Triple Play DHCP Configuration Commands

Note: For the 7450 ESS configurations, the DHCP6 and IPv6 ESM commands apply only when in mixed-mode.

Global Commands

shutdown

Syntax [**no**] **shutdown**

Context
config>service>ies>if>dhcp
config>service>vpls>sap>dhcp
config>service>vpls>sap>dhcp6
config>service>vpls>sap>dhcp>option>vendor
config>service>vpls>sap>ipoe-session
config>service>vprn>if>dhcp
config>service>vprn>if>dhcp>proxy-server
config>subscr-mgmt>loc-user-db
config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ppp>host
config>router>dhcp6>server>failover
config>router>dhcp>server>failover

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.

description

Syntax **description** *description-string*
no description

Context
config>service>vpls>sap>dhcp
config>service>vpls>sap>dhcp6
config>service>vpls>sap>ipoe-session
config>service>ies>if>dhcp
config>service>ies>if>ipv6>dhcp6-relay
config>service>vprn>if>dhcp
config>router>dhcp>server
config>router>dhcp>server>pool
config>subscr-mgmt>loc-user-db
config>service>vprn>sub-if>ipv6>dhcp6>relay

config>service>ies>sub-if>ipv6>dhcp6>relay

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 *description-string* — 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.

System Commands

adv-noaddrs-global

Syntax **adv-noaddrs-global** [**esm-proxy**] [**esm-relay**] [**relay**] [**server**]
no adv-noaddrs-global

Context config>system>dhcp6

Description This command configures the different DHCPv6 applications to send the NoAddrsAvail Status-Code in DHCPv6 Advertise messages at the global DHCP message level.

By default, all applications send the NoAddrsAvail Status-Code in DHCPv6 Advertise messages at the IA_NA Option level.

Default no adv-noaddrs-global. All applications send the NoAddrsAvail Status-Code in DHCPv6 Advertise messages at the IA_NA Option level.

Parameters Different applications for which NoAddrsAvail Status-Code in DHCPv6 Advertise messages can be configured at the global DHCP message level.

The only valid combination in current SROS is “adv-noaddrs-global esm-relay server”.

esm-proxy — Specifies the DHCPv6 proxy server on subscriber group-interfaces. Not supported in current SR OS.

esm-relay — Specifies the DHCPv6 relay on subscriber group-interfaces. Must be enabled together with the DHCPv6 server (server) application.

relay — Specifies the DHCPv6 relay on regular IES/VPRN interfaces. Not supported in current SR OS.

server — Specifies the DHCPv6 server. Must be enabled together with the DHCPv6 relay on subscriber interfaces (esm-relay) application.

DHCP Configuration Commands

local-dhcp-server

Syntax **local-dhcp-server** *server-name* [**create**]
no local-dhcp-server *server-name*

Context config>router>dhcp
config>service>vprn>dhcp

Description This command instantiates a local DHCP server. A local DHCP server can serve multiple interfaces but is limited to the routing context it was which it was created.

Default none

Parameters *server-name* — Specifies the name of local DHCP server.

delegated-prefix-length

Syntax **delegated-prefix-length** *bits*
delegated-prefix-length variable
no delegated-prefix-length

Context configure>router>local-dhcp-server>pool

Description This command configures the subscriber-interface level setting for delegated prefix length. The delegated prefix length for a subscriber- interface can be either set to a fixed value that is explicitly configured under the subscriber-interface CLI hierarchy or a variable value that can be obtained from various sources. This command can be changed only when no IPv6 prefixes are configured under the subscriber-interface.

Default no delegated-prefix-length This means that the delegated prefix length is 64.

Parameters *bits* — The delegated prefix length in bits. This value will beapplicable to the entire subscriber-interface. In case that the delegated prefix length is also supplied via other means (LUDB, RADIUS or DHCP Server), such supplied value must match the value configured under the subscriber-interface. Otherwise the prefix instantiation in 7x50 will fail.

Values 48 — 64

variable — The delegated prefix value can be of any length between 48..64. The value itself can vary between the prefixes and it will be provided at the time of prefix instantiation. The order of priority for the source of the delegated prefix length is:

- LUDB
- RADIUS
- DHCPv6 server

failover

Syntax **failover**

Context config>router>dhcp>server
config>router>dhcp6>server

Description This command enables the context to configure failover parameters.

maximum-client-lead-time

Syntax **maximum-client-lead-time** [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no maximum-client-lead-time

Context configure>router>dhcp>server>failover
configure>router>dhcp>server>pool>failover
configure>service>vprn>dhcp>server>failover
configure>service>vprn>dhcp>server>pool>failover
configure>router>dhcp6>server>failover
configure>router>dhcp6>server>pool>failover
configure>service>vprn>dhcp6>server>failover
configure>service>vprn>dhcp6>server>pool>failover

Context Maximum-client-lead-time (MCLT) is the maximum time that a DHCP server can extend client lease time beyond the lease time currently known by the DHCP partner node. In dual-homed environment, the initial lease time for all DHCP clients is strictly restricted to MCLT. Consecutive DHCP renews are allowed to extend the lease time beyond the MCLT.

The MCLT is a safeguard against IP address/prefix duplication in cases of a lease synchronization failure.

Consider a case whereby the primary DHCP server assign a new lease to the client but it crashes before it sends a sync update to the partner (secondary DHCP server). Because of the primary DHCP server failure, the secondary server (whose partner-down-delay is set to 0) is not aware of the IP address/prefix that has been allocated on the primary server. This condition creates the possibility in which the secondary DHCP server allocates the same address/prefix to another client. This would cause IP address/prefix duplication. MCLT is put in place to prevent this scenario.

Lease synchronization failure can be caused either by a node failure, or a failure of the link over which the DHCP leases are synchronized (Multi-Chassis Synchronization (MCS link). Synchronization failure detection can take up to three seconds. Once the synchronization failure is detected, the minimum time required for a DHCP server to start delegating new addresses/prefixes from the prefix designated as remote is the sum of the maximum-client-lead-time and the partner-down-delay.

During the failed state (DHCP peer is unreachable), the DHCP lease time for the new clients will be restricted to MCLT while for the existing clients the lease time will over time (by consecutive DHCP renews) gradually be reduced to the MCLT.

Default 10 minutes

Parameters **hrs** *hours* — Specifies the maximum amount of time, in hours, that one server can extend a lease for a client's binding beyond the time known by the partner server.

Values 1 — 23

min *minutes* — Specifies the maximum amount of time, in minutes, that one server can extend a lease for a client's binding beyond the time known by the partner.

Values 1 — 59

sec *seconds* — Specifies the maximum amount of time, in seconds, that one server can extend a lease for a client's binding beyond the time known by the partner.

Values 1 — 59

partner-down-delay

Syntax **partner-down-delay** [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no partner-down-delay

Context config>router>dhcp>server>failover
config>router>dhcp6>server>failover

Description Since the DHCP lease synchronization failure can be caused by the failure of the Multi-Chassis Synchronization (MCS) link (and not necessary the entire node), there is a possibility that both DHCP servers are operational during the failure. The purpose of the partner-down-delay is to allow the operator enough time to remedy the failed situation and to avoid duplication of IP addresses/prefixes during the failure. During the partner-down-delay time, the prefix designated as remote will be eligible only for renewals of the existing DHCP leases that have been synchronized by the peering node. Only after the sum of the partner-down-delay and the maximum-client-lead-time will the prefix designated as remote be eligible for assignment of the new DHCP leases.

Default 23 hours, 59minutes and 59 seconds

Parameters **hrs** *hours* — Specifies the partner-down delay time in hours.

Values 1 — 23

min *minutes* — Specifies the partner-down delay time in minutes.

Values 1 — 59

sec *seconds* — Specifies the partner-down delay time in seconds.

Values 1 — 59

peer

Syntax **peer** *ip-address* **tag** *sync-tag-name*
no peer *ip-address*

Context config>router>dhcp6>server>failover
config>router>dhcp>server>failover

Description DHCP leases are synchronized per DHCP server. The pair of synchronizing servers (peers) is identified by a tag. The synchronization information is carried over the Multi-Chassis Synchronization (MCS) link between the two peers. MCS link is a logical link (IP or MPLS).

MCS runs over TCP, port 45067 and it is using either data traffic or keepalives to detect failure on the communication link between the two nodes. In the absence of any MCS data traffic for more than

0.5sec, MCS will send its own keepalive to the peer. If a reply is NOT received within 3sec, MCS will declare its operation state as DOWN and the DB Sync state as out-of-sync. MCS will consequently notify its clients (DHCP Server being one of them) of this. It can take up to 3 seconds before the DHCP client realizes that the inter-chassis communication link has failed.

Note that the inter-chassis communication link failure does not necessarily assume the same failed fate for the access links.

Parameters *ip-address* — Specifies the IPv4 address of the peer.

sync-tag *sync-tag* **—** Specifies a synchronization tag to be used while synchronizing with the multi-chassis peer.

startup-wait-time

Syntax [**no**] **startup-wait-time** [**min** *minutes*] [**sec** *seconds*]

Context config>router>dhcp6>server>failover
config>router>dhcp>server>failover

Description This command enables startup-wait-time during which each peer waits after the initialization process before assuming the active role for the prefix designated as local. This is to avoid transient issues during the initialization process.

Default 2 minutes

Parameters **min** *minutes* **—** Specifies the time in minutes that one server attempts to contact the partner server. During this time, the server is unresponsive to DHCP client requests.

Values 1 — 10

sec *seconds* **—** Specifies the time in seconds that one server attempts to contact the partner server. During this time, the server is unresponsive to DHCP client requests.

Values 1 — 59

force-renews

Syntax [**no**] **force-renews**

Context config>router>dhcp>server

Description This command enables the sending of sending forcerenew messages.

The **no** form of the command disables the sending of forcerenew messages.

Default no force-renews

ignore-rapid-commit

Syntax [**no**] **ignore-rapid-commit**

Context config>router>dhcp6>server

Description This command enables the Rapid Commit Option.

The **no** form of the command disables the Rapid Commit Option.

interface-id-mapping

Syntax [**no**] **interface-id-mapping**

Context config>router>dhcp6>server

Description If enabled, this command enables the behavior where unique /64 prefix is allocated per interface-id, and all clients having the same interface-id get an address allocated out of this /64 prefix. This is relevant for bridged clients behind the same local-loop (and same SAP), where sharing the same prefix allows communication between bridged clients behind the same local-loop to stay local. For SLAAC based assignment, downstream neighbor-discovery is automatically enabled to resolve the assigned address.

Default no interface-id-mapping

lease-hold-time

Syntax **lease-hold-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no lease-hold-time

Context config>service>vprn>dhcp>server
config>router>dhcp>server
config>service>vprn>dhcp6>server
config>router>dhcp6>server

Description This command configures the time to remember this lease. This lease-hold-time is for unsolicited release conditions such as lease timeout and normal solicited release from DHCP client.

The no form of the command reverts to the default.

Default sec 0

Parameters [**days** *days*][**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] — Specifies the lease hold time.

Values

days:	[0..3650]
hours:	[0..23]
minutes:	[0..59]
seconds:	[0..59

lease-hold-time-for

Syntax [**no**] **lease-hold-time-for**

Context config>service>vprn>dhcp6>server
config>router>dhcp6>server
config>service>vprn>dhcp>server
config>router>dhcp>server

Description This command enables the context to configure **lease-hold-time-for** parameters which defines additional types of lease or triggers that cause system to hold up leases.

Use the **lease-hold-time** to enable or disable lease hold up on the server level.

Default lease-hold-time-for

internal-lease-ipsec

Syntax [**no**] **internal-lease-ipsec**

Context config>service>vprn>dhcp6>server>lease-hold-time-for
config>router>dhcp6>server> lease-hold-time-for
config>service>vprn>dhcp>server
config>router>dhcp>server

Description This command enables the server to hold up the lease of local IPSec clients.

The no form of the command disables the server to hold up the lease of local IPSec clients.

Default no internal-lease-ipsec

solicited-release

Syntax [**no**] **solicited-release**

Context config>service>vprn>dhcp6>server>lease-hold-time-for
config>router>dhcp6>server> lease-hold-time-for
config>service>vprn>dhcp>server
config>router>dhcp>server

Description This command enables server to hold up lease even in case of solicited release. For example, the server receives normal DHCP release message

Default no solicited-release

pool

Syntax **pool** *pool-name* [**create**]
no pool *pool-name*

Context config>router>dhcp>server

Description This command configures a DHCP address pool on the router.

Default none

Parameters *pool name* — Specifies the name of this IP address pool. Allowed values are any string up to 32 characters long composed of printable, 7-bit ASCII characters.

exclude-prefix

Syntax [**no**] **exclude-prefix** *ipv6-prefix/prefix-length*

Context config>service>vprn>dhcp6>server>pool
config>router>dhcp6>server>pool

Description This command defines a prefix that to be excluded from available prefix in the pool. The typical use case is to exclude the interface address.

- A held lease will be deleted if it got excluded by an exclude prefix.
- An exclude range can never exclude only a part of an existing lease. If for example a /63 PD is assigned, an exclude of /64 which belongs to this /63 can NOT be configured.
- A single exclude prefix can never exclude a whole include prefix.
- When applying or removing an exclude prefix, the threshold stats are adjusted to reflect the actual address space and its usage.

Default none

Parameters *ipv6-prefix/prefix-length* — Specifies an IPv6 prefix and prefix length.

Values

ipv6-prefix	x:x:x:x:x:x:x:x	(eight 16-bit pieces)
	x:x:x:x:x:x:d.d.d.d	
	x - [0..FFFF]H	
	d - [0..255]D	
prefix-length	- [0..128]	

allow-lease-query

Syntax [**no**] **allow-lease-query**

Context config>router>dhcp6>server
configure>service>vprn>dhcp6>server

Description If enabled, the local DHCPv6 server will handle and reply to lease query messages.

The **no** form of the command disables lease query support.

Default no allow-lease-query

failover

Syntax **failover**

Context config>router>dhcp>server
configure>service>vprn>dhcp>server

Description This command enables the context to configure failover paramters.

ignore-mclt-on-takeover

Syntax [**no**] **ignore-mclt-on-takeover**

Context configure>router>dhcp>server>failover
configure>router>dhcp>server>pool>failover
configure>router>dhcp6>server>failover
configure>router>dhcp6>server>pool>failover
configure>service>vprn>dhcp>server>failover
configure>service>vprn>dhcp>server>pool>failover
configure>service>vprn>dhcp6>server>failover
configure>service>vprn>dhcp6>server>pool>failover

Description With this flag enabled, the remote IP address/prefix can be taken over immediately upon entering the PARTNER-DOWN state of the intercommunication link, without having to wait for the MCLT to expire. Note that by setting this flag, the lease times of the existing DHCP clients, while the intercommunication link is in the PARTNER-DOWN state, will still be reduced to the MCLT over time and all new lease times will be set to MCLT. This behavior remains the same as originally intended for MCLT.

Some deployments require that the remote IP address/prefix range starts delegating new IP addresses/prefixes upon the failure of the intercommunication link, without waiting for the intercommunication link to transition from the COMM-INT state into the PARTNER-DOWN state and the MCLT to expire while in PARTNER-DOWN state.

This can be achieved by enabling the **ignore-mclt-on-takeover** flag and by configuring the **partner-down-delay** to 0.

Enabling this functionality must be exercised with caution. One needs to keep in mind that the partner-down-delay and MCLT timers were originally introduced to prevent IP address duplication in cases where DHCP redundant nodes transition out-of-sync due to the failure of intercommunication link. These timers (**partner-down-delay** and MCLT) would ensure that during their duration, the new IP addresses/prefixes are delegated only from one node, the one with local IP address-range/prefix. The drawback is of course that the new IP address delegation is delayed and thus service is impacted.

But if one could ensure that the intercommunication link is always available, then the DHCP nodes would stay in sync and the two timers would not be needed. This is why it is of utmost importance that in this mode of operation, the intercommunication link is well protected by providing multiple paths between the two DHCP nodes. The only event that should cause intercommunication link to fail is the entire nodal failure. This failure is acceptable since in this case only one DHCP node is available to provide new IP addresses/prefixes.

Default no ignore-mclt-on-takeover

maximum-client-lead-time

Syntax **maximum-client-lead-time** [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no maximum-client-lead-time

Context configure>router>dhcp>server>failover
configure>router>dhcp>server>pool>failover
configure>service>vprn>dhcp>server>failover
configure>service>vprn>dhcp>server>pool>failover
configure>router>dhcp6>server>failover

configure>router>dhcp6>server>pool>failover
configure>service>vprn>dhcp6>server>failover
configure>service>vprn>dhcp6>server>pool>failover

Description The **maximum-client-lead-time** (MCLT) is the maximum time that a DHCP server can extend client's lease time beyond the lease time currently known by the DHCP partner node. In dual-homed environment, the initial lease time for all DHCP clients is by default restricted to MCLT. Consecutive DHCP renews are allowed to extend the lease time beyond the MCLT.

The MCLT is a safeguard against IP address/prefix duplication in cases of a lease synchronization failure when local-remote failover model is deployed

Once the intercommunication link failure between the redundant DHCP servers is detected, the DHCP IP address range configured as remote will not be allowed to start delegating new leases until the MCLT + partner-down-delay intervals expire. This is to ensure that the new lease that was delegated from the 'local' IP address-range/prefix on one node, but was never synchronized due to the intercommunication link failure, will expire before the same IP address/prefix is allocated from the remote IP address-range/prefix on the other node.

However, the already existing (and synchronized) lease times can be renewed from the remote IP address range at any time, regardless of the state of the intercommunication link (operational or failed).

Lease synchronization failure can be caused either by a node failure, or a failure of the link over which the DHCP leases are synchronized (intercommunication link). Synchronization failure detection can take up to 3 seconds.

During the failure, the DHCP lease time for the new clients will be restricted to MCLT while for the existing clients the lease time will over time (by consecutive DHCP renews) be gradually reduced to the MCLT.

Default 10 minutes

Parameters **hrs** *hours* — Specifies the maximum client lead time in hours.

Values 1 — 23

min *minutes* — Configure the maximum client lead time in minutes.

Values 1 — 59

sec *seconds* — Configure the maximum client lead time in seconds.

Values 1 — 59

partner-down-delay

Syntax **partner-down-delay** [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no partner-down-delay

Context configure>router>dhcp>server>failover
configure>router>dhcp>server>pool>failover
configure>service>vprn>dhcp>server>failover
configure>service>vprn>dhcp>server>pool>failover
configure>router>dhcp6>server>failover
configure>router>dhcp6>server>pool>failover
configure>service>vprn>dhcp6>server>failover

configure>service>vprn>dhcp6>server>pool>failover

Description Since the DHCP lease synchronization failure can be caused by the failure of the intercommunication link (and not necessary the entire node), there is a possibility the redundant DHCP servers become isolated in the network. In other words, they can serve DHCP clients but they cannot synchronize the lease. This can lead to duplicate assignment of IP addresses, since the servers have configured overlapping IP address ranges but they are not aware of each other's leases.

The purpose of the partner-down-delay is to prevent the IP lease duplication during the intercommunication link failure by not allowing new IP addresses to be assigned from the remote IP address range. This timer is intended to provide the operator with enough time to remedy the failed situation and to avoid duplication of IP addresses/prefixes during the failure.

During the partner-down-delay time, the prefix designated as remote will be eligible only for renewals of the existing DHCP leases that have been synchronized by the peering node. Only after the sum of the partner-down-delay and the maximum-client-lead-time will the prefix designated as remote be eligible for delegation of the new DHCP leases. When this occurs, we say that the remote IP address range has been taken over.

It is possible to expedite the takeover of a remote IP address range so that the new IP leases can start being delegated from that range shortly after the intercommunication failure is detected. This can be achieved by configuring the partner-down-delay timer to 0 seconds, along with enabling the ignore-mclt-on-takeover CLI flag. Caution must be taken before enabling this functionality. It is safe to bypass safety timers (partner-down-delay + MCLT) only in cases where the operator is certain that the intercommunication between the nodes has failed due to the entire node failure and not due to the intercommunication (MCS) link failure. Failed intercommunication due to the nodal failure would ensure that only one node is present in the network for IP address delegation (as opposed to two isolated nodes with overlapping IP address ranges where address duplication can occur). For this reason, the operator must ensure that there are redundant paths between the nodes to ensure uninterrupted synchronization of DHCP leases.

In access-driven mode of operation, partner-down-delay has no effect.

Default 23 hours, 59minutes and 59 seconds

Parameters **hrs** *hours* — Specifies the partner-down delay time in hours.

Values 1 — 23

min *minutes* — Configure the partner-down delay time in minutes.

Values 1 — 59

sec *seconds* — Configure the partner-down delay time in seconds.

Values 1 — 59

peer

Syntax **peer** *ip-address* **tag** *sync-tag*
no peer

Context configure>router>dhcp>server>failover
configure>router>dhcp>server>pool>failover
configure>service>vprn>dhcp>server>failover
configure>service>vprn>dhcp>server>pool>failover
configure>router>dhcp6>server>failover

configure>router>dhcp6>server>pool>failover
configure>service>vprn>dhcp6>server>failover
configure>service>vprn>dhcp6>server>pool>failover

Description DHCP leases can be synchronized per DHCP server of DHCP pool. The pair of synchronizing servers or pools is identified by a tag. The synchronization information is carried over the Multi-Chassis Synchronization (MCS) link between the two peers. MCS link is a logical link (IP, or MPLS).

MCS runs over TCP, port 45067 and it is using either data traffic or keepalives to detect failure on the communication link between the two nodes. In the absence of any MCS data traffic for more than 0.5sec, MCS will send its own keepalive to the peer. If a reply is NOT received within 3sec, MCS will declare its operation state as DOWN and the DB Sync state as out-of-sync. MCS will consequently notify its clients (DHCP Server being one of them) of this. It can take up to 3 seconds before the DHCP client realizes that the inter-chassis communication link has failed.

Note that the inter-chassis communication link failure does not necessarily assume the same failed fate for the access links. In other words the two redundant nodes can become isolated from each other in the network. This would occur in cases where only the intercommunication (MCS) link fails. It is of utmost importance that this MCS link be highly redundant.

Default none

Parameters *ip-address* — Specifies the IPv4 address of the peer.

tag — Specifies a tag that will identify synchronizing DHCP servers or pools.

startup-wait-time

Syntax [**no**] **startup-wait-time** [**min** *minutes*] [**sec** *seconds*]

Context configure>router>dhcp>server>failover
configure>router>dhcp>server>pool>failover
configure>service>vprn>dhcp>server>failover
configure>service>vprn>dhcp>server>pool>failover
configure>router>dhcp6>server>failover
configure>router>dhcp6>server>pool>failover
configure>service>vprn>dhcp6>server>failover
configure>service>vprn>dhcp6>server>pool>failover

Description This command enables startup-wait-time during which each peer waits after the initialization process before assuming the active role for the prefix designated as local or access-driven. This is to avoid transient issues during the initialization process.

Default 2 minutes

Parameters **min —** Specifies the the startup wait time in minutes.

Values 1 — 10

sec — Specifies the the startup wait time in seconds.

Values 1 — 59

max-lease-time

Syntax **max-lease-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no max-lease-time

Context config>router>dhcp>server>pool

Description This command configures the maximum lease time.

The **no** form of the command returns the value to the default.

Default 10 days

Parameters *time* — Specifies the maximum lease time.

Values

days :	0 — 3650
hours	0 — 23
minutes:	0 — 59
seconds	0 — 59

min-lease-time

Syntax **min-lease-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no min-lease-time

Context config>router>dhcp>server>pool

Description This command configures the minimum lease time.

The **no** form of the command returns the value to the default.

Default 10 minutes

Parameters *time* — Specifies the minimum lease time.

Values

days :	0 — 3650
hours	0 — 23
minutes:	0 — 59
seconds	0 — 59

minimum-free

Syntax **minimum-free** *minimum-free* [**percent**] [**event-when-depleted**]
no minimum-free

Context config>router>dhcp>server>pool

Description This command specifies the desired minimum number of free addresses in this pool.

The **no** form of the command reverts to the default.

Default 1

Parameters *minimum-free* — Specifies the minimum number of free addresses.

0 — 255

percent — Specifies that the value indicates a percentage.

event-when-depleted — This parameter enables a system-generate event when all available addresses in the pool/subnet of local DHCP server are depleted.

nak-non-matching-subnet

Syntax [**no**] **nak-non-matching-subnet**

Context config>service>vprn>dhcp>server>pool
config>router>dhcp>server>pool

Description With this command, if the local DHCPv4 server receives a DHCP request with option 50 (means client try to request a previous allocated message as described in section 3.2 of RFC 2131, *Dynamic Host Configuration Protocol*) and the address allocation algorithm ends up using a pool and the address in option50 is not in pool, then system will return a DHCP NAK, otherwise system just drop the DHCP packet.

Default no nak-non-matching-subnet

offer-time

Syntax **offer-time** [**min** *minutes*] [**sec** *seconds*]
no offer-time

Context config>router>dhcp>server>pool

Description This command configures the offer time.

The **no** form of the command returns the value to the default.

Default 1 minute

Parameters *time* — Specifies the offer time.

Values	minutes:	0 — 10
	seconds	0 — 59

msap-defaults

Syntax **msap-default**

Context config>sub-mgmt>lu-db>dhcp>hos
config>sub-mgmt>lu-db>ipoe>host
config>sub-mgmt>lu-db>ppp>host

Description This command configures MSAP authentication defaults.

group-interface

Syntax **group-interface** *ip-int-name* [**prefix** {*port-id*}]
group-interface *ip-int-name* [**prefix** {*port-id*}]
group-interface *ip-int-name* [**suffix** {*port-id*}]
no group-interface

Context config>sub-mgmt>lu-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host>msap-defaults
config>sub-mgmt>lu-db>ppp>host

Description This command configures the group interface.

Parameters *ip-int-name* — Specifies the IP interface name.

Values 32 chars max (must start with a letter)

Parameters **prefix** {*port-id*} — Specifies the port ID as the prefix to the specified ip-int-name.

suffix {*port-id*} — Specifies the port ID as the suffix to the specified ip-int-name.

policy

Syntax **policy** *msap-policy-name*
no policy

Context config>sub-mgmt>lu-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host>msap-defaults
config>sub-mgmt>lu-db>ppp>host

Description This command configures the MSAP policy.

Parameters *msap-policy-name* — Specifies the policy name.

service

Syntax **service** *service-id*
no service

Context config>sub-mgmt>lu-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host>msap-defaults
config>sub-mgmt>lu-db>ppp>host

Description This command sets retail-service for a given subscriber host.

Parameters *service-id* — Specifies the service ID as an interger.

Values 1-2147483648

retail-service

Syntax [**no**] **retail-service** *service-id*

Context config>sub-mgmt>lu-db>dhcp>hos
config>sub-mgmt>lu-db>ppp>host

Description This command sets default service for all subscribers created based on trigger packets received on the given capture SAP in case the corresponding VSA is not included in the RADIUS authentication response. This command is applicable to capture SAP only.

Default no retail-service

options

Syntax **options**

Context config>router>dhcp>local-dhcp-serve>pool
config>router>dhcp>local-dhcp-serve>pool>subnet
config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command enables the context to configure pool options. The options defined here can be overruled by defining the same option in the local user database.

Default none

custom-option

Syntax **custom-option** *option-number* **address** [*ip-address*...(up to 4 max)]
custom-option *option-number* **hex** *hex-string*
custom-option *option-number* **string** *ascii-string*
no custom-option *option-number*

Context config>router>dhcp>local-dhcp-serve>pool>options
config>router>dhcp>local-dhcp-serve>pool>subnet>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ppp>host>options

Description This command configures specific DHCP options. The options defined here can overrule options in the local user database.

The **no** form of the removes the option from the configuration.

Default none

Parameters *option-number* — specifies the option number that the DHCP server uses to send the identification strings to the DHCP client.

Values 1 — 254

address *ip-address* **—** Specifies the IP address of this host.

hex *hex-string* **—** Specifies the hex value of this option.

Values 0x0..0xFFFFFFFF...(maximum 254 hex nibbles)

string *ascii-string* **—** Specifies the value of this option.

Values Up to 127 characters maximum.

dns-server

Syntax **dns-server address** [*ip-address*...(upto 4 max)]
no dns-server

Context config>router>dhcp>server>pool>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options
config>subscr-mgmt>loc-user-db>ppp>host>options

Description This command configures the IP address of the DNS server.

Default none

Parameters *ipv6-address* — The IPv4 address of the DNS server. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

dns-server

Syntax **dns-server** *ipv6-address* [*ipv6-address*...(up to 4 max)]
no dns-server

Context config>subscr-mgmt>loc-user-db>ppp>host>options6
config>subscr-mgmt>loc-user-db>dhcp>host>options6

Description Configure IPv6 DNS server addresses that can be used for name resolution

Default no dns-server

Parameters *ipv6-address* — - IPv6 address of the a DNS server.

domain-name

Syntax **domain-name** *domain-name*
no domain-name

Context config>router>dhcp>server>pool>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command configures the default domain for a DHCP client that the router uses to complete unqualified hostnames (without a dotted-decimal domain name).

The **no** form of the command removes the name from the configuration.

Default none

Parameters *domain-name* — Specifies the domain name for the client.

Values Up to 127 characters

lease-rebind-time

Syntax **lease-rebind-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no lease-rebind-time

Context config>router>dhcp>server>pool>subnet>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command configures the time the client transitions to a rebinding state.

The **no** form of the command removes the time from the configuration.

Default none

Parameters

Parameters *time* — Specifies the lease rebind time.

Values		
	days:	0 — 3650
	hours:	0 — 23
	minutes:	0 — 59
	seconds	0 — 59

lease-renew-time

Syntax **lease-renew-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no lease-renew-time

Context config>router>dhcp>server>pool>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command configures the time the client transitions to a renew state.

The **no** form of the command removes the time from the configuration.

Default none

Parameters *time* — Specifies the lease renew time.

Values		
	days:	0 — 3650
	hours:	0 — 23
	minutes:	0 — 59
	seconds	0 — 59

lease-time

Syntax **lease-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
no lease-time

Context config>router>dhcp>server>pool>options
config>subscr-mgmt>loc-user-db>dhcp>host>options

Description This command configures the amount of time that the DHCP server grants to the DHCP client permission to use a particular IP address.

The **no** form of the command removes the lease time parameters from the configuration.

Default none

Parameters *time* — Specifies the lease time.

Values

days :	0 — 3650
hours	0 — 23
minutes:	0 — 59
seconds	0 — 59

netbios-name-server

Syntax **netbios-name-server ip-address** [*ip-address*...(up to 4 max)]
no netbios-name-server

Context config>router>dhcp>server>pool>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ppp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command configures up to four Network Basic Input/Output System (NetBIOS) name server IP addresses.

Default none

Parameters *ip-address* — The IP address of the NetBIOS name server. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

netbios-node-type

Syntax **netbios-node-type** *netbios-node-type*
no netbios-node-type

Context config>router>dhcp>server>pool>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command configures the Network Basic Input/Output System (NetBIOS) node type.

Default none

Parameters *netbios-node-type* — Specifies the netbios node type.

Values B — Broadcast node uses broadcasting to query nodes on the network for the owner of a NetBIOS name.
P — Peer-to-peer node uses directed calls to communicate with a known NetBIOS

name server for the IP address of a NetBIOS machine name.
M — Mixed node uses broadcasted queries to find a node, and if that fails, queries a known P-node name server for the address.
H — Hybrid node is the opposite of the M-node action so that a directed query is executed first, and if that fails, a broadcast is attempted.

prefix

Syntax **prefix** *ipv6-addr/prefix-len* [**failover** {**local** | **remote**}] [**pd**] [**wan-host**] [**create**]
no prefix *ipv6-addr/prefix-len*

Context configure>router>dhcp6>server>pool
configure>service>vprn>dhcp6>server>pool

Description This is an existing command and we just need to add the failover option.

Default failover local

Parameters *ipv6-addr/prefix-len* —

Values ipv6-address x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x [0..FFFF]H
d [0..255]D
prefix-length [1..128]

failover {**local** | **remote**} — This command designates a prefix as local or remote. This is used when multi-chassis synchronization is enabled.

Values **local** — A prefix designated as local is always used to renew the existing addresses/prefixes or to assign a new one.
remote — A prefix designated as remote is used only to renew the existing DHCP leases. The new leases will be assigned from it only after the maximum-client-lead-time + partner-down-delay time elapses.

thresholds

Syntax **thresholds**

Context config>service>vprn>dhcp6>server>pool
config>router>dhcp6>server>pool

Description This command enables the context to configure pool level thresholds.

Default thresholds

thresholds

Syntax **thresholds**

Context config>service>vprn>dhcp6>server>pool>prefix

config>router>dhcp6>server>pool>prefix

Description This command enables the context to configure prefix level thresholds.

Default thresholds

minimum-free

Syntax [**no**] **minimum-free prefix-length** [1..128]

Context config>service>vprn>dhcp6>server>pool>thresholds
config>router>dhcp6>server>pool>thresholds

Description This command creates a threshold for a given prefix length on the pool level. Up to 128 thresholds could be created. For example, with **minimum-free prefix-length 64**, then the usage of /64 prefix in the pool is counted.

There are two types of thresholds could be defined on pool level:

- Depleted — The system sends out a warning when the prefix with the configured length is no long available in the pool.
- Minimum free — A percentage-based threshold which represents the minimal available percentage of prefix with the configured length in the pool. The system will send out warning if the actual percentage is lower than the configured percentage

Configuration of this command also enables the system stats collection for **configure prefix length**, which could be displayed via the **show router** *<router-id>***dhcp6 local-dhcp-server "d6" pool-threshold-stats** command.

Default none

Parameters **1..128 —** Specifies the IPv6 prefix length.

minimum-free

Syntax [**no**] **minimum-free prefix-length** [1..128]

Context config>service>vprn>dhcp6>server>pool>prefix>thresholds
config>router>dhcp6>server>pool>>prefix>thresholds

Description This command creates a threshold for a given prefix length on the prefix level. Up to 128 thresholds could be created. For example, with **minimum-free prefix-length 64**, then the usage of /64 prefix in the prefix is counted.

There are two types of thresholds could be defined on pool level:

- Depleted — The system sends out a warning when the prefix with the configured length is no long available in the provisioned prefix.
- Minimum free — A percentage or number based threshold which represent the minimal available percentage or number of the prefix with configured length in the provisioned prefix. The system will send out warning if the actual percentage is lower than the configured percentage

Configuration of this command also enables the system stats collection for **configure prefix length**, which can be displayed with the **show router** <*router-id*>**dhcp6 local-dhcp-server "d6" prefix-threshold-stats** command.

Default none

Parameters **1..128** — Specifies the IPv6 prefix length.

depleted-event

Syntax [**no**] **depleted-event**

Context config>service>vprn>dhcp6>server>pool>thresholds>minimum-free
config>router>dhcp6>server> pool>thresholds>minimum-free

Description This command enables the system to send out warnings when the prefix with the configured length is no long available in the pool.

Default none

depleted-event

Syntax [**no**] **depleted-event**
config>service>vprn>dhcp6>server>pool>prefix>thresholds>minimum-free
config>router>dhcp6>server> pool>prefix>thresholds>minimum-free

Description This command enables the system to send out a warning when the prefix with a configured length is no long available in the provisioned prefix.

For example:

```
prefix 2001:0:0:ffe0::/50 pd wan-host create
   thresholds
       minimum-free prefix-length 64
           depleted-event
```

With the above configuration, the system will send out a warning when there is no available /64 that can be allocated out of 2001:0:0:ffe0::/50.

Default none

minimum

Syntax **minimum percent** [0..100]
no minimum

Context config>service>vprn>dhcp6>server>pool>thresholds>minimum-free
config>router>dhcp6>server> pool>thresholds>minimum-free

Description This command specifies a percentage based threshold which represent the minimal available percentage of the prefix with configured length in the pool. The system will send out a warning if the actual percentage is lower than the configured percentage.

Default none

Parameters **percent** [0..100] — Specifies the percentage of used prefixes with the minimum free threshold length in the pool compared to the number of provisioned prefixes.

minimum

Syntax **minimum** [**percent** [0..100]] [**number** [0..4294967295]]
no minimum

Context config>service>vprn>dhcp6>server>pool>prefix>thresholds>minimum-free
config>router>dhcp6>server> pool>prefix>thresholds>minimum-free

Description This command configures a percentage-based or number-based threshold which represents the minimal available percentage or number of the prefix with a configured length in the provisioned prefix. The system will send out a warning if the actual percentage or number is lower than the configured threshold.

For example:

```
prefix 2001:0:0:ffe0::/50 pd wan-host create
   thresholds
       minimum-free prefix-length 64
           minimum number 3
```

With the above configuration, the system will send a warning when the number of available /64 in prefix 2001:0:0:ffe0::/50 is less than 3.

Default none

Parameters **percent** [0..100] — Specifies the percentage of used prefixes with the minimum free threshold length in the pool compared to the number of provisioned prefixes.

number [0..4294967295] — Specifies the number of prefixes.

to-client-options

Syntax **to-client-options**

Context config>subscr-mgmt>loc-user-db>ipoe>host

Description This command configures the DHCP options to send to the client.

option

Syntax **option** *option-number* **address** [*ip-address*...(up to 4 max)]
option *option-number* **hex** *hex-string*
option *option-number* **string** *ascii-string*
no option *option-number*

Context config>router>dhcp>local-dhcp-serve>pool>options
config>router>dhcp>local-dhcp-serve>pool>subnet>options

config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ppp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>to-client-options>ipv4
config>subscr-mgmt>loc-user-db>ipoe>host>to-client-options>ipv6

Description This command configures specific DHCP options. The options defined here can overrule options in the local user database.

The **no** form of the removes the option from the configuration.

Default none

Parameters *option-number* — specifies the option number that the DHCP server uses to send the identification strings to the DHCP client.

Values 1 — 254

address *ip-address* **—** Specifies the IP address of this host.

hex *hex-string* **—** Specifies the hex value of this option.

Values 0x0..0xFFFFFFFF...(maximum 254 hex nibbles)

string *ascii-string* **—** Specifies the value of this option.

Values Up to 127 characters maximum.

option

Syntax **option** *option-number* **address** *ipv6-address* [*ipv6-address*...(upto 4 max)]
option *option-number* **hex** *hex-string*
option *option-number* **string** *ascii-string*
no option *option-number*

Context configure>subscr-mgmt>loc-user-db>ipoe>host>to-client-options>dhcpv6
configure>subscr-mgmt>loc-user-db>ppp>host>to-client-options>dhcpv6

Description This command configures DHCPv6 options via LUDB that will be passed in all DHCP messages to the client. The options will be blindly appended to any options already present in the DHCP message. In other words, there is no intelligent merging of the options where overlapping options from different sources are further evaluated to determine whether only one option or multiple options should be returned to the client.

Multiple DHCP options can be configured at the same time although each option requires its own option statement. Those options are equivalent to RADIUS VSAs **Alc-ToCLient-Dhcp6-Options**.

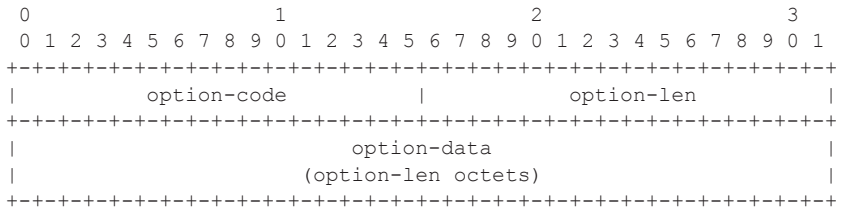
DHCPv6 options can be provided via DHCPv6 server in the relay case. In addition, DHCPv6 options provided via LUDB or RADIUS can be supplied and consequently appended to the already existing options. In case that DHCPv6 options are provided simultaneously via LUDB and RADIUS, the RADIUS as a source of DHCPv6 option will be blocked and the options supplied via LUDB will be passed to the client. This is valid for the relay and proxy case.

Any DHCP option may be encoded in the option statement. An example of the option statement for DHCPv6 DNS servers is given below:

```
option 23 2001:db8::1  2001:db8::2.
```

Options are stored serially in the options field of DHCP message header, with no padding between the options. Options are byte-aligned but are not aligned in any other way such as on 2 or 4 byte boundaries.

The format of DHCPv6 options is:

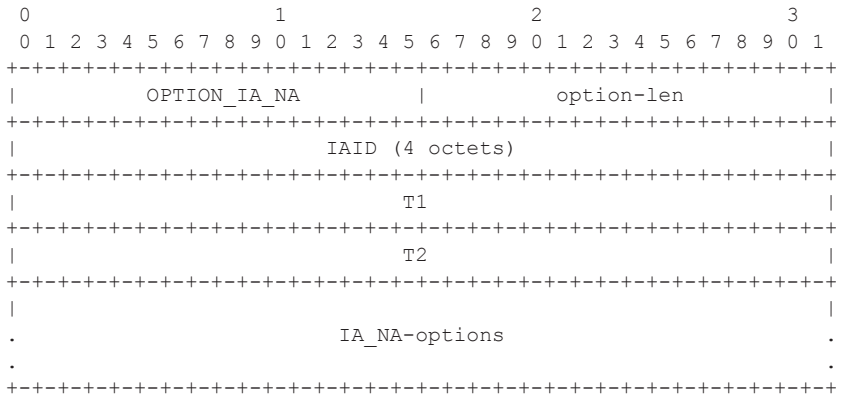


option-code — An unsigned integer identifying the specific option type carried in this option.

option-len — An unsigned integer giving the length of the option-data field in this option in octets.

option-data —The data for the option; the format of this data depends on the definition of the option.

DHCPv6 options are scoped by using encapsulation. Some options apply generally to the client, some are carried with other options, such as IA-NA:



option-code — OPTION_IA_NA (3).

option-len — 12 + length of IA_NA-options field.

IAID —The unique identifier for this IA_NA; the IAID must be unique among the identifiers for all of this client's IA_NAs. The number space for IA_NA IAIDs is separate from the number space for IA_TA IAIDs.

T1 — The time at which the client contacts the server from which the addresses in the IA_NA were obtained to extend the lifetimes of the addresses assigned to the IA_NA; T1 is a time duration relative to the current time expressed in units of seconds.

T2 — The time at which the client contacts any available server to extend the lifetimes of the addresses assigned to the IA_NA; T2 is a time duration relative to the current time expressed in units of seconds.

IA_NA-options — Options associated with this IA_NA.

Default no option

Parameters *option-number* — Specifies the number of the option. This can be a well known option (some of which are defined in RFC 3315, *Dynamic Host Configuration Protocol for IPv6 (DHCPv6)*), or an anonymous option.

address *ipv6-address* — Specifies IPv6 address as an option.

hex *hex-string* — Specifies options coded as Hex characters.

string *ascii-string* — Specifies options coded as string.

option

Syntax **option** *option-number* **address** *ipv4-address* [ipv4-address...(upto 4 max)]
option *option-number* **hex** *hex-string*
option *option-number* **string** *ascii-string*
no option *option-number*

Context configure>subscr-mgmt>loc-user-db>ipoe>host>to-client-options>dhcpv4
configure>subscr-mgmt>loc-user-db>ppp>host>to-client-options>dhcpv4

Description This command configures DHCPv4 options via LUDB that will be passed in all DHCP messages to the client. The options will be blindly appended to any options already present in the DHCP message. In other words, there is no intelligent merging of the options where overlapping options from different sources are further evaluated to determine whether only one option or multiple options should be returned to the client.

Multiple DHCP options can be configured at the same time although each option requires its own option statement. Those options are equivalent to RADIUS VSAs **Alc-ToCLient-Dhcp4-Options**.

DHCPv4 options can be provided via DHCPv4 server in the relay case. In addition, DHCPv4 options provided via LUDB or RADIUS can be supplied and consequently appended to the already existing options. In case that DHCPv4 options are provided simultaneously via LUDB and RADIUS, the RADIUS as a source of DHCPv4 option will be blocked and the options supplied via LUDB will be passed to the client. This is valid for the relay and proxy case.

Any DHCP option may be encoded in the option statement. An example of the option statement for DHCPv4 default-gateway is given below:

```
option 3 192.168.1.254
```

DHCPv4 options may be fixed length or variable length. They are appended at the end of DHCPv4 messages. All options begin with a tag octet, which uniquely identifies the option. Fixed-length options without data consist of only a tag octet. Only options 0 and 255 are fixed length. All other options are variable-length.

Default no option

Parameters *option-number* — Number of the option. This can be a well known option, or a an anonymous option.

address *ipv4-address* — Specifies IPv4 address as an option.

hex *hex-string* — Specifies options coded as Hex characters.

string *ascii-string* — Specifies options coded as string.

subnet

Syntax **subnet** {*ip-address*/*mask*|*ip-address netmask*} [**create**]
no subnet {*ip-address*/*mask*|*ip-address netmask*}

Context config>router>dhcp>server>pool

Description This command creates a subnet of IP addresses to be served from the pool. The subnet cannot include any addresses that were assigned to subscribers without those addresses specifically excluded. When the subnet is created no IP addresses are made available until a range is defined.

Default none

Parameters *ip-address* — Specifies the base IP address of the subnet. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

mask — The subnet mask in dotted decimal notation. Allowed values are dotted decimal addresses in the range 128.0.0.0 – 255.255.255.252. Note that a mask of 255.255.255.255 is reserved for system IP addresses.

netmask — Specifies a string of 0s and 1s that mask or screen out the network part of an IP address so that only the host computer part of the address remains.

address-range

Syntax [**no**] **address-range** *start-ip-address end-ip-address* [**failover** {**local** | **remote**}]

Context config>router>dhcp>server>pool>subnet

Description This command configures a range of IP addresses to be served from the pool. All IP addresses between the start and end IP addresses will be included (other than specific excluded addresses).

Default none

Parameters *start-ip-address* — Specifies the start address of this range to include. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

end-ip-address — Specifies the end address of this range to include. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

failover local — Specifies that the DHCP server failover control type is in control under normal operation.

failover remote — Specifies that the remote DHCP server failover system is in control under normal operation.

drain

Syntax [**no**] **drain**

Context config>service>vprn>dhcp>server>pool>subnet

Description This command subnet draining which means no new leases can be assigned from this subnet and existing leases are cleaned up upon renew/rebind.

The **no** form of the command means the subnet is active and new leases can be assigned from it.

exclude-addresses

Syntax [**no**] **exclude-addresses** *start-ip-address* [*end-ip-address*]

Context config>router>dhcp>server>pool>subnet

Description This command specifies a range of IP addresses that excluded from the pool of IP addresses in this subnet.

Default none

Parameters *start-ip-address* — Specifies the start address of this range to exclude. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

end-ip-address — Specifies the end address of this range to exclude. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

maximum-declined

Syntax **maximum-declined** *maximum-declined*
no maximum-declined

Context config>router>dhcp>server>pool>subnet

Description This command configures the maximum number of declined addresses allowed.

Default 64

Parameters *maximum-declined* — Specifies the maximum number of declined addresses allowed.

Values 0 — 4294967295

minimum-free

Syntax **minimum-free** *minimum-free* [**percent**] [**event-when-depleted**]
no minimum-free

Context config>router>dhcp>server>pool>subnet

Description This command configures the minimum number of free addresses in this subnet. If the actual number of free addresses in this subnet falls below this configured minimum, a notification is generated.

Default 1

Parameters *minimum-free* — Specifies the minimum number of free addresses in this subnet.

Values 0 — 255

percent — Specifies that the value indicates a percentage.

event-when-depleted — This parameter enables a system-generate event when all available addresses in the pool/subnet of local DHCP server are depleted.

default-router

Syntax **default-router** *ip-address* [*ip-address*...(up to 4 max)]
no default-router

Context config>router>dhcp>server>pool>subnet>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command configures the IP address of the default router for a DHCP client. Up to four IP addresses can be specified.

The **no** form of the command removes the address(es) from the configuration.

Default none

Parameters *ip-address* — Specifies the IP address of the default router. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

subnet-mask

Syntax **subnet-mask** *ip-address*
no subnet-mask

Context config>router>dhcp>local-dhcp-serve>pool>subnet>options
config>subscr-mgmt>loc-user-db>dhcp>host>options
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command specifies the subnet-mask option to the client. The mask can either be defined (for supernetting) or taken from the pool address.

The **no** form of the command removes the address from the configuration.

Default none

Parameters *ip-address* — Specifies the IP address of the subnet mask. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

subnet-binding key

Syntax **subnet-binding key** [**sys-id-svc-id** | **sys-id** | **string**] **unbind-delay** [**hrs** *hours*] [**min** *mins*] [**sec** secs]
no subnet-binding key

Context config>router>dhcp>local-dhcp-server>pool
config>service>vprn>dhcp>local-dhcp-server>pool

Description The command enables the pool to bind three selectable parameters, **sys-id-svc-id**, **sys-id**, or a **string** to a subnet. These parameters are retrieved from DHCP relay Option 82 vendor specific option (VSO). The intent of this feature is to allow multiple BNG to share a DHCP pool. When a subnet is bound to a VSO, only DHCP discoveries with matching VSO are allowed to allocate additional DHCP addresses. For example, if **sys-id** is the chosen VSO, a DHCP discovery will bind the **sys-id** to a subnet. Only DHCP discoveries with matching **sys-id** are allowed to allocate additional addresses from the same subnet. If a DHCP discovery fails to match any bindings, and if a new subnet is still available, it will first bind the VSO to the new subnet and offer the subscriber an IP address.

Once all addresses are released back to the pool, the subnet is once again available for binding after the unbind-delay has expired. The unbind-delay expiration is to hold the subnet for a small period of time until the subnet has successful remove itself from the routing table. The delay is configurable to allow enough time for routing update to occur. By default, the delay is 5 minute with a minimal required value of 1 second.

Default **unbind-delay min 5**

Parameters *key* — The desire key to which the subnet to bind: **sys-id-svc-id** | **sys-id** | **string**

hours — [0 — 24] the delay for the subnet to unbind in hours.

minutes — [0 — 59] the delay for the subnet to unbind in minutes.

seconds — [0 — 59] the delay for the subnet to unbind in seconds.

use-gi-address

Syntax **use-gi-address** [**scope** *scope*]

Context config>router>dhcp>server

Description This command enables the use of gi-address matching. If the gi-address flag is enabled, a pool can be used even if a subnets is not found. If the local-user-db-name is not used, the gi-address flag is used and addresses are handed out by GI only. If a user must be blocked from getting an address the server maps to a local user database and configures the user with no address.

A pool can include multiple subnets. Since the GI is shared by multiple subnets in a subscriber interface the pool may provide IP addresses from any of the subnets included when the GI is matched to any of its subnets. This allows a pool to be created that represents a sub-int.

Default no use-gi-address

Parameters **scope** *scope* — Specifies if addresses are handed out for a certain subnet where the gi-address belongs to only or for all subnets part of the pool.

Values **subnet** — Addresses are only handed out for the subnet where the gi-address is part of
pool — All subnets part of the pool which contain subnet where the gi-address is part of can hand out addresses.

use-pool-from-client

Syntax **use-pool-from-client delimiter** *delimiter*
use-pool-from-client
no use-pool-from-client

Context config>router>dhcp>server

Description This command enables the use of the pool indicated by DHCP client. When enabled, the IP address pool to be used by this server is the pool is indicated by the vendor-specific sub-option 13 of the DHCP option 82. When disabled or if there is no sub-option 13 in the DHCP message, the pool selection falls back to the "use-gi-address" configuration.

Default no use-pool-from-client

Parameters **delimiter** *delimiter* — A single ASCII character specifies the delimiter of separating primary and secondary pool names in Option82 VSO.

user-ident

Syntax **user-ident** *user-ident*
no user-ident

Context config>router>dhcp>local-dhcp-server
config>service>vprn>dhcp>server

Description This command configures the keys for identification of the DHCPv4 lease being held in the lease-database (for configured period after lease timeout). Subscriber requesting a lease via DHCPv4 that matches an existing lease based on this configured key is handed the matched prefix or address. This allows address and prefix"stickiness" for DHCPv4 assigned prefixes (IA_NA or PD).

Default duid

Parameters *user-ident* — Specifies the the user identification method

Values **duid** — Specifies the IPv4 DHCP unique identifier from DHCPv4.
interface-id — Specifies the IPv4 interface-id option.
interface-id-link-local — Specifies the interface-id and link-local address.

user-ident

Syntax **user-ident** *user-ident*
no user-ident

Context config>router>dhcp6>local-dhcp-server
config>service>vprn>dhcp6>server

Description This command configures the keys for identification of the DHCPv6 lease being held in the lease-database (for configured period after lease timeout). Subscriber requesting a lease via DHCPv6 that matches an existing lease based on this configured key is handed the matched prefix or address. This allows address and prefix"stickiness" for DHCPv6 assigned prefixes (IA_NA or PD).

Default duid

Parameters *user-ident* — Specifies the the user identification method

Values **duid** — Specifies the IPv6 DHCP unique identifier from DHCPv6.
interface-id — Specifies the IPv6 interface-id option.
interface-id-link-local — Specifies the interface-id and link-local address.

use-link-address

Syntax **use-link-address** [**scope** *scope*]
no use-link-address

Context config>router>dhcp6>local-dhcp-server

Description If configured, local pool selection for v6 address or prefix assignment will use the configured link-address under relay configuration. The selected pool will contain a prefix covering the link-address. The scope option defines the scope for the match. With scope **subnet**, the prefix or address selection is limited to the prefix in the pool that covers the link-address. With scope **pool**, all the prefixes in the selected pool are eligible for assignment.

Default scope subnet

Parameters **scope** *scope* — Specifies the scope of the IP address selection.

Values **subnet** — Specifies that the prefix or address selection is limited to the prefix in the pool that covers the link address.
pool — Specifies that all prefixes in the selected pool are eligible for assignment.

user-db

Syntax **user-db** *local-user-db-name*
no user-db

Context config>router>dhcp>server

Description This command configures a local user database for authentication.

Default not enabled

Parameters *local-user-db-name* — Specifies the name of a local user database.

Service Commands

dhcp

Syntax **dhcp**

Context
config>service>vpls>sap
config>service>vpls>spoke-sdp
config>service>vpls>mesh-sdp
config>service>ies>interface
config>service>vprn
config>service>vprn>interface
config>service>vprn>sub-if
config>service>vprn>sub-if>grp-if
config>service>ies>sub-if>grp-if
config>service>ies>sub-if
config>service>ies>sub-if>grp-if

Description This command enables the context to configure DHCP parameters.

dhcp6

Syntax **dhcp6**

Context
config>service>vpls>sap
config>service>vpls>spoke-sdp
config>service>vpls>mesh-sdp
config>service>ies>interface
config>system
config>service>vprn
config>service>vprn>interface
config>service>vprn>sub-if
config>service>vprn>sub-if>grp-if
config>service>ies>sub-if>group-grp-if
config>service>vprn>sub-if>grp-if>ipv6
config>service>ies>sub-if>grp-if>ipv6
config>service>ies>sub-if
config>service>ies>sub-if>grp-if

Description This command enables the context to configure DHCP6 parameters.

relay

Syntax [**no**] **relay**

Context
config>service>vprn>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6

config>service>vprn>sub-if>ipv6>dhcp6
config>service>ies>sub-if>ipv6>dhcp6

Description This command enables the context to configure DHCPv6 relay parameters for this interface.

client-applications

Syntax **client-applications dhcp**
client-applications pppoe
client-applications dhcp pppoe
no client-applications

Context config>service>vprn>sub-if>dhcp
config>service>ies>sub-if>dhcp
config>service>vprn>sub-if>grp-if>dhcp
config>service>ies>sub-if>grp-if>dhcp
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>relay
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy
config>service>ies>sub-if>grp-if>ipv6>dhcp6>relay
config>service>vprn>sub-if>ipv6>dhcp6>proxy
config>service>vprn>sub-if>ipv6>dhcp6>relay
config>service>ies>sub-if>ipv6>dhcp6>proxy
config>service>ies>sub-if>ipv6>dhcp6>relay

Description This command enables DHCP relay and proxy-server for the configured client types.

The **no** form of the command resets the default client application (dhcp).

Default client-applications dhcp

Parameters **dhcp —** Enables IPoE clients to use the DHCP relay or proxy-server

pppoe — Enables PPPoE clients to use the DHCP relay or proxy-server that PPPoE will attempt to request an IP address for a PPPoE client from the DHCP server(s)ly assigned to PPPoE node.

match-circuit-id

Syntax [**no**] **match-circuit-id**

Context config>service>ies>sub-if>grp-if>dhcp
config>service>vprn>sub-if>dhcp
config>service>vprn>sub-if>grp-if>dhcp

Description This command enables matching Option 82 circuit ID on relayed DHCP packet matching.

For Routed CO, the group interface DHCP relay process is stateful. When packets are relayed to the server the virtual router ID, transaction ID, SAP ID, and client hardware MAC address of the relayed packet are tracked. When a response is received from the server the virtual router ID, transaction ID, and client HW MAC address must be matched to determine the SAP on which to send the packet out. In some cases, the virtual router ID, transaction ID, and client HW MAC address are not guaranteed to be unique.

When the **match-circuit-id** command is enabled this part of the key is used to guarantee correctness in the lookup. This is only needed when are dealing with an IP aware DSLAM that proxies the client HW mac address.

Default no match-circuit-id

lease-populate

Syntax **lease-populate** [*nbt-of-entries*]
no lease-populate

Context config>service>vpls>if>dhcp>option
config>service>ies>if>dhcp>option

Description This command enables dynamic host lease state management for SAPs.

For VPLS, DHCP snooping must be explicitly enabled (using the **snoop** command) at all points where DHCP messages requiring snooping enter the VPLS instance (both from the DHCP server and from the subscribers). Lease state information is extracted from snooped DHCP ACK messages to populate lease state table entries for the MSAP.

The optional number-of-entries parameter is used to define the number lease state table entries allowed for an MSAP or IP interface. If number-of-entries is omitted, only a single entry is allowed. Once the maximum number of entries has been reached, subsequent lease state entries are not allowed and subsequent DHCP ACK messages are discarded.

The retained lease state information representing dynamic hosts may be used to:

- Populate an MSAP based anti-spoof filter table to provide dynamic anti-spoof filtering. If the system is unable to populate the dynamic host information in the anti-spoof filter table on the SAP, the DHCP ACK message must be discarded without adding new lease state entry or updating an existing lease state entry.
- Generate dynamic ARP replies if **arp-reply-agent** is enabled.

The **no** form of the command disables dynamic host lease state management for the MSAP.

Default no lease-populate

lease-populate

Syntax **lease-populate** [*nbr-of-leases*]
lease-populate [*nbr-of-leases*] **l2-header** [**mac** *ieee-address*]
no lease-populate

Context config>subscr-mgmt>msap-policy>vpls-only>dhcp
config>service>vpls>sap>dhcp
config>service>ies>interface>dhcp
config>service>vprn>interface>dhcp
config>service>ies>sub-if>grp-if>dhcp
config>service>vprn>sub-if>grp-if>dhcp
config>service>vprn>sub-if>dhcp

Description This command enables and disables dynamic host DHCPv4 lease state management for SAPs.

For VPLS, DHCP snooping must be explicitly enabled (using the **snoop** command) at all points where DHCP messages requiring snooping enter the VPLS instance (both from the DHCP server and from the subscribers). Lease state information is extracted from snooped DHCP ACK messages to populate lease state table entries for the SAP.

The optional number-of-entries parameter defines the number lease state table entries allowed.

- for this SAP in case of a VPLS service
- for this interface in case of an IES or VPRN interface
- for each SAP in case of an IES or VPRN group-interface
- for this interface in case of an IES or VPRN retail subscriber-interface

If number-of-entries is omitted, only a single entry is allowed. Once the maximum number of entries has been reached, subsequent lease state entries are not allowed and subsequent DHCP ACK messages are discarded.

The retained lease state information representing dynamic hosts may be used to:

- Populate a SAP based anti-spoof filter table to provide dynamic anti-spoof filtering. If the system is unable to populate the dynamic host information in the anti-spoof filter table on the SAP, the DHCP ACK message must be discarded without adding new lease state entry or updating an existing lease state entry.
- Populate the system's ARP cache based on the arp-populate configuration. Applicable to IES and VPRN interfaces or group-interfaces.
- Populate managed entries into a VPLS forwarding database. VPLS forwarding database population is an implicit feature that automatically places the dynamic host's MAC address into the VPLS FDB. When a dynamic host's MAC address is placed in the lease state table, it will automatically be populated into the VPLS forwarding database associated with the SAP on which the host is learned. The dynamic host MAC address will override any static MAC entries using the same MAC and prevent dynamic learning of the MAC on another interface. Existing static MAC entries with the same MAC address as the dynamic host are marked as inactive but not deleted. If all entries in the lease state table associated with the MAC address are removed, the static MAC may be populated. New static MAC definitions for the VPLS instance may be created while a dynamic host exists associated with the static MAC address
- Generate dynamic ARP replies if **arp-reply-agent** is enabled. Applicable to VPLS service SAPs

Default no lease-populate

Parameters *nbr-of-leases* — Specifies the number of DHCPv4 leases allowed.

Values 1 — 32767
1 — 65535 (chassis-mode d, SF/CPM-4 or later)
1 — 262143 (chassis-mode d, SF/CPM-4 or later, retail subscriber interfaces only)

l2-header — Indicates a mode of operation where anti-spoof entry associated with the given DHCP state is created based on the MAC address from the Layer 2 header. The Layer 2 header flag is not set by default. This parameter is only applicable for group-interfaces.

mac — Specifies that the provisioned ieee-address will be used in the anti-spoofing entries for this SAP. The parameter may be changed mid-session. Existing sessions will not be re-programmed unless a tools perform command is issues for the lease. This parameter is only applicable for group-interfaces.

option

Syntax [**no**] **option**

Context config>service>vpls>sap>dhcp
config>service>vpls>sap>dhcp6
config>service>ies>interface>dhcp
config>service>vprn>interface>dhcp
config>service>vprn>sub-if>dhcp
config>service>vprn>sub-if>grp-if>dhcp
config>service>ies>sub-if>grp-if>dhcp

Description This command enables DHCP Option 82 (Relay Agent Information Option) parameters processing and enters the context for configuring Option 82 sub-options.

The **no** form of this command returns the system to the default.

Default no option

action

Syntax **action** {**replace** | **drop** | **keep**}
no action

Context config>service>vpls>sap>dhcp>option
config>service>ies>interface>dhcp>option
config>service>vprn>interface>dhcp>option
config>service>vprn>sub-if>grp-if>dhcp>option
config>service>ies>sub-if>grp-if>dhcp

Description This command configures the Relay Agent Information Option (Option 82) processing.

The **no** form of this command returns the system to the default value.

Default The default is to keep the existing information intact.

Parameters **replace —** In the upstream direction (from the user), the Option 82 field from the router is inserted in the packet (overwriting any existing Option 82 field). In the downstream direction (towards the user) the Option 82 field is stripped (in accordance with RFC 3046).

drop — The DHCP packet is dropped if an Option 82 field is present, and a counter is incremented.

keep — The existing information is kept in the packet and the router does not add any additional information. In the downstream direction the Option 82 field is not stripped and is forwarded towards the client.

In Vendor-Specific Options (VSOs) scenarios, the behavior is slightly different. Even with the action=keep, the router will insert his own vso into the Option 82 field. This will only be done when the incoming message has already an Option 82 field.

If no Option 82 field is present, the router will not create the Option 82 field - in that case, no VSO will be added to the message.

circuit-id

Syntax **circuit-id** [**ascii-tuple** | **vlan-ascii-tuple**]
no circuit-id

Context config>service>vpls>sap>dhcp>option

Description When enabled, the router sends an ASCII-encoded tuple in the **circuit-id** sub-option of the DHCP packet. This ASCII-tuple consists of the access-node-identifier, service-id, and SAP-ID, separated by "|".

In order to send a tuple in the circuit ID, the **action replace** command must be configured in the same context.

If disabled, the **circuit-id** sub-option of the DHCP packet will be left empty.

The **no** form of this command returns the system to the default.

Default circuit-id

Parameters **ascii-tuple —** Specifies that the ASCII-encoded concatenated tuple consisting of the access-node-identifier, service-id, and interface-name is used.

vlan-ascii-tuple — Specifies that the format will include VLAN-id and dot1p bits in addition to what is included in ascii-tuple already. The format is supported on dot1q and qinq ports only. Thus, when the Option 82 bits are stripped, dot1p bits will be copied to the Ethernet header of an outgoing packet.

circuit-id

Syntax **circuit-id** [**ascii-tuple** | **ifindex** | **sap-id** | **vlan-ascii-tuple**]
no circuit-id

Context config>service>ies>if>dhcp>option
config>service>ies>sub-if>grp-if>dhcp>option
config>service>vprn>if>dhcp>option
config>service>vprn>sub-if>grp-if>dhcp>option

Description When enabled, the router sends an ASCII-encoded tuple in the **circuit-id** sub-option of the DHCP packet. This ASCII-tuple consists of the access-node-identifier, service-id, and SAP-ID, separated by "|".

In order to send a tuple in the circuit ID, the **action replace** command must be configured in the same context.

If disabled, the **circuit-id** sub-option of the DHCP packet will be left empty.

The **no** form of this command returns the system to the default.

Default circuit-id

ascii-tuple — Specifies that the ASCII-encoded concatenated tuple will be used which consists of the access-node-identifier, service-id, and interface-name, separated by "|".

ifindex — Specifies that the interface index will be used. (The If Index of a router interface can be displayed using the command **show>router>interface>detail**)

sap-id — Specifies that the SAP identifier will be used.

vlan-ascii-tuple — Specifies that the format will include VLAN-id and dot1p bits in addition to what is included in ascii-tuple already. The format is supported on dot1q-encapsulated ports only. Thus, when the option 82 bits are stripped, dot1p bits will be copied to the Ethernet header of an outgoing packet.

remote-id

Syntax **remote-id** [**mac** | **string** *string*]
no remote-id

Context config>service>vpls>sap>dhcp>option
config>service>ies>if>dhcp>option
config>service>vprn>if>dhcp>option
config>service>ies>sub-if>grp-if>dhcp>option
config>service>ies>sub-if>grp-if>dhcp>option

Description This command specifies what information goes into the remote-id sub-option in the DHCP relay packet.

If disabled, the **remote-id** sub-option of the DHCP packet will be left empty.

The **no** form of this command returns the system to the default.

Default remote-id

Parameters **mac —** This keyword specifies the MAC address of the remote end is encoded in the sub-option.

string *string* **—** Specifies the remote-id.

vendor-specific-option

Syntax [**no**] **vendor-specific-option**

Context config>service>vpls>sap>dhcp>option
config>service>ies>if>dhcp>option
config>service>vprn>if>dhcp>option
config>service>ies>sub-if>grp-if>dhcp>option
config>service>vprn>sub-if>grp-if>dhcp>option

Description This command configures the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

client-mac-address

Syntax [**no**] **client-mac-address**

Context config>service> ies>if>dhcp>option>vendor
config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor
config>service>ies>sub-if>grp-if>dhcp>option>vendor

Description This command enables the sending of the MAC address in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

The **no** form of the command disables the sending of the MAC address in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

pool-name

Syntax [**no**] **pool-name**

Context config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor
config>service>ies>if>dhcp>option>vendor
config>service>ies>sub-if>grp-if>dhcp>option>vendor

Description This command sends the pool name in the Alcatel vendor specific suboption of the DHCP relay packet.

The **no** form of the command disables the sending.

sap-id

Syntax [**no**] **sap-id**

Context config>service>vpls>sap>dhcp>option>vendor
config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor
config>service>ies>sub-if>grp-if>dhcp>option>vendor

Description This command enables the sending of the SAP ID in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

The **no** form of the command disables the sending of the SAP ID in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

service-id

Syntax [**no**] **service-id**

Context config>service>vpls>sap>dhcp>option>vendor
config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor
config>service>ies>sub-if>grp-if>dhcp>option>vendor

Description This command enables the sending of the service ID in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

The **no** form of the command disables the sending of the service ID in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

string

Syntax [**no**] **string** *text*

Context config>service>vpls>sap>dhcp>option>vendor
config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor
config>service>ies>sub-if>grp-if>dhcp>option>vendor

Description This command specifies the string in the Alcatel-Lucent vendor specific sub-option of the DHCP relay packet.

The **no** form of the command returns the default value.

Parameters *text* — The string can be any combination of ASCII characters up to 32 characters in length. If spaces are used in the string, enclose the entire string in quotation marks (“ ”).

system-id

Syntax [**no**] **system-id**

Context config>service>vpls>sap>dhcp>option>vendor
config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor
config>service>ies>sub-if>grp-if>dhcp>option>vendor

Description This command specifies whether the system-id is encoded in the Alcatel-Lucent vendor specific sub-option of Option 82.

filter

Syntax **filter** *filter-id*
no filter

Context config>service>ies>sub-if>grp-if>ipv6>dhcp6
config>service>vprn>sub-if>grp-if>ipv6>dhcp6

Description This command assigns a DHCP6 filter to the group-interface.

Default no filter

Parameters *filter-id* — Specifies the DHCP6 filter ID.

Values 1 — 65535

override-slaac

Syntax [**no**] **override-slaac**

Context config>service>vprn>sub-if>>ipv6>dhcp6
config>service>ies>sub-if>ipv6>dhcp6

config>service>vprn>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6

Description This command allows a DHCP IA_NA address to override and replace a host existing SLAAC address. When this feature is enabled, a subscriber SLAAC address is removed once the DHCP IA_NA address assignment is completed. If used with conjunction with the **allow-multiple-wan-address** command, the DHCP IA_NA address will also override the SLAAC address.

pd-managed-route

Syntax **pd-managed-route** [**next-hop** {**ipv4** | **ipv6**}]
no pd-managed-route

Context config>service>vprn>sub-if>ipv6>dhcp6
config>service>ies>sub-if>ipv6>dhcp6
config>service>vprn>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6

Description This command enables DHCP IA-PD (delegated prefix) to be modeled as managed (framed) route instead of as a subscriber-host. Antispoof filtering for the subscriber host associated with the IA-PD route must be set to **nh-mac**. The subscriber specific parameters (such as **sla-profile** or **sub-profile**) will be ignored during the authentication phase because IA-PD is not modeled as a subscriber host. Other subscriber host-specific functions (for example, host overrides via CoA or host accounting) are not possible with a PD as the managed route.

By default, or when configured with the **next-hop ipv6** parameter, the next-hop for PD managed route is an IPv6 WAN sub-host (DHCP IA-NA or SLAAC) with the same mac address as the one in the DHCP lease state for the managed IA-PD. The DHCP IA-NA next-hop host will always override the SLAAC next-hop host if both are available. If the IPv6 next-hop is not present when the framed IA-PD is instantiated, the IA-PD will be set up but the PD managed route will not be installed in the IPv6 route table and the DHCPv6 lease state for the IA-PD will have the managed route status (DHCP6 MRt Status) set to "noNextHop".

When configured with the **next-hop ipv4** parameter the next-hop for PD managed route is a DHCPv4 sub-host that belongs to the same IPoE session or PPPoE session. For IPoE, **ipoe-session** must be enabled on the group-interface. If **ipoe-session** is disabled, an IPv4 next-hop will not be found. If the IPv4 next-hop is not found or not present at the time when the framed IA-PD is instantiated, the IA-PD will be set up but the PD managed route will not be installed in the IPv6 route table. In this case, the DHCPv6 lease state for the IA-PD will have the managed route status (DHCP6 MRt Status) set to "noNextHop".

Note that IPv6 filters, QoS IPv6 criteria, and IPv6 multicast are not supported for DHCPv6 IA-PD as managed route pointing to an IPv4 subscriber host as next-hop.

The typical subscriber host information for DHCP IA-PD modeled as a route is removed from the operational show commands related to the subscriber host state (for example, s**how service active-susbscribers** or **show service id** <*svc-id*> **subscriber-hosts**). However, DHCP IA-PD route is displayed as a managed route for the corresponding IPv6 subscriber host (DHCP IA-NA or SLAAC) or DHCPv4 subscriber host..

DHCP IA-PD information for managed IA-PD route is still maintained in the DHCPv6 lease state and as such it can be displayed with the appropriate show command.

Default no pd-managed-route

Parameters **next-hop** {**ipv4** | **ipv6**} — Specifies the next-hop type for the DHCP IA-PD managed route.

Values **ipv4** - The next-hop for PD managed route is a DHCPv4 sub-host that belongs to the same IPoE session (based on the IPoE session key which is **sap-mac** by default). IPoE session must be enabled on the group-interface.
ipv6 - The next-hop for PD managed route is an IPv6 WAN sub-host (DHCP IA-NA or SLAAC) with the same MAC address as the one in the DHCP lease state for the managed IA-PD. This is the default when no next-hop is specified.

enable-ingress-stats

Syntax [**no**] **enable-ingress-stats**

Context config>service>ies>sub-if>grp-if
config>service>vprn>sub-if>grp-if

Description This command enables the collection of ingress interface IP stats. This command is only appliable to IP statistics, and not to uRPF statistics.

If enabled, then the following statistics are collected:

- IPv4 offered packets
- IPv4 offered octets
- IPv6 offered packets
- IPv6 offered octets

Note that octet statistics for IPv4 and IPv6 bytes at IP interfaces include the Layer 2 frame overhead.

Default no enable-ingress-stats

duid

Syntax **duid** *duid* [**iaid** *iaid*]
no duid

Context config>service>ies>if>ipv6>dhcp6>pfx-delegate>prefix

Description This command configures the DHCP Unique Identifier (DUID) of the DHCP client.

Parameters *duid* — Specifies the ID of the requesting router. If set to a non zero value the prefix defined will only be delegated to this router. If set to zero, the prefix will be delegated to any requesting router.

iaid *iaid* **—** Specifies the identity association identification (IAID) from the requesting router that needs to match in order to delegate the prefix defined in this row.If set to 0 no match on the received IAID is done.

preferred-lifetime

Syntax **preferred-lifetime** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*]
preferred-lifetime infinite
no preferred-lifetime

Context config>service>ies>if>ipv6>dhcp6>pfx-delegate>prefix
config>service>vprn>if>ipv6>dhcp6>pfx-delegate>prefix
config>service>vprn>sub-if>ipv6>dhcp6>proxy
config>service>ies>sub-if>ipv6>dhcp6>proxy
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy

Description This command configures the IPv6 prefix/mask preferred life time. The preferred-lifetime value cannot be bigger than the valid-lifetime value.

The **no** form of the command reverts to the default value.

Default 604800 seconds (7 days)

Parameters [**days** *days*][**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] — Specifies the preferred lifetime.

Values

days:	[0..3650]
hours:	[0..23]
minutes:	[0..59]
seconds:	[0..59

preferred-lifetime

Syntax **preferred-lifetime seconds**
preferred-lifetime infinite
no preferred-lifetime

Context config>service>ies>sub-if>grp-if>ipv6>rtr-adv>pfx-opt
config>service>vprn>sub-if>grp-if>ipv6>rtr-adv>pfx-opt
config>service>ies>sub-if>ipv6>rtr-adv>pfx-opt
config>service>vprn>sub-if>ipv6>rtr-adv>pfx-opt

Description This command specifies the remaining time for this prefix to be preferred, thus time until deprecation.

Default 3600 seconds

Parameters *seconds* — Specifies the time for the prefix to remain preferred on this group-interface in seconds.

Values 0 — 4294967295

infinite — Specifies that the remaining time will never expire.
Note that the value **4294967295** seconds is interpreted as infinite.

valid-lifetime

Syntax **valid-lifetime** *seconds*
valid-lifetime infinite
no valid-lifetime

Context config>service>ies>if>ipv6>dhcp6>pfx-delegate>prefix
config>service>vprn>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6

Description This command configures the time, in seconds, that the prefix is valid. The maximum value 4294967295 is considered equal to infinity.

The **no** form of the command reverts to the default value.

Default 2592000 seconds (30 days)

Parameters *seconds* — Specifies the time, in seconds, that this prefix remains valid.

Values 1 — 4294967294

infinite — Specifies that this prefix remains valid infinitely.

valid-lifetime

Syntax **valid-lifetime** *seconds*
valid-lifetime infinite
no valid-lifetime

Context config>service>ies>sub-if>grp-if>ipv6>rtr-adv
config>service>vprn>sub-if>grp-if>ipv6>rtr-adv

Description This command specifies the remaining time for this prefix to be valid for the purpose of on-link determination.

Default 86400

Parameters *seconds* — Specifies the time for the prefix to remain valid on this group-interface in seconds.

Values 0 — 4294967295

infinite — Specifies that the remaining time will never expire.

python-policy

Syntax **python-policy** *name*
no python-policy

Context config>service>ies>if>dhcp
config>service>vprn>if>dhcp>

Description This command specifies the python-policy to be used for DHCPv4 relay.

Parameters *name* — Specifies the name of an existing python script up to 32 characters in length.

python-policy

Syntax **python-policy** *name*
no python-policy

Context config>service>vprn>sub-if
config>service>vprn>sub-if>ipv6>dhcp6
config>service>ies>sub-if>ipv6>dhcp6
config>service>ies>if>ipv6>dhcp6-relay
config>service>vprn>if>ipv6>dhcp6-relay

Description This command specifies the python-policy to be used for DHCPv6 relay.

Parameters *name* — Specifies the name of an existing python script up to 32 characters in length.

emulated-server

Syntax **emulated-server** *ip-address*
no emulated-server

Context config>service>ies>if>dhcp>proxy-server
config>service>ies>sub-if>grp-if>dhcp>proxy-server
config>service>vpls>sap>dhcp>proxy-server
config>service>vprn>sub-if>grp-if>dhcp

Description This command configures the IP address which will be used as the DHCP server address in the context of the SAP. Typically, the configured address should be in the context of the subnet represented by the service.

The **no** form of this command reverts to the default setting. The local proxy server will not become operational without the emulated-server address being specified.

Parameters *ip-address* — Specifies the emulated server's IP address. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

emulated-server

Syntax **emulated-server** *ip-address*
no emulated-server

Context config>service>vprn>if>dhcp>proxy
config>service>vprn>sub-if>grp-if>dhcp>proxy-server

Description This command configures IP address which will be used as DHCP server address in context of the SAP. Typically, configured address should be in context of the subnet represented by VPRN. No version of these commands reverts to default setting. The local proxy server will not become operational without emulated-server address being specified.

Parameters *ip-address* — Specifies the emulated server's IP address.

lease-time

Syntax **lease-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] [**override**]
no lease-time

Context config>service>vpls>sap>dhcp>proxy-server
config>service>ies>if>dhcp>proxy-server
config>service>ies>sub-if>grp-if>dhcp>proxy-server
config>service>vprn>if>dhcp>proxy
config>service>vprn>sub-if>grp-if>dhcp>proxy-server

Description This command defines the length of lease-time that will be provided to DHCP clients. By default the local-proxy-server will always make use of the lease-time information provide by either a RADIUS or DHCP server.

The **no** form of this command disables the use of the lease-time command. The local-proxy-server will use the lease-time offered by either a RADIUS or DHCP server.

Default 7 days 0 hours 0 seconds

Parameters **override —** Specifies that the local-proxy-server will use the configured lease-time information to provide DHCP clients.

radius-override — Supported only in the **config>service>vpls>sap>dhcp>proxy-server** context, specifies that the local-proxy-server will use the configured lease-time information to provide DHCP clients.

days — Specifies the number of days that the given IP address is valid.

Values 0 — 3650

hours — Specifies the number of hours that the given IP address is valid.

Values 0 — 23

minutes — Specifies the number of minutes that the given IP address is valid.

Values 0 — 59

seconds — Specifies the number of seconds that the given IP address is valid.

Values 0 — 59

snoop

Syntax **snoop**
no snoop

Context config>service>vpls>sap>dhcp
config>service>vpls>sap>dhcp6
config>service>vpls>spoke-sdp>dhcp
config>service>vpls>mesh-sdp>dhcp
config>service>vprn>if>dhcp>option

Description This command enables DHCP snooping of DHCP messages on the SAP or SDP. Enabling DHCP snooping on interfaces (SAPs and SDP bindings) is required where DHCP messages important to lease state table population are received, or where Option 82 information is to be inserted. This includes interfaces that are in the path to receive messages from either DHCP servers or from subscribers.

Use the **no** form of the command to disable DHCP snooping on the specified SAP or SDP binding.

Default no snoop

dhcp6

dhcp-user-db

Syntax **dhcp-user-db** *local-user-db*
no dhcp-user-db

Context configure>service>vpls>sap

Description This command enabled access to LUDB for DHCPv4 hosts under the capture SAP. The name of this ludb must match the name of ludb configured under the **configure>service>vprn/ies>subscr-intf>group-intf>dhcp** hierarchy.

Default no dhcp-user-db

Parameters *local-user-db* — Specifies the name of the local-user-database up to 32 characters max.

dhcp-python-policy

Syntax **dhcp-python-policy** *policy-name*
no dhcp-python-policy

Context config>service>vpls>sap

Description This command specifies the name of the Python policy. The Python policy is created in the **config>python>python-policy** *name* context.

The **no** form of the command reverts to the default.

Default none

Parameters *policy-name* — Specifies a Python policy name up to 32 characters in length.

dhcp6

Syntax **dhcp6**

Context config>service>vpls>sap
config>service>ies>sub-if>grp-if>ipv6
config>service>vprn>sub-if>grp-if>ipv6

Description This command configures DHCP6 parameters for this SAP.

interface-id

Syntax **interface-id**
interface-id ascii-tuple
interface-id vlan-ascii-tuple
no interface-id

Context config>service>ies>if>ipv6>dhcp6>option
config>service>vprn>if>ipv6>dhcp6>option
config>service>vpls>sap>dhcp6>option

Description This command configure the interface-id suboption of the DHCP6 Relay packet

The **no** form of the command disables the sending of interface ID options in the DHCPv6 relay packet

Parameters **ascii-tuple —** Specifies that the ASCII-encoded concatenated tuple will be used which consists of the access-node-identifier, service-id, and interface-name, separated by "|".

vlan-ascii-tuple — Specifies that the format will include VLAN-id and dot1p bits in addition to what is included in ascii-tuple already. The format is supported on dot1q-encapsulated ports only. Thus, when the option 82 bits are stripped, dot1p bits will be copied to the Ethernet header of an outgoing packet.

mac — This keyword specifies the MAC address of the remote end is encoded in the sub-option.

remote-id

Syntax **remote-id**
remote-id mac
remote-id string [*32 chars max*]
no remote-id

Context config>service>ies>if>ipv6>dhcp6>option
config>service>vprn>if>ipv6>dhcp6>option
config>service>vpls>sap>dhcp6>option

Description This command enables the sending of remote ID option in the DHCPv6 relay packet.

The client DHCP Unique Identifier (DUID) is used as the remote ID.

The **no** form of the command disables the sending of remote ID option in the DHCPv6 relay packet.

interface-id

Syntax **interface-id**
interface-id ascii-tuple
interface-id vlan-ascii-tuple
no interface-id

Context config>service>vpls>sap>dhcp6>option

Description This command configures the interface-id suboption of the DHCP6 relay packet.

The no form of the command reverts to the default.

Default none

Parameters **ascii-tuple —** Specifies that the ASCII-encoded concatenated tuple consisting of the access-node-identifier, service-id, and interface-name is used.

vlan-ascii-tuple — Specifies that the format will include VLAN-id and dot1p bits in addition to what is included in ascii-tuple already. The format is supported on dot1q and qinq ports only. Thus, when the option 82 bits are stripped, dot1p bits will be copied to the Ethernet header of an outgoing packet.

dhcp6-user-db

Syntax **dhcp6-user-db** *local-user-db*
no dhcp6-user-db

Context configure>service>vpls>sap

Description This command enabled access to LUDB for DHCPv6 hosts under the capture SAP. The name of this ludb must match the name of ludb configured under the **configure>service>vprn/ies>subscr-intf>group-intf>dhcp** hierarchy.

Default no dhcp6-user-db

Parameters *local-user-db* — Specifies the name of the local-user-database up to 32 characters max.

ppp-user-db

Syntax **ppp-user-db** *local-user-db-name*
no ppp-user-db

Context configure>service>vpls

Description This command enabled access to LUDB for PPPoE and PPPoEoA v4and v6 hosts under the capture SAP. The name of this ludb must match the name of ludb configured under the **configure>service>vprn/ies>subscr-intf>group-intf>pppoe** hierarchy.

Default no pppoe-user-db

Parameters *local-user-db* — Specifies the name of the local-user-database up to 256 characters max.

pppoe-user-db

Syntax **pppoe-user-db** *local-user-db-name*
no pppoe-user-db

Context configure>service>vpls

Description This command enabled access to LUDB for PPPoE and PPPoEoA v4and v6 hosts under the capture SAP. The name of this ludb must match the name of ludb configured under the **configure>service>vprn/ies>subscr-intf>group-intf>pppoe** hierarchy.

Default no pppoe-user-db

Parameters *local-user-db* — Specifies the name of the local-user-database up to 256 characters max.

filter

Syntax **filter** *filter-id*
no filter

Context config>service>ies>sub-if>grp-if>dhcp

Description This command configures the DHCP filter for this interface

gi-address

Syntax **gi-address** *ip-address* [*src-ip-addr*]
no gi-address

Context config>service>ies>if>dhcp
config>service>vprn>interface>dhcp
config>service>vprn>sub-if>dhcp
config>service>ies>sub-if>grp-if>dhcp
config>service>ies>sub-if>dhcp

Description This command configures the gateway interface address for the DHCP relay. A subscriber interface can include multiple group interfaces with multiple SAPs. The GI address is needed, when the router functions as a DHCP relay, to distinguish between the different subscriber interfaces and potentially between the group interfaces defined.

By default, the GI address used in the relayed DHCP packet is the primary IP address of a normal IES interface. Specifying the GI address allows the user to choose a secondary address. For group interfaces a GI address must be specified under the group interface DHCP context or subscriber-interface DHCP context in order for DHCP to function.

Default no gi-address

Parameters *ip-address* — Specifies the host IP address to be used for DHCP relay packets.

src-ip-address — Specifies that this GI address is to be the source IP address for DHCP relay packets.

gi-address

Syntax **gi-address** *ipv4-address*
no gi-address

Context configure>subscr-mgmt>loc-user-db>ipoe>host

Description This command allows selection of gi-addresses based on the host entry in LUDB.

The gi-address must be a valid address (associated with an interface) within the routing context that received the DHCP message on the access side.

Default no gi-address

Parameters *ipv4-address* — Specifies the IPv4 gi-address.

relay-plain-bootp

Syntax [**no**] **relay-plain-bootp**

Context config>service>ies>if>dhcp

Description This command enables the relaying of plain BOOTP packets.

The **no** form of the command disables the relaying of plain BOOTP packets.

relay-unicast-msg

Syntax **relay-unicast-msg** [**release-update-src-ip**]
no relay-unicast-msg

Context config>service>ies>if>dhcp
config>service>ies>sub-if>dhcp
config>service>ies>sub-if>grp-if>dhcp
config>service>vprn>if>dhcp
config>service>vprn>sub-if>dhcp
config>service>vprn>sub-if>grp-if>dhcp

Description Relay unicast client DHCPv4 request (renew) messages. In the upstream direction: update the source-ip address and add the gateway IP address (gi-address) field before sending the message to the intended DHCP server (the message is not broadcasted to all configured DHCP servers). In the downstream direction: remove the gi-address and update the destination IP address to the value of the yiaddr (your IP addess) field.

By default, unicast DHCPv4 release messages are forwarded transparently. The optional “release-update-src-ip” flag, updates the source IP address with the value used for relayed DHCPv4 messages.

Additionally when the optional flag “relay-unicast-msg” is enabled, then the gi address and source IP address of relayed DHCPv4 messages can be configured to any local configured IP address in the same routing instance.

Default no relay-unicast-msg

Parameters **release-update-src-ip —** Updates the source IP address with the value used for relayed DHCPv4 messages.

server

Syntax **server** *ipv6z-address* [*ipv6z-address*...(up to 8 max)]

Context config>service>ies>if>ipv6>dhcp6

Description This command specifies a list of servers where DHCP6 requests will be forwarded. The list of servers can entered as either IP addresses or fully qualified domain names. There must be at least one server specified for DHCP6 relay to work. If there are multiple servers then the request is forwarded to all of the servers in the list.

There can be a maximum of 8 DHCP6 servers configured.

Default no server

Parameters *ipv6z-address* — Specifies a non-global IPv4 address including a zone index as defined by the InetAddressIPv4z textual convention. Up to 8 addresses can be specified.

Values ipv6-address: x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x: [0 — FFFF]H
d: [0 — 255]D

virtual-subnet

Syntax [**no**] **virtual-subnet**

Context config>service>ies>sub-if>dhcp
config>service>vprn>sub-if>dhcp

Description This command enables a virtual-subnet for DHCPv4 hosts under the subscriber-interface. With this command configured, the system will snoop and record the default router address in the DHCP ACK message for the DHCPv4 ESM host. The system could answer or traceroute request even if the default router address is not configured on the subscriber-interface.

Default none

server

Syntax **server** *server1* [*server2*...(up to 8 max)]

Context config>service>ies>if>dhcp
config>service>vprn>if>dhcp
config>service>ies>sub-if>grp-if>dhcp

Description This command specifies a list of servers where requests will be forwarded. The list of servers can entered as either IP addresses or fully qualified domain names. There must be at least one server

specified for DHCP relay to work. If there are multiple servers then the request is forwarded to all of the servers in the list.

There can be a maximum of 8 DHCP servers configured.

Default no server

Parameters *server* — Specify the DHCP server IP address.

relay-plain-bootp

Syntax [**no**] **relay-plain-bootp**

Context config>service>vprn>if>dhcp

Description This command enables the relaying of plain BOOTP packets.

The **no** form of the command disables the relaying of plain BOOTP packets.

use-arp

Syntax [**no**] **use-arp**

Context config>service>vprn>if>dhcp

Description This command enables the use of ARP to determine the destination heardware address.

The **no** form of the command disables the use of ARP to determine the destination heardware address

trusted

Syntax [**no**] **trusted**

Context config>service>ies>if>dhcp
config>service>vprn>if>dhcp
config>service>vprn>sub-if>grp-if>dhcp
config>service>ies>sub-if>grp-if>dhcp

Description This command enables relaying of untrusted packets.

The **no** form of this command disables the relay.

Default not enabled

host-connectivity-verify

Syntax **host-connectivity-verify** [**interval** *interval*] [**action** {**remove**|**alarm**}] [**family** *family*]

Context config>service>vprn>if>sap
config>service>vprn>sub-if>grp-if
config>service>vprn>sub-if>grp-if>dhcp

Description This command enables enables subscriber host connectivity verification on a given SAP within a service.

This tool will periodically scan all known hosts (from dhcp-state) and perform a UC ARP request. The subscriber host connectivity verification will maintain state (connected vs. not-connected) for all hosts.

Default no host-connectivity-verify

Parameters **interval** ***interval*** **—** The interval, expressed in minutes, which specifies the time interval which all known sources should be verified. The actual rate is then dependent on number of known hosts and interval.

Values 1— 6000) Note that a zero value can be used by the SNMP agent to disable host-connectivity-verify.)

action {**remove** | **alarm**} **—** Defines the action taken on a subscriber host connectivity verification failure for a given host. The **remove** keyword raises an alarm and removes dhcp-state and releases all allocated resources (queues, table entries, etc.). DHCP-RELEASE will be signaled to corresponding DHCP server. Static hosts will never be removed. The **alarm** keyword raises an alarm indicating that the host is disconnected.

family *family* **—** The family configuration allows the host connectivity checks to be performed for IPv4 endpoint, IPv6 endpoint or both. With family IPv6 configured, host connectivity checks will be performed on the global unicast address (assigned via SLAAC or DHCPv6 IA_NA) and link-local address of a Layer 3 RG or bridged hosts. In case of SLAAC assignment, host connectivity can only be performed if the /128 is known (via downstream ND). DHCPv6 PD assigned prefixes will be removed if link-local address is determined to be unreachable via “host connectivity check”. Reachability checks for GUA and link-local address will be done simultaneously.

dhcp

Syntax **dhcp**

Context config>service>vprn>interface
config>service>vprn>
config>service>vprn>sub-if>grp-if

Description This command enables the context to configure DHCP parameters.

action

Syntax **action** {**replace** | **drop** | **keep**}
no action

Context config>service>vprn>if>dhcp>option
config>service>vprn>sub-if>grp-if>dhcp>option

Description This command configures the processing required when the SR-Series receives a DHCP request that already has a Relay Agent Information Option (Option 82) field in the packet.

The **no** form of this command returns the system to the default value.

Default Per RFC 3046, *DHCP Relay Agent Information Option* , section 2.1.1, *Reforwarded DHCP requests*, the default is to keep the existing information intact. The exception to this is if the giaddr of the received packet is the same as the ingress address on the router. In that case the packet is dropped and an error is logged.

Parameters **replace —** In the upstream direction (from the user), the existing Option 82 field is replaced with the Option 82 field from the router. In the downstream direction (towards the user) the Option 82 field is stripped (in accordance with RFC 3046).

drop — The packet is dropped, and an error is logged.

keep — The existing information is kept in the packet and the router does not add any additional information. In the downstream direction the Option 82 field is not stripped and is sent on towards the client.

The behavior is slightly different in case of Vendor Specific Options (VSOs). When the keep parameter is specified, the router will insert his own VSO into the Option 82 field. This will only be done when the incoming message has already an Option 82 field.

If no Option 82 field is present, the router will not create the Option 82 field. In this in that case, no VSO will be added to the message.

match-circuit-id

Syntax [**no**] **match-circuit-id**

Context config>service>vprn>sub-if>grp-if>dhcp

Description This command enables Option 82 circuit ID on relayed DHCP packet matching. For routed CO, the group interface DHCP relay process is stateful. When packets are relayed to the server the virtual router ID, transaction ID, SAP ID, and client hardware MAC address of the relayed packet are tracked.

When a response is received from the server the virtual router ID, transaction ID, and client hardware MAC address must be matched to determine the SAP on which to send the packet out. In some cases, the virtual router ID, transaction ID, and client hardware MAC address are not guaranteed to be unique.

When the **match-circuit-id** command is enabled this part of the key is used to guarantee correctness in our lookup. This is really only needed when dealing with an IP aware DSLAM that proxies the client hardware MAC address.

Default no match-circuit-id

option

Syntax [**no**] **option**

Context config>service>vprn>if>dhcp
config>service>vprn>sub-if>dhcp
config>service>vprn>sub-if>grp-if>dhcp

Description This command enables DHCP Option 82 (Relay Agent Information Option) parameters processing and enters the context for configuring Option 82 sub-options.

The **no** form of this command returns the system to the default.

Default no option

vendor-specific-option

Syntax [**no**] **vendor-specific-option**

Context config>service>vprn>if>dhcp>option
config>service>vprn>sub-if>grp-if>dhcp>option

Description This command configures the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

client-mac-address

Syntax [**no**] **client-mac-address**

Context config>service>vprn>if>dhcp>option
config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor

Description This command enables the sending of the MAC address in the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

The **no** form of the command disables the sending of the MAC address in the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

sap-id

Syntax [**no**] **sap-id**

Context config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor

Description This command enables the sending of the SAP ID in the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

The **no** form of the command disables the sending of the SAP ID in the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

service-id

Syntax [**no**] **service-id**

Context config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor

Description This command enables the sending of the service ID in the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

The **no** form of the command disables the sending of the service ID in the Alcatel-Lucent vendor specific suboption of the DHCP relay packet.

string

Syntax [**no**] **string** *text*

Context config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor

Description This command specifies the vendor specific suboption string of the DHCP relay packet.

The **no** form of the command returns the default value.

Parameters *text* — The string can be any combination of ASCII characters up to 32 characters in length. If spaces are used in the string, enclose the entire string in quotation marks (“ ”).

system-id

Syntax [**no**] **system-id**

Context config>service>vprn>if>dhcp>option>vendor
config>service>vprn>sub-if>grp-if>dhcp>option>vendor

Description This command specifies whether the system-id is encoded in the Alcatel-Lucent vendor specific sub-option of Option 82.

Default None

proxy-server

proxy-server

Context config>service>vpls>sap>dhcp
config>subscr-mgmt>msap-policy>vpls-only>dhcp
config>service>vprn>if>dhcp
config>service>ies>if>dhcp
config>service>vprn>sub-if>grp-if>dhcp
config>service>ies>sub-if>grp-if>dhcp
config>service>vprn>sub-if>dhcp
config>service>vprn>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6
config>service>vprn>sub-if>ipv6>dhcp6
config>service>ies>sub-if>ipv6>dhcp6

Description This command configures the DHCP proxy server.

emulated-server

Syntax **emulated-server** *ip-address*
no emulated-server

Context config>service>vprn>if>dhcp>proxy
config>service>vprn>sub-if>grp-if>dhcp>proxy-server

Description This command configures the IP address to be used as the DHCP server address in the context of this service. Typically, the configured address should be in the context of the subnet.

The **no** form of this command reverts to the default setting. The local proxy server will not become operational without a specified emulated server address.

Parameters *ip-address* — Specifies the emulated server address.

Default Note that for a retail interface, the default is the local interface.

lease-time

Syntax **lease-time** [**days** *days*] [**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] [**override**]
no lease-time

Context config>service>vprn>if>dhcp>proxy
config>service>vprn>sub-if>grp-if>dhcp>proxy-server

Description This command defines the length of lease-time that will be provided to DHCP clients. By default the local-proxy-server will always make use of the lease-time information provide by either a RADIUS or DHCP server.

The no form of this command disables the use of the lease-time command. The local-proxy-server will use the lease-time offered by either a RADIUS or DHCP server.

Default 7 days 0 hours 0 seconds

Parameters **override —** Specifies that the local-proxy-server will use the configured lease-time information to provide DHCP clients.

days — Specifies the number of days that the given IP address is valid.

Values 0 — 3650

hours — Specifies the number of hours that the given IP address is valid.

Values 0 — 23

minutes — Specifies the number of minutes that the given IP address is valid.

Values 0 — 59

seconds — Specifies the number of seconds that the given IP address is valid.

Values 0 — 59

server

Syntax **server** *server1* [*server2*...(up to 8 max)]

Context config>service>vprn>if>dhcp
config>service>vprn>sub-if>grp-if>dhcp

Description This command specifies a list of servers where requests will be forwarded. The list of servers can entered as either IP addresses or fully qualified domain names. There must be at least one server specified for DHCP relay to work. If there are multiple servers then the request is forwarded to all of the servers in the list. There can be a maximum of 8 DHCP servers configured.

The flood command is applicable only in the VPLS case. There is a scenario with VPLS where the VPLS node only wants to add Option 82 information to the DHCP request to provider per-subscriber information, but it does not do full DHCP relay. In this case, the server is set to "flood". This means the DHCP request is still a broadcast and is sent through the VPLS domain. A node running at L3 further upstream then can perform the full L3 DHCP relay function.

Default no server

Parameters *server* — Specify the DHCP server IP address.

host-connectivity-verify

Syntax **host-connectivity-verify** [**interval** *interval*] [**action** {**remove**|**alarm**}] [**family** *family*]

Context config>service>vprn>if>sap
config>service>vprn>sub-if>grp-if
config>service>vprn>sub-if>grp-if>dhcp

Description This command enables enables subscriber host connectivity verification on a given SAP within a service.

This tool will periodically scan all known hosts (from dhcp-state) and perform a UC ARP request. The subscriber host connectivity verification will maintain state (connected vs. not-connected) for all hosts.

Default no host-connectivity-verify

Parameters **interval** ***interval*** **—** The interval, expressed in minutes, which specifies the time interval which all known sources should be verified. The actual rate is then dependent on number of known hosts and interval.

Values 1— 6000) Note that a zero value can be used by the SNMP agent to disable host-connectivity-verify.)

action {**remove** | **alarm**} **—** Defines the action taken on a subscriber host connectivity verification failure for a given host. The **remove** keyword raises an alarm and removes dhcp-state and releases all allocated resources (queues, table entries, etc.). DHCP-RELEASE will be signaled to corresponding DHCP server. Static hosts will never be removed. The **alarm** keyword raises an alarm indicating that the host is disconnected.

family *family* **—** The family configuration allows the host connectivity checks to be performed for IPv4 endpoint, IPv6 endpoint or both. With family IPv6 configured, host connectivity checks will be performed on the global unicast address (assigned via SLAAC or DHCPv6 IA_NA) and link-local address of a Layer 3 RG or bridged hosts. In case of SLAAC assignment, host connectivity can only be performed if the /128 is known (via downstream ND). DHCPv6 PD assigned prefixes will be removed if link-local address is determined to be unreachable via “host connectivity check”. Reachability checks for GUA and link-local address will be done simultaneously.

source-address

Syntax **source-address** *ipv6-address*
no source-address

Context config>service>ies>if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>ipv6>dhcp6>relay
config>service>ies>sub-if>grp-if>ipv6>dhcp6>relay
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>if>ipv6>dhcp6>dhcp6-relay
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>relay
config>service>vprn>sub-if>ipv6>dhcp6>relay

Description This command configures the source IPv6 address of the DHCPv6 relay messages.

Parameters *ipv6-address* — Specifies the source IPv6 address of the DHCPv6 relay messages.

Values ipv6-address: x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x: [0 — FFFF]H
d: [0 — 255]D

dhcp6-server

Syntax [**no**] **dhcp6-server**

Context config>service>ies>if>ipv6

Description This command enables the context to configure DHCPv6 server parameters for the IES interface.

The **no** form of the command disables the DHCP6 server.

max-nbr-of-leases

Syntax **max-nbr-of-leases** *max-nbr-of-leases*
no max-nbr-of-leases

Context config>service>ies>if>ipv6>dhcp6-server

Description This command configures the maximum number of lease states installed by the DHCP6 server function allowed on this interface.

The **no** form of the command returns the value to the default.

Default 8000

Parameters *max-nbr-of-leases* — Specifies the maximum number of lease states installed by the DHCP6 server function allowed on this interface.

Values 0 — 8000

prefix-delegation

Syntax [**no**] **prefix-delegation**

Context config>service>ies>if>ipv6>dhcp6-server

Description This command configures prefix delegation options for delegating a long-lived prefix from a delegating router to a requesting router, where the delegating router does not require knowledge about the topology of the links in the network to which the prefixes will be assigned.

The **no** form of the command disables prefix-delegation.

prefix

Syntax [**no**] **prefix** *ipv6-address/prefix-length*

Context config>service>ies>if>ipv6>dhcp6-server>pfx-delegate

Description This command specifies the IPv6 prefix that will be delegated by this system.

Parameters *ipv6-address/prefix-length* — Specify the IPv6 address on the interface.

Values

ipv6-address/prefix: ipv6-address	x:x:x:x:x:x:x:x (eight 16-bit pieces) x:x:x:x:x:x:d.d.d.d x [0 — FFFF]H d [0 — 255]D
prefix-length	1 — 128

Interface Commands

local-proxy-arp

Syntax [**no**] **local-proxy-arp**

Context config>service>vprn>interface
config>service>vprn>sub-if>grp-if

Description This command enables local proxy ARP. When local proxy ARP is enabled on an IP interface, the system responds to all ARP requests for IP addresses belonging to the subnet with its own MAC address, and thus will become the forwarding point for all traffic between hosts in that subnet. When local-proxy-arp is enabled, ICMP redirects on the ports associated with the service are automatically blocked.

Default no local-proxy-arp

mac

Syntax [**no**] **mac** *ieee-mac-address*

Context config>service>vprn>interface
config>service>vprn>if>vrrp
config>service>vprn>sub-if>grp-if

Description This command assigns a specific MAC address to a VPRN IP interface.

The **no** form of this command returns the MAC address of the IP interface to the default value.

Default The physical MAC address associated with the Ethernet interface that the SAP is configured on.

Parameters *ieee-mac-address* — 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.

proxy-arp-policy

Syntax [**no**] **proxy-arp** *policy-name* [*policy-name*...(up to 5 max)]

Context config>service>vprn>interface
config>service>vprn>sub-if>grp-if

Description This command enables a proxy ARP policy for the interface.

The no form of this command disables the proxy ARP capability.

Default no proxy-arp

Parameters *policy-name* — The export route policy name. Allowed values are any string up to 32 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.

The specified name(s) must already be defined.

redundant-interface

Syntax **redundant-interface** *red-ip-int-name*
no redundant-interface

Context config>service>vprn
config>service>vprn>sub-if>grp-if

Description This command configures a redundant interface used for dual homing.

Parameters *red-ip-int-name* — Specifies the redundant IP interface name.

remote-proxy-arp

Syntax [**no**] **remote-proxy-arp**

Context config>service>vprn>interface
config>service>vprn>sub-if>grp-if

Description This command enables remote proxy ARP on the interface.

Remote proxy ARP is similar to proxy ARP. It allows the router to answer an ARP request on an interface for a subnet that is not provisioned on that interface. This allows the router to forward to the other subnet on behalf of the requester. To distinguish remote proxy ARP from local proxy ARP, local proxy ARP performs a similar function but only when the requested IP is on the receiving interface.

Default no remote-proxy-arp

Subscriber Interface Commands

subscriber-interface

Syntax [**no**] **subscriber-interface** *ip-int-name*

Context config>service>ies
config>service>vprn

Description This command allows the operator to create special subscriber-based interfaces. It is used to contain multiple group interfaces. Multiple subnets associated with the subscriber interface can be applied to any of the contained group interfaces in any combination. The subscriber interface allows subnet sharing between group interfaces.

Use the **no** form of the command to remove the subscriber interface.

Parameters *ip-int-name* — Specifies the name of the IP interface. Interface names can be from 1 to 32 alphanumeric characters. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

group-interface

Syntax [**no**] **group-interface** *ip-int-name*

Context config>service>ies>sub-if

Description This command enables the context to configure a group interface. A group interface is an interface that may contain one or more SAPs. This interface is used in triple-play services where multiple SAPs are part of the same subnet.

Default none

Parameters *ip-int-name* — Configures the interface group name. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

authentication-policy

Syntax **authentication-policy** *name*
no authentication-policy

Context config>service>ies>sub-if>grp-if

Description This command assigns a RADIUS authentication policy to the interface.

The **no** form of this command removes the policy name from the group interface configuration.

Default no authentication-policy

Parameters *name* — Specifies the authentication policy name. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

Local User Database Commands

local-user-db

Syntax **local-user-db** *local-user-db-name* [**create**]
no local-user-db *local-user-db-name*

Context config>subscr-mgmt

Description This command enables the context to configure a local user database.

Default not enabled

Parameters *local-user-db-name* — Specifies the name of a local user database.

snooping

Syntax [**no**] **snooping**

Context config>service>ies>sub-if>grp-if>ipv6>dhcp6
config>service>vprn>sub-if>grp-if>ipv6>dhcp6

Description This command enables the group-interface to snoop DHCPv6 relay messages exchange between the subscriber host and the DHCPv6 server. A successful DHCPv6 address assignment will trigger ESM DHCPv6 host creation and a release of the lease will trigger host deletion. This feature is for ESMv6 applications where a Layer 3 aggreation network is upstream from the BNG.

user-db

Syntax **user-db** *local-user-db-name*
no user-db

Context config>service>ies>sub-if>grp-if>dhcp
config>service>ies>sub-if>grp-if>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6

Description This command assigns a local user database.

Default not enabled

Parameters *local-user-db-name* — Specifies the name of a local user database.

user-ident

Syntax **user-ident** *user-ident*

no user-ident

Context config>service>ies>sub-if>grp-if>ipv6>dhcp6>
config>service>vprn> sub-if>grp-if>ipv6>dhcp6>

Description This feature is only applicable when DHCPv6-snooping is enabled. The Ethernet header MAC address on DHCPv6 is used as the default key host identification. This command allows addition the keys for identifying the DHCPv6 host. The interface-id can be included in addition to the MAC key to further differentiate each DHCPv6 host.

Default user-ident mac

Parameters *user-ident* — Specifies the DHCP6 user-identification for this interface.

Values **mac** — Specifies to use only the Ethernet MAC of the DHCPv6 message to identify the host.
mac-interface-id — Specifies to additionally use the interface-id to identify the DHCPv6 host.

ipoe

Syntax **ipoe**

Context config>subscr-mgmt>loc-user-db

Description This command configures IPoE host parameters.

ppp

Syntax **ppp**

Context config>subscr-mgmt>loc-user-db

Description This command configures PPP host parameters.

mask

Syntax **mask type** *dhcp-match-type* {[**prefix-string** *prefix-string* | **prefix-length** *prefix-length*] [**suffix-string** *suffix-string* | **suffix-length** *suffix-length*]}
no mask type *dhcp-match-type*

Context config>subscr-mgmt>loc-user-db>dhcp
config>subscr-mgmt>loc-user-db>ppp
config>subscr-mgmt>loc-user-db>ipoe

Description This command configures the mask.

Parameters *dhcp-match-type* — Specifies up to four matching types to identify a host.

Values DHCP: circuit-id, option60, remote-id, sap-id, string, system-id
PPP: circuit-id, remote-id, service-name, username

Values prefix-string *prefix-string*

Specifies a substring that is stripped of the start of the incoming circuit ID before it is matched against the value configured in the DHCP or PPPOE circuit ID.

This string can only contain printable ASCII characters. The "*" character is a wildcard that matches any substring. If a "\" character is masked, use the escape key so it becomes "\\".

Values 127 characters maximum , *' is wildcard.

prefix-length *prefix-length* — Specifies the number of characters to remove from the start of the incoming circuitId before it is matched against the value configured in the DHCP circuit ID.

Values 1— 127

suffix-string *suffix-string* — Specifies a substring that is stripped of the end of the incoming circuit ID before it is matched against the value configured in DHCP circuit ID.

This string can only contain printable ASCII characters. The "*" character is a wildcard that matches any substring. If a "\" character is masked, use the escape key so it becomes "\\".

Values 127 characters maximum

suffix-length *suffix-length* — Specifies the number of characters to remove from the end of the incoming circuit ID before it is matched against the value configured in the DHCP circuit ID.

Values 1— 127

host

Syntax **host** *host-name* [**create**]
no host *host-name*

Context config>subscr-mgmt>loc-user-db>dhcp
config>subscr-mgmt>loc-user-db>ppp

Description This command defines a DHCP or PPP subscriber.

Parameters *host-name* —

create — Keyword used to create the host name. The **create** keyword requirement can be enabled/disabled in the **environment>create** context.

access-loop-encapsulation

Syntax [**no**] **access-loop-encapsulation**

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command enables access loop information.

encap-offset

Syntax **encap-offset** [**type** *type*]

no encap-offset

Context config>subscr-mgmt>loc-user-db>ppp>host>ale

Description This command configures the egress encapsulation offset.

Parameters **type** *type* — Selects the encap type.

Values pppoa-llc, pppoa-null, pppoeoa-llc, pppoeoa-llc-fcs, pppoeoa-llc-tagged, pppoeoa-llc-tagged-fcs, pppoeoa-null, pppoeoa-null-fcs, pppoeoa-null-tagged, pppoeoa-null-tagged-fcs, ipoa-llc, ipoa-null, ipoeoa-llc, ipoeoa-llc-fcs, ipoeoa-llc-tagged, ipoeoa-llc-tagged-fcs, ipoeoa-null, ipoeoa-null-fcs, ipoeoa-null-tagged, ipoeoa-null-tagged-fcs, pppoe, pppoe-tagged, ipoe, ipoe-tagged

rate-down

Syntax **rate-down** *rate*
no rate-down

Context config>subscr-mgmt>loc-user-db>ppp>host>ale

Description This command configures the last mile link downstram rate in the access loop.

Parameters *rate* — Specifies the the last mile link downstram rate needed for proper (shaping) rate calculations and interleaving delay in the access loop.

Values 1 — 100000 kbps

access-loop-information

Syntax **access-loop-information**

Context config>subscr-mgmt>loc-user-db>ppp>host>ali

Description This command enables the context to configure access loop information in the local user database

circuit-id

Syntax **circuit-id sap-id**
circuit-id string *ASCII string*
no circuit-id

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command specifies a circuit-id for PPPoE hosts. A circuit-id received in PPPoE tags has precedence over the ludb specified circuit-id.

Default no circuit-id

Parameters **sap-id —** Specifies to use the SAP ID of the PPPoE session as the circuit ID.

string *ASCII string*

Specifies the circuit-id as a string, up to 63 characters. in length.

remote-id

Syntax **remote-id string mac**
remote-id string *ASCII string*
no remote-id

Context config>subscr-mgmt>loc-user-db>ppp>host>ali

Description This command specifies a remote-id for PPPoE hosts. A remote-id received in PPPoE tags has precedence over the ludb specified remote-id.

Default no remote-id

Parameters string *ASCII string* — specifies the circuit-id as a string, up to 63 characters. in length.

mac — specifies MAC address of the PPPoE session as the remote ID.

acct-policy

Syntax **acct-policy** *acct-policy-name* [**duplicate** *acct-policy-name*]
no acct-policy

Context config>subscr-mgmt>loc-user-db>ppp>hostconfig>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>dhcp>host

Description This command specifies the accounting policy used for sending an Accounting Stop message to report RADIUS authentication failures of PPPoE sessions. A duplicate policy can be specified if a copy of the Accounting Stop message must be sent to another destination.

Reporting RADIUS authentication failures with an Accounting Stop message must be enabled in the RADIUS authentication policy (“send-acct-stop-on-fail”)

A duplicate RADIUS accounting policy can be specified if the accounting stop resulting from a RADIUS authentication failure must also be sent to a second RADIUS destination.

Default no acct-policy

Parameters *acct-policy-name* — Specifies the name of a RADIUS accounting policy up to 32 characters in length.

address

Syntax **address gi-address** [**scope** *scope*]
address *ip-address*[*/prefix-length*]
address pool *pool-name* [**secondary-pool** *sec-pool-name*] [**delimiter** *delimiter*]
address use-pool-from-client [**delimiter** *delimiter*]
no address

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures how the IP address is defined for this host.

When the user-db is used from a local-dhcp-server, then this command defines how to define the IP address the server will "offer" to the DHCP-client.

When the user-db is used for PPPoE authentication, the **gi-address** parameter cannot be used. A fixed IP address will then cause PPPoE to use this IP address. If no IP address is specified, the PPPoE will look for IP address by other means (DHCP). If a pool name is given, this pool will be sent in the DHCP request so that it can be used in by the DHCP server to determine which address to give to the host.

The **no** form of the command causes no IP address to be assigned to this host. In a user-db referred to from a local-dhcp-server, creating a host without address information will cause the matching client never to get an IP address.

Default no address

Parameters **gi-address —** When specified, the gi-address of the DHCP message is taken to look for a subnet in the local DHCP server. The first available free address of the subnet is taken and "offered" to the host. When **local-user-db** is used for PPPoE authentication, this has the same result as **no address**.

ip-address — Specifies the fixed IP address to use for this host.

pool-name/sec-pool-name — Specifies the primary (and secondary) pool (in the local DHCP server) to use to look for an available address. The first available IP address from any subnet in the pool will be used. When local-user-dbis used for PPPoE authentication, this causes the specified pool name tobe sent to the DHCP server in a vendor-specific suboption under Option 82

use-pool-from-client — Use the pool-name in the Option 82 vendor-specific sub-option.

delimiter *delimiter* **—** A single ascii character specifies the delimiter of separating primary and secondary pool names in option82 VSO.

auth-domain-name

Syntax **auth-domain-name** *domain-name*
no auth-domain-name

Context config>subscr-mgmt>loc-user-db>ipoe>host

config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the authentication policy of this host.

auth-policy

Syntax **auth-policy** *policy-name*
no auth-policy

Context config>subscr-mgmt>loc-user-db>dhcp>host

Description This command configures the authentication policy of this host and PPPoE hosts. This authentication policy is only used if no authentication policy is defined at the interface level. For DHCP hosts, the host entry should not contain any other information needed for setup of the host (IP address, ESM strings, etc.). For PPPoE hosts, the authentication policy configured here must have its pppoe-authentication-method set to **pap-chap**, otherwise the request will be dropped.

Parameters *policy-name* — Specifies the authentication policy name.

force-ipv6cp

Syntax [**no**] **force-ipv6cp**

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command specifies if the IPv6 control protocol should be negotiated after PPP reaches the Network-Layer Protocol phase.

diameter-application-policy

Syntax **diameter-application-policy** *policy-name*
no diameter-application-policy

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host
config>service>ies>subscr-if>group-if
config>service>vprn>subscr-if>group-if

Description This command configures the Diameter application policy.

Parameters *policy-name* — Specifies the Diameter application policy name.

diameter-auth-policy

Syntax **diameter-auth-policy** *name*
no diameter-auth-policy

Context config>subscr-mgmt>loc-user-db>dhcp>host

config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host
config>service>ies>subscr-if>group-if
config>service>vprn>subscr-if>group-if

Description This command is used to configure the Diameter NASREQ application policy to use for authentication.

Parameters *name* — Specifies the name of the Diameter NASREQ application policy to use for authentication.

auth-domain-name

Syntax **auth-domain-name** *domain-name*
no auth-domain-name

Context config>subscr-mgmt>loc-user-db>dhcp>host

Description This command sets the domain name which can be appended to user-name in RADIUS-authentication-request message for the given host.

Parameters *domain-name* — Specifies the domain name to be appended to user-name in RADIUS-authentication-request message for the given host.

host-identification

Syntax **host-identification**

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command enables the context to configure host identification parameters.

server

Syntax **server** *ip-address*
no server

Context config>subscr-mgmt>loc-user-db>ipoe>host

Description This command configures the IP address of the DHCP server to relay to.

The **no** form of the command removes the DHCP server IP address from the configuration.

The configured DHCP server IP address must reference one of the addresses configured under the DHCP CLI context of an IES/VPRN subscriber or group interface.

Default no server

Parameters *ip-address* — Specifies the IP address of the DHCP server.

circuit-id

Syntax **circuit-id string** *ascii-string*
circuit-id hex *hex-string*
no circuit-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident
config>subscr-mgmt>loc-user-db>ppp>host>host-ident

Description This command specifies the circuit-id to match.

Parameters *ascii-string* — specifies the circuit ID from the Option 82.

hex-string — Specifies the circuit ID in hexadecimal format from the Option 82.

Values 0x0..0xFFFFFFFF (maximum 254 hex nibbles)

derived-id

Syntax **derived-id** *derived-id-string*
no derived-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident

Description This command configures an ASCII string that uniquely identifies a host, and is derived by a Python script from packet content available during a DHCP transaction.

Parameters *derived-id-string* — Specifies the host ID to be derived by a python script from DHCP packets during a DHCP transaction up to 255 characters in length.

encap-tag-range

Syntax **encap-tag-range start-tag** *start-tag* **end-tag** *end-tag*
no encap-tag-range

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident
config>subscr-mgmt>loc-user-db>ppp>host>host-ident

Description This command specifies a range of encapsulation tag as the host identifications. The encapsulation tag is dot1q or qinq on Ethernet port; VPI/VCI on ATM port.

For dot1q, the start/end-tag is single number, range from 0-4094; for QinQ, the start/end-tag format is x.y, x or y could be "*", which means ignore inner or outer tag;

For ATM the start/end-tag format is vpi/vci, vpi or vci could be "*", which means ignore VPI or VCI.

Note: This command will only be used when "encap-tag-range" is configured as one of the match-list

The **no** form of the command removes the values from the configuration.

Default none

Parameters **start-tag** *start-tag* — Specifies the value of the start label in the range of SAP's allowed on this host.

Values

start-tag	dot1q	qtag1
	qinq(	qtag1.qtag2 | qtag1.* | *.qtag2)

atm	(vpi/vci | vpi/* | */vci)	
qtag1	[0..4094]	
qtag2	[0..4094]	
vpi	[0..4095] (NNI)	
	[0..255] (UNI)	
vci	[1..65535]	

end-tag *end-tag* **—** Specifies the value of the end label in the range of SAP's allowed on this host.

Values *end-tag*

dot1q	qtag1
qinq(	qtag1.qtag2 | qtag1.* | *.qtag2)
atm	(vpi/vci | vpi/* | */vci)
qtag1	[0..4094]
qtag2	[0..4094]
vpi	[0..4095] (NNI)
	[0..255] (UNI)
vci	[1..65535]

mac

Syntax **mac** *ieee-address*
no mac

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident
config>subscr-mgmt>loc-user-db>ppp>host>host-ident

Description This command specifies the MAC address to match.

Parameters *ieee-address* — Specifies the 48-bit MAC address 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.

options6

Syntax **options6**

Context config>subscr-mgmt>loc-user-db>ppp>host
config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host>options

Description This command enables the context to configure IPv6 DNS server information in the local user database

option60

Syntax **option60** *hex-string*
no option60

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident

Description This command specifies the Vendor-Identifying Vendor Option to match. Option 60 is encoded as Type-Length-Value (TLV). The *hex-string* portion of Option 60 in the received DHCP request is used

for matching. Only the first 32 bytes can be defined here. If Option 60 from the message is longer, those bytes are ignored.

Default no option60

Parameters *hex-string* — Specifies the hex value of this option.

Values 0x0..0xFFFFFFFF...(maximum 254 hex nibbles)

remote-id

Syntax **remote-id** *hex-string*
remote-id *ascii-string*
no remote-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident
config>subscr-mgmt>loc-user-db>ppp>host>host-ident

Description This command specifies the remote id of this host.

The **no** form of this command returns the system to the default.

Default no remote-id

Parameters *remote-id* — Specifies the remote-id.

service-name

Syntax **service-name** *service-name*
no service-name

Context config>subscr-mgmt>loc-user-db>ppp>host>host-ident

Description This command specifies the service-name tag in PADI and/or PADR packets to match for PPPoE hosts.

Parameters *service-name* — Specifies a PPPoE service name, up to 255 characters maximum.

sap-id

Syntax **sap-id** *sap-id*
no sap-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident

Description This command specifies the SAP ID from the Alcatel Vendor Specific Sub-option in Option 82 to match.

Parameters *sap-id* — Specifies a SAP ID, up to 255 characters maximum.

service-id

Syntax **service-id** *service-id*
no service-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident

Description This command specifies an existing service ID from the Alcatel Vendor Specific Sub-Option in Option 82 to match.

Parameters *service-id* — Specifies an existing service ID.

Values 1 — 2147483647

string

Syntax **string** *string*
no string

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident

Description This command specifies the string from the Alcatel Vendor Specific Sub-Option in Option 82 to match.

Parameters *string* — Specifies the string, up to 255 characters maximum.

system-id

Syntax **system-id** *system-id*
no system-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>host-ident

Description This command specifies the system ID from the Alcatel Vendor Specific Sub-Option in Option 82 to match.

Parameters *system-id* — Specifies the system ID, up to 255 characters maximum.

username

Syntax **username** *user-name*
username *user-name* [**no-domain**]
username *user-name* **domain-only**
no username

Context config>subscr-mgmt>loc-user-db>ppp>host>host-ident

Description This command specifies how the username is specified.

Parameters *username* — Specifies the user name of this host.

no-domain — No username is specified.

domain-only — Only the domain part of the username is specified, for example, alcatel-lucent.com.

identification-strings

Syntax **identification-strings** *option-number* [**create**]
no identification-strings

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command specifies identification strings for the subscriber. This is useful when the server is centralized with Enhanced Subscriber Management (ESM) in a lower level in the network. These strings will be parsed by a downstream Python script or they can be used literally if the "strings-from-option" option in the **config>subscriber-mgmt>sub-ident-policy** context is set to this option number. In this case, the option number may be set to any allowed number (between 224 and 254 is suggested, as these are not dedicated to specific purposes). If the option number is not given, a default value of 254 is used. Note, for PPPoE only, if the local user database is attached to the PPPoE node under the group interface and not to a local DHCP server, the strings will be used internally so the option number is not used.

Default 254

Parameters *option-number* — Specifies identification strings for the subscriber

Values 1 — 254

ancp-string

Syntax **ancp-string** *ancp-string*
no ancp-string

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the ANCP string which is encoded in the identification strings.

Parameters *ancp-string* — Specifies the the ANCP string, up to 63 characters, maximum.

app-profile-string

Syntax **app-profile-string** *app-profile-string*
no app-profile-string

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the application profile string which is encoded in the identification strings.

Parameters *app-profile-string* — Specifies the the application profile string, up to 16 characters, maximum.

category-map

Syntax **category-map** *category-map-name*
no category-map *category-map-name*

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the category map name.

Default none

Parameters *category-map-name* — Specifies an existing category map name up to 32 characters in length.

inter-dest-id

Syntax **inter-dest-id** *intermediate-destination-id*
no inter-dest-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the intermediate destination identifier which is encoded in the identification strings.

Parameters *intermediate-destination-id* — Specifies the intermediate destination identifier, up to 32 characters, maximum.

sla-profile-string

Syntax **sla-profile-string** *sla-profile-string*
no sla-profile-string

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the SLA profile string which is encoded in the identification strings.

Parameters *sla-profile-string* — Specifies the SLA profile string, up to 16 characters, maximum.

sub-profile-string

Syntax **sub-profile-string** *sub-profile-string*
no sub-profile-string

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the subscriber profile string which is encoded in the identification strings.

Parameters *sub-profile-string* — Specifies the subscriber profile string, up to 16 characters, maximum.

subscriber-id

Syntax **subscriber-id** *sub-ident-string*
no subscriber-id

Context config>subscr-mgmt>loc-user-db>dhcp>host>ident-strings
config>subscr-mgmt>loc-user-db>ppp>host>ident-strings

Description This command specifies the subscriber ID which is encoded in the identification strings.

Parameters *sub-ident-string* — Specifies the subscriber ID string, up to 32 characters, maximum.

ignore-df-bit

Syntaxt [**no**] **ignore-df-bit**

Context config>subscr-mgmt>loc-user-db>ppp>host

Description When the ignore-df-bit command is enabled for a subscriber host, then the do-not-fragment (DF) bit in the IPv4 header for frames egressing the subscriber interface is ignored: the frames are fragmented according the applicable egress MTU; the DF bit is reset for frames that are fragmented.

This command applies to PPPoE PTA and L2TP LNS frames only. Not applicable for L2TP LAC frames.

Default no ignore-df-bit

interface

Syntax **interface** *ip-int-name* **service-id** *service-id*
no interface

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the interface where PPP sessions are terminated.

The no form of the command reverts to the default.

Default none

Parameters *ip-int-name* — Specifies the name of the group interface where the PPP sessions are established

service-id *service-id* **—** Specifies the service ID of the service where the PPP sessions are established.

ipv6-address

Syntax **ipv6-address** *ipv6-address*
no ipv6-address

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures static DHCPv6 IA-NA address for the host. This address is delegated to the client as /128 via DHCPv6 proxy function within the 7x50. This IP address must not be part of any DHCP pool within internal DHCP server.

The **no** form of the command removes the IPv6 address from the host configuration.

Parameters *ipv6-address* — Specifies the IPv6 address.

Values

ipv6-address:	ipv6-prefix x:x:x:x:x:x:x:x	(eight 16-bit pieces)
	x:x:x:x:x:x:d.d.d.d	
	x [0..FFFF]H	
	d [0..255]D	

ipv6-delegated-prefix

Syntax **ipv6-delegated-prefix** *ipv6-prefix/prefix-length*
no ipv6-delegated-prefix

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures static DHCPv6 IA-PD prefix for the host. This prefix can be further delegated by the host itself to its clients. The prefix length is restricted to 48 to 64 bits. This prefix must not be part of any DHCP pool within internal DHCP server.

Default no ipv6-delegated-prefix

Parameters *ipv6-address* — Specifies the IPv6 address.

Values

ipv6-address:	ipv6-prefix x:x:x:x:x:x:x:x	(eight 16-bit pieces)
	x:x:x:x:x:x:d.d.d.d	
	x [0..FFFF]H	
	d [0..255]D	
prefix-length	[48..64]	

ipv6-delegated-prefix-pool

Syntax **ipv6-delegated-prefix-pool** *pool-name*
no ipv6-delegated-prefix-pool

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the pool name that will be used in DHCPv6 server for DHCPv6 IA-PD prefix selection.

The **no** form of the command removes the pool name from the configuration.

Parameters *pool-name* — Specifies the pool name ot be assigned to the delegated prefix pool.

ipv6-slaac-prefix

Syntax **ipv6-slaac-prefix** *ipv6-prefix/prefix-length*
no ipv6-slaac-prefix

Context config>subscr-mgmt>loc-user-db>dhcp>host
config>subscr-mgmt>loc-user-db>ppp>host
config>subscr-mgmt>loc-user-db>ipoe>host

Description This command configures static IPv6 SLAAC prefix (PIO) for the host. The host will assign an IPv6 address to itself based on this prefix. The prefix length is 64 bits.

The **no** form of the command removes the static IPv6 SLAAC prefix (PIO) for the host from the configuration.

Default no ipv6-slaac-prefix

Parameters *ipv6-prefix/prefix-length* — Specifies the IPv6 address and prefix length.

Values

<ipv6-prefix/prefi*> : ipv6-prefix	x:x:x:x:x:x:x:x (eight 16-bit pieces) x:x:x:x:x:d.d.d.d x [0..FFFF]H d [0..255]D
prefix-length	64

ipv6-slaac-prefix-pool

Syntax **ipv6-slaac-prefix-pool** *pool*
no ipv6-slaac-prefix-pool

Context config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the IPv6 slaac prefix pool of this host.

ipv6-delegated-prefix-length

Syntax **ipv6-delegated-prefix-length** *bits*
no ipv6-delegated-prefix-length

Context configure>subscr-mgmt>local-user-db>dhcp>host
configure>subscr-mgmt>local-user-db>ppp>host

Description This command allows configuration of delegated prefix length via local user database.

Default no ipv6-delegated-prefix-length

Parameters *bits* — Specifies the delegated prefix length in bits.

Values 48..64

ipv6-prefix

Syntax **ipv6-prefix** *ipv6-prefix/prefix-length*
no ipv6-prefix

Context config>subscr-mgmt>loc-user-db>dhcp>host

Description This command configures the IPv6 prefix and length of this host.

The **no** form of the command removes the IPv6 prefix and length of this host from the configuration.

Parameters *ipv6-prefix/prefix-length* — Specifies the IPv6 prefix of this host.

Values

ipv6-prefix/prefix:	ipv6-prefix	x:x:x:x:x:x:x:x	(eight 16-bit pieces)
		x:x:x:x:x:x:d.d.d.d	
		x [0..FFFF]H	
		d [0..255]D	
	prefix-length	48..64	

ipv6-wan-address-pool

Syntax **ipv6-wan-address-pool** *pool-name*
no ipv6-wan-address-pool

Context config>subscr-mgmt>loc-user-db>dhcp>host

Description This command configures the pool name that will be used in DHCPv6 server for DHCPv6 IA-PA address selection.

The **no** form of the command removes the pool name from the configuration.

Default no ipv6-wan-address-pool

Parameters *pool-name* — Specifies the WAN address pool up to 32 characters in length.

link-address

Syntax **link-address** *ipv6-address*
no link-address

Context config>subscr-mgmt>loc-user-db>ipoe>host
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server

Description This command allows link-address selection based on the host entry in LUDB.

The link-address is a field in DHCP6 Relay-Forward message that is used in DHCP6 server to select the IPv6 address (IA-NA) or IPv6 prefix (IA-PD) from a pool with configured prefix range covering the link-address. The selection scope is the pool or a prefix range within the pool.

Parameters *ipv6-address* — Specifies the link-address.

Values

<ipv6-address>	ipv6-address	- x:x:x:x:x:x:x:x	(eight 16-bit pieces)
		x:x:x:x:x:x:d.d.d.d	

x - [0..FFFF]H
d - [0..255]D

match-radius-proxy-cache

Syntax **match-radius-proxy-cache**

Context config>subscr-mgmt>loc-user-db>ipoe>host

Description This command enables the context to configure RADIUS proxy cache match parameters.

delete-hold-time

Syntax **delete-hold-time** *seconds*
no delete-hold-time

Context config>subscr-mgmt>loc-user-db>dhcp>host>match-rdprox-cache

Description This command specifies the time for which the UE state (including ESM host) is maintained after an accounting-stop has been received for the UE from RADIUS client on the AP. This allows UE state to exist when a UE moves to a new AP and re-authenticates within the hold-time, thereby providing seamless mobility. The hold-time is canceled if re-authentication or accounting-start is received for the UE before expiry. If the hold-time expires, the UE state is deleted.

The no form of the command reverts to the default.

Default no delete-hold-time

Parameters *seconds* — Specifies the time for which the UE state will be held after an accounting-stop has been received for the UE.

Values 1 — 600

fail-action

Syntax **fail-action** {**continue**|**drop**}
no fail-action

Context config>subscr-mgmt>loc-user-db>ipoe>host>match-radprox-cache

Description This command specifies the action to take when no match is found in the cache.

The no form of the command reverts to the default.

Default drop

mac-format

Syntax **mac-format** *mac-format*
no mac-format

Context config>subscr-mgmt>loc-user-db>ipoe>host>match-radprox-cache

Description This command specifies how a MAC address is represented.

match

Syntax **match** {**circuit-id**|**mac**|**remote-id**}
match option [1..254] [**option6** [1..65535]>
match option6 [1..65535]
no match

Context config>subscr-mgmt>loc-user-db>ipoe>host>match-radprox-cache

Description This command specifies in what DHCPv6 option to retrieve the value to be used as lookup key in the RADIUS proxy cache.

Default none

server

Syntax **server** [**service** *service-id*] **name** *server-name*]
no server

Context config>subscr-mgmt>loc-user-db>ipoe>host>match-radprox-cache

Description This command specifies the RADIUS proxy server.

ipv6-lease-times

Syntax [**no**] **ipv6-lease-times**

Context config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the lease times for DHCPv6.

preferred-lifetime

Syntax **preferred-lifetime** [**days** *days*] [**hrs** *hrs*] [**min** *min*] [**sec** *sec*]
preferred-lifetime *infinite*
no preferred-lifetime

Context config>service>vprn>sub-if>ipv6>dhcp6>proxy
config>service>ies>sub-if>ipv6>dhcp6>proxy
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy

Description This command configures the preferred-lifetime for DHCPv6 leases (address/prefix) in a proxy-scenario (For example address/prefix obtained from Radius)

Preferred lifetime is the length of time that a valid address/prefix is preferred (for example, the time until deprecation).

Default **hrs 1**

Parameters *infinite* — Specifies that the valid lifetime is infinite.

Values 0xffffffff

[**days** *days*][**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] **—** Specifies the preferred lifetime.

Values		
	days:	[0..3650]
	hours:	[0..23]
	minutes:	[0..59]
	seconds:	[0..59]

rebind-timer

Syntax **rebind-timer** [**days** *days*] [**hrs** *hrs*] [**min** *min*] [**sec** *sec*]
no rebind-timer

Context config>subscr-mgmt>loc-user-db>ipoe>host>ipv6-lease-times
config>subscr-mgmt>loc-user-db>ppp>host>ipv6-lease-times
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server

Description This command configures the lease rebind timer (T2) via LUBD.

The T2 time is the time at which the client contacts any available addressing authority to extend the lifetimes of DHCPv6 leases. T2 is a time duration relative to the current time expressed in units of seconds.

The IP addressing authority controls the time at which the client contacts the addressing authority to extend the lifetimes on assigned addresses/prefixes through the T1 and T2 parameters assigned to an IA. At time T1 for an IA, the client initiates a Renew/Reply message exchange to extend the lifetimes on any addresses in the IA. The client includes an IA option with all addresses/prefixes currently assigned to the IA in its Renew message. Recommended values for T1 and T2 are .5 and .8 times the shortest preferred lifetime of the addresses/prefixes in the IA that the addressing authority is willing to extend, respectively.

The configured rebind timer should always be longer than or equal to the renew timer.

The T1 and T2 are carried in the IPv6 address option that is within the IA.

Default rebind-timer min 48

Parameters **days** *days*][**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] **—** Specifies the preffered lifetime.

Values		
	days:	[0..7]
	hours:	[0..23]
	minutes:	[0..59]
	seconds:	[0..59

renew-timer

Syntax **renew-timer** [**days** *days*] [**hrs** *hrs*] [**min** *min*] [**sec** *sec*]
no renew-timer

Context config>subscr-mgmt>loc-user-db>ipoe>host>ipv6-lease-times
config>subscr-mgmt>loc-user-db>ppp>host>ipv6-lease-times
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server

Description This command configures the lease renew time (T1) via LUDB.

The T1 is the time at which the client contacts the addressing authority to extend the lifetimes of the DHCPv6 leases (addresses/prefixes). T1 is a time duration relative to the current time expressed in units of seconds.

The IP addressing authority controls the time at which the client contacts the addressing authority to extend the lifetimes on assigned addresses through the T1 and T2 parameters assigned to an IA. At time T1 for an IA, the client initiates a Renew/Reply message exchange to extend the lifetimes on any addresses in the IA. The client includes an IA option with all addresses currently assigned to the IA in its Renew message. Recommended values for T1 and T2 are .5 and .8 times the shortest preferred lifetime of the addresses in the IA that the addressing authority is willing to extend, respectively.

The configured renew timer should always be smaller than or equal to the rebind timer.

The T1 and T2 are carried in the IPv6 address option that is within the IA.

Default renew-timer min 30

Parameters **days** *days*][**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] — Specifies the preffered lifetime.

Values

days:	[0..7]
hours:	[0..23]
minutes:	[0..59]
seconds:	[0..59

server-id

Syntax **server-id duid-en hex** *hex-string*
server-id duid-en string *ascii-string*
server-id duid-ll
no server-id

Context config>service>ies>sub-if>grp-if>ipv6>dhcp6
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server

Description This command allows operator to customize the "server-id" attribute of a DHCPv6 message from the DHCPv6 proxy server (such as DHCPv6 advertise and reply). By default, the server-id uses DUID-ll derive from the chassis link-layer address. Operators have the option to use a unique identifier by using DUID-en (vendor based on enterprise number). There is a maximum length associated with the customizable hex-string and ascii-string.

Default server-id duid-ll

Parameters **duid-en hex** *hex-string* — Specifies a DUID system ID in a hex format.

Values 0x0..0xFFFFFFFF...(max 116 hex nibbles

duid-en string *ascii-string* **—** Specifies a DUID system ID in an ASCII format up to 58 characters.

duid-ll — Specifies that the DUID system ID is derived from the system link layer address.

valid-lifetime

Syntax **valid-lifetime** [**days** *days*] [**hrs** *hrs*] [**min** *min*] [**sec** *sec*]
valid-lifetime *infinite*
no valid-lifetime

Context config>subscr-mgmt>loc-user-db>ipoe>host>ipv6-lease-times
config>subscr-mgmt>loc-user-db>ppp>host>ipv6-lease-times
config>service>ies>sub-if>grp-if>ipv6>dhcp6>proxy-server
config>service>vprn>sub-if>grp-if>ipv6>dhcp6>proxy-server

Description This command configured valid-lifetime for DHCPv6 lease (address/prefix).

Valid lifetime is the the length of time an address/prefix remains in the valid state (i.e., the time until invalidation). The valid lifetime must be greater than or equal to the preferred lifetime. When the valid lifetime expires, the address/prefix becomes invalid and must not be used in communications. RFC 2461, sec 6.2.1 recommends default value of 30 days.

Each address/prefix assigned to the client has associated preferred and valid lifetimes specified by the address assignment authority (DHCP Server, Radius, ESM). To request an extension of the lifetimes assigned to an address, the client sends a Renew message to the addressing authority. The addressing authority sends a Reply message to the client with the new lifetimes, allowing the client to continue to use the address/prefix without interruption.

The lifetimes are transmitted from the addressing authority to the client in the IA option on the top level (not the address or prefix level).

Default valid-lifetime days 1

Parameters *infinite* — Specifies that the valid lifetime is infinite.

Values 0xffffffff

days *days*][**hrs** *hours*] [**min** *minutes*] [**sec** *seconds*] — Specifies the preffered lifetime.

Values		
	days:	[0..3650]
	hours:	[0..23]
	minutes:	[0..59]
	seconds:	[0..59

l2tp

Syntax **l2tp**

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures L2TP for the host.

group

Syntax **group** *tunnel-group-name* [**service-id** *service-id*]
no group

Context config>subscr-mgmt>loc-user-db>ppp>host>l2tp

Description This command configures the L2TP tunnel group. The tunnel-group-name is configured in the **config>router>l2tp** context. Refer to the 7750 SR OS Router Configuration Guide.

Parameters *tunnel-group-name* — Specifies an existing tunnel L2TP group up to 63 characters in length.

service-id *service-id* — [Specifies an existing service ID or service name.

Values service-id: 1 — 214748364
svc-name: A string up to 64 characters in length.

authentication-policy

Syntax **authentication-policy** *policy-name*
no authentication-policy

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the authentication policy for the host. A host name with name "default" will be matched when all other hosts do not match.

pado-delay

Syntax **pado-delay** *deci-seconds*
no pado-delay

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the delay timeout before sending a PPPoE Active Discovery Offer. (PADO)

Parameters *deci-seconds* — Specifies the delay timeout before sending a PADO.

Values 1 — 30

mask

Syntax **mask type** *ppp-match-type* {[**prefix-string** *prefix-string* **| prefix-length** *prefix-length*] [**suffix-string** *suffix-string* **| suffix-length** *suffix-length*]}
no mask type *ppp-match-type*

Context config>subscr-mgmt>loc-user-db>ppp
Syntax **mask type** *dhcp-match-type* {[**prefix-string** *prefix-string* **| prefix-length** *prefix-length*] [**suffix-string** *suffix-string* **| suffix-length** *suffix-length*]}
no mask type *dhcp-match-type*

Context config>subscr-mgmt>loc-user-db>dhcp

Description This command configures the mask.

Parameters *ppp-match-type* — Specifies the sub-option inserted by the PPPoE intermediate agent.

Values circuit-id, remote-id, service-name, username

dhcp-match-type — The data type represents the type of matching done to identify a DHCP host.

Values circuit-id , option60 , remote-id , sap-id , string , system-id

prefix-string *prefix-string* **—** Specifies a substring that is stripped of the start of the incoming circuit ID before it is matched against the value configured in the DHCP or PPPOE circuit ID.

This string can only contain printable ASCII characters. The "*" character is a wildcard that matches any substring. If a "\" character is masked, use the escape key so it becomes "\\".

Values 127 characters maximum , *' is wildcard.

prefix-length *prefix-length* **—** Specifies the number of characters to remove from the start of the incoming circuitId before it is matched against the value configured in the circuit ID.

Values 1— 127

suffix-string *suffix-string* **—** Specifies a substring that is stripped of the end of the incoming circuit ID before it is matched against the value configured in circuit ID.

This string can only contain printable ASCII characters. The "*" character is a wildcard that matches any substring. If a "\" character is masked, use the escape key so it becomes "\\".

Values 127 characters maximum

suffix-length *suffix-length* **—** Specifies the number of characters to remove from the end of the incoming circuit ID before it is matched against the value configured in the circuit ID.

Values 1— 127

match-list

Syntax **match-list** *match-type-1* [*match-type-2*...(up to 4 max)]
no match-list

Context config>subscr-mgmt>loc-user-db>dhcp
config>subscr-mgmt>loc-user-db>ppp
config>subscr-mgmt>loc-user-db>ipoe

Description This command specifies the type of matching done to identify a host. There are different match-types for PPPoE or IPoE hosts of which a maximum of 4 can be specified.

Default no match-list

Parameters *match-type-x* — Specifies up to four matching types to identify a host.

Values circuit-id, derived-id, dual-stack-remote-id, encap-tag-range, mac, option60, remote-id, sap-id, service-id, string, system-id

circuit-id — Specifies the DHCP4 option (82,1) or DHCP6 option 18.
mac — Specifies the MAC address of the client. Chaddr in DHCP4 and DUID in IPv6.
option60 — Specifies the DHCP4 option 60.

remote-id — Specifies the DHCP4 option (82,2) or DHCP6 option 37
(Note that the format of remote-id in IPv6 is different that the format of remote-id in IPv6; IPv6 remote-id contains enterprise-id filed that is also honored in matching.)
dual-stack-remote-id — Specifies the enterprise-id in v6 Remote-id will be stripped off before LUDB matching is performed. Processing of IPv4 Remote-id remains unchanged. This will allow a single host entry in LUDB for dual-stack host where host identification is performed based on the Remote-id field.
sap-id — Specifies the SAP ID on which DHCPv4 packet are received. The sap-id is inserted as ALU VSO (82,9,4) by the DHCPv4 relay in 7x50. This is enabled via configuration under the vendor-specific-option CLI hierarchy of the DHCPv4 relay. Since the dhcp-relay configuration is enabled under the group-interface CLI hierarchy, the group-interface and the service-id must be known before the sap-id can be used for LUDB match.
encap-tag-range — Specifies the VLAN tags.
service-id — Specifies the service-id of the ingress SAP for DHCPv4 packets. The service-id is inserted as ALU VSO (82,9,3) by the DHCPv4 relay in 7x50. This is enabled via configuration under the vendor-specific-option CLI hierarchy of the DHCPv4 relay.
string — Specifies the custom string configured under the vendor-specific-option CLI hierarchy of the DHCPv4 relay. The string is inserted as ALU VSO (82,9,5) by the DHCPv4 relay in 7x50. Since the dhcp-relay configuration is enabled under the group-interface CLI hierarchy, the group-interface and the service-id must be known before the string can be used for LUDB match.
system-id — Specifies thesystem-id of the node name configured under the system>name CLI hierarchy. The system-id is inserted as ALU VSO (82,9,1) by the DHCPv4 relay in 7x50. This is enabled via configuration under the vendor-specific-option CLI hierarchy of the DHCPv4 relay. Since the dhcp-relay configuration is enabled under the group-interface CLI hierarchy, the group-interface and the service-id must be known before the system-id can be used for LUDB match.

derived-id — Specifies the value extracted by Pyton script during processing of DHCP Discover/Solicit/Request/Renew/Rebind Messages (client to server bound messages). The value is stored in the DHCP Transaction Cache (DTC) in a variable named alc.dtc.derivedId. This value has a lifespan of a DHCP transaction (a single pair of messages exchanged between the client and the server; for example DHCP Discover and DHCP Offer).

password

Syntax **password** {**ignore** | **chap** *string* |**pap** *string*} [**hash**|**hash2**]
no password

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command specifies a password type or configures password string for **pap** or **chap**. The pap and chap passwords are stored in a hashed format in the config files. The **hash**|**hash2** optional keywords are used for config execution.

This command will only be interpreted if the local user database is connected directly to the PPPoE node under the VPRN/IES group interface. It is not used if the local user database is accessed by a local DHCP server.

Parameters **ignore —** Specifies that the password will be ignored, in which case authentication will always succeed, independent of the password used by the PPPoE client. The client must still perform authentication.

chap *string* **—** Specifies that the password for Challenge-Handshake Authentication Protocol) (CHAP) is used. Only a password received with the CHAP protocol will be accepted.

pap *string* — Specifies that the Password Authentication Protocol (PAP) is used. Only a password received with the PAP protocol will be accepted, even though the CHAP protocol will be proposed to the client first because it is unknown at the time of the offer which password type will be allowed to the client.

hash|**hash2** — Specifies hashing scheme.

pre-auth-policy

Syntax **pre-auth-policy** *policy-name*
no pre-auth-policy

Context config>subscr-mgmt>loc-user-db>ppp>host

Description This command configures the pre-authentication policy of this host.

retail-service-id

Syntax **retail-service-id** *service-id*
no retail-service-id

Context config>subscr-mgmt>loc-user-db>ipoe>host
config>subscr-mgmt>loc-user-db>ppp>host

Description This command indicates the service ID of the retailer VPRN service to which this session belongs. If the value of this object is non-zero, the session belongs to a retailer VPRN.

The **no** form of the command removes the service ID from the configuration.

Default no retail-service-id

Parameters *service-id* — Specifies the the retailer service ID.

Values

service-id:	1 — 2147483647
service-name:	Service name up to 64 characters in length.

server6

Syntax **server6** *ipv6-address*
no server6

Context config>subscr-mgmt>loc-user-db>ipoe>host

Description This command allows DHCP6 server selection based on the host entry in LUDB.

The configured DHCP6 server IP address must reference one of the v6 addressees configured under the **configure>service>vprn>sub-if>grp-if>ipv6>dhcpv6>relay** or **configure>service>ies>sub-if>grp-if>ipv6>dhcpv6>relay** context.

Default no server6

Parameters *ipv6-address* — Specifies the the retailer service ID.

Values <ipv6-address> : ipv6-address - x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x - [0..FFFF]H
d - [0..255]D

MLPPP on LNS Commands

accept-mrru

Syntax [**no**] **accept-mrru**

Context configure>subscr-mgt>ppp-policy>mlppp

Description This command is applicable only to LAC. MRRU option is an indication that the session is of MLPPPoX type. The 7750 LAC will never initiate MRRU option in LCP negotiation process. However, it will respond to MRRU negotiation request by the client.

This command provides an option to specifically enable or disable negotiation of MLPPPoX on a capture SAP level or on a group-interface level.

Default no accept-mrru — The MRRU option in LCP will not be negotiated by LAC.

admin-state

Syntax **admin-state** {**up** | **down**}
no admin-state

Context configure>router>l2tp>group>tunnel>mlppp
configure>service>vprn>l2tp>group>tunnel>mlppp

Description This command is applicable only to LNS.

The tunnel can be explicitly activated (assuming that the parent group is in a no shutdown state) or deactivated by the **up** and **down** keywords.

If case that there is no admin-state configured, the tunnel will inherit its administrative state from its parent (group).

Default no admin-state — Tunnel administrative state is inherited from the group.

up — Tunnel is in administratively up.

down — Tunnel is administratively down.

encap-offset

Syntax **encap-offset** [**type** *encap-type*]
no encap-offset

Context configure>subscriber-mgmt>local-user-db>ppp>host>access-loop

Description This command is applicable within the LAC/LNS context. It provides the last mile link encapsulation information that is needed for proper (shaping) rate calculations and interleaving delay in the last mile.

The encapsulation value will be taken from the following sources in the order of priority:

- Statically provisioned value in local user database (LUDB).
- RADIUS
- PPPoE tags on LAC or ICRQ message (RFC 5515) on LNS

In case that the encapsulation information is not provided by any of the existing means (LUDB, RADIUS, AVP signaling, PPPoE Tags), then by default pppoea-null encapsulation will be in effect.

The following values are supported encapsulation values on LNS in the 7750.

encap-type:

pppoa-llc	LLC (NLPID) PPPoA encapsulation.
pppoa-null	VC-MUX PPPoA encapsulation.
pppoeoa-llc	LLC/SNAP based bridged Ethernet PPPoEoA encapsulation without FCS.
pppoeoa-llc-fcs	LLC/SNAP based bridged Ethernet PPPoEoA encapsulation with FCS.
pppoeoa-null	VC-MUX PPPoEoA encapsulation without FCS.
pppoeoa-null-fcs	VC-MUX PPPoEoA encapsulation with FCS.
pppoe	PPPoE encapsulation.
pppoe-tagged	Tagged PPPoE Encapsulation.

The values are not supported encapsulation values on LNS in the 7750.

pppoeoa-llc-tagged
pppoeoa-llc-tagged-fcs
pppoeoa-null-tagged
pppoeoa-null-tagged-fcs
ipoa-llc
ipoa-null
ipoeeoa-llc
ipoeoa-llc-fcs
ipoeoa-llc-tagged
ipoeoa-llc-tagged-fcs
ipoeoa-null
ipoeoa-null-fcs
ipoeoa-null-tagged
ipoeoa-null-tagged-fcs
ipoe
ipoe-tagged

Default no encap-offset No offset is configured.

endpoint

Syntax **endpoint ip** *ip-address*
endpoint mac *ieee-address*
endpoint system-ip
endpoint system-mac
no endpoint

Context configure>router>l2tp>group>mlppp
configure>router>l2tp>group>tunnel>mlppp
configure>service>vprn>l2tp>group>mlppp
configure>service>vprn>l2tp>group>tunnel>mlppp
configure>subscr-mgt>ppp-policy>mlppp

Description When configured under the l2tp hierarchy, this command is applicable to LNS.

Within the ppp-policy, this command is applicable only to LAC.

The endpoint, according to RFC 1990, represents the system transmitting the packet. It is used during MLPPPoX negotiation phase to distinguish this peer from all others.

In the case that the client rejects the endpoint option during LCP negotiation, the LAC and the LNS must be able to negotiate the LCP session without the endpoint option.

The **no** form of this command disables sending endpoint option in LCP negotiation.

Default no endpoint

Parameters **ip** *ip-address* — Specifies the IPv4 address (class 2)

system-ip — Specifies to use the system IPv4 address (class 2)

mac *ieee-address* — Specifies the MAC address of the interface (class 3).

system-mac — Specifies to use the MAC address of the system (class 3)

interleave

Syntax [**no**] **interleave**

Context configure>router>l2tp>group>mlppp
configure>service>vprn>l2tp>group>mlppp

Description This command is applicable only to LNS. Interleaving is supported only on MLPPPoX bundles that contain a single member link. If more than one link is present in the MLPPPoX bundle, interleaving will be automatically disabled and a TRAP/log (tmnxMlpppBundleIndicatorsChange) will be generated.

The minimum supported rate of the link on which interleaving is performed is 1kbps.

If configured at this level, interleaving will be enabled on all tunnels within the group, unless it is explicitly disable per tunnel.

Default no interleave — Interleaving per group is disabled.

interleave

Syntax **interleave** {**always** | **never**}
no interleave

Context configure>router>l2tp>group>tunnel>mlppp
configure>service>vprn>l2tp>group>tunnel>mlppp

Description This command is applicable only to LNS. Interleaving is supported only on MLPPPoX bundles that contain a single member link. If more than one link is present in the MLPPPoX bundle, interleaving will be automatically disabled and a TRAP/log (tmnxMlpppBundleIndicatorsChange) will be generated.

The minimum supported rate of the link on which interleaving is performed is 1kbps.

Interleaving configured on this level will overwrite the configuration option under the group hierarchy. If the no form of the command is configured for interleaving at this level, the interleaving configuration will inherit the configuration option configured under the l2tp group.

Default no interleave — Interleaving configuration is inherited from the group.

Parameters **always —** Always perform interleaving on single linked MLPPPoX sessions within this tunnel, regardless of the configuration option for interleaving under the group level.

never — Never perform interleaving on single linked MLPPPoX sessions within this tunnel, regardless of the configuration option for interleaving under the group level.

load-balance-method

Syntax **load-balance-method** {**session** | **tunnel**}
no load-balance-method

Context configure>router>l2tp>group
configure>router>l2tp>group>tunnel
configure>service>vprn>l2tp>group
configure>service>vprn>l2tp>group>tunnel

Description This command is applicable only to LNS. By default traffic load balancing between the BB-ISAs is based on sessions. Each session is individually assigned to an BB-ISA during session establishment phase.

By introducing MLPPPoX, all sessions of a bundle must be terminated on the same LNS BB-ISA. This is necessary for two reasons:

- QoS in the carrier IOM has a uniform view of the subscriber
- a single BB-ISA is responsible for MLPPPoX encapsulation/fragmentation for a given bundle.

Therefore, if fragmentation is enabled, load-balancing per tunnel must be configured. In the per tunnel load-balancing mode, all sessions within the same tunnel are terminated on the same LNS BB-ISA.

In the case that we have MLPPPoX sessions with a single member link, both load-balancing methods are valid.

The **no** form of this command set the per session load balancing.

Default session — Per session load balancing is enabled by default.

Parameters **session —** Traffic load balancing between the LNS BB-ISAs is based on individual PPPoE sessions.

tunnel — Traffic load balancing between the LNS BB-ISAs is based on tunnels.

max-fragment-delay

Syntax **max-fragment-delay** *mili-seconds*
no max-fragment-delay

Context configure>router>l2tp>group>mlppp
configure>router>l2tp>group>tunnel>mlppp
configure>service>vprn>l2tp>group>mlppp
configure>service>vprn>l2tp>group>tunnel>mlppp

Description This command is applicable only to LNS. It determines the maximum fragment delay caused by the transmission that will be imposed on a link.

Fragmentation can be used to interleave high priority packet in-between low priority fragments on a MLPPPoX session with a single link or on a MLPPPoX session with multiple links to better load balance traffic over multiple member links.

Default no max-fragment-delay — Fragmentation is disabled.

Parameters *mili-seconds* — Specfies the interval in mili-seconds.

Values 5-1000ms

max-link

Syntax **max-links** *max-links*
no max-links

Context configure>router>l2tp>group>mlppp
configure>router>l2tp>group>tunnel>mlppp
configure>service>vprn>l2tp>group>mlppp
configure>service>vprn>l2tp>group>tunnel>mlppp

Description This command is applicable only to LNS. It determines the maximum number of links that can be put in a bundle.

Any attempt of a session to join a bundle that is above the max-link limit will be rejected.

If interleaving is configured, it is recommended that max-links be set to 1 or a □o□version of the command is used (no max-links). Both have the same effect.

The configuration under the tunnel hierarchy will override the configuration under the group hierarchy.

The **no** form of this command limits the number of links in the bundle to 1.

Default no max-links — A single link per bundle is allowed.

Parameters *max-links* — Specifies the maximum number of links in a bundle.

Values 1 — 8

reassembly-timeout

Syntax **reassembly-timeout** {{**100** | **1000**} **milliseconds**}
no reassembly-timeout

Context configure>router>l2tp>group>mlppp
configure>router>l2tp>group>tunnel>mlppp
configure>service>vprn>l2tp>group>mlppp

configure>service>vprn>l2tp>group>tunnel>mlppp

Description This command is applicable only to LNS. It determines the time during which the LNS keeps fragments of the same packet in the buffer before it discards them. The assumption is that if the fragments do not arrive within certain time, the chance is that they were lost somewhere in the network. In this case the partial packet cannot be reassembled and all fragments that has arrived up to this point and are stored in the buffer will be discarded in order to free up the buffer. Otherwise, a condition will arise in which partial packets will be held in the buffer until the buffer is exhausted.

The configuration under the tunnel hierarchy will override the configuration under the group hierarchy.

The **no** form of this command also sets the time-out to 1000ms.

Default 1000

Parameters {{**100** | **1000**} **milliseconds**} — Specifies the reassembly timeout value.

rate-down

Syntax **rate-down** *rate*
no rate-down

Context configure>subscriber-mgmt>local-user-db>ppp>host>access-loop

Description This command is applicable to LAC and LNS. It provides the last mile link rate in the downstream direction that is needed for proper shaping and calculating the interleaving delay.

The rate information in the last mile will be taken from the following sources in the order of priority:

- Statically provisioned value in local user database (LUDB).
- RADIUS.
- PPPoE tags on LAC or ICRQ message (RFC 5515) /ICCN message (TX Connect Seed) on LNS.

Default no rate-down

Parameters *rate* — Specifies last mile link downstream rate in the access loop

Values 1 — 100000 kbps

short-sequence-numbers

Syntax [**no**] **short-sequence-numbers**

Context configure>subscr-mgt>ppp-policy>mlppp

Description This command enables a peer request to send short sequence numbers. This command is applicable to LAC and LNS. By default, MLPPPoX will negotiate 24bit long sequence numbers. This command allows this to be changed to shorter, 12-bit sequence numbers.

Default short-sequence-numbers

Show Commands

id

Syntax **id** *service-id*

Context show>service

Description This command displays information for a particular service-id.

Parameters *service-id* — The unique service identification number that identifies the service in the service domain.

all — Display detailed information about the service.

base — Display basic service information.

fdb — Display FDB entries.

labels — Display labels being used by this service.

sap — Display SAPs associated to the service.

sdp — Display SDPs associated with the service.

split-horizon-group — Display split horizon group information.

stp — Display STP information.

lease-state

Syntax **lease-state** [**wholesaler** *service-id*] [**sap** *sap-id*|**sdp** *sdp-id:vc-id*| **interface** *interface-name*|**ip-address** *ip-address*[/*mask*]|**chaddr** *ieee-address*|**mac** *ieee-address*|{[**port** *port-id*] [**no-inter-dest-id** | **inter-dest-id** *inter-dest-id*]}] [**session** {**none**|**ipoe**}] [**detail**]

Context show>service>id>dhcp

Description This command displays DHCP lease state information. Note that the **wholesaler** *service-id* parameter is applicable only in the VPRN context.

Parameters **wholesaler** *service-id* **—** The service ID of the wholesaler. When specified in this context, SAP, SDP, interface, IP address and MAC parameters are ignored.

Values service-id: 1 — 214748364
svc-name: A string up to 64 characters in length.

sap *sap-id* — Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

sdp *sdp-id* — The SDP identifier.

Values 1 — 17407

vc-id — The virtual circuit identifier. This value is used to validate the VC ID portion of each mesh SDP binding defined in the service. The default value of this object is equal to the service ID.

Values 1 — 4294967295

interface *interface-name* **—** Specifies the interface name up to 32 characters in length.

ip *ip-address*[/*mask*] **—** Shows information for the specified IP address and mask.

port *port-id* **—** The DHCP lease state local specifies that the DHCP lease state is learned by either a SAP or SDP. When the value is SAP, the value indicates the SAP for which this entry contains information.

chaddr — Specifies the MA address of the DHCP lease state.

interface *interface-name* **—** Shows information for the specified IP interface.

detail — Displays detailed lease state information.

inter-dest-id — Indicates the intermediate destination identifier received from either the DHCP or the RADIUS server or the local user database.

session — Shows DHCPv4 lease states for hosts that are associated with an IPoE session or for hosts that are not associated with an IPoE session.

Values none, ipoe

detail — Displays detailed information.

Sample Output

```
*A:ALA-48>config# show service id 101 dhcp lease-state
===============================================================================
DHCP lease state table, service 101
===============================================================================
IP Address      Mac Address       Sap/Sdp Id          Remaining  Lease    MC
                                                      LifeTime   Origin   Stdby
-------------------------------------------------------------------------------
102.1.1.52      00:00:1f:bd:00:bb lag-1:101           00h02m56s  DHCP-R
103.3.2.62      00:00:1f:bd:00:c6 lag-1:105           00h02m59s  RADIUS
-------------------------------------------------------------------------------
Number of lease states : 2
===============================================================================
*A:ALA-48>config#


*A:ALA-48>config# show service id 105 dhcp lease-state  wholesaler 101
===============================================================================
DHCP lease state table, service 105
===============================================================================
IP Address      Mac Address       Sap/Sdp Id          Remaining  Lease    MC
                                                      LifeTime   Origin   Stdby
-------------------------------------------------------------------------------
Wholesaler 101 Leases
-------------------------------------------------------------------------------
103.3.2.62      00:00:1f:bd:00:c6 lag-1:105           00h00m39s  RADIUS
-------------------------------------------------------------------------------
Number of lease states : 1
===============================================================================
*A:ALA-48>config#
```

lease-state

Syntax **lease-state** [**detail**] [**wholesaler** *service-id*] [**session** {**none**|**ipoe**|**ppp**}]|
lease-state [**detail**] **interface** *interface-name* [**wholesaler** *service-id*] [**session** {**none**|**ipoe**|**ppp**}]
lease-state [**detail**] *ipv6-address ipv6-prefix*[/pre*fix-length*] [**wholesaler** *service-id*] [**session** {**none**|**ipoe**|**ppp**}]
lease-state [**detail**] **mac** *ieee-address* [**wholesaler** *service-id*] [**session** {**none**|**ipoe**|**ppp**}]

Context show>service>id>dhcp6

Description This command displays DHCP6 lease state information. Note that the **wholesaler** *service-id* parameter is applicable only in the VPRN context.

Parameters **wholesaler** *service-id* **—** The service ID of the wholesaler. When specified in this context, SAP, SDP, interface, IP address and MAC parameters are ignored.

Values service-id: 1 — 214748364
svc-name: A string up to 64 characters in length.

sap *sap-id* — Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

sdp *sdp-id* — The SDP identifier.

Values 1 — 17407

vc-id — The virtual circuit identifier. This value is used to validate the VC ID portion of each mesh SDP binding defined in the service. The default value of this object is equal to the service ID.

Values 1 — 4294967295

interface *interface-name* **—** Specifies the interface name up to 32 characters in length.

ipv6 *ipv6-address*[/*mask*] **—** v6Shows information for the specified IPv6 address and mask.

port *port-id* **—** The DHCP6 lease state local specifies that the DHCP lease state is learned by either a SAP or SDP. When the value is SAP, the value indicates the SAP for which this entry contains information.

chaddr — Specifies the MA address of the DHCP6 lease state.

interface *interface-name* **—** Shows information for the specified IP interface.

detail — Displays detailed lease state information.

inter-dest-id — Indicates the intermediate destination identifier received from either the DHCP6 or the RADIUS server or the local user database.

session — Shows DHCPv6 lease states for clients that are associated with an IPoE session or for clients that are associated with a PPP session or for clients that are not associated with an IPoE session.

Values none, ipoe, ppp

detail — Displays detailed information.

dhcp

Syntax **dhcp**

Context show>service>id
show>router

Description This command displays DHCP related information.

dhcp6

Syntax **dhcp6**

Context show>system

Description This command displays system-wide DHCPv6 configuration information.

Sample Output

```
A:PE-1# show system dhcp6
===============================================================================
DHCP6 system
===============================================================================
Global NoAddrsAvail status  : esm-relay server
===============================================================================
```

lease-state

Syntax **lease-state** [**detail**]
lease-state [**detail**] **interface** *interface-name*
lease-state [**detail**] **ipv6-address** *ipv6-prefix*[/*prefix-length*]
lease-state [**detail**] **mac** *ieee-address*

Context show>service>id>dhcp6

Description This command displays DHCP6 lease state related information.

Sample Output

```
*A:Dut-C# show service id  202 dhcp6 lease-state
===============================================================================
DHCP lease state table, service 202
===============================================================================
IP Address      Mac Address       Sap/Sdp Id          Remaining  Lease    MC
                                                      LifeTime   Origin   Stdby
-------------------------------------------------------------------------------
1::/120
                                  1/1/6               30d33h12m  DHCP
-------------------------------------------------------------------------------
Number of lease states : 1
===============================================================================
*A:Dut-C#
```

```
*A:Dut-C# show service id  202 dhcp6 lease-state  detail
===============================================================================
DHCP lease states for service 202
===============================================================================
Service ID           : 202
IP Address           : 1::/120
Mac Address          :
Interface            : ip-11.3.202.3
SAP                  : 1/1/6
Remaining Lifetime   : 30d33h12m
Persistence Key      : N/A

Sub-Ident            : ""
Sub-Profile-String   : ""
SLA-Profile-String   : ""
Lease ANCP-String    : ""
Dhcp6 ClientId (DUID): 0101
Dhcp6 IAID           : 1
Dhcp6 IAID Type      : prefix
Dhcp6 Client Ip      : FE80::200:FF:FE00:202

ServerLeaseStart     : 09/01/2002 04:27:00
ServerLastRenew      : 09/01/2002 04:27:00
ServerLeaseEnd       : 10/01/2002 04:27:00
-------------------------------------------------------------------------------
Number of lease states : 1
===============================================================================
*A:Dut-C#
```

statistics

Syntax **statistics** [**sap** *sap-id*] | [**sdp** [*sdp-id*[:*vc-id*]] | **interface** *ip-int-name*]]

Context show>service>id>dhcp
show>router>dhcp

Description This command displays statistics for DHCP relay and DHCP snooping.

If no IP address or interface name is specified, then all configured interfaces are displayed.

If an IP address or interface name is specified, then only data regarding the specified interface is displayed.

Parameters ***sap-id* —** Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

sdp-id — The SDP ID to be shown.

Values 1— 17407

vc-id — The virtual circuit ID on the ID to be shown.

Values 1 — 4294967295

ip-int-name | *ip-address* — Displays statistics for the specified IP interface.

Output **Show DHCP Statistics Output —** The following table describes the output fields for DHCP statistics.

Label	Description
Received Packets	The number of packets received from the DHCP clients.
Transmitted Packets	The number of packets transmitted to the DHCP clients.
Received Malformed Packets	The number of malformed packets received from the DHCP clients.
Received Untrusted Packets	The number of untrusted packets received from the DHCP clients.
Client Packets Discarded	The number of packets received from the DHCP clients that were discarded.
Client Packets Relayed	The number of packets received from the DHCP clients that were forwarded.
Client Packets Snooped	The number of packets received from the DHCP clients that were snooped.
Server Packets Discarded	The number of packets received from the DHCP server that were discarded.
Server Packets Relayed	The number of packets received from the DHCP server that were forwarded.
Server Packets Snooped	The number of packets received from the DHCP server that were snooped.

Sample Output

```
A:ALA-A# show router 1000 dhcp statistics
===============================================================================
DHCP Global Statistics (Service: 1000)
===============================================================================
Rx Packets                          : 16000
Tx Packets                          : 15041
Rx Malformed Packets                : 0
Rx Untrusted Packets                : 0
Client Packets Discarded            : 423
Client Packets Relayed              : 0
Client Packets Snooped              : 0
Client Packets Proxied (RADIUS)     : 0
Client Packets Proxied (Lease-Split) : 0
Server Packets Discarded            : 0
Server Packets Relayed              : 0
Server Packets Snooped              : 0
DHCP RELEASEs Spoofed               : 0
DHCP FORCERENEWs Spoofed            : 0
===============================================================================
A:ALA-A#
```

summary

Syntax **summary**

Context show>router>dhcp
show>service>id>dhcp

Description Display the status of the DHCP Relay and DHCP Snooping functions on each interface.

OutputOutput **Show DHCP Summary Output —** The following table describes the output fields for DHCP summary.

Label	Description
Interface Name	Name of the router interface.
ARP Populate	Indicates whether ARP populate is enabled.
Used/Provided	Indicates the number of used and provided DHCP leases.
Info Option	Indicates whether Option 82 processing is enabled on the interface.
Admin State	Indicates the administrative state.

Sample Output

```
A:ALA-48>show>router>dhcp# summary
===============================================================================
===============================================================================
Interface Name                   Arp      Used/     Info    Admin
                                 Populate Provided  Option  State
-------------------------------------------------------------------------------
ccaiesif                         No       0/0       Keep    Down
ccanet6                          No       0/0       Keep    Down
iesBundle                        No       0/0       Keep    Up
spokeSDP-test                    No       0/0       Keep    Down
test                             No       0/0       Keep    Up
test1                            No       0/0       Keep    Up
test2                            No       0/0       Keep    Up
testA                            No       0/0       Keep    Up
testB                            No       0/0       Keep    Up
testIES                          No       0/0       Keep    Up
to-web                           No       0/0       Keep    Up
-------------------------------------------------------------------------------
Interfaces: 11
===============================================================================
A:ALA-48>show>router>dhcp#
```

virtual-subnet

Syntax **virtual-subnet subscriber** *sub-ident*
virtual-subnet [**sap** *sap-id*]

Context show>service>id

Description This command displays currently recorded default gateway and submets for all virtual subnets enabled for DHCPv4 hosts in the specified service.

Parameters **subscriber** *sub-ident* — Displays information relating to the specified subscriber ID.

sap *sap-id* — Displays information relating to the specified SAP ID.

Sample Output

```
show service id 500 virtual-subnet
===============================================================================
Virtual subnets in service 500
===============================================================================
Subscriber                  : 00:20:fc:1e:cd:52|1/1/9:200
-------------------------------------------------------------------------------
Default router              : 192.168.100.254
Subnet                      : 192.168.100.0/24
SAP                         : 1/1/9:200
-------------------------------------------------------------------------------
No. of subnets: 1
===============================================================================
```

statistics

Syntax **statistics** [**interface** *ip-int-name*]

Context show>router>dhcp6
show>service>id>dhcp6

Description This command displays statistics for DHCP relay and DHCP snooping.

Sample Output

```
A:ALA-A# show router 1000 dhcp statistics
===============================================================
DHCP Global Statistics (Service: 1000)
===============================================================
Rx Packets                          : 16000
Tx Packets                          : 15041
Rx Malformed Packets                : 0
Rx Untrusted Packets                : 0
Client Packets Discarded            : 423
Client Packets Relayed              : 0
Client Packets Snooped              : 0
Client Packets Proxied (RADIUS)     : 0
Client Packets Proxied (Lease-Split) : 0
Server Packets Discarded            : 0
Server Packets Relayed              : 0
Server Packets Snooped              : 0
DHCP RELEASEs Spoofed               : 0
DHCP FORCERENEWs Spoofed            : 0
===============================================================
A:ALA-A#
```

summary

Syntax **summary**

Context show>router>dhcp6
show>service>id>dhcp6

Description Display the status of the DHCP6 relay and DHCP snooping functions on each interface.

Output **Show DHC6P Summary Output —** The following table describes the output fields for DHCP6 summary.

Label	Description
Interface Name	Name of the router interface.
Nbr. Resol.	Indicates whether or not neighbor resolution is enabled.
Used/Provided	Indicates the number of used and provided DHCP leases.
Admin State	Indicates the administrative state.
Oper State	Indicates the operational state.

Sample Output

```
*A:Dut-C# show router dhcp6 summary
===============================================================================
DHCP6 Summary (Router: Base)
===============================================================================
Interface Name                  Nbr      Used/Max Relay     Admin  Oper Relay
  SapId                         Resol.   Used/Max Server    Admin  Oper Server
-------------------------------------------------------------------------------
ip-1.1.1.10                     No          0/0             Down   Down
  sap:1/1/5                                 0/8000          Down   Down
ip-11.3.202.3                   No          0/0             Down   Down
  sap:1/1/6                                 1/8000          Up     Up
-------------------------------------------------------------------------------
Interfaces: 2
===============================================================================
*A:Dut-C#
```

local-dhcp-server

Syntax **local-dhcp-server** *server-name*

Context show>router>dhcp

Description This command displays local DHCP server information.

Parameters *server-name* — Specifies information about the local DHCP server.

Sample Output

```
*A:ALA-48>show>router>dhcp>local-dhcp-server# declined-addresses pool test
```

```
===============================================================================
Declined addresses for server test Base
===============================================================================
 Pool                                Subnet              IP Address
PPPoe User Name/                    Time                MAC Address       Type
Option 82 Circuit ID
-------------------------------------------------------------------------------
-------------------------------------------------------------------------------
No Matching Entries
===============================================================================
*A:ALA-48>show>router>dhcp>local-dhcp-server#
```

associations

Syntax **associations**

Context show>router>dhcp>local-dhcp-server
show>router>dhcp

Description This command displays the interfaces associated with this DHCP or DHCP6 server.

Sample Output

```
*A:SUB-Dut-A# show router dhcp local-dhcp-server dhcpS1 associations
===============================================================================
DHCP server s1  router 3
===============================================================================
Associations                      Admin
-------------------------------------------------------------------------------
tosim5                            Up
===============================================================================
*A:SUB-Dut-A#
```

declined-addresses

Syntax **declined-addresses** *ip-address*[/*mask*] [**detail**]
declined-addresses pool *pool-name*

Context show>router>dhcp>local-dhcp-server

Description This command display information about declined addresses.

Parameters **pool** *pool-name* **—** Specifies a DHCP pool name on the router.

ip-address — Specifies the IP address of the DNS server. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

detail — Displays detailed information.

Sample Output

```
*A:ALA-48>show>router>dhcp>local-dhcp-server# declined-addresses pool test
===============================================================================
```

```
Declined addresses for server test Base
===============================================================================
 Pool                                Subnet              IP Address
PPPoe User Name/                    Time                MAC Address       Type
Option 82 Circuit ID
-------------------------------------------------------------------------------
No Matching Entries
===============================================================================
*A:ALA-48>show>router>dhcp>local-dhcp-server#
```

free-addresses

Syntax **free-addresses** *ip-address*[/*mask*]
free-addresses summary [**subnet** *ip-address*[/*mask*]
free-addresses pool *pool-name*

Context show>router>dhcp>local-dhcp-server

Description This command displays the free addresses in a subnet.

Parameters **pool** *pool-name* — Specifies a DHCP pool name on the router.

subnet *subnet* — Specifies a subnet of IP addresses that are served from the pool.

summary — Displays summary output of the free addresses.

Sample Output

```
*A:ALA-48>show>router>dhcp>local-dhcp-server# free-addresses pool test subnet
1.0.0.0/24
===============================================================================
Free addresses in subnet 1.0.0.0/24
===============================================================================
IP Address
-------------------------------------------------------------------------------
No. of free addresses: 0
===============================================================================
*A:ALA-48>show>router>dhcp>local-dhcp-server#
```

interface-id-mapping

Syntax **interface-id-mapping**

Context show>router>dhcp6>local-dhcp-server

Description This command displays the DHCP6 interface-id mappings.

Sample Output

```
show router 600 dhcp6 local-dhcp-server "d6" interface-id-mapping
===============================================================================
Interface-ID Mappings for DHCPv6 server d6
===============================================================================
Mapped Prefix      : 2001:AAAA::/64
```

```
Relay Interface ID : 1/1/10
LDRA Interface ID  : (Not Specified)
Active Leases      : 2001:AAAA::1 (stable)
===============================================================================
1 prefix found
===============================================================================
```

leases

Syntax **leases**
leases *ip-address*[/*mask*] **address-from-user-db** [**detail**]
leases *ip-address*[/*mask*] **dhcp-host** *dhcp-host-name* [**detail**]
leases *ip-address*[/*mask*] **ppp-host** *ppp-host-name* [**detail**]
leases *ip-address*[/*mask*] [**detail**]

Context show>router>dhcp>local-dhcp-server

Description This command displays the DHCP leases.

Parameters *ip-address* — Specifies the base IP address of the subnet. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

mask — The subnet mask in dotted decimal notation.

Values 0 — 32

address-from-user-db [**detail**] **—** Displays only leases that have ip-addresses from the local-user-db.

dhcp-host *dhcp-host-name* [**detail**] **—** Shows all leases that match a certain DHCP host from the local-user-db.

ppp-host *ppp-host-name* [**detail**] **—** Displays all leases that match a certain PPPoE host from the local-user-db.

detail — Displays detailed information of all leases that fall into the indicated subnet.

The command with no parameters will show all leases from the local-user-db.

Sample Output

```
*A:ALA-48>show>router>dhcp>local-dhcp-server# leases ip-address 1.0.0.4
===============================================================================
Leases for DHCP server test router Base
===============================================================================
IP Address      Lease State       Mac Address       Remaining Clnt
  PPPoE user name/Opt82 Circuit Id                  LifeTime  Type
-------------------------------------------------------------------------------
No leases found
*A:ALA-48>show>router>dhcp>local-dhcp-server#
```

leases

Syntax **leases** [*ipv6-address/prefix-length*] [*type*] [*state*] [**detail**]

Context show>router>dhcp6>local-dhcp-server

Description This command displays the DHCP6 leases.

Parameters *ipv6-address* — Specifies the base IP address of the subnet. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

mask — The subnet mask in dotted decimal notation.

Values 0 — 32

type — Displays the lease type.

Values pd, wan-host

state — Displays the state of the lease.

Values advertised, remove-pending, held

detail — Displays detailed information of all leases that fall into the indicated subnet.

The command with no parameters will show all leases from the local-user-db.

Sample Output

```
show router 600 dhcp6 local-dhcp-server "d6" leases
===============================================================================
Leases for DHCPv6 server d6
===============================================================================
IP Address/Prefix                          Lease State       Remaining   Fail
  Link-local Address                                         LifeTime    Ctrl
-------------------------------------------------------------------------------
2001:AAAA::1/128
  FE80::220:FCFF:FE1E:CD52                 stable            23h58m52s   local
-------------------------------------------------------------------------------
1 leases found
===============================================================================
```

pool-ext-stats

Syntax **pool-ext-stats** [*pool-name*]

Context show>router>dhcp>server

Description This command displays extended statistics per DHCPv4 pool in local DHCPv4 server.

The following statistics are included in output:

- The number of stable leases in the pool
- The number of provisioned address in the pool
- The number of used address in the pool

- The number of free address in the pool
- The percentage of used address
- The percentage of free address

For each statistic (except for Provisioned Addresses), there is current value and peak value, peak value is the highest value since pool creation or last reset via the **clear router** *rt-id* **dhcp local-dhcp-server** *svr-name* **pool-ext-stats** command.

Parameters *pool-name* — Specify the name of DHCPv4 local server pool.

Sample Output

```
show router 500 dhcp local-dhcp-server "d4" pool-ext-stats "pool-1"
===============================================================================
Extended pool statistics for server "d4"
===============================================================================
                          Current         Peak            TimeStamp
-------------------------------------------------------------------------------
Pool                      pool-1
Local:
  Stable Leases           0               0               01/07/2013 19:07:11
  Provisioned Addresses   101
  Used Addresses          0               0               01/07/2013 19:07:11
  Free Addresses          101             101             01/07/2013 19:07:11
  Used Pct                0               0               01/07/2013 19:07:11
  Free Pct                100             100             01/07/2013 19:07:11
Last Reset Time                                           01/07/2013 19:07:11
-------------------------------------------------------------------------------
Number of entries         1
===============================================================================
```

pool-ext-stats

Syntax **pool-ext-stats** [*pool-name*]

Context show>router>dhcp6>server

Description This command displays extended statistics per DHCPv6 pool in local DHCPv6 server.

The following statistics are included in output:

- The number of stable leases in the pool
- The number of provisioned /64 address block in the pool
- The number of used /64 address block in the pool
- The number of free /64 address block in the pool
- The percentage of used address (with /64 address block)
- The percentage of free address (with /64 address block)

For each statistic (except for Provisioned Addresses), there is current value and peak value, peak value is the highest value since pool creation or last reset via command “clear router <rt-id> dhcp6 local-dhcp-server <svr-name> pool-ext-stats”.

Parameters *pool-name* — Specify the name of DHCPv6 local server pool.

Sample Output

```
show router 500 dhcp6 local-dhcp-server "d6" pool-ext-stats "pool-v6"
===============================================================================
Extended pool statistics for server "d6"
===============================================================================
                          Current         Peak            TimeStamp
-------------------------------------------------------------------------------
Pool                      pool-v6
Local:
  Stable Leases           0               0               01/07/2013 19:54:52
  Provisioned Blks        4
  Used Blks               0               0               01/07/2013 19:54:52
  Free Blks               4               4               01/07/2013 19:54:52
  Used Pct                0               0               01/07/2013 19:54:52
  Free Pct                100             100             01/07/2013 19:54:52
Last Reset Time                                           01/07/2013 19:54:52
-------------------------------------------------------------------------------
Number of entries         1
===============================================================================
```

prefix-ext-stats

Syntax **prefix-ext-stats** *ipv6-address/prefix-length*
prefix-ext-stats pool *pool-name*

Context show>router>dhcp6>server

Description This command displays extended statistics per DHCPv6 prefix in local DHCPv6 server.

The following statistics are included in output:

- The number of stable leases in the prefix
- The number of provisioned /64 address block in the prefix
- The number of used /64 address block in the prefix
- The number of free /64 address block in the prefix
- The percentage of used address (with /64 address block)
- The percentage of free address (with /64 address block)

For each statistic (except for “Provisioned Addresses”), there is current value and peak value, peak value is the highest value since prefix creation or last reset via command “clear router <rt-id> dhcp6 local-dhcp-server <svr-name> prefix-ext-stats”.

When parameter “pool” is used, the statistics of each prefix in the pool will be displayed.

Parameters *ipv6-address/prefix-length* — Specifies the IPv6 prefix

pool-name — The name of DHCPv6 local server pool

Sample Output

```
show router 500 dhcp6 local-dhcp-server "d6" prefix-ext-stats 2001:ABCD::/62
===============================================================================
Extended statistics for prefix 2001:ABCD::/62
===============================================================================
```

```
                          Current         Peak            TimeStamp
-------------------------------------------------------------------------------
Local:
  Failover Oper State     Active
  Stable Leases           0               0               01/07/2013 19:54:52
  Provisioned Blks        4
  Used Blks               0               0               01/07/2013 19:54:52
  Free Blks               4               4               01/07/2013 19:54:52
  Used Pct                0               0               01/07/2013 19:54:52
  Free Pct                100             100             01/07/2013 19:54:52
Last Reset Time                                           01/07/2013 19:54:52
-------------------------------------------------------------------------------
Number of entries         1
===============================================================================
```

pool-threshold-stats

Syntax **pool-threshold-stats** [*pool-name*] **detail** [**format** {**exact**|**scientific**}]
pool-threshold-stats [*pool-name*]

Context show>router>dhcp6>server

Description This commands displays pool level threshold stats of local DHCPv6 server. A minimum-free threshold needs to be configured before system collects threshold stats for the prefix.

The stats for each threshold are calculated based on the configured minimum-free prefix length.

For example, a /59 prefix is provision in the local DHCPv6 server, and the server allocated two PD leases, one /62 and one /63. And there is a /63 minimum threshold configured. So the threshold stats are calculated based on /63 as the base unit(block). So the value of "current used block" would be 3 because there is one /62 lease and one /63 lease, so it equals to total three /63.

Parameters *pool-name* — Specifies the name of the pool in local DHCPv6 server.

detail — Displays detailed output.

format — Specifies the format in the display to be either **exact** or **scientific.**

Sample Output

```
show router 500 dhcp6 local-dhcp-server "d6" pool-threshold-stats "1"
===============================================================================
Server "d6"
===============================================================================
  Operational state         : inService
-------------------------------------------------------------------------------
Pool                        : 1
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
  -----------------------------------------------------------------------------
  Threshold   Used   Peak   Too low   Depleted   Peak timestamp
  -----------------------------------------------------------------------------
  /62         25%    25%    N         N          01/21/2015 21:52:12
  /63         19%    19%    N         N          01/21/2015 21:52:12
```

The command shown above displays an overview of pool level thresholds in the specified pool:

- The **Peak** field indicates the peak value of used
- The **Too low** field indicate if the configured minimum-free threshold is exceed
- The **Depleted** field indicate if there is no available prefix with the length in the provisioned prefix
- The **Peak timestamp** field indicates the time of peak used value

```
show router 500 dhcp6 local-dhcp-server "d6" pool-threshold-stats "1" detail
===============================================================================
Server "d6"
===============================================================================
  Operational state         : inService
-------------------------------------------------------------------------------
Pool                        : 1
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
  -----------------------------------------------------------------------------
  Threshold                 : /62
  -----------------------------------------------------------------------------
  Current Provisioned Blks  : 8.000000x10^0
  Current Used Blks         : 2.000000x10^0
  Current Free Blks         : 6.000000x10^0
  Current Used Percent      : 25%
  Current Used Peak Blks    : 2.000000x10^0
  Current Used Peak Percent : 25%
  Current Used Peak Time    : 01/21/2015 21:52:12
  Current Free Percent      : 75%
  Current Free Too Low      : N
  Current Free Depleted     : N
  Local Provisioned Blks    : 8.000000x10^0
  Local Used Blks           : 2.000000x10^0
  Local Free Blks           : 6.000000x10^0
  Local Used Peak Blks      : 2.000000x10^0
  Local Used Peak Percent   : 25%
  Local Used Peak Time      : 01/21/2015 21:52:12
  Remote Provisioned Blks   : 0.000000x10^0
  Remote Used Blks          : 0.000000x10^0
  Remote Free Blks          : 0.000000x10^0
  Remote Used Peak Blks     : 0.000000x10^0
  Remote Used Peak Percent  : 0%
  Remote Used Peak Time     : 01/21/2015 21:47:39
  Peak Reset Time           : 01/21/2015 21:47:39
  Valid Data                : Y
  -----------------------------------------------------------------------------
  Threshold                 : /63
  -----------------------------------------------------------------------------
  Current Provisioned Blks  : 1.600000x10^1
  Current Used Blks         : 3.000000x10^0
  Current Free Blks         : 1.300000x10^1
  Current Used Percent      : 19%
  Current Used Peak Blks    : 3.000000x10^0
  Current Used Peak Percent : 19%
  Current Used Peak Time    : 01/21/2015 21:52:12
  Current Free Percent      : 81%
  Current Free Too Low      : N
  Current Free Depleted     : N
  Local Provisioned Blks    : 1.600000x10^1
  Local Used Blks           : 3.000000x10^0
  Local Free Blks           : 1.300000x10^1
  Local Used Peak Blks      : 3.000000x10^0
```

```
Local Used Peak Percent   : 19%
Local Used Peak Time      : 01/21/2015 21:52:12
Remote Provisioned Blks   : 0.000000x10^0
Remote Used Blks          : 0.000000x10^0
Remote Free Blks          : 0.000000x10^0
Remote Used Peak Blks     : 0.000000x10^0
Remote Used Peak Percent  : 0%
Remote Used Peak Time     : 01/21/2015 21:47:39
Peak Reset Time           : 01/21/2015 21:47:39
Valid Data                : Y
```

The above command displays detailed statistics of all pool level thresholds in the specified pool:

- **Blks** in the output means the minimum free prefix length.
- **Valid Data** output indicates whether the data you see is valid or not. The data is invalid when a background stats update is scheduled or busy.

prefix-threshold-stats

Syntax **prefix-threshold-stats pool** *pool-name* **detail** [**format** {**exact**|**scientific**}]
prefix-threshold-stats pool *pool-name*
prefix-threshold-stats *ipv6-address*/*prefix-length* **detail** [**format** {**exact**|**scientific**}]
prefix-threshold-stats *ipv6-address*/*prefix-length*

Context show>router>dhcp6>server

Description This commands displays prefix level threshold stats of local DHCPv6 server prefix. A minimum-free threshold needs to be configured before system collects threshold stats for the prefix.

The stats for each threshold are calculated based on the configured minimum-free prefix length.

For example, a /59 prefix is provision in the local DHCPv6 server, and the server allocated two PD leases, one /62 and one /63. And there is a /63 minimum threshold configured. So the threshold stats are calculated based on /63 as the base unit(block). So the value of "current used block" would be 3 because there is one /62 lease and one /63 lease, so it equals to total three /63.

Parameters **pool** *pool-name* **—** Specifies the name of the pool in local DHCPv6 server up to 32 characters in length.

detail — Displays detailed output statistics.

format — Specifies that the number format in the display will be either **exact** or **scientific**

ipv6-address/prefix-length — Specifies the IPv6 prefix with prefix length

Values ipv6-address x:x:x:x:x:x:x:x (eight 16-bit pieces)
x:x:x:x:x:x:d.d.d.d
x [0..FFFF]H
d [0..255]D
prefix-length [1..128]

Sample Output

```
show router 500 dhcp6 local-dhcp-server "d6" leases
===============================================================================
Leases for DHCPv6 server d6
```

```
===============================================================================
IP Address/Prefix                           Lease State       Remaining   Fail
  Link-local Address                                          LifeTime    Ctrl
-------------------------------------------------------------------------------
8888:0:0:ffe0::/62
  fe80::3:ffff:fe00:111                     stable            18h19m2s    local
8888:0:0:ffe4::/63
  fe80::3:ffff:fe00:211                     stable            19h49m37s   local
-------------------------------------------------------------------------------
2 leases found
===============================================================================
show router 500 dhcp6 local-dhcp-server "d6" prefix-threshold-stats pool "1"
===============================================================================
Server "d6"
===============================================================================
  Operational state         : inService
-------------------------------------------------------------------------------
Pool                        : 1
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
-------------------------------------------------------------------------------
Prefix                      : 8888:0:0:ffe0::/59
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
  Draining                  : N
  -----------------------------------------------------------------------------
  Threshold   Used   Peak   Too low   Depleted   Peak timestamp
  -----------------------------------------------------------------------------
  /62         25%    25%    Y         N          01/20/2015 23:51:36
  /63         19%    19%    N         N          01/21/2015 05:00:53
===============================================================================
```

The command shown above displays an overview of prefix level thresholds in the specified pool:

- The **Peak** field indicates the peak value of used.
- The **Too low** field indicate if the configured minimum-free threshold is exceed.
- The **Depleted** field indicate if there is no available prefix with the length in the provisioned prefix.
- The **Peak** timestamp field indicates the time of peak used value.

```
show router 500 dhcp6 local-dhcp-server "d6" prefix-threshold-stats pool "1" detail
===============================================================================
Server "d6"
===============================================================================
  Operational state         : inService
-------------------------------------------------------------------------------
Pool                        : 1
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
-------------------------------------------------------------------------------
Prefix                      : 8888:0:0:ffe0::/59
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
  Draining                  : N
  -----------------------------------------------------------------------------
  Threshold                 : /62
```

```
-------------------------------------------------------------------------------
Current Provisioned Blks  : 8.000000x10^0
Current Used Blks         : 2.000000x10^0
Current Free Blks         : 6.000000x10^0
Current Used Percent      : 25%
Current Used Peak Blks    : 2.000000x10^0
Current Used Peak Percent : 25%
Current Used Peak Time    : 01/21/2015 21:59:02
Current Free Percent      : 75%
Current Free Too Low      : N
Current Free Depleted     : N
Local Provisioned Blks    : 8.000000x10^0
Local Used Blks           : 2.000000x10^0
Local Free Blks           : 6.000000x10^0
Local Used Peak Blks      : 2.000000x10^0
Local Used Peak Percent   : 25%
Local Used Peak Time      : 01/21/2015 21:59:02
Remote Provisioned Blks   : 0.000000x10^0
Remote Used Blks          : 0.000000x10^0
Remote Free Blks          : 0.000000x10^0
Remote Used Peak Blks     : 0.000000x10^0
Remote Used Peak Percent  : 0%
Remote Used Peak Time     : 01/21/2015 21:59:02
Peak Reset Time           : 01/21/2015 21:59:02
Valid Data                : Y
-------------------------------------------------------------------------------
Threshold                 : /63
-------------------------------------------------------------------------------
Current Provisioned Blks  : 1.600000x10^1
Current Used Blks         : 3.000000x10^0
Current Free Blks         : 1.300000x10^1
Current Used Percent      : 19%
Current Used Peak Blks    : 3.000000x10^0
Current Used Peak Percent : 19%
Current Used Peak Time    : 01/21/2015 21:59:13
Current Free Percent      : 81%
Current Free Too Low      : N
Current Free Depleted     : N
Local Provisioned Blks    : 1.600000x10^1
Local Used Blks           : 3.000000x10^0
Local Free Blks           : 1.300000x10^1
Local Used Peak Blks      : 3.000000x10^0
Local Used Peak Percent   : 19%
Local Used Peak Time      : 01/21/2015 21:59:13
Remote Provisioned Blks   : 0.000000x10^0
Remote Used Blks          : 0.000000x10^0
Remote Free Blks          : 0.000000x10^0
Remote Used Peak Blks     : 0.000000x10^0
Remote Used Peak Percent  : 0%
Remote Used Peak Time     : 01/21/2015 21:59:13
Peak Reset Time           : 01/21/2015 21:59:13
Valid Data                : Y
```

The command shown above displays detailed statistics of all prefix level thresholds in the specified pool:

- **Blks** means the minimum free prefix length.
- **Valid Data** output indicates whether the data is or is not valid.The data is invalid when a background stats update is scheduled or busy.

```
show router 500 dhcp6 local-dhcp-server "d6" prefix-threshold-stats 8888:0:0:ffe0::/
```

```
59
===============================================================================
Server "d6"
===============================================================================
  Operational state         : inService
-------------------------------------------------------------------------------
Pool                        : 1
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
-------------------------------------------------------------------------------
Prefix                      : 8888:0:0:ffe0::/59
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
  Draining                  : N
  -----------------------------------------------------------------------------
  Threshold   Used   Peak   Too low   Depleted   Peak timestamp
  -----------------------------------------------------------------------------
  /62         25%    25%    N         N          01/21/2015 21:59:02
  /63         19%    19%    N         N          01/21/2015 21:59:13
```

The command shown above displays an overview of prefix level thresholds in the specified provision prefix.

```
show router 500 dhcp6 local-dhcp-server "d6" prefix-threshold-stats 8888:0:0:ffe0::/
59 detail
===============================================================================
Server "d6"
===============================================================================
  Operational state         : inService
-------------------------------------------------------------------------------
Pool                        : 1
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
-------------------------------------------------------------------------------
Prefix                      : 8888:0:0:ffe0::/59
-------------------------------------------------------------------------------
  Stable leases             : 2
  Advertised leases         : 0
  Draining                  : N
  -----------------------------------------------------------------------------
  Threshold                 : /62
  -----------------------------------------------------------------------------
  Current Provisioned Blks  : 8.000000x10^0
  Current Used Blks         : 2.000000x10^0
  Current Free Blks         : 6.000000x10^0
  Current Used Percent      : 25%
  Current Used Peak Blks    : 2.000000x10^0
  Current Used Peak Percent : 25%
  Current Used Peak Time    : 01/21/2015 21:59:02
  Current Free Percent      : 75%
  Current Free Too Low      : N
  Current Free Depleted     : N
  Local Provisioned Blks    : 8.000000x10^0
  Local Used Blks           : 2.000000x10^0
  Local Free Blks           : 6.000000x10^0
  Local Used Peak Blks      : 2.000000x10^0
  Local Used Peak Percent   : 25%
  Local Used Peak Time      : 01/21/2015 21:59:02
  Remote Provisioned Blks   : 0.000000x10^0
```

```
Remote Used Blks          : 0.000000x10^0
Remote Free Blks          : 0.000000x10^0
Remote Used Peak Blks     : 0.000000x10^0
Remote Used Peak Percent  : 0%
Remote Used Peak Time     : 01/21/2015 21:59:02
Peak Reset Time           : 01/21/2015 21:59:02
Valid Data                : Y
-------------------------------------------------------------------------------
Threshold                 : /63
-------------------------------------------------------------------------------
Current Provisioned Blks  : 1.600000x10^1
Current Used Blks         : 3.000000x10^0
Current Free Blks         : 1.300000x10^1
Current Used Percent      : 19%
Current Used Peak Blks    : 3.000000x10^0
Current Used Peak Percent : 19%
Current Used Peak Time    : 01/21/2015 21:59:13
Current Free Percent      : 81%
Current Free Too Low      : N
Current Free Depleted     : N
Local Provisioned Blks    : 1.600000x10^1
Local Used Blks           : 3.000000x10^0
Local Free Blks           : 1.300000x10^1
Local Used Peak Blks      : 3.000000x10^0
Local Used Peak Percent   : 19%
Local Used Peak Time      : 01/21/2015 21:59:13
Remote Provisioned Blks   : 0.000000x10^0
Remote Used Blks          : 0.000000x10^0
Remote Free Blks          : 0.000000x10^0
Remote Used Peak Blks     : 0.000000x10^0
Remote Used Peak Percent  : 0%
Remote Used Peak Time     : 01/21/2015 21:59:13
Peak Reset Time           : 01/21/2015 21:59:13
Valid Data                : Y
```

The command displayed above displays detailed statistics of prefix level thresholds in the specified provision prefix.

subnet-ext-stats

Syntax **subnet-ext-stats** *ip-address*[/*mask*]
subnet-ext-stats pool *pool-name*

Context show>router>dhcp>server

Description This command displays extended statistics per DHCPv4 subnet in local DHCPv4 server.

The following statistics are included in output:

- The number of stable leases in the subnet
- The number of provisioned address in the subnet
- The number of used address in the subnet
- The number of free address in the subnet
- The percentage of used address
- The percentage of free address

For each statistic (except for Provisioned Addresses), there is current value and peak value, peak value is the highest value since subnet creation or last reset via the **clear router** *rt-id* **dhcp local-dhcp-server** *svr-name* **subnet-ext-stats** command.

When parameter pool is used, the statistics of each subnet in the pool will be displayed.

Parameters *ip-address[/mask]* — Specifies the subnet

pool-name — The name of local DHCPv4 server pool

Sample Output

```
show router 500 dhcp local-dhcp-server "d4" subnet-ext-stats 220.10.10.0/24
===============================================================================
Extended statistics for subnet 220.10.10.0/24
===============================================================================
                           Current         Peak            TimeStamp
-------------------------------------------------------------------------------
Local:
  Stable Leases            1               1               01/07/2013 19:38:36
  Provisioned Addresses    101
  Used Addresses           1               1               01/07/2013 19:38:36
  Free Addresses           100             100             01/07/2013 19:38:36
  Used Pct                 1               1               01/07/2013 19:38:36
  Free Pct                 99              99              01/07/2013 19:38:36
Last Reset Time                                            01/07/2013 19:07:11
-------------------------------------------------------------------------------
Number of entries          1
===============================================================================
```

server-stats

Syntax **server-stats**

Context show>router>dhcp>server

Description This command displays server statistics.

Sample Output

```
*A:SUB-Dut-A# show router dhcp local-dhcp-server dhcpS1 server-stats
===============================================================================
Statistics for DHCP Server dhcpS1 router Base
===============================================================================
Rx Discover Packets           : 0
Rx Request Packets            : 0
Rx Release Packets            : 0
Rx Decline Packets            : 0
Rx Inform Packets             : 0

Tx Offer Packets              : 0
Tx Ack Packets                : 0
Tx Nak Packets                : 0
Tx Forcerenew Packets         : 0

Client Ignored Offers         : 0
Leases Timed Out              : 0
```

```
Dropped Bad Packet            : 0
Dropped Invalid Type          : 0
Dropped No User Database      : 0
Dropped Unknown Host          : 0
Dropped User Not Allowed      : 0
Dropped Lease Not Ready       : 0
Dropped Lease Not Found       : 0
Dropped Not Serving Pool      : 0
Dropped Invalid User          : 0
Dropped Overload              : 0
Dropped Persistence Overload  : 0
Dropped Generic Error         : 0
Dropped Destined To Other     : 0
Dropped Address Unavailable   : 0
Dropped Max Leases Reached    : 0
Dropped Server Shutdown       : 0
Dropped No Subnet For Fixed IP: 0

===============================================================================
*A:SUB-Dut-A#
```

subnet-stats

Syntax **subnet-stats** *ip-address*[*/mask*]
subnet-stats pool *pool-name*

Context show>router>dhcp>server

Description This command displays subnet statistics.

Sample Output

```
*A:SUB-Dut-A# show router dhcp local-dhcp-server dhcpS2 subnet-stats pool POOL2
===============================================================================
Statistics for pool POOL2
===============================================================================
Subnet              Free         Offered      Stable
                      FRPending    RemPending   Declined
-------------------------------------------------------------------------------
2.0.0.0/8           16384        0            0
                      0            0            0
-------------------------------------------------------------------------------
No. of entries: 1
===============================================================================
*A:SUB-Dut-A#
```

summary

Syntax **summary**

Context show>router>dhcp>server

Description This command displays DHCP summary information.

Sample Output

```
*A:SUB-Dut-A# show router dhcp local-dhcp-server dhcpS2 summary
===============================================================================
DHCP server dhcpS2  router Base
===============================================================================
dhcpS2-POOL2
Admin State            : inService
Persistency State      : ok
User Data Base         : N/A
Use gateway IP address : disabled
Send force-renewals    : disabled

-------------------------------------------------------------------------------
Pool name : POOL2
-------------------------------------------------------------------------------
Subnet             Free       Stable     Declined   Offered    Remove-pending
-------------------------------------------------------------------------------
2.0.0.0/8          16384      0          0          0          0

Totals for pool    16384      0          0          0          0
-------------------------------------------------------------------------------
Totals for server  16384      0          0          0          0
-------------------------------------------------------------------------------
Associations                    Admin
-------------------------------------------------------------------------------
No associations found
===============================================================================
*A:SUB-Dut-A#
```

servers

Syntax **servers**

Context show>router>dhcp

Description This command lists the local DHCP servers.

Sample Output

```
*A:ALA-49>show>router>dhcp# servers
===============================================================
Overview of DHCP Servers
===============================================================
Active Leases:      0
Maximum Leases:     159744

Router              Server                          Admin State
---------------------------------------------------------------
Router: Base        base_router_dhcp_server         outOfService
Service: 3          s1                              inService
===============================================================
*A:ALA-49>show>router>dhcp#
```

servers

Syntax **servers**

Context show>router>dhcp>local-dhcp-server>statistics

Description This command displays server statistics.

Sample Output

```
*A:ALA-48>show>router>dhcp>local-dhcp-server>statistics# servers
===============================================================================
Statistics for DHCP Server test router Base
===============================================================================
Rx Discover Packets     : 0
Rx Request Packets      : 0
Rx Release Packets      : 0
Rx Decline Packets      : 0
Rx Inform Packets       : 0

Tx Offer Packets        : 0
Tx Ack Packets          : 0
Tx Nack Packets         : 0
Tx Forcerenew Packets   : 0

Client ignored offers   : 0

Dropped Bad Packet      : 0
Dropped Invalid Type    : 0
Dropped Unknown Host    : 0
Dropped User Not Allowed: 0
Dropped Lease Not Ready : 0
Dropped Lease Not Found : 0
Dropped Not Serving Pool: 0
Dropped Invalid User    : 0
Dropped Generic Error   : 0
===============================================================================
*A:ALA-48>show>router>dhcp>local-dhcp-server>statistics#
```

subnet

Syntax **subnet pool** *pool-name* [**subnet** *subnet*]

Context show>router>dhcp>local-dhcp-server>statistics

Description This command displays subnet statistics.

Parameters **pool** *pool-name* — Specifies the pool name on the router.

subnet *subnet* — Specifies a subnet of IP addresses that are served from the pool.

Sample Output

```
*A:ALA-48>show>router>dhcp>local-dhcp-server>statistics# subnet pool test
===============================================================================
Statistics for pool test
===============================================================================
```

```
Subnet              Free          Offered      Stable
                      FRPending     RemPending   Declined
-------------------------------------------------------------------------------
1.0.0.0/24          0             0            0
                      0             0              0
-------------------------------------------------------------------------------
No. of entries: 1
===============================================================================
*A:ALA-48>show>router>dhcp>local-dhcp-server>statistics#
```

lease-state

Syntax **lease-state** [[**sap** *sap-id*] | [**sdp** *dp-id:vc-id*] | [**interface** *interface-name*] | [**ip-address** *ip-address*[*/mask*]>] | [**mac** *ieee-address*]] [**detail**]

Context show>service>id>dhcp

Description This command displays DHCP lease state related information.

Parameters ***sap-id* —** Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

sdp-id — The SDP ID to be shown.

Values 1 — 17407

vc-id — The virtual circuit ID on the SDP ID to be shown.

Values 1 — 4294967295

servers

Syntax **servers**

Context show>router>dhcp

Description This command lists the local DHCP servers.

Sample Output

```
*A:SUB-Dut-A# show router dhcp servers
===============================================================
Overview of DHCP Servers
===============================================================
Active Leases:      0
Maximum Leases:     159744

Router              Server                              Admin State
---------------------------------------------------------------
Router: Base        dhcpS1                              inService
Router: Base        dhcpS10                             inService
Router: Base        dhcpS100                            inService
Router: Base        dhcpS101                            inService
Router: Base        dhcpS102                            inService
Router: Base        dhcpS103                            inService
Router: Base        dhcpS104                            inService
```

```
Router: Base        dhcpS105                        inService
Router: Base        dhcpS106                        inService
Router: Base        dhcpS107                        inService
Router: Base        dhcpS108                        inService
Router: Base        dhcpS109                        inService
Router: Base        dhcpS11                         inService
Router: Base        dhcpS110                        inService
Router: Base        dhcpS111                        inService
Router: Base        dhcpS112                        inService
Router: Base        dhcpS113                        inService
Router: Base        dhcpS114                        inService
Router: Base        dhcpS115                        inService
Router: Base        dhcpS116                        inService
Router: Base        dhcpS117                        inService
Router: Base        dhcpS118                        inService
Router: Base        dhcpS119                        inService
...
Service: 1022       dhcpS1022                       inService
Service: 1023       dhcpS1023                       inService
Service: 1024       dhcpS1024                       inService
===============================================================================
*A:SUB-Dut-A#


*A:SUB-Dut-A#
===============================================================================
Overview of DHCP Servers
===============================================================================
Active Leases: 0
Maximum Leases: 159744

Router Server Admin State
-------------------------------------------------------------------------------
Router: Base base_router_dhcp_server outOfService
Service: 3 s1 inService
===============================================================================
```

statistics

Syntax **statistics** [**interface** *ip-int-name*]

Context show>router>dhcp6
show>service>id>dhcp6

Description This command displays statistics for DHCP relay and DHCP snooping.

Sample Output

```
*A:Dut-C# show service id  202 dhcp6 statistics
===============================================================================
DHCP Statistics, service 202, all interfaces
===============================================================================
Packets received                    : 1
Packets transmitted                 : 1
Packets dropped                     : 0
===============================================================================
*A:Dut-C#
```

summary

Syntax **summary**

Context show>router>dhcp6
show>service>id>dhcp6

Description This command displays the status of the DHCP6 relay and DHCP snooping functions on each interface.

OutputOutput **Show DHC6P Summary Output —** The following table describes the output fields for DHCP6 summary.

Label	Description
Interface Name	Name of the router interface.
ARP Populate	Indicates whether ARP populate is enabled.
Used/Provided	Indicates the number of used and provided DHCP leases.
Info Option	Indicates whether Option 82 processing is enabled on the interface.
Admin State	Indicates the administrative state.

Sample Output

```
*A:Dut-C# show router dhcp6 summary
===============================================================================
DHCP6 Summary (Router: Base)
===============================================================================
Interface Name                   Nbr      Used/Max Relay     Admin  Oper Relay
  SapId                          Resol.   Used/Max Server    Admin  Oper Server
-------------------------------------------------------------------------------
ip-1.1.1.10                      No          0/0             Down   Down
  sap:1/1/5                                  0/8000          Down   Down
ip-11.3.202.3                    No          0/0             Down   Down
  sap:1/1/6                                  1/8000          Up     Up
-------------------------------------------------------------------------------
Interfaces: 2
===============================================================================
*A:Dut-C#
```

remap-lease-state

Syntax **remap-lease-state old-mac** *ieee-address* **mac** *ieee-address*
remap-lease-state sap *sap-id* [**mac** *ieee-address*]

Context tools>perform>subscr-mgmt

Description This command allows the remapping of all existing hosts if network card on CMTS/WAC side is changed is required.

When this command is executed, the following restrictions apply

- When **sap** is taken, all leases associated with the SAP are re-written.
  - → For a SAP with a configured MAC in lease-populate command, this MAC will be taken.
  - → For a SAP without a configured MAC the MAC from tools command will be taken.
  - → For a SAP without a configured MAC and no MAC in tools command no action will be perform.
- When using the **old-mac** option, providing a new MAC *ieee-address* is mandatory.

This command is applicable only when dealing with DHCP lease states which were instantiated using l2header mode of DHCP operation.

Parameters **old-mac** *ieee-address*

old-mac *ieee-address* — specifies the old MAC address to remap.

mac *ieee-address* — Specifies that the provisioned MAC address will be used in the anti-spoofing entries for this SAP when l2-header is enabled. The parameter may be changed mid-session. Existing sessions will not be re-programmed unless a **tools perform** command is issued for the lease.

sap *sap-id* — Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

When configured, the SAP parameter will remap all MAC addresses of DHCP lease states on the specified SAP. When no optional MAC parameter is specified, the **sap** *sap-id* command remaps all MAC addresses of lease states towards the MAC address specified in the l2-header configuration.

Clear Commands

dhcp

Syntax **dhcp**

Context clear>router

Description This command enables the context to clear and reset DHCP entities.

dhcp6

Syntax **dhcp6**

Context clear>router

Description This command enables the context to clear and reset DHCP6 entities.

lease-state

Syntax **lease-state** [**no-dhcp-release**]
lease-state [**port** *port-id*] [**inter-dest-id** *intermediate-destination-id*] [**no-dhcp-release**]
lease-state [**port** *port-id*] **no-inter-dest-id** [**no-dhcp-release**]
lease-state ip-address *ip-address* [**no-dhcp-release**]
lease-state mac *ieee-address* **no-dhcp-release**
lease-state sap *sap-id* [**no-dhcp-release**]
lease-state sdp *sdp-id:vc-id* [**no-dhcp-release**]

Context clear>service>id>dhcp

Description This command clears DHCP lease state information.

Parameters **no-dhcp-release** — Clears the state without sending the DHCP release message.

ip-address *ip-address* — Clears the DHCP IP address lease state information. The *ip-address* portion of the **address** command specifies the IP host address that will be used by the IP interface within the subnet. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

mac *ieee-address* — Clears DHCP MAC address lease state information. 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.

sap *sap-id* — clears DHCP SAP lease state information. See Common Service Commands on page 1510 for *sap-id* command syntax.

sdp-id — Clears DHCP SDP lease state information.

Values 1 — 17407

port-id — Clears DHCP port lease state information. Common Service Commands on page 1510

intermediate-destination-id — Specifies the intermediate destination identifier which is encoded in the identification strings.

vc-id — Clears virtual circuit ID information on the specified SDP.

Values 1 — 4294967295

local-dhcp-server

Syntax **local-dhcp-server** *server-name*

Context clear>router>dhcp

Description This command clears DHCP server data.

Parameters *server-name* — Clears data for the specified local DHCP server.

declined-addresses

Syntax **declined-addresses** *ip-address[/mask]*
declined-addresses pool *pool-name*

Context clear>router>dhcp>local-dhcp-server

Description This command clears declined DHCP addresses.

Parameters *pool-name* — Specifies the declined pool name.

ip-address[/mask] — Specifies the declined IP address and mask.

leases

Syntax **leases** *ip-address[/mask]* [**offered**]

Context clear>router>dhcp>local-dhcp-server

Description This command clears DHCP leases.

Parameters *ip-address*[/*mask*] — Clears the specified IP address and mask.

offered — Clears leases in offered state only.

pool-ext-stats

Syntax **pool-ext-stats** [*pool-name*]

Context clear>router>dhcp>local-dhcp-server

Description This command clears extended pool statistics.

Parameters *pool-name* — Specifies the pool name.

server-stats

Syntax **server-stats**

Context clear>router>dhcp>local-dhcp-server

Description This command clears all server statistics.

subnet-ext-stats

Syntax **subnet-ext-stats** *ip-address*[/*mask*]
subnet-ext-stats pool *pool-name*

Context clear>router>dhcp>local-dhcp-server

Description This command clears extended subnet statistics.

lease-state

Syntax **lease-state** [**ip-address** *ipv6-address/prefix-length*] [**mac** *ieee-address*]

Context clear>service>id>dhcp6

Description This command clears DHCP6 lease state information.

Parameters **ip-address** *ipv6-address* — Clears the DHCP6 IP address lease state information. The *ipv6-address* portion of the **address** command specifies the IP host address that will be used by the IP interface within the subnet. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IPv6 addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

mac *ieee-address* — Clears DHCP6 MAC address lease state information. 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.

statistics

Syntax **statistics** [**sap** *sap-id* | **sdp** [*sdp-id*[:*vc-id*] | **interface** *ip-int-name* | *ip-address*]

Context clear>router>dhcp

Description This command clears DHCP statistics.

Parameters **sap** *sap-id* **—** clears DHCP statistics. See Common Service Commands on page 1510 for *sap-id* command syntax.

sdp-id — Clears DHCP SDP statistics.

Values 1 — 17407

vc-id — Clears DHCP the SDP VC ID statistics.

Values 1 — 4294967295

ip-int-name — Clears DHCP statistics for the specified interface name.

ip-address — Clears DHCP statistics for the specified IP address.

local-dhcp-server

Syntax **local-dhcp-server** *server-name*

Context clear>router>dhcp6

Description This command enables the context to clear local DHCP server data.

leases

Syntax **leases** [*ipv6-address/prefix-length*] [*type*] [*state*]
leases all [*type*] [*state*]

Context clear>router>dhcp6>server

Description This command removes the specified leases in the specified local DHCPv6 server.

Parameters *ipv6-address/prefix-length* — The prefix of the leases to be removed.

type — The type of the lease to be remove.

Values pd, wan-host

state — The state of the lease to be removed.

Values advertised, remove-pending, held

all — Remove all leases of specified type and(or) state.

pool-ext-stats

Syntax **pool-ext-stats** [*pool-name*]

Context clear>router>dhcp6>server

Description This command reset the begin time of peak values in output of the **show router** *rt-id* **dhcp6 local-dhcp-server** *svr-name* pool-ext-stats command.

Parameters *pool-name* — The name of the local DHCPv6 server pool.

— **pool-threshold-stats** [*pool-name*]

pool-threshold-stats

Syntax **pool-threshold-stats** [*pool-name*]

Context clear>router>dhcp6>server

Description This commands resets the peak stats in the pool level threshold stats in the specified pool. If the pool name is not specified, then the peak stats in all pools in the server will be reset.

pool-name — The name of the local DHCPv6 server pool

prefix-ext-stats

Syntax **prefix-ext-stats** *ipv6-address/prefix-length*
prefix-ext-stats pool *pool-name*

Context clear>router>dhcp6>server

Description This command reset the begin time of peak values in output of the **show router** *rt-id* **dhcp6 local-dhcp-server** *svr-name* **prefix-ext-stats** command/

Parameters *ipv6-address/prefix-length* — Specify the IPv6 prefix.

pool-name — The name of the local DHCPv6 server pool

prefix-threshold-stats

Syntax **prefix-threshold-stats** *ipv6-address/prefix-length*
prefix-threshold-stats pool *pool-name*

Context clear>router>dhcp6>server

Description This commands resets the peak stats in the prefix level threshold stats in the specified provision prefix or pool.

Parameters *pool-name* — Specifies the name of the pool in local DHCPv6 server.

ipv6-address/prefix-length — Specifies the name of theIPv6 prefix with prefix length.

server-stats

Syntax **server-stats**

Context clear>router>dhcp6>server

Description This command reset all stats of the specified local DHCPv6 server.

statistics

Syntax **statistics**

Context clear>router>dhcp6

Description This command clears DHCP6 statistics.

Debug Commands

dhcp

Syntax [**no**] **dhcp** [*ip-int-name*]

Context debug>router>ip

Description This command enables DHCP debugging.
The **no** form of the command disables debugging.

Parameters *ip-int-name* — Specifies the name of the IP interface. Interface names can be from 1 to 32 alphanumeric characters. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

dhcp6

Syntax **dhcp6** [*ip-int-name*]
no dhcp6

Context debug>router>ip

Description This command enables DHCP debugging

The **no** form of the command disables debugging

Parameters *ip-int-name* — Specifies the name of the IP interface. Interface names can be from 1 to 32 alphanumeric characters. If the string contains special characters (#, $, spaces, etc.), the entire string must be enclosed within double quotes.

detail-level

Syntax **detail-level** {**low** | **medium** | **high**}
no detail-level

Context debug>router>ip>dhcp
debug>router>local-dhcp-server
debug>router>ip>dhcp6

Description This command debugs the DHCP tracing detail level.

local-dhcp-server

Syntax [**no**] **local-dhcp-server** *server-name* [**lease-address** *ip-address*]
[**no**] **local-dhcp-server** *server-name* [**mac** *ieee-address*]

Context debug>router

Description This command enables, disables or configures debugging for a local DHCP server.

Parameters *server-name* — [32 chars max]

ip-address — a.b.c.d

ieee-address — xx:xx:xx:xx:xx:xx or xx-xx-xx-xx-xx-xx (cannot be all zeroes)

mode

Syntax **mode** {**dropped-only** | **ingr-and-dropped** | **egr-ingr-and-dropped**}
no mode

Context debug>router>ip>dhcp
debug>router>local-dhcp-server
debug>router>ip>dhcp6

Description This command debugs the DHCP tracing detail level.

wpp

Syntax [**no**] **wpp**

Context debug>router

Description This command enables the context to configure debugging for the Web Portal Protocol.

packet

Syntax [**no**] **packet**

Context debug>router>wpp

Description This command configures WPP packet debugging.

detail-level

Syntax **detail-level** *detail-level*

Default debug>router>wpp>packet

Description This command specifies the detail level of the WPP packet debug output.

Parameters *detail-level* — Specifies the detail level for WPP packet debugging.

Values high, low

portal

Syntax [**no**] **portal** *wpp-portal-name*

Context debug>router>wpp

Description This command enables WPP debugging for the specified portal.

Parameters *portal-name* — Specifies the name of this WPP portal.

packet

Syntax [**no**] **packet**

Context debug>router>wpp>portal

Description This command configures the WPP portal packet debugging.

detail-level

Syntax **detail-level** *detail-level*

Context debug>router>wpp>portal>packet

Description This command configures the detail level for WPP portal packet debugging.

Parameters *detail-level* — Specifies the detail level for WPP portal packet debugging.

Values high, low

Tools Commands

tools

Syntax **tools**

Context <root>

Description This command enables 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.

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*]

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*]

Context tools>perform>subscriber-mgmt

Description This command modifies PPP session information.

Parameters ***sap-id* —** Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

ip-address — Specifies the IP address.

sub-ident-string — Specifies a subscriber identification profile.

sub-profile-string — Specifies the subscriber profile string, up to 16 characters, maximum.

service-id — The service identification number that identifies the service in the domain.

intermediate-destination-id — Specifies the intermediate destination identifier which is encoded in the identification strings.

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

app-profile-string — Specifies an application profile string.

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 ***sap-id* —** Specifies the physical port identifier portion of the SAP definition. See Common Service Commands on page 1510 for *sap-id* command syntax.

ip-address — Specifies the a server's IP address. This address must be unique within the subnet and specified in dotted decimal notation. Allowed values are IP addresses in the range 1.0.0.0 – 223.255.255.255 (with support of /31 subnets).

sub-ident-string — Specifies the subscriber ID string, up to 32 characters, maximum.

service-id — Specifies an existing service ID.

Values 1 — 2147483647

local-user-db

Syntax **local-user-db** *local-user-db-name*

Context tools>perform>subscriber-mgmt

Description This command enables tools for controlling the local user database.

Parameters *local-user-db-name* — Specifies the name of a local user database.

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** *ieee-address*] [**remote-id** *remote-id*] [**sap-id** *sap-id*] [**service-id** *service-id*] [**string** *vso-string*] [**system-id** *system-id*] [**option60** *hex-string*] [**circuit-id** *circuit-id* | **circuit-id-hex** *circuit-id-hex*]

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

Description This command performs a lookup in the local user database. This command looks up the host with the match-list configured in the local user database.

Parameters **mac** *ieee-address* — 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.

remote-id — specifies what information goes into the remote-id sub-option in the DHCP relay packet.

Values Up to 255 characters maximum

sap-id — Specifies a SAP identifier to be used. See Common Service Commands on page 1510 for *sap-id* command syntax.

service-id — Specifies an existing subscriber service ID.

Values 1 — 2147483647

vso-string — Specifies a Vendor Specific Option (VSO) string.

system-id — Specifies the system ID.

Values up to 255 characters maximum.

option60 *hex-string* — Specifies the content of option 60 for this lookup.

Values 0x0..0xFFFFFFFF (maximum 64 hex nibbles)

circuit-id *circuit-id* — specifies the circuit ID from the Option 82.

circuit-id-hex *circuit-id-hex* — Specifies the circuit ID in hexadecimal format from the Option 82.

Values 0x0..0xFFFFFFFF (maximum 254 hex nibbles)

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 password** *password* [**mac** *ieee-address*] [**remote-id** *remote-id*] [**circuit-id** *circuit-id*] **user-name** *user-name* [**service-name** *service-name*]

authentication password *password* [**mac** *ieee-address*] [**remote-id** *remote-id*] [**circuit-id-hex** *circuit-id-hex*] **user-name** *user-name* [**service-name** *service-name*]

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 PPP node under the group interface, the user lookup will be performed with match-list username.

Parameters **password** *password* **—** specifies the password of this host up to 32 characters in length.

mac ***ieee-address*** **—** Specifies information about the MAC address of the PPP session.

remote-id — specifies what information goes into the remote-id sub-option in the DHCP relay packet.

Values Up to 255 characters maximum

circuit-id *circuit-id* — specifies the circuit ID from the Option 82.

circuit-id-hex *circuit-id-hex* **—** Specifies the circuit ID in hexadecimal format from the Option 82.

Values 0x0..0xFFFFFFFF (maximum 254 hex nibbles)

user-name *user-name* **—** Specifies the PPP user name.

service-name *service-name* **—**

host-lookup

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

Context tools>perform>subscr-mgmt>loc-user-db>ppp

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

mac *ieee-address* **—** 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.

remote-id *remote-id* **—** specifies what information goes into the remote-id sub-option in the DHCP relay packet.

Values Up to 255 characters maximum

user-name *user-name* **—** Specifies a user name up to 128 characters in length.

service-name *service-name* **—** Specifies a PPP service name, up to 255 characters maximum.

circuit-id *circuit-id* — specifies the circuit ID from the Option 82.

circuit-id-hex *circuit-id-hex* — Specifies the circuit ID in hexadecimal format from the Option 82.

Values 0x0..0xFFFFFFFF (maximum 254 hex nibbles)