
PPP Configuration Commands

Global Commands

description

Syntax	description <i>description-string</i> no description
Context	config>subscr-mgmt>pppoe-policy config>service>ies>sub-if>grp-if>pppoe config>service>vprn>sub-if>grp-if>pppoe
Description	This command creates a text description stored in the configuration file for a configuration context. The description command associates a text string with a configuration context to help identify the content in the configuration file. The no form of this command removes the string from the configuration.
Default	No description associated with the configuration context.
Parameters	<i>description-string</i> — The description character string. Allowed values are any string up to 80 characters long composed of printable, 7-bit ASCII characters. If the string contains special characters (#, \$, spaces, etc.), the entire string must be enclosed within double quotes.

shutdown

Syntax	[no] shutdown
Context	config>service>ies>sub-if>grp-if>pppoe config>service>vprn>sub-if>grp-if>pppoe
Description	This command administratively disables an entity. When disabled, an entity does not change, reset, or remove any configuration settings or statistics. The operational state of the entity is disabled as well as the operational state of any entities contained within. Many objects must be shut down before they may be deleted. The no form of this command places the entity into an administratively enabled state.

ppp-policy

Syntax	ppp-policy <i>ppp-policy-name</i> [create] no ppp-policy <i>ppp-policy-name</i>
Context	config>subscr-mgmt

PPP Configuration Commands

- Description** This command configures a PPP policy. These policies are referenced from interfaces configured for PPP. Multiple PPP policies may be configured.
This default policy cannot be modified nor deleted.
- Default** default
- Parameters** *ppp-policy-name* — Specifies the PPP policy name up to 32 characters in length.
create — Keyword used to create the entity. The **create** keyword requirement can be enabled/disabled in the **environment>create** context.

disable-cookies

- Syntax** **[no] disable-cookies**
- Context** config>subscr-mgmt>ppp-policy
- Description** This command disables the use of cookies.
The **no** form of the command enables cookies.
- Default** no disable-cookies

keepalive

- Syntax** **keepalive seconds [hold-up-multiplier multiplier]**
no keepalive
- Context** config>subscr-mgmt>ppp-policy>
- Description** This command defines the keepalive interval and the number of keepalives that can be missed before the session is declared down for this PPP policy.
The **no** form of the command reverts to the default value.
- Default** 30 seconds
3 multiplier
- Parameters** *seconds* — Specifies the keepalive interval in seconds.
Values 10 — 300
hold-up-multiplier multiplier — Specifies the number of keepalives that can be missed.
Values 1 — 5

max-sessions-per-mac

- Syntax** **max-sessions-per-mac sessions [allow-same-circuit-id-for-dhcp]**
no max-sessions-per-mac

Context	config>subscr-mgmt>ppp-policy
Description	<p>This command sets the maximum PPP sessions that can be opened for a given MAC address.</p> <p>To enable IPv4 address allocation using the internal dhcpv4 client for multiple PPPoE sessions on a single SAP and having the same MAC address and circuit-ID, the optional cli flag “allow-same-circuit-id-for-dhcp” should be added. The SROS local-dhcp-server will detect the additional vendor-specific options inserted by the internal dhcpv4 client and use an extended unique key for lease allocation.</p> <p>The no form of the command reverts to the default value.</p>
Default	1
	<p><i>sessions</i> — Specifies the maximum PPP sessions that can be opened for the given MAC address.</p> <p>Values 1 — 1023</p> <p>allow-same-circuit-id-for-dhcp — (optional) Enables support for IPv4 address allocation using the internal dhcpv4 client for multiple PPPoE sessions on a single SAP that have the same MAC address and circuit-ID.</p>

pado-delay

Syntax	pado-delay <i>deci-seconds</i> no pado-delay
Context	config>subscr-mgmt>ppp-policy
Description	This command configures the delay timeout before sending a PPP Active Discovery Offer (PADO) packet.
Default	no delay
Parameters	<p><i>deci-seconds</i> — Specifies the delay timeout before sending a PADO</p> <p>Values 1 — 30</p>

ppp-authentication

Syntax	ppp-authentication { pap chap pref-chap pref-pap } no ppp-authentication
Context	config>subscr-mgmt>ppp-policy
Description	This command configures the PPP protocol used to authenticate the PPP session.
Parameters	<p>pap — Specifies to always use PAP to authenticate the sessions.</p> <p>chap — Specifies to always use CHAP to authenticate the sessions.</p> <p>pref-chap — Specifies to attempt to use CHAP and if it fails, use PAP.</p> <p>pref-pap — Specifies to attempt to use PAP and if it fails, use CHAP.</p>

ppp-mtu

Syntax	ppp-mtu <i>mtu-bytes</i> no ppp-mtu
Context	config>subscr-mgmt>ppp-policy
Description	This command configures the the maximum PPP MTU size.
Default	no ppp-mtu
Parameters	<i>mtu-bytes</i> — Specifies the the maximum PPP MTU size.
	Values 512 — 9212

ppp-options

Syntax	ppp-options
Context	config>subscr-mgmt>pppoe-policy
Description	This command enables the context to configure PPP options.

custom-option

Syntax	custom-option <i>protocol option-number</i> address <i>ip-address</i> custom-option <i>protocol option-number</i> hex <i>hex-string</i> custom-option <i>protocol option-number</i> string <i>ascii-string</i> no custom-option <i>protocol option-number</i>
Context	config>subscr-mgmt>pppoe-policy>ppp-options
Description	This command provides the ability to configure custom PPP options. Note that standard options such as the DNS name will be returned from DHCP or RADIUS and be converted to PPP automatically. Compression is not supported. The no form of the command removes the custom options from the configuration.
Parameters	<i>protocol</i> — Specifies a protocol for the custom option. Values lcp, ipcp <i>option-number</i> — Assigns an identifying number for the custom option. Values 0 — 255 <i>ip-address</i> — <i>ascii-string</i> — Specifies an ASCII format string for the custom option up to 127 characters long. <i>hex-string</i> — Specifies a hex value for the custom option. Values [0x0..0xFFFFF...(max 254 hex nibbles)]

reply-on-padt

Syntax	[no] reply-on-padt
Context	config>subscr-mgmt>pppoe-policy
Description	Some of the PPPoE clients expect reply on PPPoE Active Discovery Terminate (PADT) message before the context of the session is cleared up. To support such client, a command enabling reply to PADT is provided.
Default	no reply-on-padt

session-timeout

Syntax	session-timeout <i>timeout</i> no session-timeout
Context	config>subscr-mgmt>ppp-policy
Description	This command defines the time in seconds between 1 and 360 days before the PPP session will be terminated. The default value is unlimited session timeout. A RADIUS specified session-timeout (attribute [27] Session-Timeout) overrides the CLI configured value.
Default	no session-timeout
Parameters	<i>timeout</i> — Specifies the session timeout in seconds.
Values	1 — 31104000

PPPoE Service Commands

pppoe

Syntax	[no] pppoe
Context	config>service>ies>sub-if>grp-if config>service>vprn>sub-if>grp-if
Description	This command configures PPPoE parameters. The no form of the command reverts all PPPoE parameters from the PPPoE context to their defaults.

dhcp-client

Syntax	dhcp-client
Context	config>service>vprn>sub-if>grp-if>pppoe config>service>ies>sub-if>grp-if>pppoe
Description	This command enables the context to configure the PPPoE-to-DHCP options.

ccag-use-origin-sap

Syntax	[no] ccag-use-origin-sap
Context	config>service>vprn>sub-if>grp-if>pppoe>dhcp-client config>service>ies>sub-if>grp-if>pppoe>dhcp-client
Description	This command enables the original VPLS SAP to be included in the circuit-id option to send to the DHCP server (in case this interface is connected to a VPLS by a CCA MDA). The no form of the command disables the feature.
Default	no ccag-use-origin-sap

include-option

Syntax	include-option string text no include-option
Context	config>service>vprn>sub-if>grp-if>pppoe>dhcp-client config>service>ies>sub-if>grp-if>pppoe>dhcp-client
Description	This command allows the configuration of a vendor-specific sub-option string in a DHCP message.
Parameters	string text — Specifies a vendor-specific string inside-option 82, sub-option 9, sub-option 5.

pap-chap-user-db

Syntax	pap-chap-user-db <i>local-user-db-name</i> no pap-chap-user-db
Context	config>service>ies>sub-if>grp-if>pppoe config>service>vprn>sub-if>grp-if>pppoe
Description	This command configures the local user database to use for PPP Challenge-Handshake Authentication Protocol/Password Authentication Protocol (PAP/CHAP) authentication. If an authentication policy is also configured, pppoe-access-method must be set to none in this authentication policy to use the local user database (in that case RADIUS authentication will not be used for PPPoE hosts).
Default	no pap-chap-user-db
Parameters	<i>local-user-db-name</i> — Specifies the local user database to use for authentication.

ppp-policy

Syntax	ppp-policy <i>ppp-policy-name</i> no ppp-policy
Context	config>service>ies>sub-if>grp-if>ppp config>service>vprn>sub-if>grp-if>ppp
Description	This command associates a PPP policy on this interface. The no form of the command reverts to the default value.
Default	default
Parameters	<i>ppp-policy-name</i> — Specifies a a PPP policy up to 32 characters in length on this interface.

sap-session-limit

Syntax	sap-session-limit <i>sap-session-limit</i> no sap-session-limit
Context	config>service>ies>sub-if>grp-if>pppoe config>service>vprn>sub-if>grp-if>pppoe
Description	This command specifies the number of PPPoE hosts per SAP allowed for this group-interface.
Default	1
Parameters	<i>sap-session-limit</i> — Specifies the number of PPPoE hosts per SAP allowed. Values 1 — 20000

session-limit

Syntax	session-limit <i>session-limit</i> no session-limit
Context	config>service>ies>sub-if>grp-if>pppoe config>service>vprn>sub-if>grp-if>pppoe
Description	This command specifies the number of PPPoE hosts allowed for this group interface.
Default	1
Parameters	<i>session-limit</i> — Specifies the number of PPPoE hosts allowed
Values	1 — 20000

acct-authentic

Syntax	[no] acct-authentic
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the acct-authentic RADIUS attribute.

acct-delay-time

Syntax	[no] acct-delay-time
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the acct-delay-time RADIUS attribute.

called-station-id

Syntax	[no] called-station-id
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command includes called station id attributes. The no form of the command excludes called station id attributes.

calling-station-id

Syntax	calling-station-id calling-station-id {mac remote-id sap-id sap-string} no calling-station-id
Context	config>service>ies>if>sap config>service>ies>sub-if>grp-if>sap config>service>vpls>sap config>service>vprn>if>sap config>service>vprn>sub-if>grp-if>sap config>subscr-mgmt>auth-plcy>include-radius-attribute config>subscr-mgmt>acct-plcy>include>include-radius-attribute
Description	This command enables the inclusion of the calling-station-id attribute in RADIUS authentication requests and RADIUS accounting messages. The value inserted is set at the SAP level. If no calling-station-id value is set at the SAP level, the calling-station-id attribute will not be sent.
Default	no calling-station-id
Parameters	mac — Specifies that the mac-address will be sent. remote-id — Specifies that the remote-id will be sent. sap-id — Specifies that the sap-id will be sent. sap-string — Specifies that the value is the inserted value set at the SAP level. If no calling-station-id value is set at the SAP level, the calling-station-id attribute will not be sent.

circuit-id

Syntax	[no] circuit-id
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the agent-circuit-id for RADIUS.

delegated-ipv6

Syntax	[no] delegated-ipv6
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the delegated-ipv6 RADIUS attribute.

framed-interface-id

Syntax	[no] framed-interface-id
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the framed-interface-id RADIUS attribute.

framed-ip-addr

Syntax	[no] framed-ip-addr
Context	config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the inclusion of the framed-ip-addr attribute.

framed-ip-netmask

Syntax	[no] framed-ip-netmask
Context	config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the inclusion of the framed-ip-netmask attribute.

framed-ipv6-prefix

Syntax	[no] framed-ipv6-prefix
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the framed-ipv6-prefix RADIUS attribute.

ipv6-address

Syntax	[no] framed-ipv6-address
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the ipv6-address RADIUS attribute.

mac-address

Syntax [no] mac-address
 config>subscr-mgmt>auth-policy>include-radius-attribute
 config>subscr-mgmt>acct-plcy>include-radius-attribute

Description This command enables the generation of the client MAC address RADIUS attribute.

nas-identifier

Syntax [no] nas-identifier
Context config>subscr-mgmt>auth-policy>include-radius-attribute
 config>subscr-mgmt>acct-plcy>include-radius-attribute

Description This command enables the generation of the nas-identifier RADIUS attribute.

nas-port

Syntax [no] nas-port *bit-specification binary-spec*
Context config>subscr-mgmt>auth-policy>include-radius-attribute
 config>subscr-mgmt>acct-plcy>include-radius-attribute

Description This command enables the generation of the nas-port RADIUS attribute. You enter decimal representation of a 32-bit string that indicates your port information. This 32-bit string can be compiled based on different information from the port (data types). By using syntax number-of-bits data-type you indicate how many bits from the 32 bits are used for the specific data type. These data types can be combined up to 32 bits in total. In between the different data types 0's and/or 1's as bits can be added. The **no** form of this command disables your nas-port configuration.

Parameters *bit-specification binary-spec* — Specifies the NAS-Port attribute

Values	binary-spec	<bit-specification> <binary-spec>
	bit-specification	0 1 <bit-origin>
	bit-origin	*<number-of-bits><origin>
	number-of-bits	1 — 32
	origin	o i s m p outer VLAN ID i inner VLAN ID s slot number m MDA number p port number or lag-id

Sample

```
*12o*12i00*2s*2m*2p => 0000 0000 0000 1111 1111 1111 00ss mmpp
If outer vlan = 0 & inner vlan = 1 & slot = 3 & mda = 1 & port = 1
=> 0000 0000 0000 0000 0000 0001 0011 0101 => nas-port = 309
```

nas-port-id

Syntax	[no] nas-port-id [prefix-string <i>string</i>] [suffix <i>suffix-option</i>]
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the nas-port-id RADIUS attribute. Optionally, the value of this attribute (the SAP-id) can be prefixed by a fixed string and suffixed by the circuit-id or the remote-id of the client connection. If a suffix is configured, but no corresponding data is available, the suffix used will be 0/0/0/0/0.
Parameters	prefix-string <i>string</i> — Specifies that a user configurable string will be added to the RADIUS NAS port attribute, up to 8 characters in length. suffix <i>suffix-option</i> — Specifies the suffix type to be added to the RADIUS NAS port attribute.
Values	circuit-id, remote-id

nas-port-type

Syntax	nas-port-type nas-port-type [0..255] no nas-port-type
Context	config>subscr-mgmt>auth-plcy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the nas-port-type RADIUS attribute. If set to nas-port-type , the following will be sent: values: 32 (null-encap), 33 (dot1q), 34 (qinq), 15 (DHCP hosts). The nas-port-type can also be set as a specified value, with an integer from 0 to 255. The no form of the command reverts to the default.
Default	no nas-port-type
Parameters	0 — 255 — Specifies an enumerated integer that specifies the value that will be put in the RADIUS nas-port-type attribute.

nat-port-range

Syntax	[no] nat-port-range
Context	config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the of nat-port-range attribute.
Default	no nat-port-range

remote-id

Syntax	[no] remote-id
Context	config>subscr-mgmt>auth-policy>include-radius-attribute config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command enables the generation of the agent-remote-id for RADIUS.

sla-profile

Syntax	[no] sla-profile
Context	config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command specifies that SLA profile attributes should be included into RADIUS accounting messages.

sub-profile

Syntax	[no] sub-profile
Context	config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command specifies that subscriber profile attributes should be included into RADIUS accounting messages.

subscriber-id

Syntax	[no] subscriber-id
Context	config>subscr-mgmt>acct-plcy>include-radius-attribute
Description	This command specifies that subscriber ID attributes should be included into RADIUS accounting messages.

radius-accounting-server

Syntax	radius-accounting-server
Context	config>app-assure>rad-acct-plcy config>aaa>l2tp-tunnel-acct-plcy
Description	This command creates the context for defining RADIUS accounting server attributes under a given session authentication policy.

access-algorithm

Syntax	access-algorithm { direct round-robin } no access-algorithm
Context	config>app-assure>rad-acct-plcy>server
Description	This command configures the algorithm used to access the list of configured RADIUS servers.
Default	direct
Parameters	direct — Specifies that the first server will be used as primary server for all requests, the second as secondary and so on. round-robin — Specifies that the first server will be used as primary server for the first request, the second server as primary for the second request, and so on. If the router gets to the end of the list, it starts again with the first server.

retry

Syntax	retry <i>count</i>
Context	config>app-assure>rad-acct-plcy>server
Description	This command configures the number of times the router attempts to contact the RADIUS server for authentication, if not successful the first time. The no form of the command reverts to the default value.
Default	3
Parameters	<i>count</i> — Specifies the retry count. Values 1 — 10

router

Syntax	router <i>router-instance</i> router service-name <i>service-name</i> no router
Context	config>app-assure>rad-acct-plcy>server
Description	This command specifies the number of times the router attempts to contact the RADIUS server for authentication, if not successful the first time. The no form of the command reverts to the default value.

server

Syntax	server <i>server-index</i> address <i>ip-address</i> secret <i>key</i> [hash hash2] [port <i>port</i>] [create]
---------------	--

no server *server-index*

Context	config>app-assure>rad-acct-plcy>server
Description	<p>This command adds a RADIUS server and configures the RADIUS server IP address, index, and key values.</p> <p>Up to five RADIUS servers can be configured at any one time. RADIUS servers are accessed in order from lowest to highest index for authentication requests until a response from a server is received. A higher indexed server is only queried if no response is received from a lower indexed server (which implies that the server is not available). If a response from a server is received, no other RADIUS servers are queried.</p> <p>The no form of the command removes the server from the configuration.</p>
Default	none
Parameters	<p><i>server-index</i> — The index for the RADIUS server. The index determines the sequence in which the servers are queried for authentication requests. Servers are queried in order from lowest to highest index.</p> <p>Values 1 — 16 (a maximum of 5 accounting servers)</p> <p><i>address ip-address</i> — The IP address of the RADIUS server. Two RADIUS servers cannot have the same IP address. An error message is generated if the server address is a duplicate.</p> <p>secret key — ValuesThe secret key to access the RADIUS server. This secret key must match the password on the RADIUS server.</p> <p><i>secret-key</i> — A string up to 20 characters in length.</p> <p><i>hash-key</i> — A string up to 33 characters in length.</p> <p><i>hash2-key</i> — A string up to 55 characters in length.</p> <p>hash — Specifies the key is entered in an encrypted form. If the hash parameter is not used, the key is assumed to be in a non-encrypted, clear text form. For security, all keys are stored in encrypted form in the configuration file with the hash parameter specified.</p> <p>hash2 — Specifies the key is entered in a more complex encrypted form. If the hash2 parameter is not used, the less encrypted hash form is assumed.</p> <p><i>port</i> — Specifies the UDP port number on which to contact the RADIUS server for authentication.</p> <p>Values 1 — 65535</p>

source-address-range

Syntax	source-address-range <i>start-ip-address end-ip-address</i> no source-address
Context	config>app-assure>rad-acct-plcy>server
Description	<p>This command configures the source address range of the RADIUS messages.</p> <p>The no form of the command reverts to the default value.</p>
Default	systemIP address

PPP Configuration Commands

- Parameters** *start-ip-address* — Specifies the start of the the range of source addresses to be used for NAT RADIUS accounting.
- end-ip-address* — Specifies the end of the the range of source addresses to be used for NAT RADIUS accounting.

timeout

- Syntax** `timeout seconds`
- Context** `config>app-assure>rad-acct-plcy>server`
- Description** This command configures the number of seconds the router waits for a response from a RADIUS server.
- The **no** form of the command reverts to the default value.
- Default** 5
- Parameters** *seconds* — Specifies the time the router waits for a response from a RADIUS server.
- Values** 1 — 90

Show Commands

ppp-policy

Syntax	ppp-policy [<i>ppp-policy-name</i> [association]]
Context	show>subscr-mgmt
Description	This command displays PPP policy information.
Parameters	<i>ppp-policy-name</i> — Specifies an existing PPP policy association — Displays the object the PPP policy is associated.

Sample Output

```
*A:ALA-49>show>subscr-mgmt# pppoe-policy policy1
=====
PPPoE Policy "policy1"
=====
Last Mgmt Change      : 11/16/2003 20:06:39      PPP-mtu              : N/A
Keepalive Interval   : 10s                Keepalive Multiplier : 1
Disable AC-Cookies   : No                    PADO Delay           : 0msec
Max Sessions-Per-Mac : 63                    Reply-On-PADT        : No

-----
PPP Custom Options
-----
Protocol Number Value
-----
No options configured.
=====

*A:ALA-49>show>subscr-mgmt# pppoe-policy policy1 association
=====
PPPoE Policy "policy1"
=====
Interface Associations
-----
Service-Id : 20 (IES)
- grp_pppoe1
- grp_pppoe2
- grp_pppoe3
=====
*A:ALA-49>show>subscr-mgmt#
```

pppoe

- Syntax** **pppoe**
- Context** show>service>id
- Description** This command enables the context to display PPPoE information.

session

- Syntax** **session [interface *ip-int-name* | *ip-address* | sap *sap-id*] [session-id *session-id*] [mac *ieee-address*] [*ip-address ip-address[/mask]*] [port *port-id*] [no-inter-dest-id | inter-dest-id *intermediate-destination-id*] [detail | statistics]**
session *l2tp-connection-id connection-id* [detail|statistics]
- Context** show>service>id>pppoe
- Description** This command displays PPPoE session information.
- Parameters**
 - interface *ip-int-name*** —
 - ip-address*** — Displays information about the IP address of the PPPoE session.
 - sap *sap-id*** — Displays information about the specified SAP ID.
 - session-id *session-id*** — Displays information about the ID of the PPPoE session.
 - mac *ieee-address*** — Displays information about the MAC address of the PPPoE session.
 - port *port-id*** — Displays information about about the specified port ID.
 - no-inter-dest-id** —
 - inter-dest-id *intermediate-destination-id*** — Displays information about the specified intermediate destination ID.
 - detail** — Displays detailed information.
 - statistics** — Displays statistics about the PPPoE session.s

Sample Output

```
*A:ALA-49#show service id 20 pppoe session
=====
PPPoE sessions for svc-id 20
=====
Sap Id           Mac Address      Sid Up Time      IP Address
-----
1/1/3:200        00:00:00:00:00:03 1    1d 00:48:39     20.0.0.101
1/1/3:300        00:00:00:00:00:05 1    0d 00:01:08     30.0.0.119
-----
Number of sessions : 2
=====
*A:ALA-49#

*A:ALA-49# show service id 20 pppoe session ip-address 20.0.0.101 detail
```

```

=====
PPPoE sessions for svc-id 20
=====
Sap Id           Mac Address      Sid Up Time      IP Address
-----
1/1/3:200       00:00:00:00:00:03 1    1d 00:49:46     20.0.0.101

LCP State        : Opened
IPCP State       : Opened
PPP MTU          : 1492
PPP Auth-Protocol : PAP
PPP User-Name    : user4@domain1

Subscriber-interface : sub_pppoe
Group-interface     : grp_pppoe2

Subscriber Origin  : RADIUS
Strings Origin     : RADIUS
IPCP Info Origin   : DHCP

Subscriber        : "radius_papchap4"
Sub-Profile-String : "sub1"
SLA-Profile-String : "sla1"
ANCP-String       : ""
Int-Dest-Id       : ""
App-Profile-String : ""

Primary DNS       : N/A
Secondary DNS     : N/A
Primary NBNS      : N/A
Secondary NBNS    : N/A

Circuit-Id       : 2
Remote-Id        :

Session-Timeout   : N/A
=====
Number of sessions : 1
=====
*A:ALA-49#

*A:ALA-49# show service id 20 pppoe session ip-address 20.0.0.101 statistics
=====
PPPoE sessions for svc-id 20
=====
Sap Id           Mac Address      Sid Up Time      IP Address
-----
1/1/3:200       00:00:00:00:00:03 1    1d 00:50:39     20.0.0.101

Packet Type      Received         Transmitted
-----
LCP Configure-Request  1               2
LCP Configure-Ack      1               1
LCP Configure-Nak      1               0
LCP Configure-Reject   0               0
LCP Terminate-Request  0               0
LCP Terminate-Ack      0               0
LCP Code-Reject        0               0
LCP Echo-Request      8927            866
LCP Echo-Reply         866             8927

```

PPP Configuration Commands

```

LCP Protocol-Reject      0          0
LCP Discard-Request     0          0
-----
PAP Authenticate-Request 1          -
PAP Authenticate-Ack    -          1
PAP Authenticate-Nak    -          0
-----
CHAP Challenge          -          0
CHAP Response           0          -
CHAP Success            -          0
CHAP Failure            -          0
-----
IPCP Configure-Request  2          1
IPCP Configure-Ack      1          1
IPCP Configure-Nak      0          1
IPCP Configure-Reject   0          0
IPCP Terminate-Request  0          0
IPCP Terminate-Ack      0          0
IPCP Code-Reject        0          0
-----
Unknown Protocol        0          -

```

Number of sessions : 1

*A:ALA-49#

*A:Dut-C# show service id 2000 pppoe session detail

=====
 PPPoE sessions for svc-id 2000
 =====

Sap Id	Mac Address	Sid	Up Time	Type
IP/L2TP-Id/Interface-Id				
2/1/5:2000	00:01:00:00:04:15	1	0d 00:05:07	Local
200.1.5.22				

```

LCP State      : Opened
IPCP State     : Opened
IPv6CP State   : Initial
PPP MTU        : 1492
PPP Auth-Protocol : None
PPP User-Name  : (Not Specified)

```

```

Subscriber-interface : ies-2000-200.1.1.1
Group-interface      : grp-Vprn-2/1/5

```

```

Subscriber Origin : RADIUS
Strings Origin    : RADIUS
IPCP Info Origin  : RADIUS
IPv6CP Info Origin : None

```

```

Subscriber      : "hpolSub43"
Sub-Profile-String : "hpolSubProf2"
SLA-Profile-String : "hpolSlaProf1"
ANCP-String     : ""
Int-Dest-Id     : "2000"
App-Profile-String : ""
Category-Map-Name : ""

```

```

Primary DNS : N/A

```

```

Secondary DNS      : N/A
Primary NBNS      : N/A
Secondary NBNS    : N/A
Address-Pool      : N/A

IPv6 Prefix       : N/A
IPv6 Del.Pfx.    : N/A
Primary IPv6 DNS  : N/A
Secondary IPv6 DNS: N/A

Circuit-Id        : circuit 0
Remote-Id         : remote 00-00-00-00-00-00-eth0-2
Service-Name      :

Session-Timeout   : N/A
RADIUS Class      :
RADIUS User-Name  : 00:01:00:00:04:15
Data link         : aal5
Encaps 1          : notAvailable
Encaps 2          : pppoaLlc
-----
Overrides
-----
Direction Type   Key          PIR          CIR          CBS          MBS
-----
Egress   Agg-Rate-Limit N/A          24125940    N/A          N/A          N/A
-----
No. of Overrides: 1
-----
Number of sessions : 1
=====
*A:Dut-C#

```

statistics

- Syntax** `statistics [{sap sap-id | interface ip-int-name | ip-address}]`
- Context** `show>service>id>pppoe`
- Description** This command displays PPPoE statistics.
- Parameters**
- sap *sap-id*** — Displays information for the specified SAP. See [Common Service Commands on page 1740](#) for *sap-id* command syntax.
 - interface *ip-int-name*** — Displays information about the specified interface.
 - ip-address*** — Displays information about the specified IP address.

Sample Output

```

*A:ALA-49# show service id 20 pppoe statistics
=====
PPPoE statistics for IES service 20
=====
Packet Type          Received          Transmitted
-----

```

PPP Configuration Commands

```
PADI          2          -
PADO          -          2
PADR          2          -
PADS          -          2
PADT          0          0
session      9838       9839
```

Drop Counters

```
Rx Invalid Version : 0
Rx Invalid Type    : 0
Rx Invalid Code    : 0
Rx Invalid Session : 0
Rx Invalid Length  : 0
Rx Invalid Tags    : 0
Rx Invalid AC-Cookie : 0
Rx Dropped        : 0
```

```
*A:ALA-49#
```

summary

- Syntax** **summary**
- Context** show>service>id>pppoe
- Description** This command displays PPPoE summary information

Clear Commands

pppoe

Syntax	pppoe
Context	clear>service>id
Description	This command enables the context to clear PPPoE-related data for the specified service.

session

Syntax	session all [no-padt] session {interface <i>ip-int-name</i> <i>ip-address</i> sap <i>sap-id</i>} [mac <i>ieee-address</i>] [session-id <i>session-id</i>] [ip-address <i>ip-address[/mask]</i>] [port <i>port-id</i>] [no-inter-dest-id inter-dest-id <i>intermediate-destination-id</i>] [no-padt]
Context	clear>service>id>ppoe
Description	This command clears PPPoE sessions.

statistics

Syntax	statistics [{sap <i>sap-id</i> interface <i>ip-int-name</i> <i>ip-address</i>}
Context	clear>service>id>ppoe
Description	This command clears PPPoE statistics.

Debug Commands

ppp

Syntax	[no] ppp
Context	debug>service>id
Description	This command enables and configures PPP debugging.

event

Syntax	[no] event
Context	debug>service>id>ppp
Description	This command enables debugging for specific PPPoE events.

dhcp-client

Syntax	dhcp-client [terminate-only] no dhcp-client
Context	debug>service>id>ppp>event
Description	This command enables debugging for specific DHCP client events.

ppp

Syntax	ppp [terminate-only] no ppp
Context	debug>service>id>ppp>event
Description	This command enables debugging for specific PPP events.

mac

Syntax	[no] mac <i>ieee-address</i>
Context	debug>service>id>ppp
Description	This command shows PPP packets for a particular MAC address.

packet

Syntax	[no] packet
Context	debug>service>id>ppp
Description	This command enables debugging for specific PPPoE packets.

detail-level

Syntax	detail-level {low medium high} no detail-level
Context	debug>service>id>ppp>packet
Description	This command configures the PPP packet tracing detail level.

dhcp-client

Syntax	[no] dhcp-client
Context	debug>service>id>ppp>packet
Description	This command enables debugging for specific DHCP client packets.

discovery

Syntax	discovery [padi] [pado] [paddr] [pads] [padt] no discovery
Context	debug>service>id>ppp>packet
Description	This command enables debugging for specific PPP discovery packets.

mode

Syntax	mode {dropped-only ingr-and-dropped egr-ingr-and-dropped} no mode
Context	debug>service>id>ppp>packet
Description	This command configures the PPP packet tracing mode.

PPP Configuration Commands

ppp

Syntax	ppp [lcp] [pap] [chap] [ipcp] no ppp
Context	debug>service>id>ppp>packet
Description	This command enables debugging for specific PPP packets

sap

Syntax	[no] sap <i>sap-id</i>
Context	debug>service>id>ppp
Description	This command displays PPP packets for a particular SAP.

Tools Commands

tools

Syntax	tools
Context	<root>
Description	The context to enable useful tools for debugging purposes.
Default	none
Parameters	dump — Enables dump tools for the various protocols. perform — Enables tools to perform specific tasks.

perform

Syntax	perform
Context	tools
Description	This command enables the context to enable tools to perform specific tasks.
Default	none

subscriber-mgmt

Syntax	subscriber-mgmt
Context	tools>perform
Description	This command enables tools to control subscriber management.

local-user-db

Syntax	local-user-db <i>local-user-db-name</i>
Context	tools>perform>subscriber-mgmt
Description	This command enables tools for controlling the local user database.
Parameters	<i>local-user-db-name</i> — [32 chars max]

dhcp

Syntax	dhcp
Context	tools>perform>subscriber-mgmt>local-user-db
Description	This command contains the tools used for controlling DHCP entries in the local user database.

host-lookup

Syntax	host-lookup [mac <i>ieee-address</i>] [remote-id <i>remote-id</i>] [sap-id <i>sap-id</i>] [service-id <i>service-id</i>] [string <i>vso-string</i>] [system-id <i>system-id</i>] [option60 <i>hex-string</i>] [circuit-id <i>circuit-id</i> circuit-id-hex <i>circuit-id-hex</i>]
Context	tools>perform>subscriber-mgmt>local-user-db>dhcp
Description	This command performs a lookup in the local user database.
Parameters	<p>mac <i>ieee-address</i> — Specifies the 48-bit MAC address for the static ARP in the form aa:bb:cc:dd:ee:ff or aa-bb-cc-dd-ee-ff where aa, bb, cc, dd, ee, and ff are hexadecimal numbers. Allowed values are any non-broadcast, non-multicast MAC and non-IEEE reserved MAC addresses.</p> <p><i>remote-id</i> — Specifies what information goes into the remote-id sub-option in the DHCP relay packet.</p> <p>Values Up to 255 characters maximum</p> <p>sap-id — Specifies a SAP identifier to be used.</p> <p><i>service-id</i> — Specifies an existing subscriber service ID.</p> <p>Values 1 — 2147483647</p> <p><i>vso-string</i> — Specifies a vendor-specific option string.</p> <p>Values Up to 255 characters maximum</p> <p><i>system-id</i> — Specifies the system ID.</p> <p>Values Up to 255 characters maximum</p> <p><i>hex-string</i> — [0x0..0xFFFFFFFF.. (max 64 hex nibbles)]</p> <p><i>circuit-id</i> — Specifies the circuit-id string.</p> <p>Values Up to 127 characters maximum</p> <p><i>circuit-id-hex</i> — [0x0..0xFFFFFFFF.. (max 254 hex nibbles)]</p>

ppp

Syntax	ppp
Context	tools>perform>subscriber-mgmt>local-user-db

Description This command contains the tools used to control PPP entries in the local user database.

authentication

Syntax **authentication** *ppp-user-name* [**password** *password*]

Context tools>perform>subscriber-mgmt>local-user-db>ppp

Description This command authenticates PPP user name. As local user database PAP/CHAP authentication can only be used when the local user database is connected to the PPPoE/PPP node under the group interface, the user lookup will be performed with match-list username.

Parameters *ppp-user-name* — Specifies the PPP username.
password — Specifies the password of this host up to 32 characters in length.

host-lookup

Syntax **host-lookup** [**mac** *ieee-address*] [**remote-id** *remote-id*] [**user-name** *user-name*] [**circuit-id** *circuit-id* | **circuit-id-hex** *circuit-id-hex*]

Context tools>perform>subscriber-mgmt>local-user-db>ppp

Description This command performs a lookup in the local user database.

Parameters *ieee-address* — xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx
remote-id — [255 chars max]
user-name — Specifies the PPPoE username.
circuit-id — [127 chars max]
circuit-id-hex — [0x0..0xFFFFFFFF.. (max 254 hex nibbles)]

edit-ppp-session

Syntax **edit-ppp-session sap** *sap-id* **ip** *ip-address* [**subscriber** *sub-ident-string*] [**sub-profile-string** *sub-profile-string*] [**sla-profile-string** *sla-profile-string*] [**inter-dest-id** *intermediate-destination-id*] [**ancp-string** *ancp-string*] [**app-profile-string** *app-profile-string*] [**user-name** *user-name*]
edit-ppp-session svc-id *service-id* **ip** *ip-address* [**subscriber** *sub-ident-string*] [**sub-profile-string** *sub-profile-string*] [**sla-profile-string** *sla-profile-string*] [**app-profile-string** *app-profile-string*] [**inter-dest-id** *intermediate-destination-id*] [**ancp-string** *ancp-string*][**user-name** *user-name*]

Context tools>perform>subscriber-mgmt

Description This command modifies PPP session information.

PPP Configuration Commands

Parameters	<i>sap-id:</i>	null	<p>[<i>port-id</i> <i>bundle-id</i> <i>bpgrp-id</i> <i>lag-id</i> <i>aps-id</i>] dot1q [<i>port-id</i> <i>bundle-id</i> <i>bpgrp-id</i> <i>lag-id</i> <i>aps-id</i>]:<i>qtag1</i> qinq [<i>port-id</i> <i>bundle-id</i> <i>bpgrp-id</i> <i>lag-id</i>]:<i>qtag1.qtag2</i> atm [<i>port-id</i> <i>aps-id</i>][:<i>vpi/vci</i> <i>vpi</i> <i>vpi1.vpi2</i>] frame [<i>port-id</i> <i>aps-id</i>]:<i>dldci</i> cisco-hdlc <i>slot/mda/port.channel</i> cem <i>slot/mda/port.channel</i> ima-grp [<i>bundle-id</i>[:<i>vpi/vci</i> <i>vpi</i> <i>vpi1.vpi2</i>] port-id <i>slot/mda/port</i>[.<i>channel</i>] bundle-id <i>bundle-type-slot/mda.bundle-num</i> bundle keyword <i>type</i> ima, ppp <i>bundle-num1</i> — 256</p> <p><i>bpgrp-id</i> bpgrp <i>bpgrp-type-bpgrp-num</i> bpgrp keyword <i>type</i> ima, ppp <i>bpgrp-num1</i> — 1280</p> <p><i>aps-id</i> aps <i>aps-group-id</i>[.<i>channel</i>] aps keyword <i>group-id1</i> — 64</p> <p><i>ccag-id</i> ccag <i>ccag-id.path-id</i>[<i>cc-type</i>]:<i>cc-id</i> ccag keyword <i>id</i> 1 — 8 <i>path-id</i> a, b <i>cc-type</i> .sap-net, .net-sap <i>cc-id</i> 0 — 4094</p> <p><i>lag-id</i> lag <i>lag-id</i> lag keyword <i>id</i> 1 — 200</p> <p><i>qtag1</i> 0 — 4094 <i>qtag2</i> *, 0 — 4094 <i>vpi</i> NNI: 0 — 4095 UNI: 0 — 255 <i>vci</i> 1, 2, 5 — 65535 <i>dldci</i> 16 — 1022</p>
-------------------	----------------	------	--

ip-address — Displays information for the specified IP address.

sub-ident-string — Displays information for the specified subscriber identification profile.

sub-profile-string — Displays information for the specified subscriber profile.

service-id — Specifies the ID that uniquely identifies a service.

Values 1 — 2147483647

intermediate-destination-id — Specifies the intermediate destination identifier, up to 32 characters in length.

ancp-string *ancp-string* — Specifies the ASCII string of the DSLAM circuit ID name.

app-profile-string — Displays information about the specified application profile.

eval-lease-state

Syntax	eval-lease-state [svc-id service-id] [sap sap-id] [subscriber sub-ident-string] [ip ip-address]																																																																																		
Context	tools>perform>subscriber-mgmt																																																																																		
Description	This command evaluates lease state.																																																																																		
Parameters	<table border="0"> <tr> <td><i>sap-id:</i></td> <td> <table border="0"> <tr> <td>null</td> <td>[port-id bundle-id bpgrp-id lag-id aps-id]</td> </tr> <tr> <td>dot1q</td> <td>[port-id bundle-id bpgrp-id lag-id aps-id]:qtag1</td> </tr> <tr> <td>qinq</td> <td>[port-id bundle-id bpgrp-id lag-id]:qtag1.qtag2</td> </tr> <tr> <td>atm</td> <td>[port-id aps-id][:vpi/vci vpi vpi1.vpi2]</td> </tr> <tr> <td>frame</td> <td>[port-id aps-id]:dlci</td> </tr> <tr> <td>cisco-hdlc</td> <td>slot/mda/port.channel</td> </tr> <tr> <td>cem</td> <td>slot/mda/port.channel</td> </tr> <tr> <td>ima-grp</td> <td>[bundle-id[:vpi/vci vpi vpi1.vpi2]</td> </tr> <tr> <td>port-id</td> <td>slot/mda/port[.channel]</td> </tr> <tr> <td>bundle-id</td> <td>bundle-type-slot/mda.bundle-num</td> </tr> <tr> <td></td> <td>bundle keyword</td> </tr> <tr> <td></td> <td>type ima, ppp</td> </tr> <tr> <td></td> <td>bundle-num1 — 256</td> </tr> <tr> <td>bpgrp-id</td> <td>bpgrp-type-bpgrp-num</td> </tr> <tr> <td></td> <td>bpgrp keyword</td> </tr> <tr> <td></td> <td>type ima, ppp</td> </tr> <tr> <td></td> <td>bpgrp-num1 — 1280</td> </tr> <tr> <td>aps-id</td> <td>aps-group-id[.channel]</td> </tr> <tr> <td></td> <td>aps keyword</td> </tr> <tr> <td></td> <td>group-id 1 — 64</td> </tr> <tr> <td>ccag-id</td> <td>ccag-id.path-id[cc-type]:cc-id</td> </tr> <tr> <td></td> <td>ccag keyword</td> </tr> <tr> <td></td> <td>id 1 — 8</td> </tr> <tr> <td></td> <td>path-id a, b</td> </tr> <tr> <td></td> <td>cc-type .sap-net, .net-sap</td> </tr> <tr> <td></td> <td>cc-id 0 — 4094</td> </tr> <tr> <td>lag-id</td> <td>lag-id</td> </tr> <tr> <td></td> <td>lag keyword</td> </tr> <tr> <td></td> <td>id 1 — 200</td> </tr> <tr> <td>qtag1</td> <td>0 — 4094</td> </tr> <tr> <td>qtag2</td> <td>*, 0 — 4094</td> </tr> <tr> <td>vpi</td> <td>NNI: 0 — 4095</td> </tr> <tr> <td></td> <td>UNI: 0 — 255</td> </tr> <tr> <td>vci</td> <td>1, 2, 5 — 65535</td> </tr> <tr> <td>dlci</td> <td>16 — 1022</td> </tr> </table> </td> <td></td> </tr> <tr> <td></td> <td colspan="2"><i>ip-address</i> — a.b.c.d</td> </tr> <tr> <td></td> <td colspan="2"><i>sub-ident-string</i> — [32 chars max]</td> </tr> <tr> <td></td> <td colspan="2"><i>service-id</i> — [1..2147483647]</td> </tr> </table>	<i>sap-id:</i>	<table border="0"> <tr> <td>null</td> <td>[port-id bundle-id bpgrp-id lag-id aps-id]</td> </tr> <tr> <td>dot1q</td> <td>[port-id bundle-id bpgrp-id lag-id aps-id]:qtag1</td> </tr> <tr> <td>qinq</td> <td>[port-id bundle-id bpgrp-id lag-id]:qtag1.qtag2</td> </tr> <tr> <td>atm</td> <td>[port-id aps-id][:vpi/vci vpi vpi1.vpi2]</td> </tr> <tr> <td>frame</td> <td>[port-id aps-id]:dlci</td> </tr> <tr> <td>cisco-hdlc</td> <td>slot/mda/port.channel</td> </tr> <tr> <td>cem</td> <td>slot/mda/port.channel</td> </tr> <tr> <td>ima-grp</td> <td>[bundle-id[:vpi/vci vpi vpi1.vpi2]</td> </tr> <tr> <td>port-id</td> <td>slot/mda/port[.channel]</td> </tr> <tr> <td>bundle-id</td> <td>bundle-type-slot/mda.bundle-num</td> </tr> <tr> <td></td> <td>bundle keyword</td> </tr> <tr> <td></td> <td>type ima, ppp</td> </tr> <tr> <td></td> <td>bundle-num1 — 256</td> </tr> <tr> <td>bpgrp-id</td> <td>bpgrp-type-bpgrp-num</td> </tr> <tr> <td></td> <td>bpgrp keyword</td> </tr> <tr> <td></td> <td>type ima, ppp</td> </tr> <tr> <td></td> <td>bpgrp-num1 — 1280</td> </tr> <tr> <td>aps-id</td> <td>aps-group-id[.channel]</td> </tr> <tr> <td></td> <td>aps keyword</td> </tr> <tr> <td></td> <td>group-id 1 — 64</td> </tr> <tr> <td>ccag-id</td> <td>ccag-id.path-id[cc-type]:cc-id</td> </tr> <tr> <td></td> <td>ccag keyword</td> </tr> <tr> <td></td> <td>id 1 — 8</td> </tr> <tr> <td></td> <td>path-id a, b</td> </tr> <tr> <td></td> <td>cc-type .sap-net, .net-sap</td> </tr> <tr> <td></td> <td>cc-id 0 — 4094</td> </tr> <tr> <td>lag-id</td> <td>lag-id</td> </tr> <tr> <td></td> <td>lag keyword</td> </tr> <tr> <td></td> <td>id 1 — 200</td> </tr> <tr> <td>qtag1</td> <td>0 — 4094</td> </tr> <tr> <td>qtag2</td> <td>*, 0 — 4094</td> </tr> <tr> <td>vpi</td> <td>NNI: 0 — 4095</td> </tr> <tr> <td></td> <td>UNI: 0 — 255</td> </tr> <tr> <td>vci</td> <td>1, 2, 5 — 65535</td> </tr> <tr> <td>dlci</td> <td>16 — 1022</td> </tr> </table>	null	[port-id bundle-id bpgrp-id lag-id aps-id]	dot1q	[port-id bundle-id bpgrp-id lag-id aps-id]:qtag1	qinq	[port-id bundle-id bpgrp-id lag-id]:qtag1.qtag2	atm	[port-id aps-id][:vpi/vci vpi vpi1.vpi2]	frame	[port-id aps-id]:dlci	cisco-hdlc	slot/mda/port.channel	cem	slot/mda/port.channel	ima-grp	[bundle-id[:vpi/vci vpi vpi1.vpi2]	port-id	slot/mda/port[.channel]	bundle-id	bundle-type-slot/mda.bundle-num		bundle keyword		type ima, ppp		bundle-num1 — 256	bpgrp-id	bpgrp-type-bpgrp-num		bpgrp keyword		type ima, ppp		bpgrp-num1 — 1280	aps-id	aps-group-id[.channel]		aps keyword		group-id 1 — 64	ccag-id	ccag-id.path-id[cc-type]:cc-id		ccag keyword		id 1 — 8		path-id a, b		cc-type .sap-net, .net-sap		cc-id 0 — 4094	lag-id	lag-id		lag keyword		id 1 — 200	qtag1	0 — 4094	qtag2	*, 0 — 4094	vpi	NNI: 0 — 4095		UNI: 0 — 255	vci	1, 2, 5 — 65535	dlci	16 — 1022			<i>ip-address</i> — a.b.c.d			<i>sub-ident-string</i> — [32 chars max]			<i>service-id</i> — [1..2147483647]	
<i>sap-id:</i>	<table border="0"> <tr> <td>null</td> <td>[port-id bundle-id bpgrp-id lag-id aps-id]</td> </tr> <tr> <td>dot1q</td> <td>[port-id bundle-id bpgrp-id lag-id aps-id]:qtag1</td> </tr> <tr> <td>qinq</td> <td>[port-id bundle-id bpgrp-id lag-id]:qtag1.qtag2</td> </tr> <tr> <td>atm</td> <td>[port-id aps-id][:vpi/vci vpi vpi1.vpi2]</td> </tr> <tr> <td>frame</td> <td>[port-id aps-id]:dlci</td> </tr> <tr> <td>cisco-hdlc</td> <td>slot/mda/port.channel</td> </tr> <tr> <td>cem</td> <td>slot/mda/port.channel</td> </tr> <tr> <td>ima-grp</td> <td>[bundle-id[:vpi/vci vpi vpi1.vpi2]</td> </tr> <tr> <td>port-id</td> <td>slot/mda/port[.channel]</td> </tr> <tr> <td>bundle-id</td> <td>bundle-type-slot/mda.bundle-num</td> </tr> <tr> <td></td> <td>bundle keyword</td> </tr> <tr> <td></td> <td>type ima, ppp</td> </tr> <tr> <td></td> <td>bundle-num1 — 256</td> </tr> <tr> <td>bpgrp-id</td> <td>bpgrp-type-bpgrp-num</td> </tr> <tr> <td></td> <td>bpgrp keyword</td> </tr> <tr> <td></td> <td>type ima, ppp</td> </tr> <tr> <td></td> <td>bpgrp-num1 — 1280</td> </tr> <tr> <td>aps-id</td> <td>aps-group-id[.channel]</td> </tr> <tr> <td></td> <td>aps keyword</td> </tr> <tr> <td></td> <td>group-id 1 — 64</td> </tr> <tr> <td>ccag-id</td> <td>ccag-id.path-id[cc-type]:cc-id</td> </tr> <tr> <td></td> <td>ccag keyword</td> </tr> <tr> <td></td> <td>id 1 — 8</td> </tr> <tr> <td></td> <td>path-id a, b</td> </tr> <tr> <td></td> <td>cc-type .sap-net, .net-sap</td> </tr> <tr> <td></td> <td>cc-id 0 — 4094</td> </tr> <tr> <td>lag-id</td> <td>lag-id</td> </tr> <tr> <td></td> <td>lag keyword</td> </tr> <tr> <td></td> <td>id 1 — 200</td> </tr> <tr> <td>qtag1</td> <td>0 — 4094</td> </tr> <tr> <td>qtag2</td> <td>*, 0 — 4094</td> </tr> <tr> <td>vpi</td> <td>NNI: 0 — 4095</td> </tr> <tr> <td></td> <td>UNI: 0 — 255</td> </tr> <tr> <td>vci</td> <td>1, 2, 5 — 65535</td> </tr> <tr> <td>dlci</td> <td>16 — 1022</td> </tr> </table>	null	[port-id bundle-id bpgrp-id lag-id aps-id]	dot1q	[port-id bundle-id bpgrp-id lag-id aps-id]:qtag1	qinq	[port-id bundle-id bpgrp-id lag-id]:qtag1.qtag2	atm	[port-id aps-id][:vpi/vci vpi vpi1.vpi2]	frame	[port-id aps-id]:dlci	cisco-hdlc	slot/mda/port.channel	cem	slot/mda/port.channel	ima-grp	[bundle-id[:vpi/vci vpi vpi1.vpi2]	port-id	slot/mda/port[.channel]	bundle-id	bundle-type-slot/mda.bundle-num		bundle keyword		type ima, ppp		bundle-num1 — 256	bpgrp-id	bpgrp-type-bpgrp-num		bpgrp keyword		type ima, ppp		bpgrp-num1 — 1280	aps-id	aps-group-id[.channel]		aps keyword		group-id 1 — 64	ccag-id	ccag-id.path-id[cc-type]:cc-id		ccag keyword		id 1 — 8		path-id a, b		cc-type .sap-net, .net-sap		cc-id 0 — 4094	lag-id	lag-id		lag keyword		id 1 — 200	qtag1	0 — 4094	qtag2	*, 0 — 4094	vpi	NNI: 0 — 4095		UNI: 0 — 255	vci	1, 2, 5 — 65535	dlci	16 — 1022												
null	[port-id bundle-id bpgrp-id lag-id aps-id]																																																																																		
dot1q	[port-id bundle-id bpgrp-id lag-id aps-id]:qtag1																																																																																		
qinq	[port-id bundle-id bpgrp-id lag-id]:qtag1.qtag2																																																																																		
atm	[port-id aps-id][:vpi/vci vpi vpi1.vpi2]																																																																																		
frame	[port-id aps-id]:dlci																																																																																		
cisco-hdlc	slot/mda/port.channel																																																																																		
cem	slot/mda/port.channel																																																																																		
ima-grp	[bundle-id[:vpi/vci vpi vpi1.vpi2]																																																																																		
port-id	slot/mda/port[.channel]																																																																																		
bundle-id	bundle-type-slot/mda.bundle-num																																																																																		
	bundle keyword																																																																																		
	type ima, ppp																																																																																		
	bundle-num1 — 256																																																																																		
bpgrp-id	bpgrp-type-bpgrp-num																																																																																		
	bpgrp keyword																																																																																		
	type ima, ppp																																																																																		
	bpgrp-num1 — 1280																																																																																		
aps-id	aps-group-id[.channel]																																																																																		
	aps keyword																																																																																		
	group-id 1 — 64																																																																																		
ccag-id	ccag-id.path-id[cc-type]:cc-id																																																																																		
	ccag keyword																																																																																		
	id 1 — 8																																																																																		
	path-id a, b																																																																																		
	cc-type .sap-net, .net-sap																																																																																		
	cc-id 0 — 4094																																																																																		
lag-id	lag-id																																																																																		
	lag keyword																																																																																		
	id 1 — 200																																																																																		
qtag1	0 — 4094																																																																																		
qtag2	*, 0 — 4094																																																																																		
vpi	NNI: 0 — 4095																																																																																		
	UNI: 0 — 255																																																																																		
vci	1, 2, 5 — 65535																																																																																		
dlci	16 — 1022																																																																																		
	<i>ip-address</i> — a.b.c.d																																																																																		
	<i>sub-ident-string</i> — [32 chars max]																																																																																		
	<i>service-id</i> — [1..2147483647]																																																																																		

