when authenticating peers. For each access attempt, the software tries the authentication methods in order, from first to last.

To configure the authentication order, include the **authentication-order** statement at the **[edit access profile *profile-name*]** hierarchy level:

```

[edit access profile profile-name]
authentication-order [ authentication-methods ];

```

In ***authentication-methods***, specify one or more of the following in the preferred order, from first tried to last tried:

- **radius**—Verify the client using RADIUS authentication services.
- **password**—Verify the client using the information configured at the **[edit access profile *profile-name* client *client-name*]** hierarchy level.



NOTE: When you configure the authentication methods for L2TP, only the first configured authentication method is used.

For L2TP, RADIUS authentication servers are configured at the **[edit access radius-server]** hierarchy level. For more information about configuring RADIUS authentication servers, see “Configuring RADIUS Authentication for L2TP” on page 37.

If you do not include the **authentication-order** statement, clients are verified by means of **password** authentication.

Configuring the Accounting Order

You can configure RADIUS accounting for an L2TP profile.

With RADIUS accounting enabled, Juniper Networks routers or switches, acting as RADIUS clients, can notify the RADIUS server about user activities such as software logins, configuration changes, and interactive commands. The framework for RADIUS accounting is described in RFC 2866.

To configure RADIUS accounting, include the **accounting-order** statement at the **[edit access profile *profile-name*]** hierarchy level:

```

[edit access profile profile-name]
accounting-order radius;

```

When you enable RADIUS accounting for an L2TP profile, it applies to all the clients within that profile. You must enable RADIUS accounting on at least one L2TP profile for the RADIUS authentication server to send accounting stop and start messages.



NOTE: When you enable RADIUS accounting for an L2TP profile, you do not need to configure the `accounting-port` statement at the `[edit access radius-server server-address]` hierarchy level. When you enable RADIUS accounting for an L2TP profile, accounting is triggered on the default port of 1813.

For L2TP, RADIUS authentication servers are configured at the `[edit access radius-server]` hierarchy level.

Example: Access Profile Configuration

The following example shows a configuration of an access profile:

```
[edit access]
profile westcoast_bldg_1 {
  client white {
    chap-secret "$9$3s2690leK8X7VKM7VwgaJn/Ctu1hclv87Ct87";
    # SECRET-DATA
    ppp {
      idle-timeout 22;
      primary-dns 192.120.65.10;
      framed-ip-address 12.12.12.12/32;
    }
    group-profile westcoast_users;
  }
  client blue {
    chap-secret "$9$eq1KWxbwgZUHNdjmqmTF3uO1Rhr-dsoJDNd";
    # SECRET-DATA
    group-profile sunnyvale_users;
  }
  authentication-order password;
}
profile westcoast_bldg_1_tunnel {
  client test {
    l2tp {
      shared-secret "$9$r3HKvLg4ZUDkX7JGjif5pOBIRS8LN";
      # SECRET-DATA
      maximum-sessions-per-tunnel 75;
      ppp-authentication chap;
    }
    group-profile westcoast_tunnel;
  }
}
client production {
  l2tp {
    shared-secret "$9$R2QErV8X-goGylVwg4jiTz36/t0BEleWFnRh
rlXxbs2aJDHqf3nCP5";
    # SECRET-DATA
    ppp-authentication chap;
  }
}
```

```

    }
    group-profile westcoast_tunnel;
  }
}

```

Configuring an IKE Access Profile

An Internet Key Exchange (IKE) access profile is used to negotiate IKE and IPsec security associations with dynamic peers. You can configure only one tunnel profile per service set for all dynamic peers. The configured preshared key in the profile is used for IKE authentication of all dynamic peers terminating in that service set. You can also use the digital certificate method for IKE authentication with dynamic peers. Include the **ike-policy** *policy-name* statement at the **[edit access profile *profile-name* client * ike]** hierarchy level. *policy-name* is the name of the IKE policy you define at the **[edit services ipsec-vpn ike policy *policy-name*]** hierarchy level.

The IKE tunnel profile specifies all the information you need to complete the IKE negotiation. Each protocol has its own statement hierarchy within the client statement to configure protocol-specific attribute value pairs, but only one client configuration is allowed for each profile. The following is the configuration hierarchy.

```

[edit access]
profile profile-name {
  client * {
    ike {
      allowed-proxy-pair {
        remote remote-proxy-address local local-proxy-address;
      }
      dead-peer-detection {
        interval seconds
        threshold number
      }
      ike-policy policy-name;
      initiate-dead-peer-detection;
      interface-id string-value;
      ipsec-policy ipsec-policy;
      pre-shared-key (ascii-text character-string | hexadecimal hexadecimal-digits);
      reverse-route
    }
  }
}

```

For dynamic peers, the Junos OS supports only IKE main mode with both the preshared key and digital certificate methods. In this mode, an IPv6 or IPv4 address is used to identify a tunnel peer to obtain the preshared key or digital certificate information. The client value * (wildcard) means that configuration within this profile is valid for all dynamic peers terminating within the service set accessing this profile.

The following statement makes up the IKE profile:

- **allowed-proxy-pair**—During phase 2 IKE negotiation, the remote peer supplies its network address (**remote**) and its peer's network address (**local**). Since multiple dynamic tunnels are authenticated through the same mechanism, this statement must include the list of possible combinations. If the dynamic peer does not present a valid combination, the phase 2 IKE negotiation fails.

By default, **remote 0.0.0.0/0 local 0.0.0.0/0** is used if no values are configured.

- **dead-peer-detection**—Enable the device to use dead peer detection (DPD). DPD is a method used by devices to verify the current existence and availability of IPsec peer devices. A device performs this verification by sending encrypted IKE Phase 1 notification payloads (R-U-THERE) to peers and waiting for DPD acknowledgements (R-U-THERE-ACK). Use the option **interval** to specify the seconds between which messages should be sent. Use the **threshold** option to specify the maximum number of messages (1-10) to be sent.
- **ike-policy**—Name of the IKE policy that defines either the local digital certificate or the preshared key used to authenticate the dynamic peer during IKE negotiation. You must include this statement to use the digital certificate method for IKE authentication with a dynamic peer. You define the IKE policy at the **[edit services ipsec-vpn ike policy policy-name]** hierarchy level.
- **initiate-dead-peer-detection**—Detects dead peers on dynamic IPsec tunnels.
- **interface-id**—Interface identifier, a mandatory attribute used to derive the logical service interface information for the session.
- **ipsec-policy**—Name of the IPsec policy that defines the IPsec policy information for the session. You define the IPsec policy at the **[edit services ipsec-vpn ipsec policy policy-name]** hierarchy level. If no policy is set, any policy proposed by the dynamic peer is accepted.
- **pre-shared-key**—Key used to authenticate the dynamic peer during IKE phase 1 negotiation. This key is known to both ends through an out-of-band secure mechanism. You can configure the value either in **hexadecimal** or **ascii-text** format. It is a mandatory value.
- **reverse-route** —(M Series and MX Series routers with an AS or MultiServices PIC only) Configure a reverse route for dynamic endpoint IPsec tunnels.

**Related
Documentation**

- [Configuring Access Profiles for L2TP or PPP Parameters on page 19](#)

Configuring the L2TP Client

To configure the client, include the **client** statement at the **[edit access profile profile-name]** hierarchy level:

```
[edit access profile profile-name]  
client client-name;
```

client-name is the peer identity.

For L2TP, you can optionally use the wildcard (*) to define a default tunnel client to authenticate multiple LACs with the same secret and L2TP attributes. If an LAC with a specific name is not defined in the configuration, the wildcard tunnel client authenticates it.



NOTE: The * for the default client configuration applies only to M Series routers. On MX Series routers, use default instead. See *Configuring an L2TP Access Profile on the LNS* for more about MX Series routers.

Related Documentation

- [Example: Defining the Default Tunnel Client on page 25](#)

Example: Defining the Default Tunnel Client

Use the wildcard (*) to define a default tunnel client to authenticate multiple LACs with the same secret:

```
[edit access profile profile-name]
client * {
  l2tp {
    interface-id interface;
    lcp-renegotiation;
    local-chap;
    maximum-sessions-per-tunnel 500;
    ppp-authentication chap;
    shared-secret "$1$dQYsZ$B5ojUeUjDsUo.yKwcCZ0";
  }
}
```

For any tunnel client, you can optionally use the user group profile to define default PPP attributes for all users coming in through a tunnel. The user group profile must define PPP attributes. If the user group profile is specified, all users (PPP sessions) use the PPP attributes specified in the user group profile. The PPP attributes specified in the local or RADIUS server take precedence over those specified in the user group profile.

Optionally, you can use a wildcard client to define a user group profile. When you do this, any client entering this tunnel uses the PPP attributes (defined user group profile attributes) as its default PPP attributes.

Related Documentation

- [Configuring the L2TP Client on page 24](#)
- [Example: Defining the User Group Profile on page 25](#)

Example: Defining the User Group Profile

Use a wildcard client to define a user group profile:

```
[edit access profile profile]  
client * {  
    user-group-profile user-group-profile1;  
}
```

Related Documentation

- [Applying a Configured PPP Group Profile to a Tunnel on page 33.](#)

Configuring the CHAP Secret for an L2TP Profile

CHAP allows each end of a PPP link to authenticate its peer, as defined in RFC 1994. The authenticator sends its peer a randomly generated challenge that the peer must encrypt using a one-way hash; the peer must then respond with that encrypted result. The key to the hash is a secret known only to the authenticator and authenticated. When the response is received, the authenticator compares its calculated result with the peer's response. If they match, the peer is authenticated.

Each end of the link identifies itself to its peer by including its name in the CHAP challenge and response packets it sends to the peer. This name defaults to the local hostname, or you can explicitly set it using the **local-name** option. When a host receives a CHAP challenge or CHAP response packet on a particular interface, it uses the peer identity to look up the CHAP secret key to use.



NOTE: When you configure PPP properties for a Layer 2 Tunneling Protocol (L2TP) profile, you typically configure the **chap-secret** statement or **pap-password** statement.

To configure CHAP, include the **profile** statement and specify a profile name at the **[edit access]** hierarchy level:

```
[edit access]  
profile profile-name {  
    client client-name chap-secret data;  
}
```

Then reference the CHAP profile name at the **[edit interfaces *interface-name* ppp-options chap]** hierarchy level.

You can configure multiple profiles. You can also configure multiple clients for each profile.

profile is the mapping between peer identifiers and CHAP secret keys. The identity of the peer contained in the CHAP challenge or response queries the profile for the secret key to use.

client is the peer identity.

chap-secret *secret* is the secret key associated with that peer.

- Related Documentation**
- [Example: Configuring L2TP PPP CHAP on page 27](#)

Example: Configuring L2TP PPP CHAP

Configure the profile **westcoast_bldg1** at the **[edit access]** hierarchy level, then reference it at the **[edit interfaces]** hierarchy level:

```
[edit]
access {
  profile westcoast_bldg1 {
    client cpe-1 chap-secret "$1$dQYsZ$B5ojUeUjDsUo.yKwcCZ0";
    # SECRET-DATA
    client cpe-2 chap-secret "$1$kdAsfaDAfkjDsASxfafdkdFKJ";
    # SECRET-DATA
  }
}
```

- Related Documentation**
- [Configuring the CHAP Secret for an L2TP Profile on page 26](#)

Referencing the Group Profile from the L2TP Profile

You can reference a configured group profile from the L2TP tunnel profile.

To reference the group profile configured at the **[edit access group-profile *profile-name*]** hierarchy level, include the **group-profile** statement at the **[edit access profile *profile-name* client *client-name*]** hierarchy level:

```
[edit access profile profile-name client client-name]
  group-profile profile-name;
```

profile-name references a configured group profile from a PPP user profile.

- Related Documentation**
- [Example: Defining the User Group Profile on page 25](#)
 - [Configuring Access Profiles for L2TP or PPP Parameters on page 19](#)
 - [Configuring L2TP Properties for a Client-Specific Profile on page 27](#)

Configuring L2TP Properties for a Client-Specific Profile

To define L2TP properties for a client-specific profile, include one or more of the following statements at the **[edit access profile *profile-name* client *client-name* l2tp]** hierarchy level:



NOTE: When you configure the profile, you can configure either L2TP or PPP parameters, but not both at the same time.

```
[edit access profile profile-name client client-name l2tp]
  interface-id interface-id;
```

```
lcp-renegotiation;  
local-chap;  
maximum-sessions-per-tunnel number;  
multilink {  
    drop-timeout milliseconds;  
    fragment-threshold bytes;  
}  
ppp-authentication (chap | pap);  
shared-secret shared-secret;
```

interface-id (in the **interface-id** statement) is the identifier for the interface representing an L2TP session configured at the [edit interfaces *interface-name* unit *local-unit-number* dial-options] hierarchy level.

number (in the **maximum-sessions-per-tunnel** statement) is the maximum number of sessions for an L2TP tunnel.

shared-secret (in the **shared-secret** statement) is the shared secret for authenticating the peer.

You can specify PPP authentication (in the **ppp-authentication** statement). By default, the PPP authentication uses CHAP. You can configure this to use Password Authentication Protocol (PAP).

You can configure LNS so it renegotiates LCP with the PPP client (in the **lcp-negotiation** statement). By default, the PPP client negotiates the LCP with the LAC. When you do this, the LNS discards the last sent LCP configuration request and last received LCP configuration request AVPs from the LAC; for example, the LCP negotiated between the PPP client and LAC.

You can configure the Junos OS so that the LNS ignores proxy authentication AVPs from the LAC and reauthenticates the PPP client using a CHAP challenge (in the **local-chap** statement). By default, the PPP client is not reauthenticated by the LNS. When you do this, the LNS directly authenticates the PPP client.

You can configure the PPP MP for L2TP if the PPP sessions that are coming into the LNS from the LAC have multilink PPP negotiated. When you do this, you join multilink bundles based on the endpoint discriminator (in the **multilink** statement).

- **milliseconds** (in the **drop-timeout** statement) specifies the number of milliseconds for the timeout that associated with the first fragment on the reassembly queue. If the timeout expires before all the fragments have been collected, the fragments at the beginning of the reassembly queue are dropped. If the drop timeout is not specified, the Junos OS holds on to the fragments (fragments may still be dropped if the multilink reassembly algorithm determines that another fragment belonging to the packet on a reassembly queue has been lost).



NOTE: The drop timeout and fragmentation threshold for a bundled multilink might belong to different tunnels. The different tunnels might have different drop timeout and fragmentation thresholds. We recommend configuring group profiles instead of profiles when you have L2TP tunnels.

- **bytes** specifies the maximum size of a packet, in bytes (in the [fragment-threshold](#) statement). If a packet exceeds the fragmentation threshold, the Junos OS fragments it into two or more multilink fragments.

**Related
Documentation**

- [Configuring PPP Properties for a Client-Specific Profile on page 31](#)
- [Example: PPP MP for L2TP on page 29](#)
- [Example: L2TP Multilink PPP Support on Shared Interfaces on page 29](#)

Example: PPP MP for L2TP

Join multilink bundles based on the endpoint discriminator:

```
[edit access]
profile tunnel-profile {
  client remote-host {
    l2tp {
      multilink {
        drop-timeout 600;
        fragmentation-threshold 100;
      }
    }
  }
}
```

**Related
Documentation**

- [Referencing the Group Profile from the L2TP Profile on page 27](#)
- [Example: L2TP Multilink PPP Support on Shared Interfaces on page 29](#)

Example: L2TP Multilink PPP Support on Shared Interfaces

On M7i and M10i routers, L2TP multilink PPP sessions are supported on both dedicated and shared interfaces. This example shows how to configure many multilink bundles on a single ASP shared interface.

```
[edit]
interfaces {
  sp-1/3/0 {
    traceoptions {
      flag all;
    }
    unit 0 {
      family inet;
    }
    unit 20 {
      dial-options {
        l2tp-interface-id test;
        shared;
      }
      family inet;
    }
  }
}
```

```
    }
  }
  access {
    profile t {
      client cholera {
        l2tp {
          interface-id test;
          multilink;
          shared-secret "$9$n8HX6A01RhIvL1R"; # SECRET-DATA
        }
      }
    }
  }
  profile u {
    authentication-order radius;
  }
  radius-server {
    192.168.65.63 {
      port 1812;
      secret "$9$Vyb4ZHkPQ39mf9pORlexNdbgoZUjqP5"; # SECRET-DATA
    }
  }
}
services {
  l2tp {
    tunnel-group 1 {
      tunnel-access-profile t;
      user-access-profile u;
      local-gateway {
        address 10.70.1.1;
      }
      service-interface sp-1/3/0;
    }
    traceoptions {
      flag all;
      debug-level packet-dump;
      filter {
        protocol l2tp;
        protocol ppp;
        protocol radius;
      }
    }
  }
}
```

Related Documentation

- [Referencing the Group Profile from the L2TP Profile on page 27](#)

Configuring the PAP Password for an L2TP Profile

When you configure PPP properties for an L2TP profile, you typically configure the **chap-secret** statement or **pap-password** statement. For information about how to configure the CHAP secret, see [“Configuring the CHAP Secret for an L2TP Profile” on page 26](#).

To configure the Password Authentication Protocol (PAP) password, include the **pap-password** statement at the **[edit access profile *profile-name* client *client-name*]** hierarchy level:

```
[edit access profile profile-name client client-name]  
pap-password pap-password;
```

pap-password is the password for PAP.

Related Documentation

- [Example: Configuring PAP for an L2TP Profile on page 31](#)

Example: Configuring PAP for an L2TP Profile

The following examples shows you how to configure the password authentication protocol for an L2TP profile:

```
[edit access]  
profile sunnyvale_bldg_2 {  
  client green {  
    pap-password "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3";  
    ppp {  
      interface-id west;  
    }  
    group-profile sunnyvale_users;  
  }  
  client red {  
    chap-secret "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3";  
    group-profile sunnyvale_users;  
  }  
  authentication-order radius;  
}  
profile Sunnyvale_bldg_1_tunnel {  
  client test {  
    l2tp {  
      shared-secret "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3";  
      ppp-authentication pap;  
    }  
  }  
}
```

Related Documentation

- [Configuring the PAP Password for an L2TP Profile on page 30](#)

Configuring PPP Properties for a Client-Specific Profile

To define PPP properties for a profile, include one or more of the following statements at the **[edit access profile *profile-name* client *client-name* ppp]** hierarchy level.



NOTE: The properties defined in the profile take precedence over the values defined in the group profile.

```
[edit access profile profile-name client client-name ppp]
cell-overhead;
encapsulation-overhead bytes;
framed-ip-address ip-address;
framed-pool pool-id;
idle-timeout seconds;
interface-id interface-id;
keepalive seconds;
keepalive-retries number-of-retries;
primary-dns primary-dns;
primary-wins primary-wins;
secondary-dns secondary-dns;
secondary-wins secondary-wins;
```



NOTE: When you configure a profile, you can configure either L2TP or PPP parameters, but not both at the same time.

The **cell-overhead** statement configures the session to use ATM-aware egress shaping on the IQ2 PIC.

bytes (in the **encapsulation-overhead** statement) configures the number of bytes used as overhead for class-of-service calculations.

ip-address (in the **framed-ip-address** statement) is the IPv4 prefix.

pool-id (in the **framed-pool** statement) is a configured address pool.

seconds (in the **idle-timeout** statement) is the number of seconds a user can remain idle before the session is terminated. By default, idle timeout is set to 0. You can configure this to be a value in the range from 0 through 4,294,967,295.

interface-id (in the **interface-id** statement) is the identifier for the interface representing an L2TP session configured at the **[edit interfaces *interface-name* unit *local-unit-number* dial-options]** hierarchy level.

keepalive seconds is the time period that must elapse before the Junos OS checks the status of the PPP session by sending an echo request to the peer. For each session, Junos OS sends a maximum of ten keepalives at 10-second intervals and the session is closed if there is no response. By default, the time to send a keepalive messages is set to 10 seconds. You can configure this to be a value in the range from 0 through 32,767 seconds.

keepalive-retries *number-of-retries* is the number of retry attempts for checking the keepalive status of a Point-to-Point (PPP) protocol session. Configuring a lower number of retries helps reduce the detection time for PPP client session failures or timeouts if you have configured a **keepalive seconds** value. By default, the number of retries is set to 10 times. You can configure this to be a value in the range from 3 through 32,767 times.

primary-dns (in the **primary-dns** statement) is an IPv4 address.

secondary-dns (in the **secondary-dns** statement) is an IPv4 address.

primary-wins (in the **primary-wins** statement) is an IPv4 address.

secondary-wins (in the *secondary-wins* statement) is an IPv4 address.

- Related Documentation**
- [Configuring L2TP Properties for a Client-Specific Profile on page 27](#)

Applying a Configured PPP Group Profile to a Tunnel

On Mi7 and M10i routers, you can optionally apply a configured PPP group profile to a tunnel. For any tunnel client, you can use the **user-group-profile** statement to define default PPP attributes for all users coming in through a tunnel. The user group profile must define PPP attributes. If the user group profile is specified, all users (PPP sessions) use the PPP attributes specified in the user group profile.

When a PPP client enters a tunnel, the Junos OS first applies the PPP user group profile attributes and then any PPP attributes from the local or RADIUS server. The PPP attributes defined in the RADIUS or local server take precedence over the attributes defined in the user group profile.

To apply configured PPP attributes to a PPP client, include the **user-group-profile** statement at the **[edit access profile *profile-name* client *client-name*]** hierarchy level:

```
[edit access profile profile-name client client-name]
  user-group-profile profile-name;
```

profile-name is a PPP group profile configured at the **[edit access group-profile *profile-name*]** hierarchy level. When a client enters this tunnel, it uses the **user-group-profile** attributes as the default attributes.

- Related Documentation**
- [Example: Applying a User Group Profile on the M7i or M10i Router on page 33](#)
 - [Example: Defining the User Group Profile on page 25](#)

Example: Applying a User Group Profile on the M7i or M10i Router

The following example shows how to apply a configured PPP group profile to a tunnel:

```
[edit access]
group-profile westcoast_users {
  ppp {
    idle-timeout 100;
  }
}
group-profile westcoast_default_configuration {
  ppp {
    framed-pool customer_b;
    idle-timeout 20;
    interface-id west;
    primary-dns 192.120.65.5;
    secondary-dns 192.120.65.6;
    primary-wins 192.120.65.7;
    secondary-wins 192.120.65.8;
  }
}
```

```
}
profile westcoast_bldg_1_tunnel {
  client test {
    l2tp {
      interface-id west;
      shared-secret "$9$r3HKvLg4ZUDkX7JGjif5p0BIRS8LN";
      # SECRET-DATA
      maximum-sessions-per-tunnel 75;
      ppp-authentication chap;
    }
    user-group-profile westcoast_default_configuration; # Apply default PPP
  }
}
profile westcoast_bldg_1 {
  client white {
    chap-secret "$9$3s2690leK8X7VKM7VwgaJn/Ctu1hclv87Ct87";
    # SECRET-DATA
    ppp {
      idle-timeout 22;
      primary-dns 192.120.65.9;
      framed-ip-address 12.12.12.12/32;
    }
    group-profile westcoast_users; # Reference the west_users group
  }
}
```

**Related
Documentation**

- [Applying a Configured PPP Group Profile to a Tunnel on page 33](#)

Example: Configuring L2TP

The following example shows how to configure L2TP:

```
[edit]
access {
  address-pool customer_a {
    address 1.1.1.1/32;
  }
  address-pool customer_b {
    address-range low 2.2.2.2 high 2.2.3.2;
  }
  group-profile westcoast_users {
    ppp {
      framed-pool customer_a;
      idle-timeout 15;
      primary-dns 192.120.65.1;
      secondary-dns 192.120.65.2;
      primary-wins 192.120.65.3;
      secondary-wins 192.120.65.4;
      interface-id west;
    }
  }
  group-profile eastcoast_users {
    ppp {
      framed-pool customer_b;
```



```

        idle-timeout 20;
        primary-dns 192.120.65.5;
        secondary-dns 192.120.65.6;
        primary-wins 192.120.65.7;
        secondary-wins 192.120.65.8;
        interface-id east;
    }
}
group-profile westcoast_tunnel {
    l2tp {
        maximum-sessions-per-tunnel 100;
    }
}
group-profile east_tunnel {
    l2tp {
        maximum-sessions-per-tunnel 125;
    }
}
profile westcoast_bldg_1 {
    client white {
        chap-secret "$9$3s2690leK8X7VKM7VwgaJn/Ctu1hclv87Ct87";
        # SECRET-DATA
        ppp {
            idle-timeout 22;
            primary-dns 192.120.65.10;
            framed-ip-address 12.12.12.12/32;
        }
        group-profile westcoast_users;
    }
    client blue {
        chap-secret "$9$eq1KWxbwgZUHNdjmqmTF3uO1Rhr-dsoJDNd";
        # SECRET-DATA
        group-profile sunnyvale_users;
    }
    authentication-order password;
}
profile west-coast_bldg_2 {
    client red {
        pap-password "$9$3s2690leK8X7VKM8888Ctu1hclv87Ct87";
        # SECRET-DATA
        ppp {
            idle-timeout 22;
            primary-dns 192.120.65.11;
            framed-ip-address 12.12.12.12/32;
        }
        group-profile westcoast_users;
    }
}
profile westcoast_bldg_1_tunnel {
    client test {
        l2tp {
            shared-secret "$9$r3HKvLg4ZUDkX7JGjif5p0BIRS8LN";
            # SECRET-DATA
            maximum-sessions-per-tunnel 75;
            ppp-authentication chap;# The default for PPP authentication is CHAP.
        }
    }
}

```

```
        group-profile westcoast_tunnel;
    }
    client production {
        l2tp {
            shared-secret "$9$R2QErV8X-goGylVwg4jiTz36/t0BEleWFnRh
            rXxbs2aJDHqf3nCP5"; # SECRET-DATA
            ppp-authentication chap;
        }
        group-profile westcoast_tunnel;
    }
}
profile westcoast_bldg_2_tunnel {
    client black {
        l2tp {
            shared-secret "$9$R2QErV8X-goGylVwg4jiTz36/t0BEleWFnRh
            rXxbs2aJDHqf3nCP5";
            # SECRET-DATA
            ppp-authentication pap;
        }
        group-profile westcoast_tunnel;
    }
}
}
```

Related Documentation

- [Configuring L2TP for Enabling PPP Tunneling Within a Network on page 12](#)

CHAPTER 3

Configuring RADIUS Authentication for L2TP

- [Configuring RADIUS Authentication for L2TP on page 37](#)
- [RADIUS Attributes for L2TP on page 39](#)
- [RADIUS Local Loopback Interface Attribute for L2TP Overview on page 42](#)
- [Example: Configuring RADIUS Authentication for L2TP on page 43](#)
- [Configuring the RADIUS Disconnect Server for L2TP on page 44](#)
- [Configuring RADIUS Authentication for an L2TP Client and Profile on page 45](#)
- [Example: Configuring RADIUS Authentication for an L2TP Profile on page 46](#)
- [Example: Configuring RADIUS-Based Subscriber Authentication and Accounting on page 46](#)
- [Understanding Session Options for Subscriber Access on page 48](#)
- [Configuring Subscriber Session Timeout Options on page 53](#)

Configuring RADIUS Authentication for L2TP

The L2TP network server (LNS) sends RADIUS authentication requests or accounting requests. Authentication requests are sent out to the authentication server port. Accounting requests are sent to the accounting port. To configure RADIUS authentication for L2TP on an M10i or M7i router, include the following statements at the **[edit access]** hierarchy level:

```
[edit access]
radius-server server-address {
  accounting-port port-number;
  port port-number;
  retry attempts;
  routing-instance routing-instance-name;
  secret password;
  source-address source-address;
  timeout seconds;
}
```



NOTE: The RADIUS servers at the [edit access] hierarchy level are not used by the network access server process (NASD).

You can specify an accounting port number on which to contact the accounting server (in the **accounting-port** statement). Most RADIUS servers use port number 1813 (as specified in RFC 2866, *Radius Accounting*).



NOTE: If you enable RADIUS accounting at the [edit access profile *profile-name* accounting-order] hierarchy level, accounting is triggered on the default port of 1813 even if you do not specify a value for the **accounting-port** statement.

server-address specifies the address of the RADIUS authentication server (in the **radius-server** statement).

You can specify a port number on which to contact the RADIUS authentication server (in the **port** statement). Most RADIUS servers use port number 1812 (as specified in RFC 2865, *Remote Authentication Dial In User Service [RADIUS]*).

You must specify a password in the **secret** statement. If a password includes spaces, enclose the password in quotation marks. The secret used by the local router must match that used by the RADIUS authentication server.

Optionally, you can specify the amount of time that the local router waits to receive a response from a RADIUS server (in the **timeout** statement) and the number of times that the router attempts to contact a RADIUS authentication server (in the **retry** statement). By default, the router waits 3 seconds. You can configure this to be a value in the range from 1 through 90 seconds. By default, the router retries connecting to the server three times. You can configure this to be a value in the range from 1 through 30 times. If the maximum number of retries is reached, the radius server is considered dead for 5 minutes (300 seconds).

In the **source-address** statement, specify a source address for each configured RADIUS server. Each RADIUS request sent to a RADIUS server uses the specified source address. The source address is a valid IPv4 address configured on one of the router interfaces.

To configure multiple RADIUS servers, include multiple **radius-server** statements. For information about how to configure the RADIUS disconnect server for L2TP, see [“Configuring the RADIUS Disconnect Server for L2TP” on page 44](#).



NOTE: When the L2TP network server (LNS) is configured with RADIUS authentication, the default behavior is to accept the preferred RADIUS-assigned IP address. Previously, the default behavior was to accept and install the nonzero peer IP address received by the Internet Protocol Control Protocol (IPCP) configuration request packet.

- Related Documentation**
- [RADIUS Attributes for L2TP on page 39](#)
 - [Configuring L2TP for Enabling PPP Tunneling Within a Network on page 12](#)
 - [Configuring the RADIUS Disconnect Server for L2TP on page 44](#)

RADIUS Attributes for L2TP

Junos OS supports the following types of RADIUS attributes for L2TP:

- Juniper Networks vendor-specific attributes (VSAs)
- Attribute-value pairs (AVPs) defined by the Internet Engineering Task Force (IETF)
- RADIUS accounting stop and start AVPs

Juniper Networks vendor-specific RADIUS attributes are described in RFC 2865, *Remote Authentication Dial In User Service (RADIUS)*. These attributes are encapsulated with the vendor ID set to the Juniper Networks ID number 2636. [Table 3 on page 39](#) lists the Juniper Networks VSAs you can configure for L2TP.

Table 3: Juniper Networks Vendor-Specific RADIUS Attributes for L2TP

Attribute Name	Standard Number	Value
Juniper-Primary-DNS	31	IP address
Juniper-Primary-WINS	32	IP address
Juniper-Secondary-DNS	33	IP address
Juniper-Secondary-WINS	34	IP address
Juniper-Interface-ID	35	String
Juniper-IP-Pool-Name	36	String
Juniper-Keep-Alive	37	Integer

[Table 4 on page 39](#) lists the IETF RADIUS AVPs supported for L2TP.

Table 4: Supported IETF RADIUS Attributes for L2TP

Attribute Name	Standard Number	Value
User-Name	1	String
User-Password	2	String
CHAP-Password	3	String
NAS-IP-Address	4	IP address

Table 4: Supported IETF RADIUS Attributes for L2TP (*continued*)

Attribute Name	Standard Number	Value
NAS-Port	5	Integer
Service-Type	6	Integer
Framed-Protocol	7	Integer
Framed-IP-Address	8	IP address
Framed-IP-Netmask	9	IP address
Framed-MTU	12	Integer
Framed-Route	22	String
Session-Timeout	27	Integer
Idle-Timeout	28	Integer
Called-Station-ID	30	String
Calling-Station-ID	31	String
CHAP-Challenge	60	String
NAS-Port-Type	61	Integer
Framed-Pool	88	Integer

[Table 5 on page 40](#) lists the supported RADIUS accounting start AVPs for L2TP.

Table 5: Supported RADIUS Accounting Start Attributes for L2TP

Attribute Name	Standard Number	Value
User-Name	1	String
NAS-IP-Address	4	IP address
NAS-Port	5	Integer
Service-Type	6	Integer
Framed-Protocol	7	Integer
Framed-IP-Address	8	IP address
Called-Station-ID	30	String

Table 5: Supported RADIUS Accounting Start Attributes for L2TP (*continued*)

Attribute Name	Standard Number	Value
Calling-Station-ID	31	String
Acct-Status-Type	40	Integer
Acct-Delay-Time	41	Integer
Acct-Session-ID	44	String
Acct-Authentic	45	Integer
NAS-Port-Type	61	Integer
Tunnel-Client-Endpoint	66	String
Tunnel-Server-Endpoint	67	String
Acct-Tunnel-Connection	68	String
Tunnel-Client-Auth-ID	90	String
Tunnel-Server-Auth-ID	91	String

[Table 6 on page 41](#) lists the supported RADIUS accounting stop AVPs for L2TP.

Table 6: Supported RADIUS Accounting Stop Attributes for L2TP

Attribute Name	Standard Number	Value
User-Name	1	String
Local-Loopback-Interface	3	String
NAS-IP-Address	4	IP address
NAS-Port	5	Integer
Service-Type	6	Integer
Framed-Protocol	7	Integer
Framed-IP-Address	8	IP address
Called-Station-ID	30	String
Calling-Station-ID	31	String

Table 6: Supported RADIUS Accounting Stop Attributes for L2TP (continued)

Attribute Name	Standard Number	Value
Acct-Status-Type	40	Integer
Acct-Delay-Time	41	Integer
Acct-Input-Octets	42	Integer
Acct-Output-Octets	43	Integer
Acct-Session-ID	44	String
Acct-Authentic	45	Integer
Acct-Session-Time	46	Integer
Acct-Input-Packets	47	Integer
Acct-Output-Packets	48	Integer
Acct-Terminate-Cause	49	Integer
Acct-Multi-Session-ID	50	String
Acct-Link-Count	51	Integer
NAS-Port-Type	61	Integer
Tunnel-Client-Endpoint	66	String
Tunnel-Server-Endpoint	67	String
Acct-Tunnel-Connection	68	String
Tunnel-Client-Auth-ID	90	String
Tunnel-Server-Auth-ID	91	String

Related Documentation

- [Example: Configuring RADIUS Authentication for L2TP on page 43](#)

RADIUS Local Loopback Interface Attribute for L2TP Overview

You can configure the Local-Loopback-Interface attribute on a RADIUS server to manage multiple LAC devices. This attribute is used as the LAC source address on an LNS tunnel for PPPoE subscribers tunneled over L2TP.

When you use the Tunnel-Client-Endpoint attribute as the LAC source address, you must configure the Tunnel-Client-Endpoint attribute for each MX Series router that uses the same RADIUS server. Starting with this release you can use the Local-Loopback-Interface attribute, which needs to be configured only once. When the LAC initiates an Access-Request message to RADIUS for authentication, RADIUS returns the Local-Loopback-Interface attribute in the Access-Accept message. This attribute contains the name of the loopback interface, either as a generic interface name such as "lo0" or as a specific name like "lo0.0". The MX Series router then uses the configured loopback interface IP address as the source address during tunnel negotiation with the LNS.



NOTE: An MX Series router can act as the LAC and use any interface address on it as an L2TP tunnel source address. The source address can be dynamically assigned by RADIUS through the Tunnel-Client-Endpoint or Local-Loopback-Interface attribute. The tunnel source address can be statically configured on the MX Series router by using the L2TP tunnel profile. If RADIUS does not return the Tunnel-Client-Endpoint or Local-Loopback-Interface attribute, and if there is no corresponding L2TP tunnel profile configured on the MX Series router, then the L2TP tunnel fails to initiate because the router does not have a proper tunnel source address. In this case, the router can use the locally configured loopback address as the source address to successfully establish the L2TP tunnel.

Related Documentation

- [RADIUS Attributes for L2TP on page 39](#)

Example: Configuring RADIUS Authentication for L2TP

The following example shows how to configure RADIUS authentication for L2TP:

```
[edit access]
profile sunnyvale_bldg_2 {
  client green {
    chap-secret "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3";
    ppp {
      interface-id west;
    }
    group-profile sunnyvale_users;
  }
  client red {
    chap-secret "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3";
    group-profile sunnyvale_users;
  }
  authentication-order radius;
}
radius-server {
  192.168.65.213 {
    port 1812;
    accounting-port 1813;
    secret "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3"; # SECRET-DATA
  }
}
```

```

192.168.65.223 {
    port 1812;
    accounting-port 1813;
    secret "$9$24gGiPfz6CuQFu1EyW8VwYgZUik.5z3"; # SECRET-DATA
}
}
radius-disconnect-port 2500;
radius-disconnect {
    192.168.65.152 secret "$9$rtkl87ws4ZDkgokPT3tpEcyLWL7-VY4a";
    # SECRET-DATA
    192.168.64.153 secret "$9$gB4UHf5F/A0z30Ihr8Lbs24GDHqmTFn";
    # SECRET-DATA
    192.168.64.157 secret "$9$Hk5FCA0IhruOrv87sYGDikfTFn/t0B";
    # SECRET-DATA
    192.168.64.173 secret "$9$Hk5FCA0IhruOrv87sYGDikfTFn/t0B";
    # SECRET-DATA
}

```

Related Documentation • [Configuring RADIUS Authentication for L2TP on page 37](#)

Configuring the RADIUS Disconnect Server for L2TP

To configure the RADIUS disconnect server to listen for disconnect requests from an administrator and process them, include the following statements at the **[edit access]** hierarchy level:

```

[edit access]
radius-disconnect-port port-number;
radius-disconnect {
    client-address {
        secret password;
    }
}

```

port-number is the server port to which the RADIUS client sends disconnect requests. The L2TP network server, which accepts these disconnect requests, is the server. You can specify a port number on which to contact the RADIUS disconnect server. Most RADIUS servers use port number 1700.



NOTE: The Junos OS accepts only disconnect requests from the client address configured at the **[edit access radius-disconnect *client-address*]** hierarchy level.

client-address is the host sending disconnect requests to the RADIUS server. The client address is a valid IP address configured on one of the router or switch interfaces.

password authenticates the RADIUS client. Passwords can contain spaces. The secret used by the local router must match that used by the server.

For information about how to configure RADIUS authentication for L2TP, see [“Configuring RADIUS Authentication for L2TP” on page 37](#).

The following example shows the statements to be included at the **[edit access]** hierarchy level to configure the RADIUS disconnect server:

```
[edit access]
radius-disconnect-port 1700;
radius-disconnect {
  192.168.64.153 secret "$9$rtkl87ws4ZDkgokPT3tpEcylWL7-VY4a";
  # SECRET-DATA
  192.168.64.162 secret "$9$rtkl87ws4ZDkgokPT3tpEcylWL7-VY4a";
  # SECRET-DATA
}
```

Related Documentation

- [Configuring RADIUS Authentication for L2TP on page 37](#)

Configuring RADIUS Authentication for an L2TP Client and Profile

On an M10i or M7i router, L2TP supports RADIUS authentication and accounting for users with one set of RADIUS servers under the **[edit access]** hierarchy. You can also configure RADIUS authentication for each tunnel client or user profile.

To configure the RADIUS authentication for L2TP tunnel clients on an M10i or M7i router, include the **ppp-profile** statement with the **l2tp** attributes for tunnel clients:

```
[edit access profile profile-name client client-name l2tp]
ppp-profile profile-name;
```

ppp-profile *profile-name* specifies the profile used to validate PPP session requests through L2TP tunnels. Clients of the referenced profile must have only PPP attributes. The referenced group profile must be defined.

To configure the RADIUS authentication for a profile, include following statements at the **[edit access profile *profile-name*]** hierarchy level:

```
[edit access profile profile-name]
radius-server server-address {
  accounting-port port-number;
  port port-number;
  retry attempts;
  routing-instance routing-instance-name;
  secret password;
  source-address source-address;
  timeout seconds;
}
```

When a PPP user initiates a session and RADIUS authentication is configured for the user profile on the tunnel group, the following priority sequence is used to determine which RADIUS server is used for authentication and accounting:

- If the **ppp-profile** statement is configured under the tunnel client (LAC), the RADIUS servers configured under the specified **ppp-profile** are used.
- If RADIUS servers are configured under the user profile for the tunnel group, those servers will be used.

- If no RADIUS server is configured for the tunnel client (LAC) or user profile, then the RADIUS servers configured at the **[edit access]** hierarchy level are used.

**Related
Documentation**

- [Example: Configuring RADIUS Authentication for an L2TP Profile on page 46](#)

Example: Configuring RADIUS Authentication for an L2TP Profile

The following example shows statements to be included at the **[edit access]** hierarchy level to configure RADIUS authentication for an L2TP profile:

```
[edit access]
profile t {
  client LAC_A {
    l2tp {
      ppp-profile u;
    }
  }
}
profile u {
  client client_1 {
    ppp {
    }
  }
  5.5.5.5 {
    port 3333;
    secret $9$dkafeqwrew;
    source-address 1.1.1.1;
    retry 3;
    timeout 3;
  }
  6.6.6.6 secret $9$fe3erqwrez;
  7.7.7.7 secret $9$f34929ftby;
}
```

**Related
Documentation**

- [Configuring RADIUS Authentication for an L2TP Client and Profile on page 45](#)

Example: Configuring RADIUS-Based Subscriber Authentication and Accounting

This example shows a RADIUS-based authentication and accounting configuration.

```
[edit access]
radius-server {
  192.168.1.250 {
    port 1812;
    accounting-port 1813;
    accounting-retry 6;
    accounting-timeout 20;
    retry 3;
    secret $ABC123$ABC123;
    source-address 192.168.1.100;
    timeout 45;
  }
}
```

```
}
192.168.1.251 {
  port 1812;
  accounting-port 1813;
  accounting-retry 6;
  accounting-timeout 20;
  retry 3;
  secret $ABC123;
  source-address 192.168.1.100;
  timeout 30;
}
2001:DB8:0f101::2{
  port 1812;
  accounting-port 1813;
  accounting-retry 6;
  accounting-timeout 20;
  retry 4;
  secret $ABC123$ABC123$ABC123-;
  source-address 2001:DB8:0f101::1;
  timeout 20;
}
}
profile isp-bos-metro-fiber-basic {
  authentication-order radius;
  accounting {
    order radius;
    accounting-stop-on-access-deny;
    accounting-stop-on-failure;
    immediate-update;
    statistics time;
    update-interval 12;
    wait-for-acct-on-ack;
    send-acct-status-on-config-change;
  }
  radius {
    authentication-server 192.168.1.251 192.168.1.252;
    accounting-server 192.168.1.250 192.168.1.251;
    options {
      accounting-session-id-format decimal;
      client-accounting-algorithm round-robin;
      client-authentication-algorithm round-robin;
      nas-identifier 56;
      nas-port-id-delimiter %;
      nas-port-id-format {
        nas-identifier;
        interface-description;
      }
      nas-port-type {
        ethernet {
          wireless-80211;
        }
      }
    }
  }
  attributes {
    ignore {
      framed-ip-netmask;
    }
  }
}
```

```

    }
    exclude {
        accounting-delay-time [accounting-start accounting-stop];
        accounting-session-id [access-request accounting-on accounting-off
        accounting-start accounting-stop];
        dhcp-gi-address [access-request accounting-start accounting-stop];
        dhcp-mac-address [access-request accounting-start accounting-stop];
        nas-identifier [access-request accounting-start accounting-stop];
        nas-port [accounting-start accounting-stop];
        nas-port-id [accounting-start accounting-stop];
        nas-port-type [access-request accounting-start accounting-stop];
    }
}
}
[edit logical-systems isp-bos-metro-12 routing-instances isp-cmbrg-12-32]
interfaces {
    lo0 {
        unit 0 {
            family inet {
                address 192.168.1.100/24;
            }
        }
    }
    ge-0/0/0 {
        vlan-tagging;
        unit 0 {
            vlan-id 200;
            family inet {
                unnumbered-address lo0.0;
            }
        }
    }
}
}

```

Related Documentation • [Configuring Router or Switch Interaction with RADIUS Servers](#)

Understanding Session Options for Subscriber Access

You can configure several characteristics of the sessions that are created for DHCP, L2TP, and terminated PPP subscribers. You can place limits on subscriber access based on how long the session has been up, how long the user has been inactive, or both. You can also set parameters that modify a subscriber's username at login based on the subscriber's access profile.

Subscriber Session Timeouts

You can limit subscriber access by configuring a session timeout or an idle timeout. Use a session timeout to specify a fixed period of time that the subscriber is permitted to have access. Use an idle timeout to specify a maximum period of time that the subscriber can be idle. You can use these timeouts separately or together. By default, neither timeout is present.



NOTE: For all subscriber types other than DHCP (such as L2TP-tunneled and PPP-terminated subscribers), the session timeout value limits the subscriber session. For DHCP subscribers, the session timeout value is used to limit the lease when no other lease time configuration is present. The lease expires when the timeout value expires. If this value is not supplied by either the CLI or RADIUS, the DHCP lease does not expire.

The idle timeout is based on accounting statistics for the subscriber. The router determines subscriber inactivity by monitoring data traffic, both upstream from the user (ingress) and downstream to the user (egress). Control traffic is ignored. The subscriber is not considered idle as long as data traffic is detected in either direction.

Optionally, you can specify that only subscriber ingress traffic is monitored; egress traffic is ignored. This configuration is useful in cases where the LNS sends traffic to the remote peer even when the peer is not up, such as when the LNS does not have PPP keepalives enabled and therefore cannot detect that the peer is not up. In this situation, because by default the LAC monitors both ingress and egress traffic, it detects the egress traffic from the LNS and either does not log out the subscriber or delays detection of inactivity until the egress traffic ceases. When you specify that only ingress traffic is monitored, the LAC can detect that the peer is inactive and then initiate logout.

When either timeout period expires, the non-DHCP subscribers are gracefully logged out, similarly to a RADIUS-initiated disconnect or a CLI-initiated logout. DHCP subscribers are disconnected. The Acct-Terminate-Cause [RADIUS attribute 49] value includes a reason code of 5 for a session timeout and a code of 4 for an idle timeout.

You can configure these limitations to subscriber access on a per-subscriber basis by using the RADIUS attributes Session-Timeout [27] and Idle-Timeout [28]. RADIUS returns these attributes in Access-Accept messages in response to Access-Request messages from the access server.

Service providers often choose to apply the same limitations to large numbers of subscribers. You can reduce the RADIUS provisioning effort for this scenario by defining the limitations for subscribers in an access profile on a per-routing-instance basis. If you do so, RADIUS attributes subsequently returned for a particular subscriber logged in with the profile override the per-routing-instance values.



BEST PRACTICE: We recommend that you do not configure a session timeout for subscribers receiving voice services. Because the session timeout is based only on time and not user activity, it is likely to interrupt subscribers actively using a voice service and terminate their calls unexpectedly (from the subscriber viewpoint). This result is a particular concern for emergency services calls.



BEST PRACTICE: We recommend that you do not configure an idle timeout for DHCP subscribers. When the timeout expires with no activity and the

connection is terminated, the protocol has no means to inform the client. Consequently, these subscribers are forced to reboot their CPE device the next time they attempt to access the Internet.

Contrast the behavior when an idle timeout is configured for PPP subscribers. In this case, timeout expiration causes PPP to terminate the link with the peer. Depending on the CPE device, this termination enables the peer to automatically retry the connection either on demand or immediately. In either case, no subscriber intervention is required.

.....

The available range for setting a timeout is the same whether you configure it in the CLI or through the RADIUS attributes:

- Session timeouts can be set for 1 minute through 527,040 minutes in the CLI and the corresponding number of seconds (60 through 31,622,400) in the Session-Timeout attribute [27].
- Idle timeouts can be set for 10 minutes through 1440 minutes in the CLI and the corresponding number of seconds (600 through 86,400) in the Idle-Timeout attribute [28].

The router interprets the values in the attributes to conform to the supported ranges. For example, for Session-Timeout [27]:

- A value of zero is treated as no timeout.
- A value in the range 1 through 59 is raised to 60 seconds.
- A value that exceeds 31,622,400 is reduced to 31,622,400 seconds.

For Idle-Timeout [28]:

- A value of zero is treated as no timeout.
- A value in the range 1 through 599 is raised to 600 seconds.
- A value that exceeds 86,400 is reduced to 86,400 seconds.

In configurations using dynamically created subscriber VLANs, the idle timeout also deletes the inactive subscriber VLANs when the inactivity threshold has been reached. In addition to deleting inactive dynamic subscriber VLANs, the idle timeout also removes dynamic VLANs when no client sessions were ever created (for example, in the event no client sessions are created on the dynamic VLAN or following the occurrence of an error during session creation or client authentication where no client sessions are created on the dynamic VLAN).

Session and idle timeouts for deleting dynamic subscriber VLANs are useful only in very limited use cases; typically neither timeout is configured for this purpose.

A possible circumstance when they might be useful is when the dynamic VLANs have no upper layer protocol that helps determine when the VLAN is removed with the **remove-when-no-subscribers** statement; for example, when the VLAN is supporting IP

over Ethernet without DHCP in a business access model with fixed addresses. However, business access is generally a higher-tier service than residential access and as such typically is not subject to timeouts due to inactivity as might be desired for residential subscribers.

An idle timeout might be appropriate in certain Layer 2 wholesale situations, where the connection can be regenerated when any packet is received from the CPE.

When using the idle timeout for dynamic VLAN removal, keep the following in mind:

- The idle timeout period begins after a dynamic subscriber VLAN interface is created or traffic activity stops on a dynamic subscriber VLAN interface.
- If a new client session is created or a client session is reactivated successfully, the client idle timeout resets.
- The removal of inactive subscriber VLANs functions only with VLANs that have been authenticated.



Subscriber Username Modification

For Layer 2 wholesale applications, some network service providers employ username modification to direct subscribers to the appropriate retail enterprise network. This modification is also called username *stripping*, because some of the characters in the username are stripped away and discarded. The remainder of the string becomes the new, modified username. The modified username is used by an external AAA server for session authentication and accounting. The modification parameters are applied according to a subscriber access profile that also determines the subscriber and session context; that is, the logical system:routing instance (LS:RI) used by the subscriber. Only the default (master) logical system is supported. Because the wholesaler differentiates between multiple retailers by placing each in a different LS:RI, the usernames are appropriately modified for each retailer.

You can select up to eight characters as delimiters to mark the boundary between the discarded and retained portions of the original username; there is no default delimiter. The portion of the name to the right of the selected delimiter is discarded along with the delimiter. By configuring multiple delimiters, a given username structure can result in different modified usernames. You can configure the direction in which the original name is parsed to determine which delimiter marks the boundary. By default, the parse direction is from left to right.



Consider the following examples:

- You specify one delimiter, @. The username is user1@example.com. In this case, the parse direction does not matter. In either case, the single delimiter is found and example.com is discarded. The modified username is user1.

parse direction	identify delimiter	modified username
left-to-right	user1@example.com 	user1
right-to-left	user1@example.com 	user1



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- You specify one delimiter, @. The username is user1@test@example.com. In this case, the parse direction results in different usernames.
 - Parse direction is left-to-right—The left-most @ is identified as the delimiter and test@example.com is discarded. The modified username is user1.
 - Parse direction is right-to-left—The right-most @ is identified as the delimiter and example.com is discarded. The modified username is user1@test.

parse direction	identify delimiter	modified username
left-to-right	user1@test@example.com 	user1
right-to-left	user1@test@example.com 	user1@test

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- You specify two delimiters, @ and /. The username is user1@bldg1/example.com. The parse direction results in different usernames.
 - Parse direction is left-to-right—The @ is identified as the delimiter and bldg1/example.com is discarded. The modified username is user1.
 - Parse direction is right-to-left—The / is identified as the delimiter and example.com is discarded. The modified username is user1@bldg1.

parse direction	identify delimiter	modified username
left-to-right	user1@bldg1/example.com 	user1
right-to-left	user1@bldg1/example.com 	user1@bldg1

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You can configure a subscriber access profile so that a portion of each subscriber login string is stripped and subsequently used as a modified username by an external AAA server for session authentication and accounting. The modified username appears, for example, in RADIUS Access-Request, Acct-Start, and Acct-Stop messages, as well as RADIUS-initiated disconnect requests and change of authorization (CoA) requests.

Related Documentation

- [RADIUS IETF Attributes Supported by the AAA Service Framework](#)
- [Configuring Subscriber Session Timeout Options on page 53](#)
- [Configuring Username Modification for Subscriber Sessions](#)
- [Removing Inactive Dynamic Subscriber VLANs](#)

Configuring Subscriber Session Timeout Options

Subscriber session timeout options enable you to place limits on subscriber access based on how long the session has been up, how long the user has been inactive, or both. The subscriber session options apply to both L2TP-tunneled and PPP-terminated subscriber sessions. For DHCP subscribers, the session timeout limits the DHCP lease time.



NOTE: To configure the timeout attributes in RADIUS, refer to the documentation for your RADIUS server.

To configure limitations on subscriber sessions, configure the session options in the client profile that applies to the subscriber:

- Terminate the subscriber when the configured session timeout expires, regardless of activity.

```
[edit access profile profile-name session-options]
user@host# set client-session-timeout minutes
```

- Terminate the subscriber when there is no ingress or egress data traffic for the duration of the configured idle timeout.

```
[edit access profile profile-name session-options]
user@host# set client-idle-timeout minutes
```

- Terminate the subscriber when there is no ingress data traffic for the duration of the configured idle timeout; ignore egress traffic.

```
[edit access profile profile-name session-options]
user@host# set client-idle-timeout minutes
user@host# set client-idle-timeout-ingress-only
```

For example, to configure session timeout options in the **acc-prof** client profile, specifying an idle timeout of 15 minutes, that only ingress traffic is monitored, and that the session times out after 120 minutes:

```
[edit]
access {
  profile {
    acc-prof {
      session-options {
        client-idle-timeout 15;
        client-idle-timeout-ingress-only;
        client-session-timeout 120;
      }
    }
  }
}
```

Related Documentation

- [Understanding Session Options for Subscriber Access](#) on page 48
- [Configuring Username Modification for Subscriber Sessions](#)

- *Removing Inactive Dynamic Subscriber VLANs*
- *Removing Inactive Dynamic Subscriber VLANs*

CHAPTER 4

Configuration Statements

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Access Configuration Statements

To configure access, include the following statements at the **[edit access]** hierarchy level:

```
[edit access]
address-assignment {
  neighbor-discovery-router-advertisement;
  pool pool-name {
    family inet {
      dhcp-attributes {
        [protocol-specific-attributes];
      }
      host hostname {
        hardware-address mac-address;
        ip-address ip-address;
      }
      network address-or-prefix </subnet-mask>;
      range name {
        high upper-limit;
        low lower-limit;
        prefix-length prefix-length;
      }
    }
  }
}
address-pool pool-name {
  address address-or-prefix;
  address-range low <lower-limit> high <upper-limit>;
}
domain {
  delimiter;
  map;
  parse-direction;
};
group-profile profile-name {
  l2tp {
    interface-id interface-id;
    lcp-renegotiation;
    local-chap;
    maximum-sessions-per-tunnel number;
    multilink {
      drop-timeout milliseconds;
      fragment-threshold bytes;
    }
  }
}
ppp {
  cell-overhead;
  encapsulation-overhead bytes;
  framed-pool pool-id;
  idle-timeout seconds;
```



```

    interface-id interface-id;
    keepalive seconds;
    primary-dns primary-dns;
    primary-wins primary-wins;
    secondary-dns secondary-dns;
    secondary-wins secondary-wins;
  }
}
profile profile-name {
  accounting {
    accounting-stop-on-access-deny;
    accounting-stop-on-failure;
    coa-immediate-update;
    duplication;
    immediate-update;
    order [ accounting-method ];
    statistics (time | volume-time);
    update-interval minutes;
  }
  accounting-order radius;
  authentication-order [ authentication-methods ];
  authorization-order jsr;
  client client-name {
    chap-secret chap-secret;
    client-group [ group-names ];
    firewall-user {
      password password;
    }
    group-profile profile-name;
    ike {
      allowed-proxy-pair {
        local local-proxy-address remote remote-proxy-address;
      }
      ike-policy policy-name;
      initiate-dead-peer-detection;
      interface-id interface-id;
      ipsec-policy policy-name;
      pre-shared-key (ascii-text character-key-string | hexadecimal
        hexadecimal-digits-key-string);
    }
  }
  l2tp {
    interface-id interface-identifier;
    lcp-renegotiation;
    local-chap;
    maximum-sessions-per-tunnel number;
    multilink {
      drop-timeout milliseconds;
      fragment-threshold bytes;
    }
    ppp-authentication (chap | pap);
    ppp-profile profile-name;
    shared-secret shared-secret;
  }
  pap-password pap-password;
  ppp {
    cell-overhead;
  }
}

```

```

encapsulation-overhead bytes;
framed-ip-address ip-address;
framed-pool framed-pool;
idle-timeout seconds;
interface-id interface-id;
keepalive seconds;
primary-dns primary-dns;
primary-wins primary-wins;
secondary-dns secondary-dns;
secondary-wins secondary-wins;
}
provisioning-order jsr;
user-group-profile profile-name;
}
radius {
  accounting-server [ ip-address ];
  attributes {
    exclude
      accounting-authentic [ accounting-on | accounting-off ];
      accounting-delay-time [ accounting-on | accounting-off ];
      accounting-session-id [ access-request | accounting-on | accounting-off |
        accounting-stop ];
      accounting-terminate-cause [ accounting-off ];
      called-station-id [ access-request | accounting-start | accounting-stop ];
      calling-station-id [ access-request | accounting-start | accounting-stop ];
      class [ accounting-start | accounting-stop ];
      dhcp-options [ access-request | accounting-start | accounting-stop ];
      dhcp-gi-address [ access-request | accounting-start | accounting-stop ];
      dhcp-mac-address [ access-request | accounting-start | accounting-stop ];
      output-filter [ accounting-start | accounting-stop ];
      event-timestamp [ accounting-on | accounting-off | accounting-start |
        accounting-stop ];
      framed-ip-address [ accounting-start | accounting-stop ];
      framed-ip-netmask [ accounting-start | accounting-stop ];
      input-filter [ accounting-start | accounting-stop ];
      input-gigapackets [ accounting-stop ];
      input-gigawords [ accounting-stop ];
      interface-description [ access-request | accounting-start | accounting-stop ];
      nas-identifier [ access-request | accounting-on | accounting-off | accounting-start
        | accounting-stop ];
      nas-port [ access-request | accounting-start | accounting-stop ];
      nas-port-id [ access-request | accounting-start | accounting-stop ];
      nas-port-type [ access-request | accounting-start | accounting-stop ];
      output-gigapackets [ accounting-stop ];
      output-gigawords [ accounting-stop ];
    }
  }
  ignore {
    framed-ip-netmask;
    input-filter;
    logical-system-routing-instance;
    output-filter;
  }
}
authentication-server [ ip-address ];
options {
  accounting-session-id-format (decimal | description);
}

```

```

client-accounting-algorithm (direct | round-robin);
client-authentication-algorithm (direct | round-robin);
ethernet-port-type-virtual;
interface-description-format [sub-interface | adapter];
nas-identifier identifier-value;
nas-port-extended-format {
    adapter-width width;
    port-width width;
    slot-width width;
    stacked-vlan-width width;
    vlan-width width;
}
revert-interval interval;
vlan-nas-port-stacked-format;
}
}
radius-options {
    revert-interval interval;
}
radius-disconnect {
    client-address {
        secret password;
    }
}
radius-disconnect-port port-number;
radius-options {
    revert-interval interval;
}
radius-server server-address {
    accounting-port port-number;
    port port-number;
    retry attempts;
    routing-instance routing-instance-name;
    secret password;
    source-address address;
    timeout seconds;
}
session-options {
    client-group [ group-names ];
    client-idle-timeout minutes;
    client-session-timeout minutes;
}

```

Related Documentation

- [Configuring the PPP Authentication Protocol on page 8](#)
- [Example: Configuring PPP CHAP on page 8](#)
- [Configuring the PPP Authentication Protocol on page 8](#)
- [Example: Configuring CHAP Authentication with RADIUS on page 9](#)
- [Configuring L2TP for Enabling PPP Tunneling Within a Network on page 12](#)
- [Defining the Minimum L2TP Configuration on page 13](#)
- [Configuring the Address Pool for L2TP Network Server IP Address Allocation on page 14](#)

- [Configuring the Group Profile for Defining L2TP Attributes on page 16](#)

accounting (Access Profile)

Syntax `accounting {
 accounting-stop-on-access-deny;
 accounting-stop-on-failure;
 address-change-immediate-update;
 ancp-speed-change-immediate-update;
 coa-immediate-update;
 coa-no-override service-class-attribute;
 duplication;
 duplication-filter;
 duplication-vrf {
 access-profile-name profile-name;
 vrf-name vrf-name;
 }
 immediate-update;
 order [accounting-method];
 send-acct-status-on-config-change
 statistics (time | volume-time);
 update-interval minutes;
 wait-for-acct-on-ack;
}`

Hierarchy Level `[edit access profile profile-name]`

Release Information Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 9.1 for EX Series switches.

Description Configure RADIUS accounting parameters and enable RADIUS accounting for an access profile.

The remaining statements are explained separately. See [CLI Explorer](#).

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


Related Documentation

- [Configuring Authentication and Accounting Parameters for Subscriber Access](#)
- [Configuring Per-Subscriber Session Accounting](#)
- [Understanding RADIUS Accounting Duplicate Reporting](#)

accounting-order

Syntax	accounting-order (radius [<i>accounting-order-data-list</i>]);
Hierarchy Level	[edit access profile <i>profile-name</i>]
Release Information	Statement introduced in Junos OS Release 8.0. Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches.
Description	Specify the order in which accounting methods are used.
Options	radius —Use the RADIUS accounting method. [<i>accounting-order-data-list</i>] —Set of data listing the accounting order to be used, enclosed in brackets. This can be any combination of accounting methods, up to and including a list of the entire accounting order.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the Accounting Order on page 21

accounting-port

Syntax	accounting-port <i>port-number</i> ;
Hierarchy Level	[edit access radius-server <i>server-address</i>], [edit access profile <i>profile-name</i> radius-server <i>server-address</i>]
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches with support for Enhanced Layer 2 software (ELS).</p> <p>Statement introduced on Junos OS without ELS in the following releases:</p> <ul style="list-style-type: none">• Junos OS Release 12.3 for EX Series switches: Release 12.3R10.• Junos OS Release 14.1X53 for EX Series switches: Release 14.1X53-D25.• Junos OS Release 15.1 for EX Series switches: Release 15.1R4.
Description	Configure the port number on which to contact the RADIUS accounting server.
	<div> NOTE: Specifying the accounting port is optional, and port 1813 is the default. However, we recommend that you configure it in order to avoid confusion, as some RADIUS servers might refer to an older default.</div>
Options	<p>port-number—Port number on which to contact the RADIUS accounting server. Most RADIUS servers use port 1813, as specified in RFC 2866.</p> <p>Default: 1813</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RADIUS System Accounting• Configuring Router or Switch Interaction with RADIUS Servers• Configuring Authentication and Accounting Parameters for Subscriber Access• Configuring RADIUS Authentication for L2TP on page 37

accounting-server

Syntax	<code>accounting-server [<i>ip-address</i>];</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> radius]</code>
Release Information	Statement introduced in Junos OS Release 9.1.
Description	Specify a list of the RADIUS accounting servers used for accounting for DHCP, L2TP, and PPP clients.
Options	<i>ip-address</i> —IP version 4 (IPv4) address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>

accounting-session-id-format

Syntax	<code>accounting-session-id-format (decimal description);</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> radius options]</code>
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure the format the router or switch uses to identify the accounting session.
Default	decimal
Options	<p>decimal—Use the decimal format.</p> <p>description—Use the generic format, in the form: <code>jnpr <i>interface-specifier:subscriber-session-id</i></code>.</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring RADIUS Server Options for Subscriber Access</i> • <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>

accounting-stop-on-access-deny

Syntax	accounting-stop-on-access-deny;
Hierarchy Level	[edit access profile <i>profile-name</i> accounting]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure RADIUS accounting to send an Acct-Stop message when the AAA server refuses a client request for access.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>

accounting-stop-on-failure

Syntax	accounting-stop-on-failure;
Hierarchy Level	[edit access profile <i>profile-name</i> accounting]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	<p>Configure RADIUS accounting to send an Acct-Stop message when a subscriber session has been successfully authenticated and authorized, but then fails before an Acct-Start message is sent. By default, an Acct-Stop message is sent only if an Acct-Start message has been exchanged with the accounting server.</p> <p>Consider a situation where RADIUS address pools are used to assign IP/IPv6 addresses. After a subscriber session is successfully authenticated, the RADIUS server authorizes the session by assigning an IP address from the RADIUS address pool and conveying that address in the Framed-IP-Address attribute. If a negotiation failure occurs at this point, the session is terminated before activating. The Acct-Start message is never sent because it is initiated by session activation. By default, an Acct-Stop message cannot be sent because the Acct-Start is never sent. However, if the acct-stop-on-failure statement is configured, the negotiation failure causes the Acct-Stop message to be sent, which explicitly notifies the RADIUS server that the session is disconnected and that it can free the allocated IP address back to the pool.</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>

address (Access Address Pool)

Syntax	<code>address <i>address-or-prefix</i>;</code>
Hierarchy Level	[edit access address-pool <i>pool-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the IP address or prefix value for clients.
Options	<i>address-or-prefix</i> —An address or prefix value.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the Address Pool for L2TP Network Server IP Address Allocation on page 14

address-assignment (Address-Assignment Pools)

```
Syntax address-assignment {
    abated-utilization percentage;
    abated-utilization-v6 percentage;
    high-utilization percentage;
    high-utilization-v6 percentage;
    neighbor-discovery-router-advertisement ndra-pool-name;
    pool pool-name {
        active-drain;
        family family {
            dhcp-attributes {
                protocol-specific attributes;
            }
            host hostname {
                hardware-address mac-address;
                ip-address ip-address;
            }
            network ip-prefix / <prefix-length>;
            prefix ipv6-prefix;
            range range-name {
                high upper-limit;
                low lower-limit;
                prefix-length prefix-length;
            }
        }
        hold-down;
        link pool-name;
    }
}
```

Hierarchy Level [edit access]

Release Information Statement introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Configure address-assignment pools that can be used by different client applications.



NOTE: Support for subordinate statements is platform-specific. See individual statement topics for support information.

Options *pool-name*—Name assigned to an address-assignment pool.

The remaining statements are explained separately. See [CLI Explorer](#).

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

- Related Documentation**
- [Address-Assignment Pools Overview](#)
 - [Configuring Address-Assignment Pools](#)
 - [Configuring an Address-Assignment Pool for L2TP LNS with Inline Services](#)

address-pool

Syntax `address-pool pool-name {
 address address-or-prefix;
 address-range <low lower-limit> <high upper-limit>;
 }`

Hierarchy Level [edit access]

Release Information Statement introduced before Junos OS Release 7.4.
 Statement introduced in Junos OS Release 9.0 for EX Series switches.

Description Allocate IP addresses for clients.



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

Options *pool-name*—Name assigned to an address pool.

 The remaining statements are explained separately.

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

- Related Documentation**
- [Configuring the Address Pool for L2TP Network Server IP Address Allocation on page 14](#)

address-range

Syntax	<code>address-range <low <i>lower-limit</i>> <high <i>upper-limit</i>>;</code>
Hierarchy Level	<code>[edit access address-pool <i>pool-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the address range.
Options	<ul style="list-style-type: none"> high <i>upper-limit</i>—Upper limit of an address range. low <i>lower-limit</i>—Lower limit of an address range.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring the Address Pool for L2TP Network Server IP Address Allocation on page 14


allowed-proxy-pair

Syntax	<pre>allowed-proxy-pair { remote <i>remote-proxy-address</i> local <i>local-proxy-address</i>; }</pre>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> client <i>client-name</i> ike]</code>
Release Information	Statement introduced in Junos OS Release 7.4.
Description	Specify the network address of the local and remote peer associated with an IKE access profile.
Options	local <i>local-proxy-address</i> —Network address of the local peer. Default: 0.0.0.0 remote <i>remote-proxy-address</i> —Network address of the remote peer. Default: 0.0.0.0
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> Configuring an IKE Access Profile on page 23

attributes

Syntax	<pre>attributes { exclude { ... } ignore { framed-ip-netmask; input-filter; logical-system-routing-instance; output-filter; } }</pre>
Hierarchy Level	[edit access profile <i>profile-name</i> radius]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Specify how the router or switch processes RADIUS attributes. The remaining statements are explained separately. See CLI Explorer .
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring How RADIUS Attributes Are Used for Subscriber Access</i>

authentication-order

Syntax	<code>authentication-order [<i>authentication-methods</i>];</code>
Hierarchy Level	<code>[edit access <i>profile profile-name</i>]</code>
Release Information	<p>Statement introduced before Junos OS Release 7.4.</p> <p>Statement introduced in Junos OS Release 9.0 for EX Series switches.</p> <p>none option added in Junos OS Release 11.2.</p> <p>nasreq option added in Junos OS Release 16.1.</p>
Description	<p>Set the order in which AAA tries different authentication methods when verifying that a client can access the router or switch. For each login attempt, AAA tries the authentication methods in order, from first to last.</p> <p>A given subscriber does not undergo both authentication and authorization as separate steps. When both authentication-order and authorization-order are specified, DHCP subscribers honor the configured authorization order, all other subscribers use the configured authentication-order.</p>
Options	<p><i>authentication-methods</i>—Ordered list of methods to use for authentication attempts. The list includes one or more of the following methods in any combination:</p> <ul style="list-style-type: none"> • nasreq—Verify the client using NASREQ authentication services. • none—No authentication is performed. Grants authentication without examining the client credentials. Can be used, for example, when the Diameter function Gx-Plus is employed for notification during subscriber provisioning. • password—Verify the client using the information configured at the <code>[edit access profile <i>profile-name</i> client <i>client-name</i>]</code> hierarchy level. • radius—Verify the client using RADIUS authentication services.
	<div>  <p>NOTE: Subscriber access management does not support the password option, and authentication fails when no method (none) is specified.</p> </div>
	Default: password
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Example: Configuring CHAP Authentication with RADIUS on page 9 • Specifying the Authentication and Accounting Methods for Subscriber Access • Configuring Access Profiles for L2TP or PPP Parameters on page 19

authentication-server

Syntax	<code>authentication-server [<i>ip-address</i>];</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> radius]</code>
Release Information	Statement introduced in Junos OS Release 9.1.
Description	Specify a list of the RADIUS authentication servers used to authenticate DHCP, L2TP, and PPP clients. The servers in the list are also used as RADIUS dynamic-request servers, from which the router accepts and processes RADIUS disconnect requests, CoA requests, and dynamic service activations and deactivations.
Options	<i>ip-address</i> —IPv4 address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring RADIUS Server Parameters for Subscriber Access</i>

boot-file

Syntax	<code>boot-file <i>filename</i>;</code>
Hierarchy Level	<code>[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]</code>
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Set the boot file advertised to DHCP clients. After the client receives an IP address and the boot file location from the DHCP server, the client uses the boot image stored in the boot file to complete DHCP setup. This configuration is equivalent to DHCP Option 67.
Options	<i>filename</i> —Location of the boot file on the boot server. The filename can include a pathname.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• boot-server on page 75• <i>Configuring Address-Assignment Pools</i>

boot-server

Syntax	<code>boot-server (address hostname);</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure the name of the boot server advertised to DHCP clients. The client uses a boot file located on the boot server to complete DHCP setup. This configuration is equivalent to DHCP Option 66.
Options	address —IPv4 address of a boot server. hostname —Fully qualified hostname of a boot server.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • boot-file on page 74 • <i>Configuring Address-Assignment Pools</i>

cell-overhead

Syntax	<code>cell-overhead;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> ppp], [edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	Configure the session to use Asynchronous Transfer Mode (ATM)-aware egress shaping on the IQ2 PIC.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the PPP Attributes for a Group Profile on page 17 • Configuring PPP Properties for a Client-Specific Profile on page 31

chap-secret

Syntax	<code>chap-secret <i>chap-secret</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	For interfaces with PPP encapsulation on which the PPP Challenge Handshake Authentication Protocol (CHAP) is configured, configure the shared secret (the CHAP secret key associated with a peer), as defined in RFC 1994.



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

Options	<i>chap-secret</i> —The secret key associated with a peer.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the CHAP Secret for an L2TP Profile on page 26• Configuring PPP CHAP Authentication• pap-password on page 127• Junos OS Administration Library

circuit-id (Address-Assignment Pools)

Syntax	<code>circuit-id <i>value</i> range <i>named-range</i>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes option-match option-82], [edit access protocol-attributes <i>attribute-set-name</i> option-match option-82]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure the address-assignment pool <i>named-range</i> to use for a particular option 82 Agent Circuit ID value.
Options	<i>value</i> —String for the Agent Circuit ID suboption (suboption 1) of the DHCP relay agent information option (option 82) in DHCP packets. <i>range named-range</i> —Name of the address-assignment pool range to use.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Address-Assignment Pools

circuit-type (DHCP Local Server)

Syntax circuit-type;

Hierarchy Level [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* authentication username-include],
 [edit logical-systems *logical-system-name* system services dhcp-local-server authentication username-include],
 [edit logical-systems *logical-system-name* system services dhcp-local-server dhcpv6 authentication username-include],
 [edit logical-systems *logical-system-name* system services dhcp-local-server dhcpv6 group *group-name* authentication username-include],
 [edit logical-systems *logical-system-name* system services dhcp-local-server group *group-name* authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* authentication username-include],
 [edit logical-systems *logical-system-name* routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* authentication username-include],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server authentication username-include],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 authentication username-include],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server dhcpv6 group *group-name* authentication username-include],
 [edit routing-instances *routing-instance-name* system services dhcp-local-server group *group-name* authentication username-include],
 [edit system services dhcp-local-server authentication username-include],
 [edit system services dhcp-local-server dhcpv6 authentication username-include],
 [edit system services dhcp-local-server dhcpv6 group *group-name* authentication username-include],
 [edit system services dhcp-local-server group *group-name* authentication username-include]

Release Information Statement introduced in Junos OS Release 9.1.
 Statement introduced in Junos OS Release 12.3R2 for EX Series switches.

Description Specify that the circuit type is concatenated with the username during the subscriber authentication or client authentication process.

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

Related Documentation • *Using External AAA Authentication Services with DHCP*

client

```
Syntax  client client-name {
        chap-secret chap-secret;
        group-profile profile-name;
        ike {
            allowed-proxy-pair {
                remote remote-proxy-address local local-proxy-address;
            }
            pre-shared-key (ascii-text character-string | hexadecimal hexadecimal-digits);
            ike-policy policy-name;
            interface-id string-value;
        }
        l2tp {
            aaa-access-profile profile-name;
            interface-id interface-id;
            lcp-renegotiation;
            local-chap;
            maximum-sessions number;
            maximum-sessions-per-tunnel number;
            multilink {
                drop-timeout milliseconds;
                fragment-threshold bytes;
            }
            override-result-code session-out-of-resource;
            ppp-authentication (chap | pap);
            ppp-profile profile-name;
            sessions-limit-group;
            shared-secret shared-secret;
        }
        pap-password pap-password;
        ppp {
            cell-overhead;
            encapsulation-overhead bytes;
            framed-ip-address ip-address;
            framed-pool framed-pool;
            idle-timeout seconds;
            interface-id interface-id;
            keepalive seconds;
            primary-dns primary-dns;
            primary-wins primary-wins;
            secondary-dns secondary-dns;
            secondary-wins secondary-wins;
        }
        user-group-profile profile-name;
    }
```

Hierarchy Level [edit access *profile profile-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure the peer identity.



NOTE: Subordinate statement support depends on the platform. See individual statement topics for more detailed support information.

Options *client-name*—A peer identity. For L2TP clients, you can use a special name to configure a default client. This client enables the LNS to accept any LAC to establish the session. On M Series routers, use * for the default client configuration. On MX Series routers, use **default**.


The remaining statements are explained separately. See [CLI Explorer](#).

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

Related Documentation

- [Configuring the L2TP Client on page 24](#)
- [Configuring Access Profiles for L2TP or PPP Parameters on page 19](#)
- [Configuring an L2TP Access Profile on the LNS](#)

client-authentication-algorithm

Syntax	client-authentication-algorithm (direct round-robin);
Hierarchy Level	[edit access profile <i>profile-name</i> radius options]
Release Information	Statement introduced in Junos OS Release 10.0. Statement introduced in Junos OS Release 13.2X50-D10 for EX Series switches.
Description	<p>Configure the method that the authenticator uses to access RADIUS authentication servers when there are multiple servers configured. Initially, a RADIUS client sends a request to a RADIUS authentication or accounting server. The router or switch, acting as the authenticator, waits for a response from the server before sending another request.</p> <p>When there are multiple RADIUS server connections configured for a client, the authenticator attempts to reach the different servers in the order that they are configured. If there is no response from the first RADIUS server, the authenticator attempts to reach the next RADIUS server. This process repeats until the client is either granted access or there are no more configured servers.</p> <p>If the direct method is configured, the authenticator always treats the first server in the list as the primary server. The authenticator moves on to the second server only if the attempt to reach the first server fails. If the round-robin method is configured, the server chosen first will be rotated based on which server was used last. The first server in the list is treated as a primary for the first authentication request, but for the second request, the second server configured is treated as primary, and so on. With this method, all of the configured servers receive roughly the same number of requests on average so that no single server has to handle all of the requests.</p>
	<div> NOTE: The round-robin access method is not recommended for use with EX Series switches.</div>
Default	The direct option is the default.
Options	<p>direct—Use the direct access method. The authenticator contacts the first RADIUS server on the list for each request, the second server if the first one fails, and so on.</p> <p>round-robin—Use the round-robin method. The authenticator contacts the first RADIUS server for the first request, the second server for the second request, and so on.</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.

- Related Documentation**
- *Configuring RADIUS Server Parameters for Subscriber Access*
 - *Configuring RADIUS Server Options for Subscriber Access*

client-idle-timeout

Syntax	<code>client-idle-timeout <i>minutes</i>;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> session-options]</code>
Release Information	Statement introduced in Junos OS Release 8.5.
Description	<p>Specify the grace period that begins after an authenticated user terminates all sessions and connections. Authentication is not required if a new connection is initiated during the grace period by the same user.</p> <p>During this period, the router determines whether the subscriber is inactive by monitoring data traffic, both upstream from the user (ingress) and downstream to the user (egress). Control traffic is ignored. The subscriber is not considered idle as long as data traffic is detected in either direction. When no traffic is detected for the duration of the idle time out, non-DHCP subscribers (such as L2TP or PPP) are gracefully logged out, similarly to a RADIUS-initiated disconnect or a CLI-initiated logout; DHCP subscribers are disconnected.</p> <p>When you additionally configure the related <code>client-idle-timeout-ingress-only</code> statement (MX Series only), the router monitors only ingress traffic to determine whether the subscriber is inactive; it does not monitor any egress traffic. The related client-session-timeout statement terminates the subscriber session when the session timeout expires regardless of user activity.</p> <p>Client idle timeouts are most often used for residential services rather than business services. The most practical use case for this timeout is in a PPP access model. It is not practical for DHCP or DHCPv6 subscribers.</p> <p>Although you can use the client-idle-timeout statement for dynamically configured subscriber VLANs, this configuration is useful only in limited circumstances (such as IP over Ethernet without DHCP and with fixed addresses) and is not typically used. If you do use the idle timeout for VLANs, the timeout period starts when the VLAN is instantiated. It resets when a client session is created or an existing session is reactivated. When no traffic is detected on an authenticated VLAN for the duration of the timeout, the VLAN is considered inactive and is deleted. If no client sessions are ever created on the VLAN, then the VLAN is removed when the timeout expires.</p>
Default	The timeout is not configured.
Options	<p><i>minutes</i>—Number of minutes of idle time that elapse before the session is terminated. The value that you specify must be determined locally with consideration of the services and policies that you offer.</p> <p>Range: 10 through 1440 minutes</p>

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

Related Documentation

- [Understanding Session Options for Subscriber Access on page 48](#)
- [Configuring Subscriber Session Timeout Options on page 53](#)
- *Removing Inactive Dynamic Subscriber VLANs*

client-session-timeout

Syntax `client-session-timeout minutes;`

Hierarchy Level `[edit access profile profile-name session-options]`

Release Information Statement introduced in Junos OS Release 8.5.

Description Specify the amount of time after which user sessions are terminated, regardless of user activity (also known as a forced or hard authentication timeout).

Alternatively, when you want subscribers to be identified as inactive before they are terminated, use the related statements, [client-idle-timeout](#) and [client-idle-timeout-ingress-only](#). Use [client-idle-timeout](#) alone to specify a period of time during which both ingress and egress subscriber data traffic is monitored; if no traffic is detected for the duration of the period, the subscriber is considered inactive and is terminated. Add the [client-idle-timeout-ingress-only](#) statement to monitor only ingress traffic for the duration of the timeout set with the [client-idle-timeout](#) statement.



BEST PRACTICE: We recommend that you do not configure a session timeout for subscribers receiving voice services. Because the session timeout is a simple time-based timeout, it is likely to interrupt subscribers actively using a voice service and terminate their calls unexpectedly (from the subscriber viewpoint). This result is a particular concern for emergency services calls.

Client session timeouts are most often used for residential services rather than business services. The most practical use case for this timeout is in a PPP access model when no voice services are offered. For DHCP or DHCPv6 subscribers, the session timeout is used as the DHCP lease timer if no other lease time configuration is present.

Although you can use the `client-session-timeout` statement for dynamically configured subscriber VLANs, this configuration is useful only in limited circumstances (such as IP over Ethernet without DHCP and with fixed addresses) and is not typically used. If you do use the session timeout for VLANs, the timeout period starts when the VLAN is instantiated.

Default The timeout is not configured.

Options *minutes*—Number of minutes after which user sessions are terminated. The value that you specify must be determined locally with consideration of the services and policies that you offer.

Range: 1 through 527040 minutes

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

Related Documentation

- [Understanding Session Options for Subscriber Access on page 48](#)
- [Configuring Subscriber Session Timeout Options on page 53](#)

dead-peer-detection

Syntax `dead-peer-detection {
 (always-send | optimized | probe-idle-tunnel);
 interval seconds;
 threshold number;
}`

Hierarchy Level [edit security ike gateway *gateway-name*]

Release Information Statement introduced in Junos OS Release 8.5. Support for the **optimized** and **probe-idle-tunnel** options added in Junos OS Release 12.1X46-D10.

Description Enable the device to use dead peer detection (DPD). DPD is a method used by devices to verify the current existence and availability of IPsec peers. A device performs this verification by sending encrypted IKE Phase 1 notification payloads (R-U-THERE messages) to a peer and waiting for DPD acknowledgements (R-U-THERE-ACK messages) from the peer.

Options The remaining statements are explained separately. See [CLI Explorer](#).

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

Related Documentation

- [Understanding AutoVPN](#)
- [IPSec VPN Overview](#)

dhcp-attributes (Address-Assignment Pools)

Syntax dhcp-attributes {
 boot-file *filename*;
 boot-server (*address* | *hostname*);
 dns-server [*ipv6-address*];
 domain-name *domain-name*;
 exclude-prefix-len *exclude-prefix-length*;
 grace-period *seconds*;
 maximum-lease-time *seconds*;
 name-server [*server-list*];
 netbios-node-type *node-type*;
 option {
 [(*id-number* *option-type* *option-value*)
 (*id-number* *array* *option-type* *option-value*)];
 }
 option-match {
 option-82 {
 circuit-id *value* *range* *named-range*;
 remote-id *value* *range* *named-range*;
 }
 }
 preferred-lifetime *seconds*;
 router [*router-address*];
 server-identifier *ip4-address*;
 sip-server-address [*ipv6-address*];
 sip-server-domain-name *domain-name*;
 t1-percentage *percentage*;
 t1-renewal-time;
 t2-percentage *percentage*;
 t2-rebinding-time;
 tftp-server *address*;
 valid-lifetime *seconds*;
 wins-server [*servers*];
 }

Hierarchy Level [edit access address-assignment *pool* *pool-name* family *family*]

Release Information Statement introduced in Junos OS Release 9.0.
 Statement introduced in Junos OS Release 12.3 for EX Series switches.
exclude-prefix-len statement introduced in Junos OS Release 17.3 for MX Series.

Description Configure DHCP attributes for the protocol family in a specific address pool. The attributes determine options and behaviors for the DHCP clients.

The remaining statements are explained separately.

Options **exclude-prefix-len** *exclude-prefix-length*—Specify the length of the IPv6 prefix to be excluded from the delegated prefix.
Range: 1 through 128

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

Related Documentation

- *Address-Assignment Pools Overview*
- *DHCP Attributes for Address-Assignment Pools*
- *Configuring Address-Assignment Pools*
- *Configuring DHCP Client-Specific Attributes Applied When Clients Obtain an Address*

domain-name (Address-Assignment Pools)

Syntax `domain-name domain-name;`

Hierarchy Level [edit access address-assignment pool *pool-name* family inet [dhcp-attributes](#)],
[edit access protocol-attributes *attribute-set-name*]

Release Information Statement introduced in Junos OS Release 9.0.

Description Configure the name of the domain in which clients search for a DHCP server host. This is the default domain name that is appended to hostnames that are not fully qualified. This is equivalent to DHCP option 15.

Options *domain-name*—Name of the domain.

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

Related Documentation

- *Configuring Address-Assignment Pools*

drop-timeout

Syntax	<code>drop-timeout <i>milliseconds</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> l2tp multilink]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the drop timeout for a multilink bundle.
Options	<i>milliseconds</i> —Number of milliseconds for the timeout that is associated with the first fragment on the reassembly queue. If the timeout expires before all the fragments have been collected, the fragments at the beginning of the reassembly queue are dropped. If the drop timeout is not specified, the Junos OS holds on to the fragments. (Fragments may still be dropped if the multilink reassembly algorithm determines that another fragment belonging to the packet on a reassembly queue has been lost.)
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring L2TP Properties for a Client-Specific Profile on page 27


dynamic-request-port

Syntax	<code>dynamic-request-port <i>port-number</i>;</code>
Hierarchy Level	[edit access radius-server <i>server-address</i>], [edit access profile <i>profile-name</i> radius-server <i>server-address</i>]
Release Information	Statement introduced in Junos OS Release 14.2R1 for MX Series routers.
Description	Configure the port number on which to contact the RADIUS dynamic-request server.
Options	<i>port-number</i> —Port number on which to contact the RADIUS dynamic-request server. Default: 3799 (as specified in RFC 5176)
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RADIUS-Initiated Dynamic Request Support

encapsulation-overhead

Syntax	<code>encapsulation-overhead bytes;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> ppp], [edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	Configure the encapsulation overhead for class-of-service calculations.
Options	bytes —The number of bytes used as encapsulation overhead for the session.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the PPP Attributes for a Group Profile on page 17 • Configuring PPP Properties for a Client-Specific Profile on page 31

ethernet-port-type-virtual

Syntax	<code>ethernet-port-type-virtual;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> radius options]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Specify the physical port type the router or switch uses to authenticate clients. The router or switch passes a port type of ethernet in RADIUS attribute 61 (NAS-Port-Type) by default. This statement specifies a port type of virtual .
<div style="display: flex; align-items: center;">  <div> <p>NOTE: This statement takes precedence over the <code>nas-port-type</code> statement if you include both statements in the same access profile.</p> </div> </div>	
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring RADIUS Server Options for Subscriber Access • Configuring RADIUS Server Parameters for Subscriber Access

exclude (RADIUS)

Syntax `exclude {`

- `acc-aggr-cir-id-asc [access-request | accounting-start | accounting-stop];`
- `acc-aggr-cir-id-bin [access-request | accounting-start | accounting-stop];`
- `acc-loop-cir-id [access-request | accounting-start | accounting-stop];`
- `acc-loop-encap [access-request | accounting-on | accounting-off | accounting-start | accounting-stop];`
- `acc-loop-remote-id [access-request | accounting-on | accounting-off | accounting-start | accounting-stop];`
- `accounting-authentic [accounting-on | accounting-off];`
- `accounting-delay-time [accounting-on | accounting-off];`
- `accounting-session-id [access-request | accounting-on | accounting-off | accounting-stop];`
- `accounting-terminate-cause [accounting-off];`
- `acct-tunnel-connection [access-request | accounting-start | accounting-stop];`
- `act-data-rate-dn [access-request | accounting-start | accounting-stop];`
- `act-data-rate-up [access-request | accounting-start | accounting-stop];`
- `act-interlv-delay-dn [access-request | accounting-start | accounting-stop];`
- `act-interlv-delay-up [access-request | accounting-start | accounting-stop];`
- `att-data-rate-dn [access-request | accounting-start | accounting-stop];`
- `att-data-rate-up [access-request | accounting-start | accounting-stop];`
- `called-station-id [access-request | accounting-start | accounting-stop];`
- `calling-station-id [access-request | accounting-start | accounting-stop];`
- `chap-challenge [access-request];`
- `chargeable-user-identity [access-request];`
- `class [accounting-start | accounting-stop];`
- `cos-shaping-rate [accounting-start | accounting-stop];`
- `dhcp-gi-address [access-request | accounting-start | accounting-stop];`
- `dhcp-mac-address [access-request | accounting-start | accounting-stop];`
- `dhcp-options [access-request | accounting-start | accounting-stop];`
- `downstream-calculated-qos-rate [access-request | accounting-start | accounting-stop];`
- `dsl-forum-attributes [access-request | accounting-start | accounting-stop];`
- `dsl-line-state [access-request | accounting-start | accounting-stop];`
- `dsl-type [access-request | accounting-start | accounting-stop];`
- `event-timestamp [accounting-on | accounting-off | accounting-start | accounting-stop];`
- `filter-id [accounting-start | accounting-stop];`
- `first-relay-ipv4-address [access-request | accounting-start | accounting-stop];`
- `first-relay-ipv6-address [access-request | accounting-start | accounting-stop];`
- `framed-ip-address [accounting-start | accounting-stop];`
- `framed-ip-netmask [accounting-start | accounting-stop];`
- `input-filter [accounting-start | accounting-stop];`
- `input-gigapackets [accounting-stop];`
- `input-gigawords [accounting-stop];`
- `interface-description [access-request | accounting-start | accounting-stop];`
- `l2tp-rx-connect-speed [access-request | accounting-start | accounting-stop];`
- `l2tp-tx-connect-speed [access-request | accounting-start | accounting-stop];`
- `max-data-rate-dn [access-request | accounting-start | accounting-stop];`
- `max-data-rate-up [access-request | accounting-start | accounting-stop];`
- `max-interlv-delay-dn [access-request | accounting-start | accounting-stop];`
- `max-interlv-delay-up [access-request | accounting-start | accounting-stop];`
- `min-data-rate-dn [access-request | accounting-start | accounting-stop];`

```

min-data-rate-up [ access-request | accounting-start | accounting-stop ];
min-lp-data-rate-dn [ access-request | accounting-start | accounting-stop ];
min-lp-data-rate-up [ access-request | accounting-start | accounting-stop ];
nas-identifier [ access-request | accounting-on | accounting-off | accounting-start |
    accounting-stop ];
nas-port [ access-request | accounting-start | accounting-stop ];
nas-port-id [ access-request | accounting-start | accounting-stop ];
nas-port-type [ access-request | accounting-start | accounting-stop ];
output-filter [ accounting-start | accounting-stop ];
output-gigapackets [ accounting-stop ];
output-gigawords [ accounting-stop ];
pppoe-description [ access-request | accounting-start | accounting-stop ];
tunnel-assignment-id [ access-request | accounting-start | accounting-stop ];
tunnel-client-auth-id [ access-request | accounting-start | accounting-stop ];
tunnel-client-endpoint [ access-request | accounting-start | accounting-stop ];
tunnel-medium-type [ access-request | accounting-start | accounting-stop ];
tunnel-server-auth-id [ access-request | accounting-start | accounting-stop ];
tunnel-server-endpoint [ access-request | accounting-start | accounting-stop ];
tunnel-type [ access-request | accounting-start | accounting-stop ];
upstream-calculated-qos-rate [ access-request | accounting-start | accounting-stop ];
virtual-router [ access-request | accounting-start | accounting-stop ];
}

```

Hierarchy Level [edit access profile *profile-name* radius [attributes](#)]

Release Information Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 9.1 for EX Series switches.
Options **downstream-calculated-qos-rate**, **dsl-forum-attributes**, and **upstream-calculated-qos-rate** added in Junos OS Release 11.4.
Options **cos-shaping-rate** and **filter-id** added in Junos OS Release 13.2.
Option **pppoe-description** added in Junos OS Release 14.2.
Option **virtual-router** added in Junos OS Release 15.1.
Options **first-relay-ipv4-address** and **first-relay-ipv6-address** added in Junos OS Release 16.1.
Options **acc-loop-encap** and **acc-loop-remote-id** added in Junos OS Release 16.1R4.
Option **access-request** support for all tunnel attributes added in Junos OS Release 15.1R7, 16.1R5, 16.2R2, 17.1R2, 17.2R2, and 17.3R1 for MX Series.

Description Configure the router or switch to exclude the specified attributes from the specified type of RADIUS message.

Not all attributes are available in all types of RADIUS messages. By default, the router or switch includes the specified attributes in RADIUS Access-Request, Acct-On, Acct-Off, Acct-Start, and Acct-Stop messages.



NOTE: If you exclude an attribute from Acct-Off messages, the attributes are then excluded from Interim-Acct messages.

Options RADIUS attribute type—RADIUS attribute, Juniper Networks (vendor ID 4874) VSA number and name, or DSL Forum (vendor ID 3561) VSA number and name:

- **acc-aggr-cir-id-asc**—Juniper Networks VSA 26-112, Acc-Aggr-Cir-Id-Asc.
- **acc-aggr-cir-id-bin**—Juniper Networks VSA 26-111, Acc-Aggr-Cir-Id-Bin.
- **acc-loop-cir-id**—Juniper Networks VSA 26-110, Acc-Loop-Cir-Id.
- **acc-loop-encap**—Juniper Networks VSA 26-183, Acc-Loop-Encap.
- **acc-loop-remote-id**—Juniper Networks VSA 26-182, Acc-Loop-Remote-Id.
- **accounting-authentic**—RADIUS attribute 45, Acct-Authentic.
- **accounting-delay-time**—RADIUS attribute 41, Acct-Delay-Time.
- **accounting-session-id**—RADIUS attribute 44, Acct-Session-Id.
- **accounting-terminate-cause**—RADIUS attribute 49, Acct-Terminate-Cause.
- **acct-tunnel-connection**—RADIUS attribute 68, Acct-Tunnel-Connection.
- **act-data-rate-dn**—Juniper Networks VSA 26-114, Act-Data-Rate-Dn
- **act-data-rate-up**—Juniper Networks VSA 26-113, Act-Data-Rate-Up
- **act-interlv-delay-dn**—Juniper Networks VSA 26-126, Act-Interlv-Delay-Dn
- **act-interlv-delay-up**—Juniper Networks VSA 26-124, Act-Interlv-Delay-Up
- **att-data-rate-dn**—Juniper Networks VSA 26-118, Att-Data-Rate-Dn
- **att-data-rate-up**—Juniper Networks VSA 26-117, Att-Data-Rate-Up
- **called-station-id**—RADIUS attribute 30, Called-Station-Id.
- **calling-station-id**—RADIUS attribute 31, Calling-Station-Id.
- **chargeable-user-identity**—RADIUS attribute 89, Chargeable-User-Identity.
- **class**—RADIUS attribute 25, Class.
- **cos-shaping-rate**—Juniper Networks VSA 26-177, Cos-Shaping-Rate.
- **dhcp-gi-address**—Juniper Networks VSA 26-57, DHCP-GI-Address.
- **dhcp-mac-address**—Juniper Networks VSA 26-56, DHCP-MAC-Address.
- **dhcp-options**—Juniper Networks VSA 26-55, DHCP-Options.
- **downstream-calculated-qos-rate**—Juniper Networks VSA 26-141
- **dsl-forum-attributes**—DSL Forum VSA (vendor ID 3561) as described in RFC 4679, *DSL Forum Vendor-Specific RADIUS Attributes*
- **dsl-line-state**—Juniper Networks VSA 26-127, DSL-Line-State
- **dsl-type**—Juniper Networks VSA 26-128, DSL-Type
- **event-timestamp**—RADIUS attribute 55, Event-Timestamp.
- **filter-id**—RADIUS attribute 11, Filter-Id.

- **first-relay-ipv4-address**—Juniper Networks VSA 26-187, DHCP-First-Relay-IPv4-Address.
- **first-relay-ipv6-address**—Juniper Networks VSA 26-188, DHCP-First-Relay-IPv6-Address.
- **framed-ip-address**—RADIUS attribute 8, Framed-IP-Address.
- **framed-ip-netmask**—RADIUS attribute 9, Framed-IP-Netmask.
- **input-filter**—Juniper Networks VSA 26-10, Ingress-Policy-Name.
- **input-gigapackets**—Juniper Networks VSA 26-42, Acct-Input-Gigapackets.
- **input-gigawords**—RADIUS attribute 52, Acct-Input-Gigawords.
- **interface-description**—Juniper Networks VSA 26-53, Interface-Desc.
- **l2tp-rx-connect-speed**—Juniper Networks VSA 26-163, Rx-Connect-Speed
- **l2tp-tx-connect-speed**—Juniper Networks VSA 26-162, Tx-Connect-Speed
- **max-data-rate-dn**—Juniper Networks VSA 26-120, Max-Data-Rate-Dn
- **max-data-rate-up**—Juniper Networks VSA 26-119, Max-Data-Rate-Up
- **max-interlv-delay-dn**—Juniper Networks VSA 26-125, Max-Interlv-Delay-Dn
- **max-interlv-delay-up**—Juniper Networks VSA 26-123, Max-Interlv-Delay-Up
- **min-data-rate-dn**—Juniper Networks VSA 26-116, Min-Data-Rate-Dn
- **min-data-rate-up**—Juniper Networks VSA 26-115, Min-Data-Rate-Up
- **min-lp-data-rate-dn**—Juniper Networks VSA 26-122, Min-Lp-Data-Rate-Dn
- **min-lp-data-rate-up**—Juniper Networks VSA 26-121, Min-Lp-Data-Rate-Up
- **nas-identifier**—RADIUS attribute 32, NAS-Identifier.
- **nas-port**—RADIUS attribute 5, NAS-Port.
- **nas-port-id**—RADIUS attribute 87, NAS-Port-Id.
- **nas-port-type**—RADIUS attribute 61, NAS-Port-Type.
- **output-filter**—Juniper Networks VSA 26-11, Egress-Policy-Name.
- **output-gigapackets**—Juniper Networks VSA 26-43, Acct-Output-Gigapackets.
- **output-gigawords**—RADIUS attribute 53, Acct-Output-Gigawords.
- **pppoe-description**—Juniper Networks VSA 26-24, PPPoE-Description.
- **tunnel-assignment-id**—RADIUS attribute 82, Tunnel-Assignment-ID.
- **tunnel-client-auth-id**—RADIUS attribute 90, Tunnel-Client-Auth-ID.
- **tunnel-client-endpoint**—RADIUS attribute 66, Tunnel-Client-Endpoint.
- **tunnel-medium-type**—RADIUS attribute 65, Tunnel-Medium-Type.
- **tunnel-server-auth-id**—RADIUS attribute 91, Tunnel-Server-Auth-ID.
- **tunnel-server-endpoint**—RADIUS attribute 67, Tunnel-Server-Endpoint.

- **tunnel-type**—RADIUS attribute 64, Tunnel-Type.
- **upstream-calculated-qos-rate**—Juniper Networks VSA 26-142
- **virtual-router**—Juniper Networks VSA 26-1

RADIUS message type:

- **access-request**—RADIUS Access-Request messages.
- **accounting-off**—RADIUS Accounting-Off messages.
- **accounting-on**—RADIUS Accounting-On messages.
- **accounting-start**—RADIUS Accounting-Start messages.
- **accounting-stop**—RADIUS Accounting-Stop messages.

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

Related Documentation	<ul style="list-style-type: none">• <i>Configuring How RADIUS Attributes Are Used for Subscriber Access</i>• <i>Configuring RADIUS Server Parameters for Subscriber Access</i>
------------------------------	---

fragment-threshold (Access)

Syntax	fragment-threshold <i>bytes</i> ;
---------------	-----------------------------------

Hierarchy Level	[edit access profile profile-name client client-name l2tp multilink]
------------------------	---

Release Information	Statement introduced before Junos OS Release 7.4.
----------------------------	---

Description	Configure the fragmentation threshold for a multilink bundle.
--------------------	---

Options	bytes —The maximum number of bytes in a packet. If a packet exceeds the fragmentation threshold, the Junos OS fragments it into two or more multilink fragments.
----------------	---

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

Related Documentation	<ul style="list-style-type: none">• Configuring L2TP Properties for a Client-Specific Profile on page 27• multilink on page 117
------------------------------	--

framed-ip-address

Syntax	<code>framed-ip-address <i>address</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify a framed IP address.
Options	<i>address</i> —The IP version 4 (IPv4) prefix.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring PPP Properties for a Client-Specific Profile on page 31


framed-pool

Syntax	<code>framed-pool <i>framed-pool</i>;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> ppp], [edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the address pool.
Options	<i>framed-pool</i> —References a configured address pool.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the PPP Attributes for a Group Profile on page 17 • Configuring PPP Properties for a Client-Specific Profile on page 31

grace-period

Syntax	<code>grace-period <i>seconds</i>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family (inet inet6) dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure the amount of time that the client retains the address lease after the lease expires. The address cannot be reassigned to another client during the grace period.
Options	seconds —Number of seconds the lease is retained. Range: 0 through 4,294,967,295 seconds Default: 0 (no grace period)
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Address-Assignment Pools

group-profile (Associating with Client)

Syntax	<code>group-profile <i>profile-name</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Associate a group profile with a client.
<div> NOTE: This statement is not supported for L2TP LNS on MX Series routers.</div>	
Options	profile-name —Name assigned to the group profile.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Referencing the Group Profile from the L2TP Profile on page 27

group-profile (Group Profile)

```
Syntax  group-profile profile-name {
        l2tp {
            interface-id interface-id;
            lcp-renegotiation;
            local-chap;
            maximum-sessions-per-tunnel number;
        }
        ppp {
            cell-overhead;
            encapsulation-overhead bytes;
            framed-pool pool-id;
            idle-timeout seconds;
            interface-id interface-id;
            keepalive seconds;
            ppp-options {
                aaa-options aaa-options-name;
                chap;
                initiate-ncp (ip | ipv6 | dual-stack-passive)
                ipcp-suggest-dns-option;
                mru;
                mtu;
                pap;
                peer-ip-address-optional;
            }
            primary-dns primary-dns;
            primary-wins primary-wins;
            secondary-dns secondary-dns;
            secondary-wins secondary-wins;
        }
    }
```

Hierarchy Level [edit access]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure the group profile.



NOTE: Subordinate statement support depends on the platform. See individual statement topics for more detailed support information.

Options *profile-name*—Name assigned to the group profile.

The remaining statements are explained separately.

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

- Related Documentation**
- [Configuring the Group Profile for Defining L2TP Attributes on page 16](#)
 - [Applying PPP Attributes to L2TP LNS Subscribers with a User Group Profile](#)


hardware-address

Syntax	<code>hardware-address <i>mac-address</i>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family (inet inet6) host <i>hostname</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify the MAC address of the client. This is the hardware address that identifies the client on the network.
Options	<i>mac-address</i> —MAC address of the client.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Address-Assignment Pools

host (Address-Assignment Pools)

Syntax	<pre>host <i>hostname</i> { hardware-address <i>mac-address</i>; ip-address <i>ip-address</i>; }</pre>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family (inet inet6)]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure a static binding for the specified client.
Options	<i>hostname</i> —Name of the client. The remaining statements are explained separately. See CLI Explorer .
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Address-Assignment Pools Overview• Configuring Address-Assignment Pools

idle-timeout (Access)

Syntax	<code>idle-timeout seconds;</code>
Hierarchy Level	<code>[edit access group-profile <i>profile-name</i> ppp],</code> <code>[edit access profile <i>profile-name</i> client <i>client-name</i> ppp]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 11.1 for the QFX Series. Statement introduced in Junos OS Release 14.1X53-D20 for OCX Series switches.
Description	<p>Configure the idle timeout for a user. The router might consider a PPP session to be idle because of the following reasons:</p> <ul style="list-style-type: none"> • There is no ingress traffic on the PPP session. • There is no egress traffic. • There is neither ingress or egress traffic on the PPP session. • There is no ingress or egress PPP control traffic. This is applicable only if keepalives are enabled.
Options	<p>seconds—Number of seconds a user can remain idle before the session is terminated.</p> <p>Range: 0 through 4,294,967,295 seconds</p> <p>Default: 0</p>
<div>  <p>NOTE: The <code>[edit access]</code> hierarchy is not available on QFabric systems.</p> </div>	
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring the PPP Attributes for a Group Profile on page 17 • Configuring PPP Properties for a Client-Specific Profile on page 31 • Applying PPP Attributes to L2TP LNS Subscribers with a User Group Profile

ignore

Syntax	<pre>ignore { dynamic-iflset-name; framed-ip-netmask; input-filter; logical-system-routing-instance; output-filter; }</pre>
Hierarchy Level	[edit access profile <i>profile-name</i> radius attributes]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure the router or switch to ignore the specified attributes in RADIUS Access-Accept messages. By default, the router or switch processes the attributes it receives from the external server.
Options	<p>dynamic-iflset-name—Ignore Interface-Set/Dynamic-Iflset-Name (VSA 26-130).</p> <p>framed-ip-netmask—Ignore Framed-IP-Netmask (RADIUS attribute 9).</p> <p>input-filter—Ignore Ingress-Policy-Name (VSA 26-10).</p> <p>logical-system-routing-instance—Ignore Virtual-Router (VSA 26-1).</p> <p>output-filter—Ignore Egress-Policy-Name (VSA 26-11).</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• <i>Configuring How RADIUS Attributes Are Used for Subscriber Access</i>• <i>Configuring RADIUS Server Parameters for Subscriber Access</i>

ike (Access Profile)

Syntax

```
ike {
    allowed-proxy-pair {
        remote remote-proxy-address local local-proxy-address;
    }
    dead-peer-detection {
        interval seconds
        threshold number
    }
    ike-policy policy-name;
    initiate-dead-peer-detection;
    interface-id string-value;
    ipsec-policy ipsec-policy;
    pre-shared-key (ascii-text character-string | hexadecimal hexadecimal-digits);
    reverse-route
}
```

Hierarchy Level [edit access profile *profile-name* *client* *client-name*]

Release Information Statement introduced in Junos OS Release 7.4.
ike-policy statement introduced in Junos OS Release 8.2.

Description Configure an IKE access profile.

The remaining statements are explained separately.



NOTE: This statement is not supported on MX Series routers.

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

Related Documentation

- [Configuring an IKE Access Profile on page 23](#)

ike-policy

Syntax	<code>ike-policy <i>policy-name</i>;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> client <i>client-name</i> ike]</code>
Release Information	Statement introduced in Junos OS Release 8.2.
Description	Specify the IKE policy used to authenticate dynamic peers during IKE negotiation.
Options	<i>policy-name</i> —The name of an IKE policy configured at the <code>[edit services ipsec-vpn ike policy <i>policy-name</i>]</code> hierarchy level. The IKE policy defines either the local digital certificate or the pre-shared key used for IKE authentication with dynamic peers. For more information about how to configure the IKE policy, see the <i>Junos OS Services Interfaces Library for Routing Devices</i> .
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring an IKE Access Profile on page 23• <i>Junos IPsec Feature Guide</i>• <i>Junos OS Services Interfaces Library for Routing Devices</i>

immediate-update

Syntax	<code>immediate-update;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> accounting]</code>
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure the router or switch to send an Acct-Update message to the RADIUS accounting server on receipt of a response (for example, an ACK or timeout) to the Acct-Start message.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring RADIUS Server Parameters for Subscriber Access</i>• <i>Configuring Per-Subscriber Session Accounting</i>

initiate-dead-peer-detection (IPsec)

Syntax	initiate-dead-peer-detection;
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> ike]
Release Information	Statement introduced in Junos OS Release 8.3.
Description	Detect inactive peers on dynamic IPsec tunnels.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring an IKE Access Profile on page 23

interface-description-format

Syntax	<pre>interface-description-format { exclude-adapter; exclude-channel; exclude-sub-interface; }</pre>
Hierarchy Level	[edit access profile <i>profile-name</i> radius options]
Release Information	<p>Statement introduced in Junos OS Release 9.1.</p> <p>Statement introduced in Junos OS Release 9.1 for EX Series switches.</p> <p>exclude-adapter and exclude-sub-interface options added in Junos OS Release 10.4.</p> <p>exclude-channel option added in Junos OS Release 17.3R1.</p>
Description	<p>Specify the information that is excluded from the interface description that the device passes to RADIUS for inclusion in the RADIUS attributes such as NAS-Port-ID (87) or Calling-Station-ID (31).</p> <p>The default format for nonchannelized interfaces is as follows:</p> <p><i>interface-type-slot/adapter/port.subinterface[:svlan-vlan]</i></p> <p>For example, consider physical interface ge-1/2/0, with a subinterface of 100 and SVLAN identifier of 100. The interface description used in the NAS-Port-ID is ge-1/2/0.100:100. If you exclude the subinterface, the description becomes ge-1/2/0:100.</p> <p>The default format for channelized interfaces is as follows:</p> <p><i>interface-type-slot/adapter/channel.subinterface[:svlan-vlan]</i></p> <p>The channel information (logical port number) is determined by this formula:</p> <p>Logical port number = 100 + (<i>actual-port-number</i> x 20) + <i>channel-number</i>.</p> <p>For example, consider a channelized interface 3 on port 2 where the:</p> <ul style="list-style-type: none">• Physical interface is xe-0/1/2:3.• Subinterface is 4.• SVLAN is 5.• VLAN is 6. <p>Using the formula, the logical port number = 100 + (2 x 20) + 3 = 143. Consequently, the default interface description is xe-0/1/143.4-5.6. If you exclude the channel information, the description becomes xe-0/1/2.4-5.6.</p>
Options	exclude-adapter —(Optional) Exclude the adapter from the interface description.

exclude-channel—(Optional) Exclude the channel information from the interface description.

exclude-sub-interface—(Optional) Exclude the subinterface from the interface description.

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

Related Documentation

- *Interface Text Descriptions for Inclusion in RADIUS Attributes*
- *Configuring RADIUS Server Options for Subscriber Access*
- *RADIUS Server Options for Subscriber Access*

interface-id

Syntax interface-id *interface-id*;

Hierarchy Level [edit access group-profile *profile-name* **l2tp**],
[edit access group-profile *profile-name* **ppp**],
[edit access profile *profile-name* client *client-name* ike],
[edit access profile *profile-name* client *client-name* **l2tp**],
[edit access profile *profile-name* client *client-name* **ppp**]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure the interface identifier.

Options *interface-id*—Identifier for the interface representing a Layer 2 Tunneling Protocol (L2TP) session configured at the [edit interfaces *interface-name* unit *local-unit-number* dial-options] hierarchy level. For more information about the interface ID, see *Services Interface Naming Overview*.

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

Related Documentation

- [Configuring L2TP for a Group Profile on page 17](#)
- [Configuring the PPP Attributes for a Group Profile on page 17](#)
- [Configuring L2TP Properties for a Client-Specific Profile on page 27](#)
- [Configuring PPP Properties for a Client-Specific Profile on page 31](#)
- [Configuring an IKE Access Profile on page 23](#)
- [Configuring an L2TP Access Profile on the LNS](#)

ip-address

Syntax	<code>ip-address <i>ip-address</i>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet host <i>hostname</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify the reserved IP address assigned to the client.
Options	<i>ip-address</i> —IP version 4 (IPv4) address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Address-Assignment Pools</i>• <i>Configuring Static Address Assignment</i>

keepalive

Syntax	<code>keepalive seconds;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> ppp], [edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the keepalive interval for an L2TP tunnel.
Options	<p>seconds—Time period that must elapse before the Junos OS checks the status of the Point-to-Point Protocol (PPP) session by sending an echo request to the peer.</p> <p>For L2TP on MX Series routers, the minimum recommended interval is 30 seconds. A value of 0 disables generation of keepalive messages from the LNS.</p> <p>Range: 0 through 32,767 seconds</p> <p>Default: 30 seconds</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring the PPP Attributes for a Group Profile on page 17 • Configuring PPP Properties for a Client-Specific Profile on page 31 • Applying PPP Attributes to L2TP LNS Subscribers with a User Group Profile

keepalive-retries

Syntax	<code>keepalive-retries <i>number-of-retries</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced in Junos OS Release 10.4.
Description	Configure the number of retry attempts for checking the keepalive status of a Point-to-Point (PPP) protocol session. Configure this setting to reduce the detection time for PPP client session timeouts or failures if you have configured the keepalive timeout interval (using the keepalive statement).
Options	<p><i>number-of-retries</i>—The maximum number of retries the L2TP network server (LNS) attempts by sending LCP echo requests to the peer to check the keepalive status of the PPP session. If there is no response from the PPP client within the specified number of retries, the PPP session is considered to have timed out.</p> <p>Range: 3 through 32,767 times</p> <p>Default: 10 times</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring PPP Properties for a Client-Specific Profile on page 31• keepalive on page 109

l2tp (Group Profile)

Syntax l2tp {
 interface-id *interface-id*;
 lcp-renegotiation;
 local-chap;
 maximum-sessions-per-tunnel *number*;
 }

Hierarchy Level [edit access **group-profile** *profile-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure the Layer 2 Tunneling Protocol for a group profile.

The remaining statements are explained separately.



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

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

Related Documentation • [Configuring L2TP for a Group Profile on page 17](#)

l2tp (Profile)

Syntax l2tp {
 interface-id *interface-id*;
 lcp-renegotiation;
 local-chap;
 maximum-sessions *number*;
 maximum-sessions-per-tunnel *number*;
 multilink {
 drop-timeout *milliseconds*;
 fragment-threshold *bytes*;
 }
 override-result-code session-out-of-resource;
 ppp-authentication (chap | pap);
 ppp-profile *profile-name*;
 sessions-limit-group;
 shared-secret *shared-secret*;
 }

Hierarchy Level [edit access profile *profile-name* **client** *client-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure the L2TP properties for a profile.

 The remaining statements are explained separately.




NOTE: Only the interface-id, lcp-renegotiation, maximum-sessions, maximum-sessions-per-tunnel, sessions-limit-group and shared-secret statements are supported for L2TP LNS on MX Series routers.

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


Related Documentation

- [Configuring L2TP Properties for a Client-Specific Profile on page 27](#)
- [Configuring an L2TP Access Profile on the LNS](#)

lcp-renegotiation

Syntax	lcp-renegotiation;
Hierarchy Level	[edit access group-profile <i>profile-name</i> l2tp], [edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the L2TP network server (LNS) so it renegotiates the link control protocol (LCP) with the PPP client. When LCP renegotiation is disabled, LNS uses the pre-negotiated LCP parameters between the L2TP access concentrator (LAC) and PPP client to set up the session. When LCP renegotiation is enabled, authentication is also renegotiated.
<div>  <p>NOTE: This statement is not supported at the [edit access group-profile l2tp] hierarchy level for L2TP LNS on MX Series routers.</p> </div>	
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring L2TP for a Group Profile on page 17 • Configuring L2TP Properties for a Client-Specific Profile on page 27

local-chap

Syntax	local-chap;
Hierarchy Level	[edit access group-profile <i>profile-name</i> l2tp], [edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the Junos OS so that the LNS ignores proxy authentication attribute-value pairs (AVPs) from the L2TP access concentrator (LAC) and reauthenticates the PPP client using a Challenge Handshake Authentication Protocol (CHAP) challenge. When you do this, the LNS directly authenticates the PPP client.
<div> NOTE: This statement is not supported for L2TP LNS on MX Series routers.</div>	
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring L2TP for a Group Profile on page 17• Configuring L2TP Properties for a Client-Specific Profile on page 27

maximum-lease-time

Syntax	<code>maximum-lease-time seconds;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family (inet inet6) dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify the maximum length of time, in seconds, that the lease is held for a client if the client does not renew the lease. This is equivalent to DHCP option 51. The maximum-lease-time is mutually exclusive with both the preferred-lifetime and the valid-lifetime , and cannot be configured with either timer.
Options	seconds —Maximum number of seconds the lease can be held. Range: 30 through 4,294,967,295 seconds Default: 86,400 (24 hours)
Required Privilege Level	admin —To view this statement in the configuration. admin-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Address-Assignment Pools</i> • <i>DHCP Attributes for Address-Assignment Pools</i> • <i>preferred-lifetime (Address-Assignment Pools)</i> • <i>valid-lifetime (Address-Assignment Pools)</i>

maximum-sessions-per-tunnel

Syntax	<code>maximum-sessions-per-tunnel <i>number</i>;</code>
Hierarchy Level	<code>[edit access group-profile l2tp],</code> <code>[edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the maximum sessions for a Layer 2 tunnel.



NOTE: This statement is not supported at the `[edit access group-profile l2tp]` hierarchy level for L2TP LNS on MX Series routers.

Options	<code><i>number</i></code> —Maximum number of sessions for a Layer 2 tunnel.
Required Privilege Level	<code>admin</code> —To view this statement in the configuration. <code>admin-control</code> —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring L2TP for a Group Profile on page 17• Configuring L2TP Properties for a Client-Specific Profile on page 27

multilink

Syntax	<code>multilink { drop-timeout <i>milliseconds</i>; fragment-threshold <i>bytes</i>; }</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure Multilink PPP for Layer 2 Tunneling Protocol (L2TP).



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

Options	The statements are explained separately.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring L2TP Properties for a Client-Specific Profile on page 27

name-server

Syntax	<code>name-server [<i>server-names</i>];</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure one or more Domain Name System (DNS) name servers available to the client to resolve hostname-to-client mappings. This is equivalent to DHCP option 6.
Options	<i>server-names</i> —IP addresses of the domain name servers, listed in order of preference.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Address-Assignment Pools

nas-identifier

Syntax	<code>nas-identifier <i>identifier-value</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> radius options]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure the value for the client RADIUS attribute 32 (NAS-Identifier). This attribute is used for authentication and accounting requests.
Options	<i>identifier-value</i> —String to use for authentication and accounting requests. Range: 1 through 64 characters
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring RADIUS Server Options for Subscriber Access</i>• <i>Configuring RADIUS Server Parameters for Subscriber Access</i>

nas-port-extended-format

Syntax

```
nas-port-extended-format {
  adapter-width width;
  ae-width width;
  port-width width;
  pw-width width;
  slot-width width;
  stacked-vlan-width width;
  vlan-width width;
  atm {
    adapter-width width;
    port-width width;
    slot-width width;
    vci-width width;
    vpi-width width;
  }
}
```

Hierarchy Level [edit access profile *profile-name* radius [options](#)]

Release Information Statement introduced in Junos OS Release 9.1.
 Statement introduced in Junos OS Release 9.1 for EX Series switches.
ae-width option added in Junos OS Release 12.1.
atm option added in Junos OS Release 12.3R3 and supported in later 12.3Rx releases.
atm option supported in Junos OS Release 13.2 and later releases. (Not supported in Junos OS Release 13.1.)
pw-width option added in Junos OS Release 15.1.

Description Configure the RADIUS client to use the extended format for RADIUS attribute 5 (NAS-Port) and specify the width of the fields in the NAS-Port attribute.

Options

- adapter-width *width***—Number of bits in the adapter field.
- ae-width *width***—Number of bits in the aggregated Ethernet identifier field.
- port-width *width***—Number of bits in the port field.
- pw-width *width***—Number of bits in the pseudowire field. Appears in the Cisco NAS-Port-Info AVP (100).
- slot-width *width***—Number of bits in the slot field.
- stacked-vlan-width *width***—Number of bits in the SVLAN ID field.
- vlan-width *width***—Number of bits in the VLAN ID field.



NOTE: The total of the widths must not exceed 32 bits, or the configuration will fail.

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

Related Documentation

- *Configuring RADIUS Server Options for Subscriber Access*
- *Configuring RADIUS Server Parameters for Subscriber Access*

netbios-node-type

Syntax netbios-node-type *node-type*;

Hierarchy Level [edit access address-assignment pool *pool-name* family inet [dhcp-attributes](#)],
[edit access protocol-attributes *attribute-set-name*]

Release Information Statement introduced in Junos OS Release 9.0.

Description Specify the NetBIOS node type. This is equivalent to DHCP option 46.

Options *node-type*—One of the following node types:

- **b-node**—Broadcast node
- **h-node**—Hybrid node
- **m-node**—Mixed node
- **p-node**—Peer-to-peer node

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

Related Documentation

- *Configuring Address-Assignment Pools*

network

Syntax	<code>network <i>ip-prefix</i> </<i>prefix-length</i>>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Configure subnet information for an IPv4 address-assignment pool.
Options	<i>ip-prefix</i> —IP version 4 address or prefix value. <i>prefix-length</i> —(Optional) Subnet mask.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Address-Assignment Pools</i>

option

Syntax	<pre>option { [(id-number option-type option-value) (id-number array option-type option-value)]; }</pre>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family (inet inet6) dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0. hex-string option type introduced in Junos OS Release 13.3.
Description	Specify user-defined options that are added to client packets.
Options	<p>array—An option can include an array of option types.</p> <p>id-number—Any whole number. The ID number is used to index the option and must be unique across a DHCP server.</p> <p>option-type—Any of the following types: byte, byte-stream, flag, hex-string, integer, ip-address, short, string, unsigned-integer, or unsigned-short.</p> <p>option-value—Value associated with an option. The option value must be compatible with the option type (for example, an On or Off value for a flag type).</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Address-Assignment Pools</i>

option-82 (Address-Assignment Pools)

Syntax	<pre>option-82 { circuit-id value range named-range; remote-id value range named-range; }</pre>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes option-match], [edit access protocol-attributes <i>attribute-set-name</i> option-match]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	<p>Specify the list of option 82 suboption match criteria used to select the named address range used for the client. The server matches the option 82 value in the user PDU to the specified option 82 match criteria and uses the named address range associated with the string.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Address-Assignment Pools</i>

option-match

Syntax	<pre>option-match { option-82 { circuit-id value range named-range; remote-id value range named-range; } }</pre>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	<p>Specify a list of match criteria used to determine which named address range in the address-assignment pool to use. The extended DHCP local server matches this information to the match criteria specified in the client PDUs. For example, for option 82 match criteria, the server matches the option 82 value in the user PDU to the specified option 82 string and uses the named range associated with the string.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Address-Assignment Pools</i>

options (Access Profile)

```
Syntax  options {
    accounting-session-id-format (decimal | description);
    calling-station-id-delimiter delimiter-character;
    calling-station-id-format {
        agent-circuit-id;
        agent-remote-id;
        interface-description;
        nas-identifier;
    }
    chap-challenge-in-request-authenticator;
    client-accounting-algorithm (direct | round-robin);
    client-authentication-algorithm (direct | round-robin);
    coa-dynamic-variable-validation;
    ethernet-port-type-virtual;
    access-loop-id-local;
    interface-description-format {
        exclude-adapter;
        exclude-channel;
        exclude-sub-interface;
    }
    ip-address-change-notify message;
    juniper-dsl-attributes;
    nas-identifier identifier-value;
    nas-port-extended-format {
        adapter-width width;
        ae-width width;
        port-width width;
        slot-width width;
        stacked-vlan-width width;
        vlan-width width;
        atm {
            adapter-width width;
            port-width width;
            pw-width width;
            slot-width width;
            vci-width width;
            vpi-width width;
        }
    }
    nas-port-id-delimiter delimiter-character;
    nas-port-id-format {
        agent-circuit-id;
        agent-remote-id;
        interface-description;
        interface-text-description;
        nas-identifier;
        order {
            agent-circuit-id;
            agent-remote-id;
            interface-description;
            interface-text-description;
            nas-identifier;
        }
    }
}
```

```
        postpend-vlan-tags;
    }
    postpend-vlan-tags;
}
nas-port-type {
    ethernet {
        port-type;
    }
}
revert-interval interval;
service-activation {
    dynamic-profile (optional-at-login | required-at-login);
    extensible-service (optional-at-login | required-at-login);
}
vlan-nas-port-stacked-format;
}
```

Hierarchy Level [edit access profile *profile-name* **radius**]

Release Information Statement introduced in Junos OS Release 9.1.
Statement introduced in Junos OS Release 9.1 for EX Series switches.

Description Configure the options used by RADIUS authentication and accounting servers.

The remaining statements are explained separately. See [CLI Explorer](#).

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


Related Documentation

- *Configuring RADIUS Server Options for Subscriber Access*
- *RADIUS Server Options for Subscriber Access*

order

Syntax	<code>order [<i>accounting-method</i>];</code>
Hierarchy Level	[edit access profile <i>profile-name</i> accounting]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Set the order in which the Junos OS tries different accounting methods for client activity. When a client logs in, the software tries the accounting methods in the specified order.
Options	<i>accounting-method</i> —One or more accounting methods. When a client logs in, the software tries the accounting methods in the following order, from first to last. The only valid value is radius for RADIUS accounting.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Authentication and Accounting Parameters for Subscriber Access

pap-password

Syntax	<code>pap-password <i>password</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the Password Authentication Protocol (PAP) password.
<div style="display: flex; align-items: center;">  <div> <p>NOTE: This statement is not supported for L2TP LNS on MX Series routers.</p> </div> </div>	
Options	<i>password</i> —PAP password.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the PAP Password for an L2TP Profile on page 30

pool (Address-Assignment Pools)

Syntax

```
pool pool-name {
  active-drain;
  family family {
    dhcp-attributes {
      [ protocol-specific attributes ]
    }
    host hostname {
      hardware-address mac-address;
      ip-address ip-address;
    }
    network ip-prefix / <prefix-length>;
    prefix ipv6-prefix;
    range range-name {
      high upper-limit;
      low lower-limit;
      prefix-length prefix-length;
    }
  }
  hold-down;
  link pool-name;
}
```

Hierarchy Level [edit access [address-assignment](#)]

Release Information Statement introduced in Junos OS Release 9.0.
Statement introduced in Junos OS Release 12.1 for EX Series switches.

Description Configure the name of an address-assignment pool.



NOTE: Subordinate statement support depends on the platform. See individual statement topics for more detailed support information.

Options *pool-name*—Name assigned to the address-assignment pool.

The remaining statements are explained separately. See [CLI Explorer](#).

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

Related Documentation

- [Address-Assignment Pools Overview](#)
- [Configuring Address-Assignment Pools](#)

port

Syntax	<code>port <i>port-number</i>;</code>
Hierarchy Level	[edit access radius-server <i>server-address</i>], [edit access profile <i>profile-name</i> radius-server <i>server-address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the port number on which to contact the RADIUS server.
Options	<i>port-number</i> —Port number on which to contact the RADIUS server. Default: 1812 (as specified in RFC 2865)
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Router or Switch Interaction with RADIUS Servers</i>• <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>

ppp (Group Profile)

Syntax

```
ppp {
  cell-overhead;
  encapsulation-overhead bytes;
  framed-pool framed-pool;
  idle-timeout seconds;
  interface-id interface-id;
  keepalive seconds;
  ppp-options {
    aaa-options aaa-options-name;
    chap;
    initiate-ncp (ip | ipv6 | dual-stack-passive)
    ipcp-suggest-dns-option;
    mru;
    mtu;
    pap;
    peer-ip-address-optional;
  }
  primary-dns primary-dns;
  primary-wins primary-wins;
  secondary-dns secondary-dns;
  secondary-wins secondary-wins;
}
```

Hierarchy Level [edit access [group-profile](#) *profile-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure PPP properties for a group profile.

The remaining statements are explained separately.



NOTE: Subordinate statement support depends on the platform. See individual statement topics for more detailed support information.

Required Privilege Level

admin—To view this statement in the configuration.
admin-control—To add this statement to the configuration.

Related Documentation

- [Configuring the PPP Attributes for a Group Profile on page 17](#)
- [Applying PPP Attributes to L2TP LNS Subscribers with a User Group Profile](#)

ppp (Profile)

Syntax

```
ppp {
  cell-overhead;
  encapsulation-overhead bytes;
  framed-ip-address address;
  framed-pool framed-pool;
  idle-timeout seconds;
  interface-id interface-id;
  keepalive seconds;
  primary-dns primary-dns;
  primary-wins primary-wins;
  secondary-dns secondary-dns;
  secondary-wins secondary-wins;
}
```

Hierarchy Level [edit access profile *profile-name* **client** *client-name*]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure PPP properties for a client profile.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring PPP Properties for a Client-Specific Profile on page 31](#)

ppp-authentication

Syntax	ppp-authentication (chap pap);
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure PPP authentication.



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

Options	<ul style="list-style-type: none">• chap—Challenge Handshake Authentication Protocol.• pap—Password Authentication Protocol.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring L2TP Properties for a Client-Specific Profile on page 27

ppp-profile

Syntax	<code>ppp-profile <i>profile-name</i>;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]</code>
Release Information	Statement introduced in Junos OS Release 7.4.
Description	Specify the profile used to validate PPP session requests through L2TP tunnels.



NOTE: This statement is not supported for L2TP LNS on MX Series routers.

Options	<i>profile-name</i> —Identifier for the PPP profile.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring RADIUS Authentication for an L2TP Client and Profile on page 45

pre-shared-key (Access Profile)

Syntax	<code>pre-shared-key (ascii-text <i>character-string</i> hexadecimal <i>hexadecimal-digits</i>);</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> client <i>client-name</i> ike]</code>
Release Information	Statement introduced in Junos OS Release 7.4.
Description	Configure the key used to authenticate a dynamic peer during IKE phase 1 negotiation. Specify the key in either ASCII or hexadecimal format.
Options	<p>ascii-text <i>character-string</i>—Authentication key in ASCII format.</p> <p>hexadecimal <i>hexadecimal-digits</i>—Authentication key in hexadecimal format.</p>
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring an IKE Access Profile on page 23

primary-dns

Syntax	<code>primary-dns <i>primary-dns</i>;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> client <i>client-name</i> ppp], [edit access profile <i>profile-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the primary Domain Name System (DNS) server.
Options	<i>primary-dns</i> —An IPv4 address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the PPP Attributes for a Group Profile on page 17• Configuring PPP Properties for a Client-Specific Profile on page 31

primary-wins

Syntax	<code>primary-wins <i>primary-wins</i>;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> client <i>client-name</i> ppp], [edit access profile <i>profile-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the primary Windows Internet name server.
Options	<i>primary-wins</i> —An IPv4 address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the PPP Attributes for a Group Profile on page 17• Configuring PPP Properties for a Client-Specific Profile on page 31

profile (Access)

```
Syntax  profile profile-name {
    accounting {
        address-change-immediate-update
        accounting-stop-on-access-deny;
        accounting-stop-on-failure;
        ancp-speed-change-immediate-update;
        coa-immediate-update;
        coa-no-override service-class-attribute;
        duplication;
        duplication-filter;
        duplication-vrf {
            access-profile-name profile-name;
            vrf-name vrf-name;
        }
        immediate-update;
        order [ accounting-method ];
        send-acct-status-on-config-change;
        statistics (time | volume-time);
        update-interval minutes;
        wait-for-acct-on-ack;
    }
    accounting-order (radius | [accounting-order-data-list]);
    authentication-order [ authentication-methods ];
    client client-name {
        chap-secret chap-secret;
        group-profile profile-name;
        ike {
            allowed-proxy-pair {
                remote remote-proxy-address local local-proxy-address;
            }
            pre-shared-key (ascii-text character-string | hexadecimal hexadecimal-digits);
            ike-policy policy-name;
            interface-id string-value;
        }
        l2tp {
            aaa-access-profile profile-name;
            interface-id interface-id;
            lcp-renegotiation;
            local-chap;
            maximum-sessions number;
            maximum-sessions-per-tunnel number;
            multilink {
                drop-timeout milliseconds;
                fragment-threshold bytes;
            }
            override-result-code session-out-of-resource;
            ppp-authentication (chap | pap);
            ppp-profile profile-name;
            sessions-limit-group limit-group-name;
            shared-secret shared-secret;
        }
        pap-password pap-password;
    }
}
```

```
ppp {
  cell-overhead;
  encapsulation-overhead bytes;
  framed-ip-address ip-address;
  framed-pool framed-pool;
  idle-timeout seconds;
  interface-id interface-id;
  keepalive seconds;
  primary-dns primary-dns;
  primary-wins primary-wins;
  secondary-dns secondary-dns;
  secondary-wins secondary-wins;
}
user-group-profile profile-name;
}
domain-name-server;
domain-name-server-inet;
domain-name-server-inet6;
local {
  flat-file-profile profile-name;
}
preauthentication-order preauthentication-method;
provisioning-order (gx-plus | jsr | pcrf);
radius {
  accounting-server [ ip-address ];
  attributes {
    exclude {
      ...
    }
    ignore {
      framed-ip-netmask;
      input-filter;
      logical-system:routing-instance;
      output-filter;
    }
  }
}
authentication-server [ ip-address ];
options {
  accounting-session-id-format (decimal | description);
  calling-station-id-delimiter delimiter-character;
  calling-station-id-format {
    agent-circuit-id;
    agent-remote-id;
    interface-description;
    interface-text-description;
    mac-address;
    nas-identifier;
    stacked-vlan;
    vlan;
  }
  chap-challenge-in-request-authenticator;
  client-accounting-algorithm (direct | round-robin);
  client-authentication-algorithm (direct | round-robin);
  coa-dynamic-variable-validation;
  ethernet-port-type-virtual;
  interface-description-format {
```

```

    exclude-adapter;
    exclude-channel;
    exclude-sub-interface;
}
juniper-dsl-attributes;
nas-identifier identifier-value;
nas-port-extended-format {
    adapter-width width;
    ae-width width;
    port-width width;
    pw-width width;
    slot-width width;
    stacked-vlan-width width;
    vlan-width width;
    atm {
        adapter-width width;
        port-width width;
        slot-width width;
        vci-width width;
        vpi-width width;
    }
}
nas-port-id-delimiter delimiter-character;
nas-port-id-format {
    agent-circuit-id;
    agent-remote-id;
    interface-description;
    interface-text-description;
    nas-identifier;
    order {
        agent-circuit-id;
        agent-remote-id;
        interface-description;
        interface-text-description;
        nas-identifier;
        postpend-vlan-tags;
    }
    postpend-vlan-tags;
}
nas-port-type {
    ethernet {
        port-type;
    }
}
revert-interval interval;
service-activation {
    dynamic-profile (optional-at-login | required-at-login);
    extensible-service (optional-at-login | required-at-login);
}
vlan-nas-port-stacked-format;
}
preauthentication-server ip-address;
}
radius-server server-address {
    accounting-port port-number;
    accounting-retry number;
}

```

```

accounting-timeout seconds;
dynamic-request-port
port port-number;
preauthentication-port port-number;
preauthentication-secret password;
retry attempts;
routing-instance routing-instance-name;
secret password;
max-outstanding-requests value;
source-address source-address;
timeout seconds;
}
service {
  accounting {
    statistics (time | volume-time);
    update-interval minutes;
  }
  accounting-order (activation-protocol | local | radius);
}
session-options {
  client-idle-timeout minutes;
  client-idle-timeout-ingress-only;
  client-session-timeout minutes;
  strip-user-name {
    delimiter [ delimiter ];
    parse-direction (left-to-right | right-to-left);
  }
}
}

```

Hierarchy Level [edit access]

Release Information Statement introduced before Junos OS Release 7.4.

Description Configure PPP CHAP, or a profile and its subscriber access, L2TP, or PPP properties.

Options *profile-name*—Name of the profile.

For CHAP, the name serves as the mapping between peer identifiers and CHAP secret keys. This entity is queried for the secret key whenever a CHAP challenge or response is received.

The remaining statements are explained separately. See [CLI Explorer](#).

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

**Related
Documentation**

- [Configuring the PPP Authentication Protocol on page 8](#)
- [Configuring Access Profiles for L2TP or PPP Parameters on page 19](#)
- [Configuring L2TP Properties for a Client-Specific Profile on page 27](#)
- *Configuring an L2TP LNS with Inline Service Interfaces*
- [Configuring PPP Properties for a Client-Specific Profile on page 31](#)
- *Configuring Service Accounting with JSRC*
- *Configuring Service Accounting in Local Flat Files*
- *AAA Service Framework Overview*
- *show network-access aaa statistics*
- [clear network-access aaa statistics on page 164](#)

radius (Access Profile)

```
Syntax  radius {
        accounting-server [ ip-address ];
        attributes {
            exclude
            ...
        }
        ignore {
            framed-ip-netmask;
            input-filter;
            logical-system-routing-instance;
            output-filter;
        }
    }
    authentication-server [ ip-address ];
    options {
        accounting-session-id-format (decimal | description);
        calling-station-id-delimiter delimiter-character;
        calling-station-id-format {
            agent-circuit-id;
            agent-remote-id;
            interface-description;
            nas-identifier;
        }
        chap-challenge-in-request-authenticator;
        client-accounting-algorithm (direct | round-robin);
        client-authentication-algorithm (direct | round-robin);
        coa-dynamic-variable-validation;
        ethernet-port-type-virtual;
        interface-description-format {
            exclude-adapter;
            exclude-channel;
            exclude-sub-interface;
        }
        ip-address-change-notify message;
        juniper-dsl-attributes;
        nas-identifier identifier-value;
        nas-port-extended-format {
            adapter-width width;
            ae-width width;
            port-width width;
            slot-width width;
            stacked-vlan-width width;
            vlan-width width;
            atm {
                adapter-width width;
                port-width width;
                slot-width width;
                vci-width width;
                vpi-width width;
            }
        }
        nas-port-id-delimiter delimiter-character;
```

```

nas-port-id-format {
  agent-circuit-id;
  agent-remote-id;
  interface-description;
  interface-text-description;
  nas-identifier;
  order {
    agent-circuit-id;
    agent-remote-id;
    interface-description;
    interface-text-description;
    nas-identifier;
    postpend-vlan-tags;
  }
  postpend-vlan-tags;
}
nas-port-type {
  ethernet {
    port-type;
  }
}
revert-interval interval;
service-activation {
  dynamic-profile (optional-at-login | required-at-login);
  extensible-service (optional-at-login | required-at-login);
}
vlan-nas-port-stacked-format;
}
preauthentication-server ip-address;
}

```

Hierarchy Level	[edit access profile <i>profile-name</i>]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure the RADIUS parameters that the router uses for AAA authentication and accounting for subscribers. The remaining statements are explained separately. See CLI Explorer .
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring RADIUS Server Parameters for Subscriber Access</i> • <i>RADIUS Server Options for Subscriber Access</i>

radius-disconnect

Syntax	<pre>radius-disconnect { client-address { secret password; } }</pre>
Hierarchy Level	[edit access]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure a disconnect server that listens on a configured User Datagram Protocol (UDP) port for disconnect messages from a configured client and processes these disconnect messages.
Options	<p><i>client-address</i>—A valid IP address configured on one of the router interfaces.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Configuring the RADIUS Disconnect Server for L2TP on page 44

radius-disconnect-port

Syntax	<code>radius-disconnect-port <i>port-number</i>;</code>
Hierarchy Level	[edit access]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Specify a port number on which to contact the RADIUS disconnect server. Most RADIUS servers use port number 1700.
Options	<i>port-number</i> —The server port to which disconnect requests from the RADIUS client are sent. The L2TP network server, which accepts these disconnect requests, is the server.



NOTE: The Junos OS accepts disconnect requests only from the client address configured at the [edit access radius-disconnect client *client-address*] hierarchy level.

The remaining statements are explained separately.

Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the RADIUS Disconnect Server for L2TP on page 44

radius-server

Syntax	<pre>radius-server server-address { accounting-port port-number; accounting-retry number; accounting-timeout seconds; dynamic-request-port max-outstanding-requests value; port port-number; preauthentication-port port-number; preauthentication-secret password; retry attempts; routing-instance routing-instance-name; secret password; source-address source-address; timeout seconds; }</pre>
Hierarchy Level	[edit access], [edit access profile profile-name]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. dynamic-request-port option added in Junos OS Release 14.2 for MX Series routers. preauthentication-port and preauthentication-secret options added in Junos OS Release 15.1 for MX Series routers. Support for IPv6 server-address introduced in Junos OS Release 16.1.
Description	<p>Configure RADIUS for subscriber access management, L2TP, or PPP.</p> <p>To configure multiple RADIUS servers, include multiple radius-server statements. The servers are tried in order and in a round-robin fashion until a valid response is received from one of the servers or until all the configured retry limits are reached.</p>
Options	<p>server-address—IPv4 or IPv6 address of the RADIUS server.</p> <p>The remaining statements are explained separately. See CLI Explorer.</p>
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RADIUS Authentication for L2TP on page 37• Configuring the PPP Authentication Protocol on page 8• <i>Configuring Router or Switch Interaction with RADIUS Servers</i>• <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>• <i>show network-access aaa statistics</i>

- [clear network-access aaa statistics on page 164](#)

range (Address-Assignment Pools)

Syntax	<pre>range <i>range-name</i> { high <i>upper-limit</i>; low <i>lower-limit</i>; prefix-length <i>prefix-length</i>; }</pre>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family (inet inet6)]
Release Information	<p>Statement introduced in Junos OS Release 9.0.</p> <p>IPv6 support introduced in Junos OS Release 10.0.</p> <p>Statement introduced in Junos OS Release 12.3 for EX Series switches.</p>
Description	Configure a named range of IPv4 addresses or IPv6 prefixes, used within an address-assignment pool.
Options	<p>high <i>upper-limit</i>—Upper limit of an address range or IPv6 prefix range.</p> <p>low <i>lower-limit</i>—Lower limit of an address range or IPv6 prefix range.</p> <p>prefix-length <i>prefix-length</i>—Assigned length of the IPv6 prefix.</p> <p>range-name—Name assigned to the range of IPv4 addresses or IPv6 prefixes.</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Address-Assignment Pools Overview • Configuring Address-Assignment Pools

remote-id

Syntax	<code>remote-id <i>value</i> range <i>named-range</i>;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes option-match option-82], [edit access protocol-attributes <i>attribute-set-name</i> option-match option-82]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify the address-assignment pool named range to use based on the particular option 82 Agent Remote ID value.
Options	range <i>named-range</i> —Name of the address-assignment pool range to use. value —String for Agent Remote ID suboption (suboption 2) of the DHCP relay agent information option (option 82) in DHCP packets.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Address-Assignment Pools</i>

retry

Syntax	<code>retry attempts;</code>
Hierarchy Level	<code>[edit access radius-server server-address];</code> <code>[edit access profile <i>profile-name</i> radius-server server-address]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Specify the number of times that the router or switch is allowed to attempt to contact a RADIUS authentication or accounting server. You can override the retry limit for accounting servers with the <i>accounting-retry</i> statement.



NOTE: To successfully set a retry limit for the accounting servers different from the authentication servers, you must configure both the *accounting-retry* and *accounting-timeout* statements. If you configure only one of these statements, then the value you configure is ignored in favor of the values configured with the *retry* and *timeout* statements.



NOTE: The maximum retry duration (the number of retries times the length of the timeout) cannot exceed 2700 seconds. An error message is displayed if you configure a longer duration.

Options	<i>attempts</i> —Number of times that the router is allowed to attempt to contact a RADIUS server. Range: 1 through 100 Default: 3
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Authentication and Accounting Parameters for Subscriber Access • Configuring Router or Switch Interaction with RADIUS Servers • Example: Configuring CHAP Authentication with RADIUS on page 9 • Configuring RADIUS Authentication for L2TP on page 37 • timeout on page 156

reverse-route

Syntax	<code>reverse-route { preference <i>metric-value</i>; }</code>
Hierarchy Level	[edit access profile <i>profile-name</i> client <i>client-name</i> ike]
Release Information	Statement introduced in Junos OS Release 10.4.
Description	(M Series and MX Series routers with an AS or MultiServices PIC only) Configure a reverse route for dynamic endpoint IPsec tunnels. The remaining statements are explained separately.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.

revert-interval

Syntax	<code>revert-interval <i>interval</i>;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> radius options]; [edit access radius-options]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure the amount of time the router or switch waits after a server has become unreachable. The router or switch rechecks the connection to the server when the specified interval expires. If the server is then reachable, it is used in accordance with the order of the server list.
Options	interval —Amount of time to wait. Range: 0 through 604,800 seconds Default: 60 seconds
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring RADIUS Server Options for Subscriber Access</i>• <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>

router (Address-Assignment Pools)

Syntax	<code>router [<i>router-address</i>];</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify one or more routers located on the client's subnet. This statement is the equivalent of DHCP option 3.
Options	<i>router-address</i> —IP address of one or more routers.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Address-Assignment Pools

routing-instance

Syntax	<code>routing-instance <i>routing-instance-name</i>;</code>
Hierarchy Level	[edit access radius-server <i>server-address</i>], [edit access profile <i>profile-name</i> radius-server <i>server-address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the routing instance used to send RADIUS packets to the RADIUS server.
Options	<i>routing-instance-name</i> —Routing instance name.
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the PPP Authentication Protocol on page 8 • Configuring Authentication and Accounting Parameters for Subscriber Access

secondary-dns

Syntax	<code>secondary-dns secondary-dns;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> ppp], [edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the secondary DNS server.
Options	<i>secondary-dns</i> —An IPv4 address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the PPP Attributes for a Group Profile on page 17• Configuring PPP Properties for a Client-Specific Profile on page 31

secondary-wins

Syntax	<code>secondary-wins secondary-wins;</code>
Hierarchy Level	[edit access group-profile <i>profile-name</i> ppp], [edit access profile <i>profile-name</i> client <i>client-name</i> ppp]
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Configure the secondary Windows Internet name server.
Options	<i>secondary-wins</i> —An IPv4 address.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the PPP Attributes for a Group Profile on page 17• Configuring PPP Properties for a Client-Specific Profile on page 31

secret

Syntax	<code>secret password;</code>
Hierarchy Level	[edit access profile <i>profile-name</i> radius-server <i>server-address</i>], [edit access radius-disconnect <i>client-address</i>], [edit access radius-server <i>server-address</i>]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the password to use with the RADIUS server. The secret password used by the local router or switch must match that used by the server.
Options	password —Password to use; it can include spaces if the character string is enclosed in quotation marks.
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i> • <i>Configuring Router or Switch Interaction with RADIUS Servers</i> • Example: Configuring CHAP Authentication with RADIUS on page 9 • Configuring RADIUS Authentication for L2TP on page 37 • Configuring the RADIUS Disconnect Server for L2TP on page 44

session-options

Syntax session-options {
 client-group [*group-names*];
 client-idle-timeout *minutes*;
 client-idle-timeout-ingress-only;
 client-session-timeout *minutes*;
 strip-user-name {
 delimiter [*delimiter*];
 parse-direction (left-to-right | right-to-left);
 }
 }

Hierarchy Level [edit access [profile](#) *profile-name*]

Release Information Statement introduced in Junos OS Release 8.5.

Description (MX Series and SRX Series devices) Define options to place limits on subscriber access based on how long the session has been up, how long the user has been inactive, or both.

(MX Series) Define options to modify a subscriber username at login based on the subscriber's access profile.

The remaining statements are explained separately. See [CLI Explorer](#).

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

Related Documentation

- [Understanding Session Options for Subscriber Access on page 48](#)
- [Configuring Subscriber Session Timeout Options on page 53](#)
- *Configuring Username Modification for Subscriber Sessions*
- *Removing Inactive Dynamic Subscriber VLANs*

shared-secret

Syntax	<code>shared-secret <i>shared-secret</i>;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> client <i>client-name</i> l2tp]</code>
Release Information	Statement introduced in Junos OS Release 7.4.
Description	Configure the shared secret.
Options	<i>shared-secret</i> —Shared secret key for authenticating the peer.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring L2TP Properties for a Client-Specific Profile on page 27• <i>Configuring an L2TP Access Profile on the LNS</i>

source-address

Syntax	<code>source-address <i>source-address</i>;</code>
Hierarchy Level	<code>[edit access radius-server <i>server-address</i>];</code> <code>[edit access profile <i>profile-name</i> radius-server <i>server-address</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches. Support for IPv6 source-address introduced in Junos OS Release 16.1.
Description	Configure a source address for each configured RADIUS server. Each RADIUS request sent to a RADIUS server uses the specified source address.
Options	source-address —Valid IPv4 or IPv6 address configured on one of the router or switch interfaces. On M Series routers only, the source address can be an IPv6 address and the UDP source port is 514.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Router or Switch Interaction with RADIUS Servers</i>• <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>• Example: Configuring CHAP Authentication with RADIUS on page 9• Configuring RADIUS Authentication for L2TP on page 37



statistics (Access Profile)

Syntax	<code>statistics (time volume-time);</code>
Hierarchy Level	[edit access profile <i>profile-name</i> accounting]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches. volume-time option added in Junos OS Release 9.4.
Description	Configure the router or switch to collect time statistics, or both volume and time statistics, for the sessions being managed by AAA.
Options	time —Collect uptime statistics only. volume-time —Collect both volume and uptime statistics.
Required Privilege Level	admin —To view this statement in the configuration. admin-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Authentication and Accounting Parameters for Subscriber Access</i>


tftp-server

Syntax	<code>tftp-server ip-address;</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify the Trivial File Transfer Protocol (TFTP) server that the client uses to obtain the client configuration file. This is equivalent to DHCP option 150.
Options	ip-address —IP address of the TFTP server.
Required Privilege Level	admin —To view this statement in the configuration. admin-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • <i>Configuring Address-Assignment Pools</i>


timeout (RADIUS)

Syntax	<code>timeout seconds;</code>
Hierarchy Level	[edit access radius-server server-address], [edit access profile <i>profile-name</i> radius-server server-address]
Release Information	Statement introduced before Junos OS Release 7.4. Statement introduced in Junos OS Release 9.0 for EX Series switches.
Description	Configure the amount of time that the local router or switch waits to receive a response from RADIUS authentication and accounting servers. You can override the timeout value for accounting servers with the <i>accounting-timeout</i> statement.
	<div>NOTE: To successfully set a timeout value for the accounting servers different from the authentication servers, you must configure both the <i>accounting-retry</i> and <i>accounting-timeout</i> statements. If you configure only one of these statements, then the value you configure is ignored in favor of the values configured with the <i>retry</i> and <i>timeout</i> statements.</div>
	<div>NOTE: The maximum retry duration (the number of retries times the length of the timeout) cannot exceed 2700 seconds. An error message is displayed if you configure a longer duration.</div>
Options	<i>seconds</i> —Amount of time to wait. Range: 1 through 1000 seconds Default: 3 seconds
Required Privilege Level	system—To view this statement in the configuration. system-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Router or Switch Interaction with RADIUS Servers• Configuring Authentication and Accounting Parameters for Subscriber Access• Example: Configuring CHAP Authentication with RADIUS on page 9• Configuring RADIUS Authentication for L2TP on page 37

update-interval

Syntax	update-interval <i>minutes</i> ;
Hierarchy Level	[edit access profile <i>profile-name</i> accounting]
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	<p>Enable interim accounting updates and configure the amount of time that the router or switch waits before sending a new accounting update.</p> <p>Interim accounting updates are included in the exchange of messages between the client and the accounting server. In RADIUS accounting, the client is the network access server (NAS), which can be the router or switch. The NAS sends Accounting-Request messages to the server, which acknowledges receipt of the requests with Accounting-Response messages. Interim accounting updates are sent in Accounting-Request packets with the Acct-Status-Type attribute set to Interim-Update.</p> <p>When a user is authenticated, the authentication server issues an Access-Accept message in response to a successful Access-Request message. The interval between interim updates can be configured directly on the server using the Acct-Interim-Interval attribute of the Access-Accept message. However, if the update interval is configured on the NAS using update-interval, then the locally configured value overrides the value found in an Access-Accept message from the server.</p>
	<p> NOTE: All information in an interim update message is cumulative from the beginning of the session, not from the last interim update message.</p>
Default	No interim updates are sent from the client to the accounting server.
Options	<p>minutes—Amount of time between updates, in minutes. All values are rounded to the next higher multiple of 10. For example, the values 811 through 819 are all accepted by the CLI, but are all rounded up to 820.</p> <p>Range: 10 through 1440 minutes</p>
Required Privilege Level	<p>admin—To view this statement in the configuration.</p> <p>admin-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> Configuring Authentication and Accounting Parameters for Subscriber Access Configuring Immediate Interim Accounting Updates to RADIUS in Response to ANCP Notifications

user-group-profile

Syntax	<code>user-group-profile <i>profile-name</i>;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i>]</code>
Release Information	Statement introduced before Junos OS Release 7.4.
Description	Apply a configured PPP group profile to PPP users.
	<div> NOTE: If <code>user-group-profile</code> is modified or deleted, the existing LNS subscribers, which were using this Layer 2 Tunneling Protocol client configuration, go down.</div>
Options	<i>profile-name</i> —Name of a PPP group profile configured at the <code>[edit access group-profile <i>profile-name</i>]</code> hierarchy level.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Applying a Configured PPP Group Profile to a Tunnel on page 33• Configuring an L2TP Access Profile on the LNS

vlan-nas-port-stacked-format

Syntax	<code>vlan-nas-port-stacked-format;</code>
Hierarchy Level	<code>[edit access profile <i>profile-name</i> radius options]</code>
Release Information	Statement introduced in Junos OS Release 9.1. Statement introduced in Junos OS Release 9.1 for EX Series switches.
Description	Configure RADIUS attribute 5 (NAS-Port) to include the S-VLAN ID, in addition to the VLAN ID, for subscribers on Ethernet interfaces.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring RADIUS Server Options for Subscriber Access• Configuring Authentication and Accounting Parameters for Subscriber Access

wins-server (Access)

Syntax	<code>wins-server { <code>ipv4-address</code>; }</code>
Hierarchy Level	[edit access address-assignment pool <i>pool-name</i> family inet dhcp-attributes], [edit access protocol-attributes <i>attribute-set-name</i>]
Release Information	Statement introduced in Junos OS Release 9.0.
Description	Specify one or more NetBIOS name servers (NBNS) that the client uses to resolve NetBIOS names. This is equivalent to DHCP option 44.
Options	<i>ipv4-address</i> —IP address of each NetBIOS name server; add them to the configuration in order of preference.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• <i>Configuring Address-Assignment Pools</i>

PART 3

Administration

- [Administrative Commands on page 163](#)
- [Monitoring Commands on page 177](#)

CHAPTER 5

Administrative Commands

- `clear network-access aaa statistics`
- `clear network-access aaa subscriber`
- `clear services l2tp session`
- `clear services l2tp tunnel statistics`
- `show services l2tp radius`

clear network-access aaa statistics

Syntax	<code>clear network-access aaa statistics</code> <code><accounting></code> <code><address-assignment (client pool <i>pool-name</i>)></code> <code><authentication></code> <code><dynamic-requests></code> <code><radius></code> <code><re-authentication></code> <code><terminate-code></code>
Release Information	Command introduced in Junos OS Release 10.0. Option radius introduced in Junos OS Release 11.4 Option terminate-code introduced in Junos OS Release 11.4.
Description	Clear AAA statistics.
Options	accounting —(Optional) Clear AAA accounting statistics. address-assignment client —(Optional) Clear AAA address-assignment statistics for the client. address-assignment pool <i>pool-name</i> —(Optional) Clear AAA address-assignment pool statistics. authentication —(Optional) Clear AAA authentication statistics. dynamic-requests —(Optional) Clear AAA dynamic-request statistics. radius —(Optional) Clears the values in the Peak and Exceeded columns only. re-authentication —(Optional) Clear AAA reauthentication statistics. terminate-code —(Optional) Clear AAA termination code statistics.
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none">• <i>Verifying and Managing Subscriber AAA Information</i>
List of Sample Output	clear network-access aaa statistics accounting on page 165 clear network-access aaa statistics address-assignment pool on page 165 clear network-access aaa statistics radius on page 165
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear network-access aaa statistics accounting

```
user@host> clear network-access aaa statistics accounting
```

clear network-access aaa statistics address-assignment pool

```
user@host> clear network-access aaa statistics address-assignment pool isp_1
```

clear network-access aaa statistics radius

```
user@host> clear network-access aaa statistics radius
```

clear network-access aaa subscriber

Syntax	<pre>clear network-access aaa subscriber <session-id <i>identifier</i> <reconnect>> <statistics username <i>username</i>> <username <i>username</i> <reconnect>></pre>
Release Information	Command introduced in Junos OS Release 9.1. reconnect and session-id options added in Junos OS Release 16.1R4.
Description	Clear AAA subscriber statistics and log out subscribers. You can log out subscribers based on the username or on the subscriber session identifier. Use the session identifier when more than one session has the same username string.
Options	<p>reconnect—(Optional) Reconnect as a Layer 2 wholesale session when the subscriber session has been fully logged out. This option is equivalent to issuing a RADIUS-initiated disconnect with reconnect semantics; that is, when the message includes Acct-Terminate-Cause (RADIUS attribute 49) with a value of callback (16). You can apply this option to either a Layer 2 wholesale session or a conventionally auto-sensed dynamic VLAN supporting a PPPoE session.</p> <p>In the latter case, this option triggers a PPPoE session logout and removal of the dynamic VLAN logical interface. This is followed by authorization of the access-line to attempt creation of a dynamic VLAN IFL supporting Layer 2 wholesale session in its place.</p> <p>session-id <i>identifier</i>—(Optional) Log out the subscriber based on the subscriber session identifier.</p> <p>statistics username <i>username</i>—(Optional) Clear AAA subscriber statistics and log out the subscriber.</p> <p>username <i>username</i>—(Optional) Log out the AAA subscriber.</p>
Required Privilege Level	maintenance
Related Documentation	<ul style="list-style-type: none">• <i>Verifying and Managing Subscriber AAA Information</i>
List of Sample Output	clear network-access aaa subscriber statistics username on page 167 clear network-access aaa subscriber username on page 167 clear network-access aaa subscriber username on page 167
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear network-access aaa subscriber statistics username

```
user@host> clear network-access aaa subscriber statistics username user22@example.com
```

clear network-access aaa subscriber username

```
user@host> clear network-access aaa subscriber username user22@example.com
```

clear network-access aaa subscriber username

```
user@host> clear network-access aaa subscriber session-id 18367425
```

clear services l2tp session

Syntax clear services l2tp session (all | interface *interface-name* | local-gateway *gateway-address* | local-gateway-name *gateway-name* | local-session-id *session-id* | local-tunnel-id *tunnel-id* | peer-gateway *gateway-address* | peer-gateway-name *gateway-name* | tunnel-group *group-name* | user *username*)

Release Information Command introduced before Junos OS Release 7.4.

Description (M10i and M7i routers only) Clear Layer 2 Tunneling Protocol (L2TP) sessions on LNS.
(MX Series routers only) Clear L2TP sessions on LAC and LNS.



NOTE: On MX Series routers, you cannot issue the `clear services l2tp session` command in parallel with statistics-related `show services l2tp` commands from separate terminals. If this clear command is running, then you must press Ctrl+c to make the command run in the background before issuing any of the `show` commands listed in the following table:

show services l2tp destination extensive	show services l2tp summary statistics
show services l2tp destination statistics	show services l2tp tunnel extensive
show services l2tp session extensive	show services l2tp tunnel statistics
show services l2tp session statistics	

Options all—Close all L2TP sessions.

interface *interface-name*—Clear only the L2TP sessions using the specified adaptive services or inline services interface. The interface type depends on the line card as follows:

- **si-*fpc/pic/port***—MPCs on MX Series routers only. This option is not available for L2TP on M Series routers.
- **sp-*fpc/pic/port***—AS or Multiservices PICs on M7i, M10i, and M120 routers only. This option is not available for L2TP on MX Series routers.

local-gateway *gateway-address*—Clear only the L2TP sessions associated with the specified local gateway address.

local-gateway-name *gateway-name*—Clear only the L2TP sessions associated with the specified local gateway name.

local-session-id *session-id*—Clear only the L2TP sessions with this identifier for the local endpoint of the L2TP session.

local-tunnel-id *tunnel-id*—Clear only the L2TP sessions associated with the specified local tunnel identifier.

peer-gateway *gateway-address*—Clear only the L2TP sessions associated with the peer gateway with the specified address.

peer-gateway-name *gateway-name*—Clear only the L2TP sessions associated with the peer gateway with the specified name.

tunnel-group *group-name*—Clear only the L2TP sessions associated with the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.

user *username* —(M Series routers only) Clear only the L2TP sessions for the specified username.

Required Privilege Level clear

Related Documentation

- [L2TP Services Configuration Overview](#)
- [L2TP Minimum Configuration](#)
- [clear services l2tp session statistics](#)
- [show services l2tp session on page 178](#)

List of Sample Output [clear services l2tp session on page 169](#)
[clear services l2tp session interface on page 169](#)

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear services l2tp session

```
user@host> clear services l2tp session 31694
```

```
Session 31694 closed
```

Sample Output

clear services l2tp session interface

```
user@host> show services l2tp session Tunnel local ID: 17185
```

Local ID	Remote ID	State	Interface unit	Interface Name
5117	1	Established	1073741828	si-2/0/0
34915	2	Established	1073741829	si-2/1/0
6454	3	Established	1073741830	si-2/0/0
46142	4	Established	1073741831	si-2/1/0

```
user@host> clear services l2tp session interface si-2/0/0
Session 5117 closed
Session 6454 closed
```

```
user@host> show services l2tp session Tunnel local ID: 17185
```

Local ID	Remote ID	State	Interface unit	Interface Name
34915	2	Established	1073741829	si-2/1/0
46142	4	Established	1073741831	si-2/1/0

clear services l2tp tunnel statistics

Syntax	clear services l2tp tunnel statistics (all interface <i>sp-fpc/pic/port</i> local-gateway <i>gateway-address</i> local-gateway-name <i>gateway-name</i> local-tunnel-id <i>tunnel-id</i> peer-gateway <i>gateway-address</i> peer-gateway-name <i>gateway-name</i> tunnel-group <i>group-name</i>)
Release Information	Command introduced before Junos OS Release 7.4. Support for MX Series routers added in Junos OS Release 10.4.
Description	(M10i and M7i routers: LNS only. MX Series routers: LAC only.) Clear statistics for Layer 2 Tunneling Protocol (L2TP) tunnels.
Options	<p>all—Clear statistics for all L2TP tunnels.</p> <p>interface <i>sp-fpc/pic/port</i>—Clear statistics for only the L2TP tunnels using the specified adaptive services interface. This option is not available for L2TP LAC on MX Series routers.</p> <p>local-gateway <i>gateway-address</i>—Clear statistics for only the L2TP tunnels associated with the local gateway with the specified address.</p> <p>local-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP tunnels associated with the local gateway with the specified name.</p> <p>local-tunnel-id <i>tunnel-id</i>—Clear statistics for only the L2TP tunnels that have the specified local tunnel identifier.</p> <p>peer-gateway <i>gateway-address</i>—Clear statistics for only the L2TP tunnels associated with the peer gateway with the specified address.</p> <p>peer-gateway-name <i>gateway-name</i>—Clear statistics for only the L2TP tunnels associated with the peer gateway with the specified name.</p> <p>tunnel-group <i>group-name</i>—Clear statistics for only the L2TP tunnels in the specified tunnel group. This option is not available for L2TP LAC on MX Series routers.</p>
Required Privilege Level	clear
Related Documentation	<ul style="list-style-type: none"> • <i>L2TP Services Configuration Overview</i> • <i>L2TP Minimum Configuration</i> • <i>clear services l2tp tunnel</i> • <i>show services l2tp tunnel</i>
List of Sample Output	clear services l2tp tunnel statistics all on page 172

Output Fields When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear services l2tp tunnel statistics all

```
user@host> clear services l2tp tunnel statistics all
Tunnel 9933 statistics cleared
```

show services l2tp radius

Syntax	<pre>show services l2tp radius <accounting (servers statistics)> <authentication (servers statistics)> <servers> <statistics></pre>
Release Information	Command introduced in Junos OS Release 9.0.
Description	(M7i, M10i, and M120 routers only) Display RADIUS servers and statistics information for the RADIUS servers configured on the router.
Options	<p>You must include one of the following keywords to provide a valid completion for the command:</p> <p>accounting (servers statistics)—(Optional) Display RADIUS servers or statistical accounting information only.</p> <p>authentication (servers statistics)—(Optional) Display RADIUS servers or statistical authentication information only.</p> <p>servers—(Optional) Display RADIUS authentication and accounting server information only.</p> <p>statistics—(Optional) Display RADIUS authentication and accounting statistics information only.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <i>L2TP Services Configuration Overview</i> <i>L2TP Minimum Configuration</i>
List of Sample Output	show services l2tp radius servers on page 175 show services l2tp radius statistics on page 176
Output Fields	<p>Table 7 on page 173 lists the output fields for the show services l2tp radius command. Output fields are listed in the approximate order in which they appear.</p>

Table 7: show services l2tp radius Output Fields

Field Name	Field Description
IP Address	IP address of the server.
State	(servers keyword only) Present state of the server.

Table 7: show services l2tp radius Output Fields (*continued*)

Field Name	Field Description
UDP Port	Number of the UDP port used to send authentication or accounting messages to the server.
Retry Count	(servers keyword only) Number of times the RADIUS client resends a packet if no ACK is received.
Timeout	(servers keyword only) Length of time the client waits for an ACK before retransmission.
Pending Requests	(servers keyword only) Number of client pending authentication or accounting requests.
Maximum Sessions	(servers keyword only) Maximum number of pending requests on each RADIUS client before the server moves to the next RADIUS client, which is 200 times the maximum number of clients that can be created on a server (which is 12).
Dead Time	(servers keyword only) Interval to wait before retrying a server after it fails to send a response to an authentication or accounting request.
Secret Type	(servers keyword only) Secret type configured on the RADIUS server.
Profile	(servers keyword only) Name of profile configured for the RADIUS server.
Access requests	(statistics keyword only) Number of access requests sent to the server.
Rollover requests	(statistics keyword only) Number of requests coming into the server as a result of the previous server timing out.
Retransmissions	(statistics keyword only) Number of retransmissions.
Access accepts	(statistics keyword only) Number of access accept messages received from the server.
Access rejects	(statistics keyword only) Number of access reject messages received from the server.
Access challenges	(statistics keyword only) Number of access challenges received from the server.
Malformed responses	(statistics keyword only) Number of responses with attributes having an invalid length or unexpected attributes (such as two attributes when the response is required to have at most one).
Bad authenticators	(statistics keyword only) Number of responses in which the authenticator is incorrect for the matching request. This can occur if the RADIUS secrets for the client and server do not match.
Requests pending	(statistics keyword only) Number of requests waiting for a response.
Request timeouts	(statistics keyword only) Number of requests that timed out.
Unknown responses	(statistics keyword only) Number of unknown responses. The RADIUS response type in the header is invalid or unsupported.

Table 7: show services l2tp radius Output Fields (*continued*)

Field Name	Field Description
Packets dropped	(statistics keyword only) Number of packets dropped because they are too short or because the router receives a response for which there is no corresponding request. For example, if the router sends a request that times out, the router removes the request from the list and sends a new request. If the server is slow and sends a response to the first request after the router removes the request, the packet is dropped.

Sample Output

show services l2tp radius servers

```

user@host> show services l2tp radius servers
                RADIUS Authentication Servers

   IP Address   State   UDP   Retry   Pending   Maximum   Dead   Secret
   192.0.2.1     Active  1812  2       25        0         2400   300   radius-key
   198.51.100.1  Active  1812  5       35        0         2400   300   radius-key
   203.0.113.1   Active  1812  2       25        0         2400   300   radius-key
   172.28.30.174 Active  1812  7       75        0         2400   300   radius-key
   172.28.30.175 Active  1812  7       75        0         2400   300   radius-key
   172.28.30.176 Active  1812  4       55        0         2400   300   radius-key
   172.31.30.176 Active  1812  3       3         0         2400   300   none-set
   172.31.130.174 Active  1812  7       75        0         2400   300   radius-key

                RADIUS Accounting Servers

   IP Address   State   UDP   Retry   Pending   Maximum   Dead   Secret
   192.0.2.1     Active  1813  2       25        0         2400   300   radius-key
   198.51.100.1  Active  1813  5       35        0         2400   300   radius-key
   203.0.113.1   Active  1813  2       25        0         2400   300   radius-key
   172.28.30.174 Active  1813  7       75        0         2400   300   radius-key
   172.28.30.175 Active  1813  7       75        0         2400   300   radius-key
   172.28.30.176 Active  1813  4       55        0         2400   300   radius-key
   172.31.30.176 Active  1813  3       3         0         2400   300   none-set
   172.31.130.174 Active  1813  7       75        0         2400   300   radius-key

                RADIUS Accounting Servers

Profile: user1

```

show services l2tp radius statistics

```
user@host> show services l2tp radius statistics
RADIUS Authentication Statistics
```

Authentication statistics:

Server 192.0.2.1, UDP port: 1812

```
Access requests      : 40
Rollover requests    : 5
Retransmissions      : 2
Access accepts       : 39
Access rejects       : 1
Access challenges    : 3
Malformed responses  : 0
Bad authenticators   : 0
Requests pending     : 1
Request timeouts     : 0
Unknown responses    : 0
Packets dropped      : 0
```

RADIUS Accounting Statistics

Accounting statistics:

Server 172.31.130.174, UDP port: 1813

```
Total requests      : 9
Start requests       : 6
Interim requests     : 1
Stop requests        : 2
Rollover requests    : 0
Retransmissions      : 1
Total response       : 9
Start responses      : 6
Interim responses    : 1
Stop responses       : 2
Malformed responses  : 0
Bad authenticators   : 0
Requests pending     : 1
Request timeouts     : 0
Unknown responses    : 0
Packets dropped      : 0
```

CHAPTER 6

Monitoring Commands

- `show services l2tp session`
- `show services l2tp radius`
- `show services l2tp summary`

show services l2tp session

Syntax `show services l2tp session`
 `<brief | detail | extensive>`
 `<interface interface-name>`
 `<local-gateway gateway-address>`
 `<local-gateway-name gateway-name>`
 `<local-session-id session-id>`
 `<local-tunnel-id tunnel-id>`
 `<peer-gateway gateway-address>`
 `<peer-gateway-name gateway-name>`
 `<statistics>`
 `<tunnel-group group-name>`
 `<user username>`

Release Information Command introduced before Junos OS Release 7.4.
 Support for LAC on MX Series routers introduced in Junos OS Release 10.4.
 Support for LNS on MX Series routers introduced in Junos OS Release 11.4.

Description (M10i and M7i routers only) Display information about active L2TP sessions for LNS.

 (MX Series routers only) Display information about active L2TP sessions for LAC and LNS.

Options **none**—Display standard information about all active L2TP sessions.

brief | detail | extensive—(Optional) Display the specified level of output.

interface *interface-name*—(Optional) Display L2TP session information for only the specified adaptive services or inline services interface. The interface type depends on the line card as follows:

- **si-*fpc/pic/port***—MPCs on MX Series routers only. This option is not available for L2TP on M Series routers.
- **sp-*fpc/pic/port***—AS or Multiservices PICs on M7i, M10i, and M120 routers only. This option is not available for L2TP on MX Series routers.

local-gateway *gateway-address*—(Optional) Display L2TP session information for only the specified local gateway address.

local-gateway-name *gateway-name*—(Optional) Display L2TP session information for only the specified local gateway name.

local-session-id *session-id*—(Optional) Display L2TP session information for only the specified local session identifier.

local-tunnel-id *tunnel-id*—(Optional) Display L2TP session information for only the specified local tunnel identifier.

peer-gateway *gateway-address*—(Optional) Display L2TP session information for only the specified peer gateway address.

peer-gateway-name *gateway-name*—(Optional) Display L2TP session information for only the specified peer gateway name.

statistics—(Optional) Display the number of control packets and bytes transmitted and received for the session. You cannot include this option with any of the level options, **brief**, **detail**, or **extensive**.

tunnel-group *group-name*—(Optional) Display L2TP session information for only the specified tunnel group. To display information about L2TP CPU and memory usage, you can include the tunnel group name in the **show services service-sets memory-usage *group-name*** and **show services service-sets cpu-usage *group-name*** commands. This option is not available for L2TP LAC on MX Series routers.

user *username*—(M Series routers only) (Optional) Display L2TP session information for only the specified username.

Required Privilege Level view

Related Documentation

- [L2TP Services Configuration Overview](#)
- [L2TP Minimum Configuration](#)
- [clear services l2tp session on page 168](#)

List of Sample Output

- [show services l2tp session \(LNS on M Series Routers\) on page 182](#)
- [show services l2tp session \(LNS on MX Series Routers\) on page 183](#)
- [show services l2tp session \(LAC\) on page 183](#)
- [show services l2tp session detail \(LAC\) on page 183](#)
- [show services l2tp session extensive \(LAC\) on page 183](#)
- [show services l2tp session extensive \(LAC on MX Series Routers\) on page 183](#)
- [show services l2tp session extensive \(LNS on M Series Routers\) on page 184](#)
- [show services l2tp session extensive \(LNS on MX Series Routers\) on page 185](#)
- [show services l2tp session statistics \(MX Series Routers\) on page 185](#)

Output Fields [Table 8 on page 179](#) lists the output fields for the **show services l2tp session** command. Output fields are listed in the approximate order in which they appear.

Table 8: show services l2tp session Output Fields

Field Name	Field Description	Level of Output
Interface	(LNS only) Name of an adaptive services interface.	All levels
Tunnel group	(LNS only) Name of a tunnel group.	All levels
Tunnel local ID	Identifier of the local endpoint of the tunnel, as assigned by the L2TP network server (LNS).	All levels

Table 8: show services l2tp session Output Fields (*continued*)

Field Name	Field Description	Level of Output
Session local ID	Identifier of the local endpoint of the L2TP session, as assigned by the LNS.	All levels
Session remote ID	Identifier of the remote endpoint of the L2TP session, as assigned by the L2TP access concentrator (LAC).	All levels
State	State of the L2TP session: <ul style="list-style-type: none"> • Established—Session is operating. This is the only state supported for the LAC. • closed—Session is being closed. • destroyed—Session is being destroyed. • clean-up—Session is being cleaned up. • lns-ic-accept-new—New session is being accepted. • lns-ic-idle—Session has been created and is idle. • lns-ic-reject-new—New session is being rejected. • lns-ic-wait-connect—Session is waiting for the peer's incoming call connected (ICCN) message. 	All levels
Bundle ID	(LNS only) Bundle identifier. Indicates the session is part of a multilink bundle. Sessions that have a blank Bundle field are not participating in the Multilink Protocol. Sessions in a multilink bundle might belong to different L2TP tunnels. For L2TP output organized by bundle ID, issue the show services l2tp multilink extensive command.	All levels
Mode	(LNS) Mode of the interface representing the session: shared or exclusive . (LAC) Mode of the interface representing the session: shared or dedicated . Only dedicated is currently supported for the LAC.	extensive
Local IP	IP address of local endpoint of the Point-to-Point Protocol (PPP) session.	extensive
Remote IP	IP address of remote endpoint of the PPP session.	extensive
Username	(LNS only) Name of the user logged in to the session.	All levels
Assigned IP address	(LNS only) IP address assigned to remote client.	extensive
Local name	For LNS, name of the LNS instance in which the session was created. For LAC, name of the LAC.	extensive
Remote name	For LNS, name of the LAC from which the session was created. For LAC, name of the LAC instance.	extensive
Local MRU	(LNS only) Maximum receive unit (MRU) setting of the local device, in bytes.	extensive
Remote MRU	(LNS only) MRU setting of the remote device, in bytes.	extensive

Table 8: show services l2tp session Output Fields (*continued*)

Field Name	Field Description	Level of Output
Tx speed	<p>Transmit speed of the session conveyed from the LAC to the LNS, in bits per second (bps) and the source method from which the speed is derived. Starting in Junos OS Release 17.2, only the current (update) line speed can be displayed on MX Series routers.</p> <p>Starting in Junos OS Release 14.1, either the initial (initial) line speed or both the initial and current (update) line speeds can be displayed on MX Series routers:</p> <ul style="list-style-type: none"> • When connection speed updates are not enabled, then only the initial line speed is displayed. • When connection speed updates are enabled, then both the initial and the current speeds are displayed. <p>Starting in Junos OS Release 15.1, when the Tx connect speed method is set to none, the value of zero (0) is displayed.</p>	extensive
Rx speed	<p>Receive speed of the session conveyed from the LAC to the LNS, in bits per second (bps) and the source method from which the speed is derived. Starting in Junos OS Release 17.2, only the current (update) line speed can be displayed on MX Series routers.</p> <p>Starting in Junos OS Release 14.1, either the initial (initial) line speed or both the initial and current (update) line speeds can be displayed on MX Series routers:</p> <ul style="list-style-type: none"> • When connection speed updates are not enabled, then only the initial line speed is displayed. • When connection speed updates are enabled, then both the initial and the current speeds are displayed. <p>Starting in Junos OS Release 15.1, when the Tx connect speed method is set to none, the value of zero (0) is displayed.</p>	extensive
Bearer type	<p>Type of bearer enabled:</p> <ul style="list-style-type: none"> • 0—Might indicate that the call was not received over a physical link (for example, when the LAC and PPP are located in the same subsystem). • 1—Digital access requested. • 2—Analog access requested. • 4—Asynchronous Transfer Mode (ATM) bearer support. 	extensive
Framing type	<p>Type of framing enabled:</p> <ul style="list-style-type: none"> • 1—Synchronous framing • 2—Asynchronous framing 	extensive
LCP renegotiation	<p>(LNS only) Whether Link Control Protocol (LCP) renegotiation is configured: On or Off.</p>	extensive
Authentication	<p>Type of authentication algorithm used: Challenge Handshake Authentication Protocol (CHAP) or Password Authentication Protocol (PAP).</p>	extensive
Interface ID	<p>(LNS only) Identifier used to look up the logical interface for this session.</p>	extensive

Table 8: show services l2tp session Output Fields (*continued*)

Field Name	Field Description	Level of Output
Interface unit	Logical interface for this session.	All levels
Call serial number	Unique serial number assigned to the call.	extensive
Policer bandwidth	Maximum policer bandwidth configured for this session.	extensive
Policer burst size	Maximum policer burst size configured for this session.	extensive
Firewall filter	Configured firewall filter name.	extensive
Session encapsulation overhead	Overhead allowance configured for this session, in bytes.	extensive
Session cell overhead	Cell overhead activation (On or Off).	extensive
Create time	Date and time when the call was created.	extensive
Up time	Length of time elapsed since the call became active, in hours, minutes, and seconds.	extensive
Idle time	Length of time elapsed since the call became idle, in hours, minutes, and seconds.	extensive
Statistics since	Date and time when collection of the following statistics began: <ul style="list-style-type: none"> • Control Tx—Amount of control information transmitted, in packets and bytes. • Control Rx—Amount of control information received, in packets and bytes. • Data Tx—Amount of data transmitted, in packets and bytes. • Data Rx—Amount of data received, in packets and bytes. • Errors Tx—Number of errors transmitted, in packets. • Errors Rx—Number of errors received, in packets. • LCP echo req Tx—Number of LCP echo requests transmitted, in packets. • LCP echo req Rx—Number of LCP echo requests received, in packets. • LCP echo rep Tx—Number of LCP echo responses transmitted, in packets. • LCP echo rep Rx—Number of LCP echo responses received, in packets. • LCP echo Req timeout—Number of LCP echo requests that timed out. • LCP echo Req error—Number of errors received for LCP echo packets. • LCP echo Rep error—Number of errors transmitted for LCP echo packets. 	extensive

Sample Output

show services l2tp session (LNS on M Series Routers)

```
user@host> show services l2tp session
```

```

Interface: sp-1/2/0, Tunnel group: group1, Tunnel local ID: 8802
Local Remote Interface State      Bundle Username
ID   ID   unit
37966      5       2 Established

```

show services l2tp session (LNS on MX Series Routers)

```

user@host> show services l2tp session
Tunnel local ID: 40553
Local Remote State      Interface      Interface
ID   ID   unit                  unit          Name
17967 1     Established         1073749824    si-5/2/0

```

show services l2tp session (LAC)

```

user@host> show services l2tp session
Tunnel local ID: 31889
Local Remote State      Interface      Interface
ID   ID   unit                  unit          Name
31694 1     Established         311          pp0

```

show services l2tp session detail (LAC)

```

user@host> show services l2tp session detail
Tunnel local ID: 31889
Session local ID: 31694, Session remote ID: 1, Interface unit: 311
State: Established, Interface: pp0, Mode: Dedicated
Local IP: 203.0.113.2:1701, Remote IP: 203.0.113.1:1701
Local name: ce-lac, Remote name: ce-lns

```

show services l2tp session extensive (LAC)

```

user@host> show services l2tp session extensive
Tunnel local ID: 31889
Session local ID: 31694, Session remote ID: 1
Interface unit: 311
State: Established, Mode: Dedicated
Local IP: 203.0.113.2:1701, Remote IP: 203.0.113.1:1701
Local name: ce-lac, Remote name: ce-lns
Tx speed: 0, Rx speed: 0
Bearer type: 1, Framing type: 1
LCP renegotiation: N/A, Authentication: None, Interface ID: N/A
Interface unit: 311, Call serial number: 0
Policer bandwidth: 0, Policer burst size: 0
Policer exclude bandwidth: 0, Firewall filter: 0
Session encapsulation overhead: 0, Session cell overhead: 0
Create time: Tue Aug 24 14:38:23 2010, Up time: 01:06:25
Idle time: N/A

```

show services l2tp session extensive (LAC on MX Series Routers)

```

user@host> show services l2tp session extensive
Tunnel local ID: 31889
Session local ID: 31694, Session remote ID: 1
Interface unit: 311
State: Established, Mode: Dedicated
Local IP: 203.0.113.102:1701, Remote IP: 203.0.113.101:1701
Local name: ce-lac, Remote name: ce-lns
Tx speed: 256000, source service-profile

```

```

Rx speed: 128000, source ancp
Bearer type: 1, Framing type: 1
LCP renegotiation: N/A, Authentication: None, Interface ID: N/A
Interface unit: 311, Call serial number: 0
Policer bandwidth: 0, Policer burst size: 0
Policer exclude bandwidth: 0, Firewall filter: 0
Session encapsulation overhead: 0, Session cell overhead: 0
Create time: Tue Aug 24 14:38:23 2010, Up time: 01:06:25
Idle time: N/A

```

show services l2tp session extensive (LNS on M Series Routers)

```

user@host> show services l2tp session extensive
Interface: sp-1/2/0, Tunnel group: group1, Tunnel local ID: 62746
Session local ID: 56793, Session remote ID: 53304
State: Established, Bundle ID: 5, Mode: shared
Local IP: 203.0.113.121:1701, Remote IP: 203.0.113.202:1701
Username: user@example.com, Assigned IP address: 203.0.113.51/32
Local MRU: 4000, Remote MRU: 1500, Tx speed: 64000, Rx speed: 64000
Bearer type: 2, Framing type: 1
LCP renegotiation: Off, Authentication: CHAP, Interface ID: unit_20
Interface unit: 20, Call serial number: 4137941434
Policer bandwidth: 64000, Policer burst size: 51200
Firewall filter: f1
Session encapsulation overhead: 16, Session cell overhead: On
Create time: Tue Mar 23 14:13:15 2004, Up time: 01:16:41
Idle time: 00:00:00
Statistics since: Tue Mar 23 14:13:13 2004

```

	Packets	Bytes
Control Tx	4	88
Control Rx	2	28
Data Tx	0	0
Data Rx	461	29.0k
Errors Tx	0	
Errors Rx	0	

```

Interface: sp-1/2/0, Tunnel group: group_company_dns, Tunnel local ID: 37266
Session local ID: 39962, Session remote ID: 53303
State: Established, Bundle ID: 5, Mode: shared
Local IP: 203.0.113.121:1701, Remote IP: 203.0.113.222:1701
Username: usr1@company.example.com, Assigned IP address: 203.0.113.3/24
Local name: router-1, Remote name: router-2
Local MRU: 4470, Remote MRU: 4470, Tx speed: 155000000, Rx speed: 155000000
Bearer type: 2, Framing type: 1
LCP renegotiation: Off, Authentication: CHAP, Interface ID: unit_31
Interface unit: 31, Call serial number: 4137941433
Policer bandwidth: 64000, Policer burst size: 51200
Firewall filter: f1
Create time: Tue Mar 23 14:13:17 2004, Up time: 01:16:39
Idle time: 01:16:36
Statistics since: Tue Mar 23 14:13:15 2004

```

	Packets	Bytes
Control Tx	6	196
Control Rx	4	150
Data Tx	0	0
Data Rx	1	80
Errors Tx	0	
Errors Rx	0	

show services l2tp session extensive (LNS on MX Series Routers)

```

user@host> show services l2tp session extensive
Tunnel local ID: 40553
Session local ID: 17967, Session remote ID: 1
Interface unit: 1073749824
State: Established
Interface: si-5/2/0
Mode: Dedicated
Local IP: 192.0.2.2:1701, Remote IP: 192.0.2.3:1701
Local name: lns-mx960, Remote name: testlac
Tx speed: 56000, Rx speed: 0
Bearer type: 2, Framing type: 1
LCP renegotiation: Off, Authentication: None
Call serial number: 1
Create time: Mon Apr 25 20:27:50 2011, Up time: 00:01:48
Idle time: N/A
Statistics since: Mon Apr 25 20:27:50 2011

```

	Packets	Bytes
Control Tx	4	219
Control Rx	4	221
Data Tx	0	0
Data Rx	10	228
Errors Tx	0	
Errors Rx	0	

show services l2tp session statistics (MX Series Routers)

```

user@host> show services l2tp session statistics local session-id 1
Tunnel local ID: 17185
Session local ID: 1, Session remote ID: 14444, Interface unit: 1073788352
State: Established
Statistics since: Mon Aug 1 13:27:47 2011

```

	Packets	Bytes
Data Tx	4	51
Data Rx	3	36

show services l2tp radius

Syntax	<pre>show services l2tp radius <accounting (servers statistics)> <authentication (servers statistics)> <servers> <statistics></pre>
Release Information	Command introduced in Junos OS Release 9.0.
Description	(M7i, M10i, and M120 routers only) Display RADIUS servers and statistics information for the RADIUS servers configured on the router.
Options	<p>You must include one of the following keywords to provide a valid completion for the command:</p> <p>accounting (servers statistics)—(Optional) Display RADIUS servers or statistical accounting information only.</p> <p>authentication (servers statistics)—(Optional) Display RADIUS servers or statistical authentication information only.</p> <p>servers—(Optional) Display RADIUS authentication and accounting server information only.</p> <p>statistics—(Optional) Display RADIUS authentication and accounting statistics information only.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • <i>L2TP Services Configuration Overview</i> • <i>L2TP Minimum Configuration</i>
List of Sample Output	<p>show services l2tp radius servers on page 188</p> <p>show services l2tp radius statistics on page 189</p>
Output Fields	<p>Table 7 on page 173 lists the output fields for the show services l2tp radius command. Output fields are listed in the approximate order in which they appear.</p>

Table 9: show services l2tp radius Output Fields

Field Name	Field Description
IP Address	IP address of the server.
State	(servers keyword only) Present state of the server.

Table 9: show services l2tp radius Output Fields (*continued*)

Field Name	Field Description
UDP Port	Number of the UDP port used to send authentication or accounting messages to the server.
Retry Count	(servers keyword only) Number of times the RADIUS client resends a packet if no ACK is received.
Timeout	(servers keyword only) Length of time the client waits for an ACK before retransmission.
Pending Requests	(servers keyword only) Number of client pending authentication or accounting requests.
Maximum Sessions	(servers keyword only) Maximum number of pending requests on each RADIUS client before the server moves to the next RADIUS client, which is 200 times the maximum number of clients that can be created on a server (which is 12).
Dead Time	(servers keyword only) Interval to wait before retrying a server after it fails to send a response to an authentication or accounting request.
Secret Type	(servers keyword only) Secret type configured on the RADIUS server.
Profile	(servers keyword only) Name of profile configured for the RADIUS server.
Access requests	(statistics keyword only) Number of access requests sent to the server.
Rollover requests	(statistics keyword only) Number of requests coming into the server as a result of the previous server timing out.
Retransmissions	(statistics keyword only) Number of retransmissions.
Access accepts	(statistics keyword only) Number of access accept messages received from the server.
Access rejects	(statistics keyword only) Number of access reject messages received from the server.
Access challenges	(statistics keyword only) Number of access challenges received from the server.
Malformed responses	(statistics keyword only) Number of responses with attributes having an invalid length or unexpected attributes (such as two attributes when the response is required to have at most one).
Bad authenticators	(statistics keyword only) Number of responses in which the authenticator is incorrect for the matching request. This can occur if the RADIUS secrets for the client and server do not match.
Requests pending	(statistics keyword only) Number of requests waiting for a response.
Request timeouts	(statistics keyword only) Number of requests that timed out.
Unknown responses	(statistics keyword only) Number of unknown responses. The RADIUS response type in the header is invalid or unsupported.

Table 9: show services l2tp radius Output Fields (*continued*)

Field Name	Field Description
Packets dropped	(statistics keyword only) Number of packets dropped because they are too short or because the router receives a response for which there is no corresponding request. For example, if the router sends a request that times out, the router removes the request from the list and sends a new request. If the server is slow and sends a response to the first request after the router removes the request, the packet is dropped.

Sample Output

show services l2tp radius servers

```

user@host> show services l2tp radius servers
                                RADIUS Authentication Servers

      IP Address      State      UDP Port  Retry Count  Timeout  Pending Requests  Maximum Sessions  Dead Time  Secret Type
192.0.2.1             Active      1812     2         25         0             2400             300      radius-key
198.51.100.1         Active      1812     5         35         0             2400             300      radius-key
203.0.113.1          Active      1812     2         25         0             2400             300      radius-key
172.28.30.174        Active      1812     7         75         0             2400             300      radius-key
172.28.30.175        Active      1812     7         75         0             2400             300      radius-key
172.28.30.176        Active      1812     4         55         0             2400             300      radius-key
172.31.30.176        Active      1812     3         3          0             2400             300      none-set
172.31.130.174       Active      1812     7         75         0             2400             300      radius-key

                                RADIUS Accounting Servers

      IP Address      State      UDP Port  Retry Count  Timeout  Pending Requests  Maximum Sessions  Dead Time  Secret Type
192.0.2.1             Active      1813     2         25         0             2400             300      radius-key
198.51.100.1         Active      1813     5         35         0             2400             300      radius-key
203.0.113.1          Active      1813     2         25         0             2400             300      radius-key
172.28.30.174        Active      1813     7         75         0             2400             300      radius-key
172.28.30.175        Active      1813     7         75         0             2400             300      radius-key
172.28.30.176        Active      1813     4         55         0             2400             300      radius-key
172.31.30.176        Active      1813     3         3          0             2400             300      none-set
172.31.130.174       Active      1813     7         75         0             2400             300      radius-key

                                RADIUS Accounting Servers

Profile: user1

```

show services l2tp radius statistics

```
user@host> show services l2tp radius statistics
RADIUS Authentication Statistics
```

Authentication statistics:

Server 192.0.2.1, UDP port: 1812

Access requests	: 40
Rollover requests	: 5
Retransmissions	: 2
Access accepts	: 39
Access rejects	: 1
Access challenges	: 3
Malformed responses	: 0
Bad authenticators	: 0
Requests pending	: 1
Request timeouts	: 0
Unknown responses	: 0
Packets dropped	: 0

RADIUS Accounting Statistics**Accounting statistics:**

Server 172.31.130.174, UDP port: 1813

Total requests	: 9
Start requests	: 6
Interim requests	: 1
Stop requests	: 2
Rollover requests	: 0
Retransmissions	: 1
Total response	: 9
Start responses	: 6
Interim responses	: 1
Stop responses	: 2
Malformed responses	: 0
Bad authenticators	: 0
Requests pending	: 1
Request timeouts	: 0
Unknown responses	: 0
Packets dropped	: 0

show services l2tp summary

Syntax	show services l2tp summary <interface sp-fpc/pic/port> <statistics>
Release Information	Command introduced before Junos OS Release 7.4. Support for LAC on MX Series routers introduced in Junos OS Release 10.4. Support for LNS on MX Series routers introduced in Junos OS Release 11.4. Support for statistics option introduced in Junos OS Release 13.1.
Description	(M10i and M7i routers: LNS only. MX Series routers: LAC and LNS.) Display Layer 2 Tunneling Protocol (L2TP) summary information.
Options	<p>none—Display complete L2TP summary information. For LNS on M Series routers, display L2TP summary information for all adaptive services interfaces. For LNS on MX Series routers, display L2TP summary information for all inline services interfaces.</p> <p>interface sp-fpc/pic/port—(Optional) Display L2TP summary information for only the specified adaptive services interface. This option is not available for L2TP on MX Series routers.</p> <p>statistics—(Optional) Display a summary of control packets and bytes transmitted and received.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> <i>L2TP Services Configuration Overview</i> <i>L2TP Minimum Configuration</i>
List of Sample Output	show services l2tp summary (LAC on M Series routers) on page 193 show services l2tp summary (LAC on MX Series routers) on page 193 show services l2tp summary (LNS on MX Series routers) on page 194 show services l2tp summary (LNS on M Series routers) on page 194 show services l2tp summary statistics (MX Series routers) on page 194
Output Fields	Table 10 on page 190 lists the output fields for the show services l2tp summary command. Output fields are listed in the approximate order in which they appear.

Table 10: show services l2tp summary Output Fields

Field Name	Field Description
Administrative state	Administrative state of the tunnel is drain. In this state you cannot configure new sessions, destinations, or tunnels at the LAC or LNS.

Table 10: show services l2tp summary Output Fields (*continued*)

Field Name	Field Description
Failover within a preference level	State of this tunnel selection method on the LAC. When enabled, tunnel selection fails over within a preference level. When disabled, tunnel selection drops to the next lower preference level. Not displayed for LNS on M Series routers.
Weighted load balancing	State of this tunnel selection method on the LAC. When enabled, the maximum session limit of a tunnel determines its weight within a preference level. Tunnel selection proceeds from greatest to least weight. When disabled, selection defaults to a round robin method. Not displayed for LNS on M Series routers.
Destination equal load balancing	State of this tunnel selection method on the LAC. When enabled, the LAC selects tunnels based on the session count for destinations and the tunnel session count. Not displayed for LNS on M Series routers.
Tunnel authentication challenge	State of tunnel authentication, indicating whether the LAC and LNS exchange an authentication challenge and response during the establishment of the tunnel. The state is Enabled when a secret is configured in the tunnel profile or on the RADIUS server in the Tunnel-Password attribute [69]. The state is Disabled when the secret is not present. Not displayed for LNS on M Series routers.
Calling number avp	When the state is Enabled , the LAC includes the value of the Calling Number AVP 22 in ICRQ packets sent to the LNS. When the state is Disabled , the attribute is not sent to the LNS. Not displayed for LNS on M Series routers.
Failover Protocol	When the state is enabled, the LAC operates in the default <i>failover-protocol-fall-back-to-silent-failover</i> manner. When the state is disabled, the disable-failover-protocol statement has been issued and the LAC operates only in silent failover mode. Not displayed for LNS on M Series routers.
Tx connect speed method	<p>The connection speed method configured to send the speed values in the L2TP Tx Connect Speed (AVP 24) and L2TP Rx Connect Speed (AVP 38). Possible values are:</p> <ul style="list-style-type: none"> • actual This is the default value in Junos OS Releases 15.1, 16.1, 16.2, and 17.1. It is deprecated in Junos Releases 17.2 and higher. • ancp • none • pppoe-ia-tag • service-profile • static This is the default value in Junos Releases 13.3, 14.1, 14.2, 17.2 and higher. It is deprecated in Junos OS Releases 15.1, 16.1, 16.2, and 17.1.
Rx speed avp when equal	Indicates if the Rx connect speed when equal configuration is enabled or disabled .

Table 10: show services l2tp summary Output Fields (*continued*)

Field Name	Field Description
Tunnel assignment id	<p>Format of the tunnel name.</p> <p>Format of the tunnel name, based on RADIUS attributes returned from the AAA server:</p> <ul style="list-style-type: none"> • authentication-id—Name consists of only Tunnel Assignment-Id [82]. This is the default value. • client-server-id—Name is a combination of Tunnel-Client-Auth-Id [90], Tunnel-Server-Endpoint [67], and Tunnel-Assignment-Id [82]. This format is available only on MX Series routers.
Tunnel Tx Address Change	<p>Action taken by LAC when it receives a request from a peer to change the destination IP address, UDP port, or both:</p> <ul style="list-style-type: none"> • accept—Accepts change requests for the IP address or UDP port. This is the default action. • ignore—Ignores all change requests. • ignore-ip-address—Ignores change requests for the IP address but accepts them for the UDP port. • ignore-udp-port—Ignores change requests for the UDP port but accepts them for the IP address.
Min Retransmission Timeout for control packets	Minimum number of seconds that the local peer waits for the initial response after transmitting an L2TP control packet. If no response has been received by the time the period expires, the local peer retransmits the packet.
Min Retransmission Timeout for control packets	Minimum number of seconds that the local peer waits for the initial response after transmitting an L2TP control packet. If no response has been received by the time the period expires, the local peer retransmits the packet.
Max Retransmissions for Established Tunnel	Maximum number of times control messages are retransmitted for established tunnels.
Max Retransmissions for Not Established Tunnel	Maximum number of times control messages are retransmitted for tunnels that are not established.
Tunnel Idle Timeout	Period that a tunnel can be inactive—that is, carrying no traffic—before it times out and is torn down.
Destruct Timeout	Period that the router attempts to maintain dynamic destinations, tunnels, and sessions after they have been destroyed.
Reassembly Service Set	Indicates active IP reassembly configured for the interface.
Destination Lockout Timeout	Timeout period for which all future destinations are locked out, meaning that they are not considered for selection when a new tunnel is created.

Table 10: show services l2tp summary Output Fields (*continued*)

Field Name	Field Description
Access Line Information	State of LAC global configuration for forwarding subscriber line information to the LNS, Enabled or Disabled . Indicates active IP reassembly configured for the interface.
IPv6 Services for LAC Sessions	State of LAC IPv6 service configuration for creating the IPv6 (inet6) address family for LAC subscribers, allowing the application of IPv6 firewall filters, Enabled or Disabled .
Speed Updates	State of LAC global configuration for including connection speed updates when it forwards subscriber line information to the LNS, Enabled or Disabled .
Destinations	Number of L2TP destinations for the LAC. Not displayed for LNS on M Series routers.
Tunnels	Number of L2TP tunnels established on the router.
Sessions	Number of L2TP sessions established on the router.
Switched sessions	Number of L2TP tunnel-switched sessions established on the router.
Control	Count of L2TP control packets and bytes sent and received.
Data	Count of L2TP data packets and bytes sent and received.
Errors	Count of L2TP error packets and bytes sent and received.

Sample Output

show services l2tp summary (LAC on M Series routers)

```

user@host> show services l2tp summary
Administrative state is Drain
Failover within a preference level is Disabled
Weighted load balancing is Enabled
Destination equal load balancing is Disabled
Tunnel authentication challenge is Enabled
Calling number avp is Enabled
Failover Protocol is Disabled
Tunnel assignment id format is authentication-id
Destinations: 1 Tunnels: 1, Sessions: 1
  Tx packets    Rx packets    Memory (bytes)
Control        260           144          11513856
Data           7.5k          16.9k         8.3k
Errors          0             0

```

show services l2tp summary (LAC on MX Series routers)

```

user@host> show services l2tp summary

```

```
Administrative state is Drain
  Failover within a preference level is Disabled
  Weighted load balancing is Disabled
  Destination equal load balancing is Enabled
  Tunnel authentication challenge is Enabled
  Calling number avp is Enabled
  Failover Protocol is Disabled
  Tx Connect speed method is static
  Rx speed avp when equal is enabled
  Tunnel Tx Address Change is Accept
  Min Retransmissions Timeout for control packets is 2 seconds
  Max Retransmissions for Established Tunnel is 7
  Max Retransmissions for Not Established Tunnel is 5
  Tunnel Idle Timeout is 60 seconds
  Destruct Timeout is 300 seconds
  Destination Lockout Timeout is 300 seconds
  Reassembly Service Set is ssnr3
  Access Line Information is Enabled, Speed Updates is Enabled
  IPv6 Services For LAC Sessions is Enabled
  Destinations: 0, Tunnels: 0, Sessions: 0, Switched sessions: 0
```

show services l2tp summary (LNS on MX Series routers)

```
user@host show services l2tp summary
Administrative state is Drain
  Failover within a preference level is Disabled
  Weighted load balancing is Disabled
  Destination equal load balancing is Disabled
  Tunnel authentication challenge is Enabled
  Calling number avp is Enabled
  Failover Protocol is Enabled
  Tx Connect speed method is static
  reassembly Service Set is ssnr3
  Destinations: 4, Tunnels: 19, Sessions: 65, Switched sessions: 2
```

show services l2tp summary (LNS on M Series routers)

```
user@host> show services l2tp summary
Tunnels: 2, Sessions: 2, Errors: 0
  Tx packets    Rx packets    Memory (bytes)
Control        6k             9k             688k
Data           70k            70k            3054
```

show services l2tp summary statistics (MX Series routers)

```
user@host>show services l2tp summary statistics
Administrative state is Drain
  Failover within a preference level is Disabled
  Weighted load balancing is Disabled
  Destination equal load balancing is Disabled
  Tunnel authentication challenge is Enabled
  Calling number avp is Enabled
  Failover Protocol is Enabled
  Tx Connect speed method is advisory
  Tunnel assignment id format is assignment-id
  Tunnel Tx Address Change is Accept
  Min Retransmissions Timeout for control packets is 4 seconds
  Max Retransmissions for Established Tunnel is 7
  Max Retransmissions for Not Established Tunnel is 5
  Tunnel Idle Timeout is 60 seconds
```



```
Destruct Timeout is 300 seconds
Destination Lockout Timeout is 300 secondsDestinations: 1, Tunnels: 1, Sessions:
31815, Switched sessions: 0
  Tx packets  Rx packets  Memory (bytes)
Control      90.4k        32.0k        245678080
Data        127.3k       100.8kk         0
Errors         0          0
```

