

Access Gateway Function User Guide

Published
2023-06-15

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Access Gateway Function User Guide
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About This Guide

The Access Gateway Function (AGF) provides subscribers with wireline access to the 5G core network and is an integral part of Junos Multi-Access User Plane solution. Use this document to learn more about Access Gateway Function on a MX Series router.

1

CHAPTER

Overview

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Overview of 5G

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5G is the fifth-generation technology standard for wireless networks. 5G delivers higher data speeds, lower latency, and supports more users, devices, and services while simultaneously improving network efficiency. As defined by the Third-Generation Partnership Project (3GPP), the 5G core (5GC) network is a cloud-aligned, service-based architecture (SBA) and covers all 5G functions and interactions. The converged 5GC lays the foundation for a single subscriber profile and policy management for both the existing wireline users with installed router gateway and the new 5G wireless users. The converged core offers the following benefits:

- Single control plane for wireline and wireless subscribers
- Ease of migration for existing subscribers to 5GC
- Access to a wireline fixed network router gateway (FN-RG)
- Hybrid access with a 5G residential gateway (5G-RG) for increased bandwidth and increased availability
- Single Operation Support System (OSS) and Business Support System (BSS) integration

Components in a 5GC Network

[Figure 1 on page 3](#) shows the key components for the 5GC network to which the FN-RG has connected by using an Access Gateway Function (AGF). [Table 1 on page 3](#) describes the key network functions and the logical interfaces between them. The interaction between the key network functions and the logical interfaces is defined by the 3GPP. Other functions and interfaces defined for the 5G network are beyond the scope of this guide.

Figure 1: Components in a 5GC Network

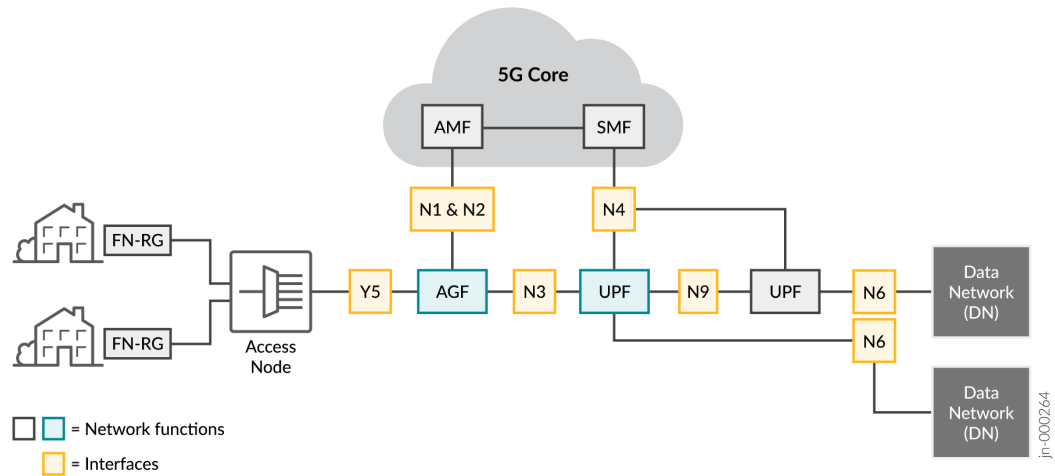


Table 1: Components of a 5G Network

Functions and Interfaces	Description
Access Gateway Function (AGF)	<p>Provides the access connection for residential gateways (RGs) to connect to the 5GC.</p> <p>In adaptive mode, the AGF emulates N1 signaling for the FN-RG to connect to the 5GC. Additionally, the AGF sends messages to the AMF over the N2 interface and sends the protocol data unit (PDU) session traffic over the N3 interface to the UPF.</p>
Access and Mobility Management Function (AMF)	<p>Responsible for registration management, PDU session management, and forwarding of access facing traffic to and from the access network.</p>

Table 1: Components of a 5G Network (*Continued*)

Functions and Interfaces	Description
Fixed Network Residential Gateway (FN-RG)	<p>Connects the home network to the WAN.</p> <p>An FN-RG is a wireline device and works in a wireline network. It does not send signaling associated with RAN found in 5GC networks. For an FN-RG, N1 signaling originates on the AGF. The AGF acts as an endpoint on the 5GC and handles all N1 signaling on behalf of the FN-RG. You do not need new hardware or changes to the existing FN-RG hardware to work with AGF.</p>
Session Management Function (SMF)	Establishes PDU sessions and interacts with the user plane function (UPF).
User plane function (UPF)	<p>Supports packet routing, forwarding, packet inspection, PDU session, and flow-level QoS.</p> <p>NOTE: An UPF can be external or colocated with the AGF.</p>
N1	Interface from the user equipment (UE) to the AMF. The N1 interface uses non-access stratum (NAS) layer signaling to exchange UE information that is related to connection and session that the UE establishes with the 5GC network.
N2	Control interface that connects the AGF to the AMF.
N3	The AGF connects to the UPF over the N3 interface using the general packet radio service (GPRS) tunneling protocol. The AGF and UPF exchange PDU session information over the N3 interface.
N6	Interface that carries data between the UPF and the data network.
N9	Interface that connects one UPF to another.

Table 1: Components of a 5G Network (*Continued*)

Functions and Interfaces	Description
Y5	Interface that connects an FN-RG to the AGF over the wireline access network. The Y5 interface is the equivalent of the V interface in wireline broadband networks.

Access Gateway Function

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- [Benefits of Access Gateway Function | 6](#)

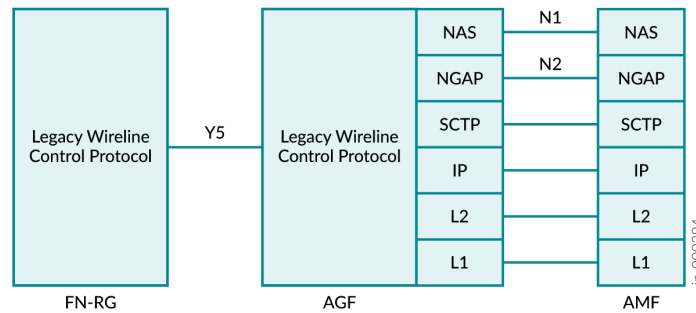
Access Gateway Function

The Access Gateway Function (AGF) on Junos OS provides a solution that enables interworking of wireline-connected devices and the 5G core (5GC). In adaptive mode, the AGF manages the access connections between the residential gateway (RG) and the 5GC by providing the 5G signaling that is used in the 5GC network.

- IP connectivity
- AAA services
- QoS to subscribers on the RG
- Connection between the 5GC and the existing FN-RG, which uses Dynamic Host Configuration Protocol (DHCP), DHCPv6, or Point-to-Point Protocol over Ethernet (PPPoE)

[Figure 2 on page 6](#) shows the legacy wireline control protocol stack used by the FN-RG, wireline AGF, and Access and Mobility Management Function (AMF). The wireline AGF acts as an N1 termination point for the FN-RG. N1 signaling is defined in the Non-Access Stratum (NAS) protocol. N2 signaling is defined in the Next Generation Application Protocol (NGAP).

Figure 2: Control Protocol Stack Between FN-RG and 5GC

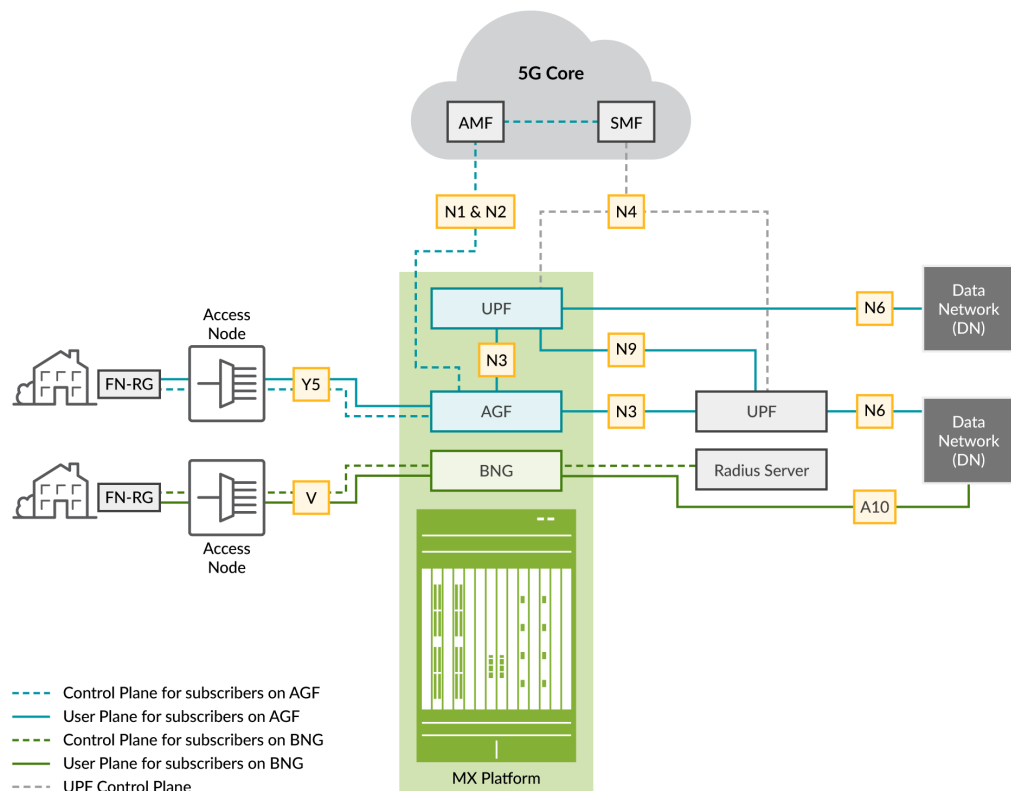


Benefits of Access Gateway Function

- Offers ease of migration for a subscriber with existing customer premise equipment (CPE), such as an FN-RG, to the 5G core (5GC)
- Provides a solution that enables interworking between wireline devices and the 5GC
- Supports existing FN-RG and existing hardware, such as the MX series routers.
- Optimizes data plane traffic with the User Plane Function (UPF), resulting in improved performance
- Eases deployment with by enabling the collocation of broadband network gateway (BNG), AGF, and UPF on the same platform

Figure 3 on page 6 shows the topology that subscribers use to access their broadband service provider. Subscribers can access services through the traditional broadband network gateway (BNG) or through the AGF.

Figure 3: Topology Enabling Subscriber Access to a Data Network



The BNG connects to the FN-RG through an access node that aggregates traffic for the service provider. The BNG routes the aggregated traffic to the service provider's network. The access node can be a DSL access multiplier (DSLAM) or an optical line termination (OLT). The BNG interacts with the FN-RG across the V interface and connects with the data network across the A10 interface.

The AGF connects to the FN-RG through the V interface. The AGF interacts with the wireline network to connect to the 5GC. From the 5GC point of view, the AGF is the equivalent of a 5G base station (gNodeB). In adaptive mode, the AGF provides the N1, N2, and N3 signaling on behalf of FN-RGs when the residential gateways (RGs) connect to the 5GC. The AGF provides the following services:

- Exchanges control plane data with the Access and Mobility Management functions and Session Management Functions (SMFs) through the N1 and N2 interfaces (The AGF uses N1 and N2 signaling to authenticate, authorize, and manage sessions).
- Registers the FN-RG as user equipment (UE) when the AGF establishes a connection with the AMF in the 5GC
- Passes the allocated IP address from the SMF to the FN-RG
- Passes the PDU session setup information (gateways, DNS, and so on) that is received from the 5GC for the FN-RG

- Enforces UE-level QoS and policy that it receives from the 5GC
- Sends and receives user plane data from the User Plane Function (UPF) through the N3 interface

The MX series routers support colocated BNG, AGF, and UPF services. AGF is an integral part of the Junos Multi-Access User Plane solution. See [Junos Multi-Access User Plane](#).

Authentication and Registration

Authentication and registration of a subscriber's fixed-network residential gateway (FN-RG differs from authentication and registration of FN-RG on a wireline core network). The authentication and registration process comprises these steps:

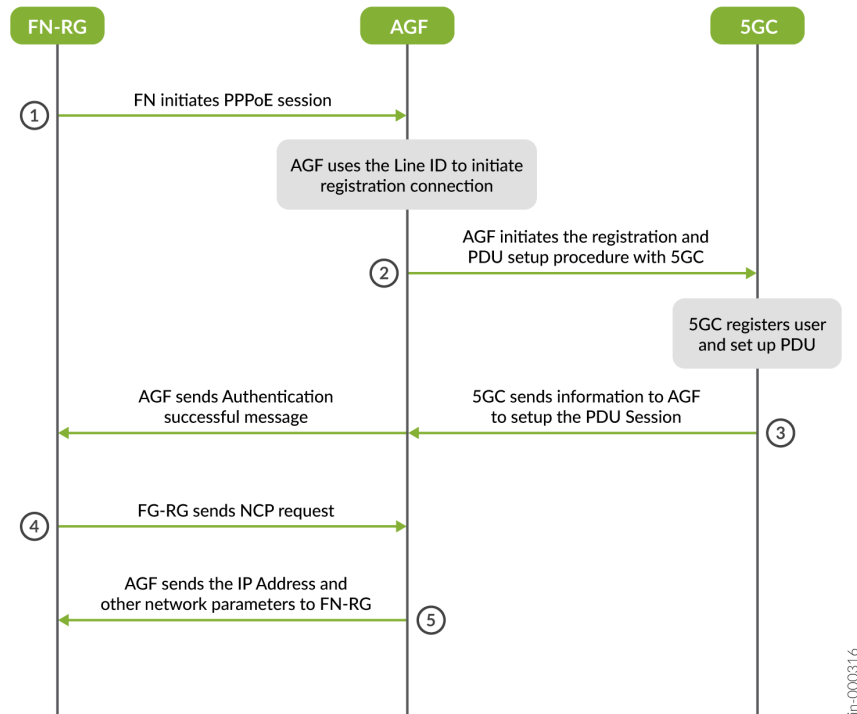
1. The FN-RG uses a unique global line identifier (GLI) to connect to the 5GC network. The GLI contains a circuit line ID and a remote line ID.
2. The Access Gateway Function (AGF) uses the circuit line ID and the remote line ID in the GLI to construct a unique Subscription Permanent Identifier (SUPI) for each FN-RG.
3. To preserve privacy, the AGF converts the SUPI to a Subscription Concealed Identifier (SUCI). The AGF then uses the SUCI to authenticate and to register a subscriber with the Access and Mobility Management Function (AMF) on the 5GC.

Upon successful authentication, the AMF allocates a Global Unique Temporary Identifier (GUTI) for the subscriber. The subscriber uses the GUTI during its registered session with the AMF. The GUTI contains information that identifies the user without revealing the user's permanent identity in the 5GC.

AGF supports the use of both Dynamic Host Configuration Protocol (DHCP) and Point-to-Point Protocol over Ethernet (PPPoE) in authenticating users, registering users, and in allocating an IP address to the FN-RG.

[Figure 4 on page 9](#) shows a high-level view of the interaction between the FN-RG, AGF (in adaptive mode), and 5GC when you use PPPoE for authentication and registration. You can find detailed information on the registration process in 3GPP TS 23.316.

Figure 4: High-Level View of Authentication and Registration Using PPPoE



Authentication and registration of an FN-RG using PPPoE comprises the following steps;

1. Point-to-Point Protocol over Ethernet (PPPoE) begins when the FN-RG sends a PPPoE Active Discovery Initiation (PADI) message to the AGF.

The PADI message contains PPPoE tags that include the PPPoE Circuit line ID and Remote line ID tags. .

2. The AGF uses the circuit line and remote line IDs to generate the subscriber's identity. The AGF then uses the subscriber's ID and the corresponding PPPoE tag to initiate a Point-to-Point (PPP) connection.

Upon establishment of a PPPoE session, the FN-RG initiates the PPP authentication request. The AGF generates the SUPI and the SUCI from the Line ID. The AGF then completes the registration and protocol data unit (PDU) session setup with the 5GC over the N1 and N2 interfaces.

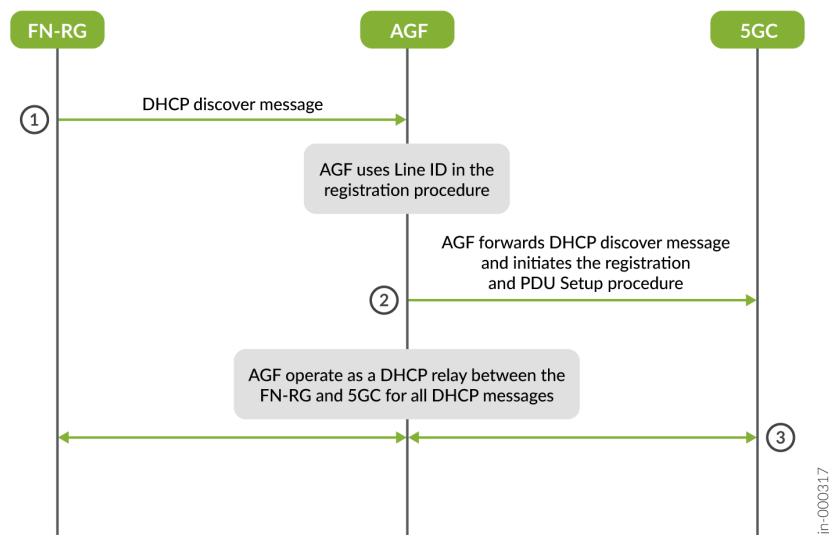
3. After a successful registration in the 5GC, the AGF responds with an authentication success message to the FN-RG.
4. The FN-RG initiates the Network Control Protocol (NCP) to establish different Network Layer protocols that are required to set up the PPP connections. The FN-RG uses Internet Protocol Control Protocol (IPCP) to send either for an IPv4 or IPv6CP request to the AGF.

5. After the PPP connection is established, the AGF sends the IPv4 address that was received in the IPCP response during the protocol data unit (PDU) session setup with the FN-RG.

On an IPv6CP request, AGF sends the Network ID that was part of the IPv6CP response. The AGF forwards the router advertisement containing the prefix that came from the 5GC.

Figure 5 on page 10 shows the DHCP interaction between the FN-RG, AGF (in adaptive mode), and 5GC is as follows:

Figure 5: High-Level View of Authentication and Registration Using DHCP



Authentication and registration of an FN-RG using DHCP comprises the following steps;

1. DHCP begins when the FN-RG sends a DHCPv4 discover message to the AGF.
The DHCPv4 discover message contains the circuit line ID and remote line ID information in DHCP option 82.
2. Upon receiving the DHCP discover message from the FN-RG, the AGF generates the SUPI and SUCI from the Line ID. The AGF then initiates the deferred IP address allocation. It starts the registration and the PDU session setup on the 5GC over the N1 and N2 interfaces.
3. AGF operates as the DHCP relay and forwards all the DHCP messages between the FN-RG and the DHCP server on the 5GC.

IP Address Allocation

The current Broadband Edge architecture uses RADIUS servers to deploy IP addresses. In the 5G architecture, the session management function (SMF) is responsible for providing IP addresses. The Access Gateway Function (AGF) supports the following IP address allocation methods:

1. **NAS signaling mode**—For Point-to-Point Protocol over Ethernet (PPPoE) users, the AGF sends an IP address request to the Access and Mobility Management Function (AMF) on the 5GC. The AMF forwards the request to the SMF. The SMF allocates IP address and sends the IP address back as part of the N1 NAS signaling.
2. **Deferred mode**—For the Dynamic Host Configuration Protocol (DHCP) users, the AGF acts as a relay agent for the client (FN-RG). The AGF forwards the DHCP Discover, Offer, Request, Acknowledgment (DORA) messages to the SMF by way of the user plane function (UPF) on the N3 interface. The AGF forwards the DHCP messages by appending the GPRS tunneling protocol (GTP) headers provided by the AMF in the N1 message. The UPF forwards these DHCP messages to the SMF. The SMF acts as a DHCP relay agent and forwards the DHCP messages to the DHCP server. The DHCP server allocates the IP address and sends the IP address by way of the UPF to AGF. AGF then forwards the IP addresses to the DHCP client running the FN-RG.

NOTE: The AGF supports the deferred IP address allocation when using IPv6.

Routing Instances

The Access Gateway Function (AGF) supports placing subscribers in different routing instances where each routing instance has its own routing table, routing policies, and interfaces. You can configure multiple routing instances to support the authentication and registration of subscribers to different Access and Mobility Management Functions (AMFs) and to support the routing of data packets to different user plane functions (UPFs).

To configure routing instances for the Point-to-Point Protocol over Ethernet (PPPoE) subscribers, set the `target-routing-instance` option at the `[edit access domain map]` hierarchy level or set the `subscriber-context` option under the `[edit access]` hierarchy. You will need to apply authentication attributes to subscribers. To apply attributes to the Point-to-Point Protocol (PPP) subscribers, use the `aaa-options` statement at the `[edit dynamic-profiles profile-name interfaces pp0 unit $junos-interface-unit ppp-options]` hierarchy level.

To configure routing instances for the Dynamic Host Configuration Protocol (DHCP) subscribers, set the `target-routing-instance` option at the `[edit access domain map]` hierarchy level. The AGF assigns the domain name to the subscriber using the DHCP group configuration.

You can also configure multiple routing instances to route the data packets to different UPFs. To configure the UPF routing instance and local tunnel endpoint for the GPRS tunneling protocol, user plane (GTP-U) tunnel to the UPF, set the `routing-instance` and `ip-address` options at the `[edit services agf user-planes]` hierarchy level.

User Plane Function

The user plane function (UPF) is the data plane in the 5G core (5GC). After the Access Gateway Function (AGF) authenticates the subscriber and establishes a protocol data unit (PDU) session, the session management function (SMF) selects the UPF for the subscriber. The UPF provides the following functionality:

- Subscriber tunnel encapsulations enabled by the GPRS tunneling protocol, user plane(GTP-U)
- Packet routing and forwarding
- Quality of service (QoS) and buffering
- Policy enforcement
- Statistics gathering and reporting
- Lawful intercept requests processing
- Optional advanced services

Juniper supports the UPF both on an MX platform, both when the platform is dedicated to the UPF and when the UPF is colocated with the Access Gateway Function (AGF) on the platform. You can configure the UPF as a target UPF or as an intermediate UPF. A target UPF communicates with the data network over the N6 interface. An intermediate UPF performs the role of an uplink classifier and communicates with other UPFs over the N9 interface.

AGF and UPF Colocation

Juniper supports the colocation of user plane functions (UPFs) on the same MX router. In the 5G architecture, the Access Gateway Function (AGF) forwards data packets to the UPF over the N3 interface. Conceptually, the colocated AGF and UPF send data packets internally over the N3 interface to each other. When the UPF and the AGF are colocated, you can still configure the UPF to be both a target UPF and an intermediate UPF.

When you colocate the AGF with the UPF, the UPF operates on the edge of the network. Therefore, user application data can have lower latency and higher throughput.

To enable a colocated UPF, include `colocated-user-plane` at the `[edit services agf user-planes user-plane-name]` hierarchy.

For more information on configuring UPFs, see <https://www.juniper.net/documentation/us/en/software/junos/multi-access-user-plane/topics/topic-map/cups-saegw-overview.html>

Quality of Service

Quality of service in a 5G network is driven by QoS flows. A QoS flow represents the finest granularity of QoS differentiation in the protocol data unit (PDU) session. Each QoS flow is identified by a unique identifier called QoS Flow Identifier (QFI) and by QoS parameters that describe the characteristics of the packet flow. The session management function (SMF) which controls the QoS and passes QoS characteristics to the user plane function (UPF) and the Access Gateway Function (AGF) when the PDU session is being established. The UPF enforces the QoS flows for a particular PDU session, and the AGF manages the aggregate of all the QoS flows going to the residential gateway (RG).

The 5G core (5GC) supports up to 64 QFIs for a single PDU session. The QoS flow parameters include the 5G QoS identifier (5QI). 5QI maps to the well-defined QoS characteristics, such as priority level, averaging window, maximum data burst volume, and so on. 3GPP Specification 23.501 defines how the standard 5QI values map to the QoS characteristics mappings.

The UPF identifies the QoS flows by sending a QFI, but the AGF does not use QFI to classify the packets. The AGF classifies the traffic by using the Differentiated Services code point (DSCP) in the GPRS tunneling protocol (GTP) header that the UPF sends over the N3 interface.. The SMF sends the Transport Level Marking (TLM) to the UPF. The UPF uses the TLM to mark up the GTP header in the outgoing N3 packets to the AGF. After classifying the packets (by using DSCP), the AGF uses the standard Junos class of service (CoS) classification configuration to classify and to shape the traffic.

The BBF standards specify that operators who use the per subscriber CoS parameters per household, should use Router Gateway Level Wireline Access Characteristics (RG-LWAC) to define the CoS limits and scope of service for the specified subscriber or a group of subscribers on a router. To configure the QoS characteristics of legacy access networks, the AGF uses the RG-LWAC information from the 5GC to set CoS queue shaping, firewall filters, and policers. The AGF leverages the existing shaping, policers, and firewall filters on Junos OS. The AGF uses the existing rewrite rules to set the PCP or DSCP value in the packet header sent to the access network.

For downstream traffic, the UPF sets the DSCP value based on the packet priority that was set by the 5GC and sends it to the AGF. The AGF uses hierarchical policers to shape downstream traffic. For this task, the AGF performs the following:

- Maps the outer DSCP value to a forwarding class.

- Assigns the forwarding class to an output queue.
- Assigns the forwarding class to the scheduler based on the forwarding class priority.
- Applies the RG-LWAC or the local configuration to classify the traffic and to rewrite the PCP or DSCP value when needed.

For more information on CoS, see [CoS for Subscriber Access Overview](#).

SCTP

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SCTP Overview

Stream Control Transmission Protocol (SCTP) is a transport layer protocol in the Internet protocol suite. SCTP exists at an equivalent level with UDP and TCP, which provides transport layer functions to many Internet applications. SCTP is a message stream-focused and reliable connection-oriented transport protocol with the following features:

- Multi-stream protocol—SCTP provides a mechanism to maintain multiple streams of messages for each SCTP endpoint.

This protocol supports applications that perform the following tasks:

- Deliver messages of different priorities
- Deliver strict message order within stream
- Bypass sequence delivery service within stream use multi-stream protocol
- User data fragmentation—To deliver a message of a size more than the path maximum transmission unit (MTU) limit, the SCTP fragments the message in data chunks and sends it in different SCTP

packets. SCTP header has a flag to mark the last chunk of fragmented message. The receiver side reassembles all the fragmented chunks and passes it to the upper layer protocol.

- **Chunk bundling**—This feature enables the SCTP to bundle chunks from multiple messages in a single SCTP packet. The receiver side disassembles the chunks before delivering to the upper layer protocol.
- **Packet validation**—You can include a verification tag in the SCTP header to uniquely identify an SCTP association session. Use a new verification tag for the revival of a session. This feature provides protection against masquerade attacks and stale SCTP packets from previous association.
- **Multihoming support**—The SCTP can specify the list of local transport addresses for the SCTP endpoint which the server and the client exchange during association startup. This list advertises at the other endpoint about the available destination address and source address in the SCTP packet that one endpoint receives after SCTP association setup. The other SCTP endpoint establishes the route for each of the received destination addresses and uses this route to ensure high availability for data transfer.

SCTP Connection to the AMF

The Access Gateway Function (AGF) uses the Stream Control Transmission Protocol (SCTP) to transport the Next Generation Application Protocol (NGAP) messages. These messages provide control plane signaling with the Access and Mobility Management Functions (AMFs). The SCTP is a transport layer protocol which ensures reliable, in-sequence transport of data. SCTP provides multihoming support where one or both endpoints of a connection can consist of more than one IP address. This capability enables transparent failover between redundant network paths. The SCTP association is a connection between two SCTP endpoints. The AGF creates a Transport Layer Network Association (TNLA) between endpoints on the AGF and the AMF.

Figure 6: SCTP Multihoming

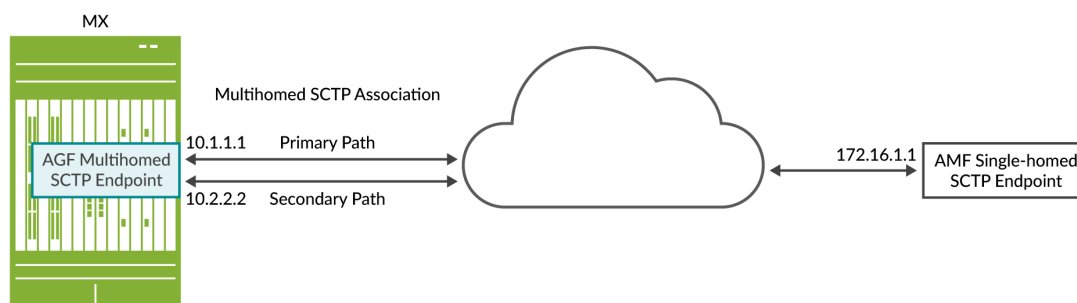


Figure 6 on page 15 shows a multihomed AGF SCTP endpoint and a single-homed AMF SCTP endpoint. With AGF SCTP endpoint multihoming, you can designate one of the AGF endpoints (IP address) as the primary path. If the primary path fails, the SCTP switches to the secondary path. The AGF supports the following capabilities:

- Multihomed local endpoint
- Routing instances to AMFs
- Up to 10 TNLAs for each AMF
- Load balancing of user equipment (UE) across all TNLAs that support UE-associated signaling.

You can configure the SCTP connections to AMFs in the `[edit services agf amf]` hierarchy.

SCTP Support for Virtual Routing and Forwarding (VRF)

The VRF (Virtual Routing and Forwarding) feature allows for the management of remote IP addresses. SCTP client, before initiating new SCTP association, it should set socket option for route table index/VRF index, if egress interface to SCTP server configured inside VRF, otherwise association will not get established as SCTP client will use default/global routing instance for association establishment. On SCTP server side, if VRF index socket option is not set on listening socket, association request received on all VRFs will be entertained but if VRF index socket option is set on listening socket, association establishment request coming on that particular VRF will only be entertained.

Application can either set socket option with custom flag to provide route table index to SCTP to handle VRF-based SCTP association, to place association in that particular association, or let SCTP kernel to choose VRF for association during establishment in process of 4-way handshake, based on VRF in which ingress interface is configured.

When a SCTP association is established over a VRF instance, the kernel must take into account an additional parameter, the unique VRF ID, when looking up unique associations by using the existing 4-tuple used in SCTP (source IP, source port, destination IP, destination port).

- **Inbound SCTP packets over VRF:**

When a SCTP packet arrives on an ingress interface, a lookup is conducted using the 5-tuple (source IP, source port, destination IP, destination port, and 'VRF ID on which the packet was received') to determine if there is an existing SCTP association present in the kernel.

- **Outbound SCTP packets over VRF:**

For every SCTP packet that is sent out from the kernel, the corresponding VRF ID is obtained from the association data using the 5-tuple (source IP, source port, destination IP, destination port, and 'VRF ID on which the packet is to be sent').

AGF Using Junos Telemetry Interface

The Access Gateway Function (AGF) uses Junos telemetry interface (JTI) to export telemetry data from a device to a collector to help you monitor the health of your network and the traffic that it carries. JTI gathers telemetry data through a "push" model instead of the traditional "pull" models such as CLI or SNMP. Data delivery is automated and happens in real-time. You can use AGF-specific sensors to collect data on AGF interactions and use the data to:

- Improve your network design.
- Optimize traffic engineering.
- Gain early detection of problems on individual devices.

For information about AGF sensors, see [Telemetry Sensor Explorer](#). For information about JTI, see [Junos Telemetry Interface User Guide](#).

Supported Standards

- *Broadband Forum TR-456—5G Wireless Wireline Convergence Architecture*
- *Broadband Forum TR-470—5G FMC Architecture*
- *3GPP TS 23.316, Release 16—Wireless and wireline convergence access support for the 5G System (5GS)*
- *3GPP TS 23.501, Release 16—System Architecture for the 5G System*
- *3GPP TS 24.501, Release 16—NAS procedures in the 5G system*
- *3GPP TS 29.281, Release 16—GPRS Tunneling Protocol UP GTPv1-U*
- *3GPP TS 38.413, Release 16—NG Application Protocol*

2

CHAPTER

Configure AGF

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Overview of Configuring AGF

The network functions in a 5G core (5GC) network interact with one another to support user connectivity. You can deploy the Access Gateway Function (AGF) between the residential gateway (RG) and the Access and Mobility Management Function (AMF) and user plane function (UPF). You can deploy the AGF by following these steps:

1. Configure either of the following protocols to provide subscribers access and authentication capability on the AMF:
 - Point-to-Point Protocol over Ethernet (PPPoE)
 - Dynamic Host Configuration Protocol (DHCP) Relay
2. Configure the AGF services.

Configure PPP Support for AGF

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This example describes how to configure the Access Gateway Function (AGF) to support a subscriber using Point-to-Point Protocol over Ethernet (PPPoE) for authentication.

Procedure

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the [edit] hierarchy level.

```
set dynamic-profiles autoconf-vlan-demux routing-instances "$junos-routing-instance" interface
"$junos-interface-name" any
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" ppp-options
chap
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" ppp-options
pap
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" ppp-options
aaa-options nas-5g-access-options
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" pppoe-
options underlying-interface "$junos-underlying-interface"
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" pppoe-
options server
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" no-
keepalives
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" family inet
unnumbered-address "$junos-loopback-interface"
set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-unit" family
inet6 unnumbered-address "$junos-loopback-interface"
set access profile NAS-5G-AGF authentication-order nas-5g
set access nas-5g max-outstanding-requests 1000
set access nas-5g request-retry 3
set access nas-5g timeout 30
set access aaa-options NAS-5G-ACCESS-OPTIONS access-profile NAS-5G-AGF
set access aaa-options NAS-5G-ACCESS-OPTIONS aaa-context AMF-RI
set access aaa-options NAS-5G-ACCESS-OPTIONS subscriber-context UE-RI-1
set access domain map DOMAIN1.COM aaa-routing-instance AMF-RI
set access domain map DOMAIN1.COM access-profile nas-5g-agf
set access domain map DOMAIN1.COM target-routing-instance UE-RI-1
set routing-instances UE-RI-1 instance-type virtual-router
set routing-instances UE-RI-1 interface xe-2/0/1.3
set routing-instances UE-RI-1 interface lo0.1
```

Step-by-Step Procedure

1. Configure the dynamic profile for the Point-to-Point Protocol (PPP) subscriber.

```
[edit]
user@host# set dynamic-profiles autoconf-vlan-demux routing-instances "$junos-routing-
instance" interface "$junos-interface-name" any
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" ppp-options chap
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" ppp-options pap
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" ppp-options aaa-options nas-5g-access-options
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" pppoe-options underlying-interface "$junos-underlying-interface"
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" pppoe-options server
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" no-keepalives
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" family inet unnumbered-address "$junos-loopback-interface"
user@host# set dynamic-profiles autoconf-vlan-demux interfaces pp0 unit "$junos-interface-
unit" family inet6 unnumbered-address "$junos-loopback-interface"
```

2. Set the access authentication method for the subscriber group to use Non-Access Stratum (NAS) signaling.

```
[edit]
user@host# set access profile NAS-5G-AGF authentication-order nas-5g
```

3. Configure the following options for NAS signaling between the AGF and the AMF.

- Maximum number of outstanding request—The number of unanswered request messages from the AMF.
- Number of retries—The number of attempts for a registration or deregistration request .
- Timeout—The duration that the AGF waits for a response from the AMF.

```
[edit]
user@host# set access nas-5g max-outstanding-requests 1000
```

```
user@host# set access nas-5g request-retry 3
user@host# set access nas-5g timeout 30
```

4. Define the profile with a set of AAA options for the PPP subscriber by performing the following steps:

- Create the access profile (access-profile) for the subscriber group.
- Specify the logical-system:routing-instance (LS:RI) that the subscriber session uses for AAA (RADIUS) interactions.
- Specify the LS:RI where the subscriber interface is placed. In this case, we are using the default routing instance.

```
[edit]
user@host# set access aaa-options NAS-5G-ACCESS-OPTIONS access-profile NAS-5G-AGF
user@host# set access aaa-options NAS-5G-ACCESS-OPTIONS aaa-context AMF-RI
user@host# set access aaa-options NAS-5G-ACCESS-OPTIONS subscriber-context UE-RI-1
```

Alternatively, you can create a domain map and apply the domain map to the access profile.

```
[edit]
user@host# set access domain map DOMAIN1.COM aaa-routing-instance AMF-RI
user@host# set access domain map DOMAIN1.COM access-profile NAS-5G-AGF
user@host# set access domain map DOMAIN1.COM target-routing-instance UE-RI-1
```

5. Configure the routing instance.

```
[edit]
user@host# set routing-instances UE-RI-1 instance-type virtual-router
user@host# set routing-instances UE-RI-1 interface xe-2/0/1.3
user@host# set routing-instances UE-RI-1 interface lo0.1
```

For more information on PPP Subscribers, see <https://www.juniper.net/documentation/us/en/software/junos/subscriber-mgmt-access/topics/topic-map/ppp-access-network-overview.html>

Configure DHCP Support for AGF

IN THIS SECTION

- Procedure | 23

This example describes how to configure the Access Gateway Function (AGF) to support the use of Dynamic Host Configuration Protocol (DHCP) for subscriber authentication. In this example, we configure DHCP relay to forward the DHCP request and reply packets between the subscriber (DHCP client) and the DHCP server on the 5G core (5GC).

Procedure

CLI Quick Configuration

To quickly configure this example, copy the following commands, paste them into a text file, remove any line breaks, change any details necessary to match your network configuration, and then copy and paste the commands into the CLI at the [edit] hierarchy level.

```
set group AGF_SUBSCRIBER_GROUP authentication password $abc123
set group AGF_SUBSCRIBER_GROUP authentication username-include user-prefix USER
set group AGF_SUBSCRIBER_GROUP access-profile NAS-5G-AGF
set group AGF_SUBSCRIBER_GROUP overrides trust-option-82
set group AGF_SUBSCRIBER_GROUP interface xe-1/0/0.0
set access profile NAS-5G-AGF authentication-order nas-5g
set access domain map DOMAIN1.COM aaa-routing-instance default
set access domain map DOMAIN1.COM access-profile NAS-5G-AGF
set access domain map DOMAIN1.COM target-routing-instance UE-RI-1
set access nas-5g max-outstanding-requests 1000
set access nas-5g request-retry 3
set access nas-5g timeout 30
set routing-instances UE-RI-1 instance-type virtual-router
```

```
set routing-instances UE-RI-1 interface xe-2/0/1.3
set routing-instances UE-RI-1 interface lo0.1
```

Step-by-Step Procedure

1. Create a subscriber group with the authentication fields that will be passed to the access interface.

```
[edit forwarding-options dhcp-relay]
user@host# set group AGF_SUBSCRIBER_GROUP authentication password $abc123
user@host# set group AGF_SUBSCRIBER_GROUP authentication username-include user-prefix USER
```

2. Create an access profile (access-profile) for the group subscribers that will be authenticating in the 5GC and attach the profile to the DHCP relay agent.

```
[edit forwarding-options dhcp-relay]
user@host# set group AGF_SUBSCRIBER_GROUP access-profile NAS-5G-AGF
```

3. Configure the router to always accept the DHCP client packets that contain option 82 information.

```
[edit forwarding-options dhcp-relay]
user@host# set group AGF_SUBSCRIBER_GROUP overrides trust-option-82
```

4. Specify the interface to which that the DHCP subscribers will connect.

```
[edit forwarding-options dhcp-relay]
user@host# set group AGF_SUBSCRIBER_GROUP interface xe-1/0/0.0
```

5. Set the access profile that the AGF will use to authenticate for the subscriber group to authenticate using Non-Access Stratum (NAS) signaling.

```
[edit]
user@host# set access profile NAS-5G-AGF authentication-order nas-5g
```

6. Create the domain map and apply the domain map to the access profile.

```
edit]
user@host# set access domain map DOMAIN1.COM aaa-routing-instance default
user@host# set access domain map DOMAIN1.COM access-profile NAS-5G-AGF
user@host# set access domain map DOMAIN1.COM target-routing-instance UE-RI-1
```

7. Configure the following options for NAS signaling between the AGF and the Access and Mobility Management Function (AMF).

- Maximum number of outstanding request—The number of unanswered request messages from the AMF.
- Number of retries—The number of attempts for a registration or deregistration request .
- Timeout—The duration that the AGF waits for a response from the AMF.

```
[edit]
user@host# set access nas-5g max-outstanding-requests 1000
user@host# set access nas-5g request-retry 3
user@host# set access nas-5g timeout 30
```

8. Configure the routing instance.

```
[edit]
user@host# set routing-instances UE-RI-1 instance-type virtual-router
user@host# set routing-instances UE-RI-1 interface xe-2/0/1.3
user@host# set routing-instances UE-RI-1 interface lo0.1
```

For more information on DHCP subscribers, see <https://www.juniper.net/documentation/us/en/software/junos/subscriber-mgmt-access/topics/topic-map/dhcp-subscriber-access-overview.html>

Configure AGF Services

IN THIS SECTION

- Procedure | 26

This example describes how to configure the Access Gateway Function (AGF) services to support residential gateways that connect to the 5G core (5GC).

Procedure

CLI Quick Configuration

To quickly configure this example:

1. Copy the following commands and paste them into a text file.
2. Remove any line breaks and change any details necessary to match your network configuration
3. Copy and paste the commands into the CLI at the [edit] hierarchy level

```
set services agf node-name AGF-NODE1
set services agf node-id 1
set services agf plmn te-plmn mcc 123
set services agf plmn te-plmn mnc 456
set services agf tracking-area 0 plmn te-plmn s-nssai 0 sst v2x sd 5
set services agf tracking-area 0 plmn te-plmn s-nssai 1 sst miot sd4
set services agf amf AMF1 node-id 1
set services agf amf AMF1 ip-address 10.1.1.7 port 38412
set services agf amf AMF1 local-endpoint ip-address 10.1.1.1 primary
set services agf amf AMF1 local-endpoint ip-address 10.20.1.1
set services agf amf AMF1 default-amf
set services agf user-planes UPF_DEFAULT ip-address 10.1.7.1
set services agf user-planes UPF_DEFAULT data-network-name DEFAULT-DN
set services agf user-planes UPF_COLOCATED 10.255.20.149
set services agf user-planes UPF_COLOCATED data-network-name COLOCATED-DN
```

```
set services agf user-planes UPF_COLOCATED colocated-user-plane ip-endpoint-address 10.255.20.149
set routing-instances AMF-RI instance-type virtual-router
set routing-instances AMF-RI interface xe-2/0/2.1
```

Step-by-Step Procedure

1. Configure the AGF node.

```
[edit services agf]
user@host# set node-name AGF-NODE1
user@host# set node-id 1
```

2. Configure the supported public land mobile network (PLMN) and tracking area.

```
[edit services agf]
user@host# set plmn te-plmn mcc 123
user@host# set plmn te-plmn mnc 456
user@host# set tracking-area 0 plmn te-plmn s-nssai 0 sst v2x sd 5
user@host# set tracking-area 0 plmn te-plmn s-nssai 1 sst miot sd4
```

3. Configure the connection to the Access Management and Mobility Function (AMF). The AMF IP address must be reachable in the configured AMF routing instance. Configure the Stream Control Transmission Protocol (SCTP) local endpoint on the AGF. If you are configuring a multihoming association, specify one local endpoint as a primary endpoint.

```
[edit services agf]
user@host# set services agf amf AMF1 node-id 1
user@host# set services agf amf AMF1 ip-address 10.1.1.7 port 38412
user@host# set services agf amf AMF1 local-endpoint ip-address 10.1.1.1 primary
user@host# set services agf amf AMF1 local-endpoint ip-address 10.20.1.1
user@host# set services agf amf AMF1 default-amf
user@host# set services agf amf AMF1 routing-instance AMF1-RI-1
```

4. Configure the user plane information. If you are configuring an user plane function (UPF) on the MX router, you must specify that the UPF is colocated and configure the colocated-user-plane information.

```
[edit services agf]
user@host# set services agf user-planes UPF_DEFAULT ip-address 10.1.7.1
```



```
user@host# set services agf user-planes UPF_DEFAULT data-network-name DEFAULT-DN
user@host# set services agf user-planes UPF_COLOCATED 10.255.20.149
user@host# set services agf user-planes UPF_COLOCATED data-network-name COLOCATED-DN
user@host# set services agf user-planes UPF_COLOCATED colocated-user-plane ip-endpoint-
address 10.255.20.149
```

5. Configure the routing instance to the AMF.

```
[edit]
user@host# set routing-instances AMF-RI instance-type virtual-router
user@host# set routing-instances AMF-RI interface xe-2/0/2.1
```

3

CHAPTER

Migrate Subscribers from BNG to AGF

Migrate Subscribers from BNG to AGF | 30

Migrate Subscribers from BNG to AGF

IN THIS SECTION

- Using an Interface Tag to Migrate DHCP Subscribers from the BNG to the AGF | 30
- Configure Access Support for BNG and AGF | 31

Using an Interface Tag to Migrate DHCP Subscribers from the BNG to the AGF

Before Junos OS 23.2R1, you could only map one DHCP group to a physical interface (IFD) that is supporting dynamic VLANs. This limits the interface to supporting subscribers with the same DHCP requirements. Starting in Junos OS 23.2R1, you can use interface tags to map a single dynamic VLAN or a group of dynamic VLANs to different DHCP groups. Therefore, you can support subscribers with different DHCP requirements on one IFD. The device will use the interface tag to map the incoming subscriber VLAN ID in the profile to the DHCP group. This feature allows you to easily migrate users from the BNG to the AGF.

To support multiple DHCP groups on the same physical interface:

- Configure the `interface-tag` in the dynamic profile on a VLAN demux interface.
 - `set dynamic-profiles profile-name interfaces demux0 unit $junos-interface-unit interface-tag interface-tag-name`
- Configure the dynamic VLAN demux (auto-sensed) interface and corresponding dynamic profile. Specify the VLAN range subset that will map the dynamic profile to the DHCP group.
- Map the dynamic profile to the associated DHCP group by specifying the same `interface-tag` name. For more information on configuring DHCP Local Server and DHCP Relay Servers, see *Common DHCP Configuration for Interface Groups and Server Groups*.

DHCP Relay

- `set forwarding-options dhcp-relay group name interface-tag interface-tag-name`
- `set forwarding-options dhcp-relay dhcpv6 group name interface-tag interface-tag-name`

DHCP Local Server

- `set system services dhcp-local-server group sgroup interface-tag interface-tag-name`
- `set system services dhcp-local-server dhcpv6 group sgroup interface-tag interface-tag-name`

NOTE: Subscribers migrating from broadband to AGF will maintain their DHCP session until they terminate their session.

Subscribers who are eligible for migration remain connected in their DHCP session. Once the subscriber logs off and the DHCP session has been terminated, the router migrates the subscriber to AGF at the next successful login (DHCP renegotiation).

Use the following `show DHCP binding` command with the `detail` option to displays interface tag information:

- `show dhcp relay binding detail`
- `show dhcpv6 relay binding detail`
- `show dhcp server binding detail`
- `show dhcpv6 server binding detail`

Configure Access Support for BNG and AGF

The following example shows how to configure a physical interface (IFD) on a device to support both BNG and AGF subscribers. We configure two dynamic profiles on the demux interface (demux0—one profile for the BNG subscribers and one for AGF subscribers). The device uses the VLAN ID to map a subscriber to a dynamic profile. The device then uses the interface tag in the dynamic profile to map the subscriber to a DHCP group.

1. Configure dynamic profiles to support incoming subscribers on demux interface. Configure one dynamic profile for BNG subscribers and another profile for AGF subscribers. Use the same interface tag name in both the dynamic profile and the DHCP group. In this example, we use an interface tag that identifies the VLAN range.

BNG

```
set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" actual-transit-statistics
set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" interface-tag IFD_TAG_1_2000
```

```

set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" proxy-arp
set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" vlan-id "$junos-vlan-id"
set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" family inet address 192.168.10.3/32
set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" actual-transit-statistics
set dynamic-profiles BNG_DPROFILE_1 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" family inet6 address 2001:db8:1/128

```

AGF

```

set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" interface-tag IFD_TAG_2001_4000
set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" actual-transit-statistics
set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" proxy-arp
set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" vlan-id "$junos-vlan-id"
set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" family inet address 192.168.10.3/32
set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" actual-transit-statistics
set dynamic-profiles AGF_DPROFILE_2 interfaces "$junos-interface-ifd-name" unit "$junos-
interface-unit" family inet6 address 2001:db8:3/128

```

2. Configure the interface with two dynamic profiles (BNG_DPROFILE and AGF_DPROFILE). Specify the VLAN range in the dynamic profile that maps to the DHCP group.

```

set interfaces xe-1/1/0 description AGF_BNG
set interfaces xe-1/1/0 flexible-vlan-tagging
set interfaces xe-1/1/0 auto-configure remove-when-no-subscribers

```

BNG

```

set interfaces xe-1/1/0 auto-configure stacked-vlan-ranges dynamic-profile BNG_DPROFILE_1
accept inet
set interfaces xe-1/1/0 auto-configure stacked-vlan-ranges dynamic-profile BNG_DPROFILE_1

```

```
accept pppoe
set interfaces xe-1/1/0 auto-configure stacked-vlan-ranges dynamic-profile BNG_DPROFILE_1
ranges 1-2000
```

AGF

```
set interfaces xe-1/1/0 auto-configure stacked-vlan-ranges dynamic-profile AGF_DPROFILE_2
accept inet
set interfaces xe-1/1/0 auto-configure stacked-vlan-ranges dynamic-profile AGF_DPROFILE_2
accept pppoe
set interfaces xe-1/1/0 auto-configure stacked-vlan-ranges dynamic-profile AGF_DPROFILE_2
ranges 2001-4000
```

3. Configure the DHCP relay configuration for the access interface. Use the corresponding interface tag name from dynamic profile in the DHCP group. We configure the set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 interface xe-1/1/0.0 as a fallback when there are additional VLAN IDs. The router gives the interface tag precedence over the interface statement.

BNG

```
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 authentication password password
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 authentication username-include
user-prefix USER2
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 dynamic-profile dhcp-profile
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 access-profile legacy_access1
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 overrides trust-option-82
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 relay-option-82 remote-id keep-
incoming-remote-id
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_1 interface-tag IFD_TAG_1_2000
```

AGF

```
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 authentication password joshua
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 authentication username-include
user-prefix DEFAULT
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 dynamic-profile dhcp-profile
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 access-profile agf-access1
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 overrides trust-option-82
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 relay-option-82 remote-id keep-
incoming-remote-id
```

```
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 interface xe-1/1/0.0  
set forwarding-options dhcp-relay group DHCPv4_CLIENT_GROUP_2 interface-tag IFD_TAG_2001_4000
```

RELATED DOCUMENTATION

<https://www.juniper.net/documentation/us/en/software/junos/subscriber-mgmt-sessions/topics/topic-map/dhcp-common-config-interface-group.html>

<https://www.juniper.net/documentation/us/en/software/junos/subscriber-mgmt-vlan/topics/task/subscriber-management-vlan-demux-dynamic.html>

<https://www.juniper.net/documentation/us/en/software/junos/subscriber-mgmt-vlan/topics/task/subscriber-management-ip-demux-dynamic.html>

4

CHAPTER

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agf

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Syntax

```
agf {
  amf name {
    default-amf;
    ip-address ip-address;
    local-endpoint {
      initial-tnla-weight-factor initial-tnla-weight-factor;
      ip-address name {
        primary;
      }
    }
    node-id node-id;
    offline;
    port port;
    routing-instance routing-instance;
    tracking-area name;
  }

  node-id node-id;
  node-name node-name;
  plmn name {
```

```
mcc mcc;  
mnc mnc;  
}  
tracking-area code {  
  plmn name {  
    s-nssai name {  
      sd sd;  
      sst(embb | miot | urllc | v2x);  
    }  
  }  
}  
user-planes name {  
  colocated-user-plane {  
    ip-endpoint-address ip-endpoint-address;  
  }  
  data-network-name data-network-name;  
  ip-address ip-address;  
  routing-instance routing-instance;  
}  
}
```

Hierarchy Level

[edit services]

Description

Configure the Access Gateway Function.

Options

node-id Specifies the AGF node identifier.

Syntax

```
amf name {  
  <default-amf;  
  ip-address ip-address;  
  local-endpoint {  
    initial-tnla-weight-factor initial-tnla-weight-factor;  
    ip-address name {  
      primary;  
    }  
  }  
  node-id node-id;  
  offline;  
  port port;  
  routing-instance routing-instance;  
  tracking-area name;  
}
```

Hierarchy Level

[edit services [agf](#)]

Description

Configure the connection to the Access and Mobility Management Function (AMF).

Options

<code>name</code>	Specifies the name of the Access and Mobility Management Function (AMF).
<code>default-amf</code>	Identifies the AMF as the default AMF.
<code>ip-address</code>	Specifies the IP address of the Stream Control Transmission Protocol (SCTP) endpoint on the AMF.
<code>node-id</code>	Specifies the AMF node identifier. <ul style="list-style-type: none"> • Range: 0 through 255
<code>offline</code>	Disable communication with this AMF.
<code>port <i>port number</i></code>	Specifies the port number on the SCTP endpoint. You can specify a port from 0 through 65535. The default is 38412. <ul style="list-style-type: none"> • Default: 38412 • Range: 0 through 65535
<code>routing-instance</code> <i>routing-instance-name</i>	Binds the SCTP endpoint routing instance to the AMF connectivity.

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

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 22.3R1.

fiveqi-map

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Syntax

```
fiveqi-map identifier {  
  upstream-rewrite {  
    dscp dscp;  
    dscp-n3 dscp-n3;  
    forwarding-class forwarding-class;  
    loss-priority(high | low);  
  }  
}
```

Hierarchy Level

```
[edit services agf]
```

Description

Configure the Quality of Service (QoS) attributes for a 5G QoS identifier (5QI) value in the 5QI table.

Customers send data packets across the access Y5 interface to the Access Gateway Function (AGF) in clear IP text. AGF encapsulates the data packet using GPRS Tunnelling Protocol (GTP) and forwards the encapsulated packet to the 5GC. To support GTP encapsulation, AGF sets the QFI and DSCP value in the outer IP header based on the packet priority, forwarding class, and packet loss priority of the data.

AGF looks for 5QI and QoS Flow ID (QFI) values in N2 signaling messages from the Access and Mobility Function (AMF) and matches those values to parameters in the 5QI table. AGF derives the forwarding class and loss priority from the 5QI mapping table. AGF classifies data packet priority using the authorized QoS rules sent in the N1 signaling messages. AGF manages individual subscriber session and applies the QoS rules that corresponds to the 5QI in the 5QI mapping table. AGF can then update differentiated services code point (DSCP) in the payload to match the derived QoS parameters. When you configure DSCP parameters in the 5QI mapping table, AGF overrides the payload DSCP. AGF updates both the inner and outer the IP header when it forwards the GTP packet in the data plane.

This statement allows you to:

- Override the QoS attributes for the non-dynamic 5QI.
- Add a dynamic 5QI and its QoS attributes.

You can configure the following QoS attributes for each defined 5QI. AGF uses the information to update the DSCP value in the IP header as it forwards the data packet from the Y5 interface to the N3 interface.

- Forwarding Class
- Packet Loss Priority
- Upstream DSCP
- Upstream N3 DSCP

Options

identifier	5QI number
	Range: 0 through 63

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

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Command introduced in Junos OS Release 23.2R1.

RELATED DOCUMENTATION

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interface-tag (DHCP Local Server)

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- [Hierarchy Level](#) | 44
- [Description](#) | 44
- [Options](#) | 45
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- [Release Information](#) | 45

Syntax

```
interface-tag name {  
    access-profile;  
    dynamic-profile (DHCP Local Server);  
    overrides (DHCP Local Server);  
    service-profile (DHCP Local Server);  
    short-cycle-protection (DHCP Local Server and Relay Agent);;  
}
```

Hierarchy Level

```
[edit logical-systems name routing-instances name system services dhcp-local-server group],  
[edit logical-systems name system services dhcp-local-server group],  
[edit logical-systems name tenants name routing-instances name system services dhcp-local-server  
group],  
[edit routing-instances name system services dhcp-local-server group],  
[edit system services dhcp-local-server group],  
[edit tenants name routing-instances name system services dhcp-local-server group]
```

Description

Configure the interface tag name to map auto-configured dynamic VLANs to DHCP groups. Specify an interface tag with a dynamic. You can then use the dynamic profile to map to a subset of incoming VLAN IDs. The maximum number of interface-tags supported is 32. This is also the maximum number of supported auto-configurable VLAN dynamic profiles.

Options

name Interface tag name. The length of the interface tag name cannot exceed 64 characters. The only supported special characters are ^ _ * \$.

The remaining statements are explained separately. Click the linked statement in the Syntax section for details or search for the statement in [CLI Explorer](#).

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 23.2R1.

RELATED DOCUMENTATION

| *group (DHCP Local Server)*

interface-tag (DHCP Relay Server)

IN THIS SECTION

- [Syntax | 46](#)
- [Hierarchy Level | 46](#)
- [Description | 47](#)
- [Options | 47](#)
- [Required Privilege Level | 47](#)

Syntax

```
interface-tag name {
    access-profile;
    dynamic-profile (DHCP Relay Agent);
    overrides (DHCP Relay Agent);
    service-profile (DHCP Relay Agent);
    short-cycle-protection (DHCP Local Server and Relay Agent);
}
```

Hierarchy Level

```
[edit bridge-domains name forwarding-options dhcp-relay group],
[edit forwarding-options dhcp-relay group],
[edit logical-systems name bridge-domains name forwarding-options dhcp-relay group],
[edit logical-systems name forwarding-options dhcp-relay group],
[edit logical-systems name routing-instances name bridge-domains name forwarding-options dhcp-relay group],
[edit logical-systems name routing-instances name forwarding-options dhcp-relay group],
[edit logical-systems name routing-instances name vlans name forwarding-options dhcp-relay group],
[edit logical-systems name tenants name routing-instances name bridge-domains name forwarding-options dhcp-relay group],
[edit logical-systems name tenants name routing-instances name forwarding-options dhcp-relay group],
[edit logical-systems name tenants name routing-instances name vlans name forwarding-options dhcp-relay group],
[edit logical-systems name vlans name forwarding-options dhcp-relay group],
[edit routing-instances name bridge-domains name forwarding-options dhcp-relay group],
[edit routing-instances name forwarding-options dhcp-relay group],
```

```
[edit routing-instances name vlans name forwarding-options dhcp-relay group],
[edit tenants name routing-instances name bridge-domains name forwarding-options dhcp-relay
group],
[edit tenants name routing-instances name forwarding-options dhcp-relay group],
[edit tenants name routing-instances name vlans name forwarding-options dhcp-relay group],
[edit vlans name forwarding-options dhcp-relay group]
```

Description

Configure the interface tag name to map auto-configured dynamic VLANs to DHCP groups. Specify an interface tag with a dynamic. You can then use the dynamic profile to map to a subset of incoming VLAN IDs. The maximum number of interface-tags supported is 32. This is also the maximum number of supported auto-configurable VLAN dynamic profiles.

Options

name Interface tag name. The length of the interface tag name cannot exceed 64 characters. The only supported special characters are ^_-\$.

The remaining statements are explained separately. Click the linked statement in the Syntax section for details or search for the statement in [CLI Explorer](#).

Required Privilege Level

interface—To view this statement in the configuration.

interface-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 23.2R1.

RELATED DOCUMENTATION

| *group (DHCP Relay Agent)*

local-endpoint

IN THIS SECTION

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- [Hierarchy Level | 48](#)
- [Description | 49](#)
- [Options | 49](#)
- [Required Privilege Level | 49](#)
- [Release Information | 49](#)

Syntax

```
local-endpoint {  
  initial-tnla-weight-factor initial-tnla-weight-factor;  
  ip-address name {  
    <primary>;  
  }  
}
```

Hierarchy Level

```
[edit services agf amf]
```

Description

AMF local endpoint

Options

initial-tnla-weight-factor

The weight factor assigned to the Stream Control Transmission Protocol (SCTP) association. The weight factor is passed to the Access and Mobility Management Function (AMF) for load balancing. The AMF assigns the weight factor and is used in load balancing. The AGF recommends the initial TNLA weight factor as the SCTP tunnel is being established.

- **Default:** 128
- **Range:** 1 through 255

ip-address *ip-address*

Specify the SCTP endpoint on the AGF.

primary

(Optional) Identify the SCTP endpoint as a primary path.

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

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS 22.3R1.

plmn

IN THIS SECTION

- Syntax | 50
- Hierarchy Level | 50
- Description | 50
- Options | 51
- Required Privilege Level | 51
- Release Information | 51

Syntax

```
plmn name {  
    mcc mcc;  
    mnc mnc;  
}
```

Hierarchy Level

```
[edit services agf]
```

Description

Configure the public land mobile networks (PLMNs) that the Access Gateway Function (AGF) supports.

Options

name	Public land mobile network (PLMN) name
mcc <i>mcc</i>	Mobile country code
mnc <i>mnc</i>	Mobile network code

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 22.3R1.

s-nssai

IN THIS SECTION

- [Syntax | 52](#)
- [Hierarchy Level | 52](#)
- [Description | 52](#)
- [Options | 52](#)
- [Required Privilege Level | 53](#)
- [Release Information | 53](#)

Syntax

```
s-nssai name {
    sd sd;
    sst(embb | miot | urllc | v2x);
}
```

Hierarchy Level

```
[edit services agf tracking-area name plmn]
```

Description

Configure the single network slice selection assistance information (S-NSSAI). The S-NSSAI is used to uniquely identify a network slice. It consists of two components. For a fixed network residential gateway (FN-RG), the Access Gateway Function (AGF) sends a proxy S-NSSAI message to the Access and Mobility Management Function (AMF) during the initial setup.

- SST—Slice service type
- SD—Selection differentiator

Options

<i>name</i>	Single network slice selection assistance information identifier
	<ul style="list-style-type: none"> • Range:0 through 128
<i>sd</i>	Selection differentiator

- **Default:** 0
- **Range:** 0 through 16777215

sst	Slice service type
	<ul style="list-style-type: none"> • embb—Enhanced mobile broadband slice • miot—Massive Internet of Things (IoT) • urllc—Ultra-reliable, low-latency communications • v2x—V2X services

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 22.3R1.

tracking-area

IN THIS SECTION

- [Syntax | 54](#)
- [Hierarchy Level | 54](#)
- [Description | 54](#)
- [Options | 54](#)
- [Required Privilege Level | 55](#)

Syntax

```
tracking-area code {  
  plmn name {  
    s-nssai name {  
      sd sd;  
      sst(embb | miot | urllc | v2x);  
    }  
  }  
}
```

Hierarchy Level

[edit services [agf](#)]

Description

Tracking area for the AMF.

Options

- | | |
|------|--------------------|
| name | Tracking area code |
|------|--------------------|
- **Range:** 0 through 16777215

plmn Public land mobile network name

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

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 22.3R1.

upstream-rewrite

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- [Syntax | 55](#)
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- [Description | 56](#)
- [Options | 56](#)
- [Required Privilege Level | 57](#)
- [Release Information | 57](#)

Syntax

```
upstream-rewrite {
```

```
dscp dscp;
dscp-n3 dscp-n3;
forwarding-class forwarding-class;
loss-priority(high | low);
}
```

Hierarchy Level

```
[edit services agf fiveqi-map]
```

Description

Rewrite QoS attributes for upstream traffic in AGF in the 5QI table.

Options

dscp	Differentiated services code point (DSCP) value on the IP packet containing user data sent to the UPF on N3 Interface. DSCP is a 6-bit value represented by decimal value between 0 to 63. <ul style="list-style-type: none"> • Range: 0 through 63
dscp-n3	DSCP value of the GTP-U encapsulated packet sent to the UPF on N3 Interface. DSCP is a 6-bit value represented by decimal value between 0 to 63. <ul style="list-style-type: none"> • Range: 0 through 63
forwarding-class	Name of forwarding class. Groups packets for transmission and assigns packets to output queues.
loss-priority	Apply the packet loss priority (PLP) for dropping packets.

- high—High probability of being dropped at times of congestion
- low—Low probability of being dropped at times of congestion

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Command introduced in Junos OS Release 23.2R1.

RELATED DOCUMENTATION

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user-planes

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Syntax

```
user-planes name {  
  colocated-user-plane {  
    ip-endpoint-address ip-endpoint-address;  
  }  
  data-network-name data-network-name;  
  ip-address ip-address;  
  routing-instance routing-instance;  
}
```

Hierarchy Level

[edit services [agf](#)]

Description

Configure a tunnel to the User Plane Function (UPF).

Options

name	User plane name
colocated-user-plane	Specify there is a colocated UPF. The <code>ip-endpoint-address</code> <i>ip-endpoint-address</i> is the IP address of the UPF.
data-network-name	Data network name Name of the data network

<code>ip-address <i>ip-endpoint-address</i></code>	User plane IP address
<code>routing-instance</code>	User plane routing instance

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

Required Privilege Level

system—To view this statement in the configuration.

system-control—To add this statement to the configuration.

Release Information

Statement introduced in Junos OS Release 22.3R1.

5

CHAPTER

Operational Commands

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clear network access nas-5g statistics

IN THIS SECTION

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- [Description | 61](#)
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- [Required Privilege Level | 61](#)
- [Release Information | 62](#)

Syntax

```
clear network-access nas-5g statistics
```

Description

Clear the counter tracking network NAS 5G messages.

Options

none

Required Privilege Level

view

Release Information

Command introduced in Junos OS Release 22.3R1.

clear services agf nas statistics

IN THIS SECTION

- [Syntax | 62](#)
- [Description | 62](#)
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- [Release Information | 63](#)

Syntax

```
clear services agf nas statistics
```

Description

Clear Non-Access Stratum (NAS) messaging information that the Access Gateway Function (AGF) has collected.

Options

none

Required Privilege Level

view

Release Information

Command introduced in Junos OS Release 22.3R1.

clear services agf ngap amf

IN THIS SECTION

- [Syntax | 63](#)
- [Description | 63](#)
- [Options | 64](#)
- [Required Privilege Level | 64](#)
- [Release Information | 64](#)

Syntax

```
clear services agf ngap amf  
<amf-name>  
statistics
```

Description

Clear N1 messages sent to the Access Gateway Function (AGF) from the Access and Mobility Management Functions (AMFs).

Options

<i>amf-name</i>	(Optional) Clear the statistics for a particular AMF.
<i>statistics</i>	Clear the statistics for all the AMFs.

Required Privilege Level

view

Release Information

Command introduced in Junos OS Release 22.3R1.

show dhcp relay binding

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Syntax

```
show dhcp relay binding
<address>
<brief>
<detail>
<interface interface-name>
<interface-tag interface-tag-name>
<interfaces-vlan>
<interfaces-wildcard>
<ip-address / mac-address>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
<summary>
```

Description

Display the address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.

Options

<i>address</i>	(Optional) Display DHCP binding information for a specific client identified by one of the following entries: <ul style="list-style-type: none"> • <i>ip-address</i>—The specified IP address. • <i>mac-address</i>—The specified MAC address. • <i>session-id</i>—The specified session ID.
<i>brief</i>	(Optional) Display brief information about the active client bindings. This is the default, and produces the same output as <code>show dhcp relay binding</code> .
<i>detail</i>	(Optional) Display detailed client binding information.
<i>interface interface-name</i>	(Optional) Perform this operation on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.

interface-tag <i>interface-tag-name</i>	(Optional) Displays the binding information for the specified interface-tag.
<i>interfaces-vlan</i>	(Optional) Show the binding state information on the interface VLAN ID and S-VLAN ID.
<i>interfaces-wildcard</i>	(Optional) The set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).
logical-system <i>logical-system-name</i>	(Optional) Perform this operation on the specified logical system.
routing-instance <i>routing-instance-name</i>	(Optional) Perform this operation on the specified routing instance.
summary	(Optional) Display a summary of DHCP client information.

Required Privilege Level

view

Output Fields

Table 2 on page 66 lists the output fields for the `show dhcp relay binding` command. Output fields are listed in the approximate order in which they appear.

Table 2: show dhcp relay binding Output Fields

Field Name	Field Description	Level of Output
<i>number</i> clients,(<i>number</i> init, <i>number</i> bound, <i>number</i> selecting, <i>number</i> requesting, <i>number</i> renewing, <i>number</i> rebinding, <i>number</i> releasing)	Summary counts of the total number of DHCP clients and the number of DHCP clients in each state.	summary
IP address	IP address of the DHCP client.	brief detail

Table 2: show dhcp relay binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Session Id	Session ID of the subscriber session.	brief detail
Generated Remote ID	Remote ID generated by the Option 82 Agent Remote ID (suboption 1)	detail
Hardware address	Hardware address of the DHCP client.	brief detail
Expires	Number of seconds in which the lease expires.	brief detail
State	<p>State of the DHCP relay address binding table on the DHCP client:</p> <ul style="list-style-type: none"> • BOUND—Client has an active IP address lease. • INIT—Initial state. • REBINDING—Client is broadcasting a request to renew the IP address lease. • RELEASE—Client is releasing the IP address lease. • RENEWING—Client is sending a request to renew the IP address lease. • REQUESTING—Client is requesting a DHCP server. • SELECTING—Client is receiving offers from DHCP servers. 	brief detail
Interface	Incoming client interface.	brief
Lease Expires	Date and time at which the client's IP address lease expires.	detail
Lease Expires in	Number of seconds in which the lease expires.	detail

Table 2: show dhcp relay binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Lease Start	Date and time at which the client's IP address lease started.	detail
Lease time violated	Lease time violation has occurred.	detail
Incoming Client Interface	Client's incoming interface.	detail
Interface tag	Name of the Interface tag.	detail
Server IP Address	IP address of the DHCP server.	detail
Server Interface	Interface of the DHCP server.	detail
Bootp Relay Address	IP address of BOOTP relay.	detail
Type	<p>Type of DHCP packet processing performed on the router:</p> <ul style="list-style-type: none"> • active—Router actively processes and relays DHCP packets. • passive—Router passively snoops DHCP packets passing through the router. 	All levels
Lease expires at	Date and time at which the client's IP address lease expires.	All levels
Dual Stack Group	Name of dual stack that is configured with the DHCP binding.	detail
Dual Stack Peer Prefix	Prefix of dual stack DHCPv6 peer.	detail

Table 2: show dhcp relay binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Dual Stack Peer Address	Address of the dual stack DHCPv6 peer.	detail

Sample Output

show dhcp relay binding

```
user@host> show dhcp relay binding
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.11	41	00:00:5e:00:53:01	86371	BOUND	ge-1/0/0.0
192.51.100.12	42	00:00:5e:00:53:02	86371	BOUND	ge-1/0/0.0
192.51.100.13	43	00:00:5e:00:53:03	86371	BOUND	ge-1/0/0.0
192.51.100.14	44	00:00:5e:00:53:04	86371	BOUND	ge-1/0/0.0
192.51.100.15	45	00:00:5e:00:53:05	86371	BOUND	ge-1/0/0.0

show dhcp relay binding detail

```
user@host> show dhcp relay binding detail
```

```
Client IP Address: 192.51.100.11
  Hardware Address:      00:00:5e:00:53:01
  State:                  BOUND(DHCP_RELAY_STATE_BOUND_ON_INTF_DELETE)
  Lease Expires:          2009-07-21 11:00:06 PDT
  Lease Expires in:       86361 seconds
  Lease Start:            2009-07-20 11:00:06 PDT
  Lease time violated:    yes
  Last Packet Received:   2009-07-20 11:00:06 PDT
  Incoming Client Interface: ge-1/0/0.0
  Interface tag:          None
  Server Ip Address:      192.51.100.22
  Server Interface:       none
```

```

Bootp Relay Address:      192.51.100.32
Session Id:               41
Dual Stack Group:         dual-stack-retail6
Dual Stack Peer Prefix:   2001:db8:0:4::/64
Dual Stack Peer Address:  2001:db8:1:0:8003::1/128

```

Client IP Address: 192.51.100.12

```

Hardware Address:         00:00:5e:00:53:02
State:                    BOUND(DHCP_RELAY_STATE_BOUND_ON_INTF_DELETE)
Lease Expires:            2009-07-21 11:00:06 PDT
Lease Expires in:         86361 seconds
Lease Start:              2009-07-20 11:00:06 PDT
Last Packet Received:     2009-07-20 11:00:06 PDT
Incoming Client Interface: ge-1/0/0.0
Interface tag:             None
Server Ip Address:        192.51.100.22
Server Interface:         none
Bootp Relay Address:      192.51.100.32
Session Id:               42
Generated Remote ID       host:ge-1/0/0:100

```

show dhcp relay binding interface

```
user@host> show dhcp relay binding interface fe-0/0/2
```

IP address	Hardware address	Type	Lease expires at
192.51.100.1	00:00:5e:00:53:01	active	2007-03-27 15:06:20 EDT

show dhcp relay binding interface vlan-id

```
user@host> show dhcp relay binding interface ge-1/1/0:100
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.15	6	00:00:5e:00:53:94	86124	BOUND	ge-1/1/0:100

show dhcp relay binding interface svlan-id

```
user@host> show dhcp relay binding interface ge-1/1/0:10-100
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.16	7	00:00:5e:00:53:92	86124	BOUND	ge-1/1/0:10-100

show dhcp relay binding interface-tag <interface-tag-name>

```
user@host> show dhcp relay binding interface-tag sample_tag
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.2.1.1	2	00:10:94:00:00:01	740	BOUND	ge-0/0/1.3221225472

show dhcp relay binding interface-tag interface-tag-name detail

```
user@host> show dhcp relay binding interface-tag AGF_IFD detail
```

```
Client IP Address: 192.168.0.100
Hardware Address: 00:34:44:44:44:44
State: BOUND(RELAY_STATE_BOUND)
Lease Expires: 2023-05-02 11:22:44 PDT
Lease Expires in: 2575 seconds
Lease Start: 2023-05-02 09:52:44 PDT
Last Packet Received: 2023-05-02 10:22:44 PDT
Incoming Client Interface: demux0.3221225472
Interface tag name: AGF_IFD
Client Interface Svlan Id: 1
Client Interface Vlan Id: 1
Demux Interface: demux0.3221225491
Server Ip Address: 192.168.0.50
Server Interface: none
Bootp Relay Address: 192.168..1
Session Id: 8
Client Profile Name: dhcp-profile
Generated Circuit ID: aci1
Generated Remote ID: ari1
Relay Id Length: 31
```

```
Relay Id: /0x00020000/0x00000583/0x01000000/0x00000000
Relay Id: /0x30303a32/0x363a3838/0x3a64373a/0x66373a
```

show dhcp relay binding ip-address

```
user@host> show dhcp relay binding 192.51.100.13
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.13	43	00:00:5e:00:53:03	86293	BOUND	ge-1/0/0.0

show dhcp relay binding mac-address

```
user@host> show dhcp relay binding 00:00:5e:00:53:05
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.15	45	00:00:5e:00:53:05	86279	BOUND	ge-1/0/0.0

show dhcp relay binding session-id

```
user@host> show dhcp relay binding 41
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.11	41	00:00:5e:00:53:53	86305	BOUND	ge-1/0/0.0

show dhcp relay binding <interfaces-vlan>

```
user@host> show dhcp relay binding ge-1/0/0:100-200
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.168.0.17	42	00:00:5e:00:53:02	86346	BOUND	ge-1/0/0.1073741827
192.168.0.16	41	00:00:5e:00:53:01	86346	BOUND	ge-1/0/0.1073741827

show dhcp relay binding <interfaces-wildcard>

```
user@host> show dhcp relay binding ge-1/3/*
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.168.0.9	24	00:00:5e:00:53:04	86361	BOUND	ge-1/3/0.110

192.168.0.8	23	00:00:5e:00:53:03	86361	BOUND	ge-1/3/0.110
192.168.0.7	22	00:00:5e:00:53:02	86361	BOUND	ge-1/3/0.110

show dhcp relay binding summary

```
user@host> show dhcp relay binding summary
3 clients, (2 init, 1 bound, 0 selecting, 0 requesting, 0 renewing, 0 rebinding, 0 releasing)
```

Release Information

Command introduced in Junos OS Release 8.3.

Options interface and *mac-address* added in Junos OS Release 8.4.

Options *interfaces-vlan* and *interfaces-wildcard* added in Junos OS Release 12.1.

RELATED DOCUMENTATION

Viewing and Clearing DHCP Bindings

clear dhcp relay binding

show dhcpv6 relay binding

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Syntax

```
show dhcpv6 relay binding
<address>
<brief>
<detail>
<interface interface-name>
<interface-tag interface-tag-name>
<interfaces-vlan>
<interfaces-wildcard>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
<summary>
```

Description

Display the DHCPv6 address bindings in the Dynamic Host Configuration Protocol (DHCP) client table.

Options

- address*** (Optional) One of the following identifiers for the DHCPv6 client whose binding state you want to show:
- *CID*—The specified Client ID (CID).
 - *ipv6-prefix*—The specified IPv6 prefix.
 - *session-id*—The specified session ID.
- brief*** (Optional) Display brief information about the active client bindings. This is the default, and produces the same output as `show dhcpv6 relay binding`.

detail	(Optional) Display detailed client binding information.
interface <i>interface-name</i>	(Optional) Perform this operation on the specified interface. You can optionally filter on VLAN ID and S-VLAN ID.
interface-tag <i>interface-tag-name</i>	(Optional) Displays the binding information for the specified interface-tag.
interfaces-vlan	(Optional) Interface VLAN ID or S-VLAN ID interface on which to show binding state information.
interfaces-wildcard	(Optional) Set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).
logical-system <i>logical-system-name</i>	(Optional) Perform this operation on the specified logical system.
routing-instance <i>routing-instance-name</i>	(Optional) Perform this operation on the specified routing instance.
summary	(Optional) Display a summary of DHCPv6 client information.

Required Privilege Level

view

Output Fields

[Table 3 on page 76](#) lists the output fields for the `show dhcpv6 relay binding` command. Output fields are listed in the approximate order in which they appear.

Table 3: show dhcpv6 relay binding Output Fields

Field Name	Field Description	Level of Output
<i>number clients, (number init, number bound, number selecting, number requesting, number renewing, number rebinding, number releasing)</i>	Summary counts of the total number of DHCPv6 clients and the number of DHCPv6 clients in each state.	summary
Client IPv6 Prefix	Prefix of the DHCPv6 client.	brief detail
Client IPv6 Excluded Prefix	IPv6 Prefix of the DHCP client excluded.	detail
Client DUID	DHCP for IPv6 Unique Identifier (DUID) of the client.	brief detail
Client IPv6 Address	IPv6 address assigned to the subscriber.	detail
Session Id	Session ID of the subscriber session.	brief detail
Expires	Number of seconds in which the lease expires.	brief detail

Table 3: show dhcpv6 relay binding Output Fields (Continued)

Field Name	Field Description	Level of Output
State	<p>State of the DHCPv6 relay address binding table on the DHCPv6 client:</p> <ul style="list-style-type: none"> • BOUND—Client has an active IP address lease. • INIT—Initial state. • REBINDING—Client is broadcasting a request to renew the IP address lease. • RECONFIGURE—Client is broadcasting a request to reconfigure the IP address lease. • RELEASE—Client is releasing the IP address lease. • RENEWING—Client is sending a request to renew the IP address lease. • REQUESTING—Client is requesting a DHCPv6 server. • SELECTING—Client is receiving offers from DHCPv6 servers. 	brief detail
Interface	Incoming client interface.	brief
Interface tag	Name of the Interface tag.	detail
Lease Expires	Date and time at which the client's IP address lease expires.	detail
Lease Expires in	Number of seconds in which the lease expires.	detail
Preferred Lease Expires	Date and UTC time at which the client's IPv6 prefix expires.	detail
Preferred Lease Expires in	Number of seconds at which the client's IPv6 prefix expires.	detail

Table 3: show dhcpv6 relay binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Lease Start	Date and time at which the client's IP address lease started.	detail
Lease time violated	Lease time violation has occurred.	detail
Incoming Client Interface	Client's incoming interface.	detail
Server Address	IP address of the DHCPv6 server. Displays unknown for a DHCPv6 relay agent in a multi-relay topology that is not directly adjacent to the DHCPv6 server and does not detect the IP address of the server. In that case, the output instead displays the Next Hop Server Facing Relay field.	detail
Next Hop Server Facing Relay	Next-hop address in the direction of the DHCPv6 server.	detail
Server Interface	Interface of the DHCPv6 server.	detail
Relay Address	IP address of the relay.	detail
Client Pool Name	Address pool that granted the client lease.	detail
Client ID Length	Length of client ID.	All levels
Client Id	Client ID.	All levels
Generated Circuit ID	Circuit ID generated by the DHCPv6 Interface-ID option (option 18)	detail
Generated Remote ID Enterprise Number	The Juniper Networks IANA private enterprise number	detail

Table 3: show dhcpv6 relay binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Generated Remote ID	Remote ID generated by the DHCPv6 Remote-ID option (option 37)	detail
Dual Stack Group	Name of the dual-stack group for the DHCPv6 binding.	detail
Dual Stack Peer Address	Address of the dual-stack DHCPv4 peer.	detail

Sample Output

show dhcpv6 relay binding

```

user@host> show dhcpv6 relay binding
Prefix                Session Id Expires State Interface Client DUID
2001:db8:3c4d:15::/64 1          83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
2001:db8:3c4d:16::/64 2          83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:02
2001:db8:3c4d:17::/64 3          83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:03
2001:db8:3c4d:18::/64 4          83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:04
2001:db8:3c4d:19::/64 5          83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:05
2001:db8:3c4d:20::/64 6          83720 BOUND ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:06

```

show dhcpv6 relay binding (Address)

```

user@host> show dhcp6 relay binding 2001:db8:1111:2222::/64 detail
Session Id: 1
Client IPv6 Prefix:                2001:db8:3c4d:15::/64

```

```

Client DUID:                LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
State:                      BOUND(RELAY_STATE_BOUND)
Lease Expires:              2011-05-25 07:12:09 PDT
Lease Expires in:           77115 seconds
Preferred Lease Expires:    2012-07-24 00:18:14 UTC
Preferred Lease Expires in: 600 seconds
Lease Start:                2011-05-24 07:12:09 PDT
Incoming Client Interface:  ge-1/0/0.0
Interface tag:              None
Server Address:             2001:db8:aaaa:bbbb::1
Server Interface:           none
Relay Address:              2001:db8:1111:2222::
Client Pool Name:           pool-25
Client Id Length:           14
Client Id:                  /0x00010001/0x4bfa26af/0x00109400/0x0001

```

show dhcpv6 relay binding detail (Client ID)

```

user@host> show dhcpv6 relay binding 14/0x00010001/0x4bfa26af/0x00109400/0x0001 detail
Session Id: 1
  Client IPv6 Prefix:        2001:db8:3c4d:15::/64
  Client DUID:               LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
  State:                     BOUND(RELAY_STATE_BOUND)
  Lease Expires:             2011-05-25 07:12:09 PDT
  Lease Expires in:          77115 seconds
  Preferred Lease Expires:    2012-07-24 00:18:14 UTC
  Preferred Lease Expires in: 600 seconds
  Lease Start:               2011-05-24 07:12:09 PDT
  Lease time violated:        yes
  Incoming Client Interface:  ge-1/0/0.0
  Interface tag:              None
  Server Address:             2001:db8:aaaa:bbbb::1
  Server Interface:           none
  Relay Address:              2001:db8:1111:2222::
  Client Pool Name:           pool-25
  Client Id Length:           14
  Client Id:                  /0x00010001/0x4bfa26af/0x00109400/0x0001

```

show dhcpv6 relay binding detail

```

user@host> show dhcpv6 relay binding detail
Session Id: 1
  Client IPv6 Prefix:          2001:db8:3c4d:15::/64
  Client DUID:                 LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01
  State:                       BOUND(RELAY_STATE_BOUND)
  Lease Expires:               2011-05-25 07:12:09 PDT
  Lease Expires in:            77115 seconds
  Preferred Lease Expires:     2012-07-24 00:18:14 UTC
  Preferred Lease Expires in:  600 seconds
  Lease Start:                 2011-05-24 07:12:09 PDT
  Lease time violated:         yes
  Incoming Client Interface:   ge-1/0/0.0
  Interface tag:               None
  Server Address:              2001:db8:aaaa:bbbb::1
  Server Interface:            none
  Relay Address:               2001:db8:1111:2222::
  Client Pool Name:            pool-25
  Client Id Length:            14
  Client Id:                   /0x00010001/0x4bfa26af/0x00109400/0x0001
  Generated Remote ID Enterprise Number: 1411
  Generated Remote ID:         host:ge-1/0/0:100

```

show dhcpv6 relay binding detail (Dual-Stack)

```

user@host> show dhcpv6 relay binding detail
Session Id: 2
  Client IPv6 Prefix:          2001:db8:ffff:0:4::/64
  Client IPv6 Address:         2001:db8:3000:8003::1/128
  Client DUID:                 LL0x1-00:00:64:01:01:02
  State:                       BOUND(DHCPV6_RELAY_STATE_BOUND)
  Lease Expires:               2016-10-17 07:39:25 PDT
  Lease Expires in:            3450 seconds
  Lease Start:                 2016-10-17 06:39:25 PDT
  Last Packet Received:        2016-10-17 06:39:25 PDT
  Incoming Client Interface:   ae0.3221225472
  Interface tag:               None
  Client Interface Svlan Id:   2000
  Client Interface Vlan Id:    1

```

```

Server Ip Address:      2001:db8:3000::2
Server Interface:      none
Client Profile Name:    my-dual-stack
Client Id Length:       10
Client Id:              /0x00030001/0x00006401/0x0102
Dual Stack Group:       group1
Dual Stack Peer Address: 192.0.2.4

```

show dhcpv6 relay binding detail (Multi-Relay Topology)

```

user@host > show dhcpv6 relay binding detail
Session Id: 13
  Client IPv6 Prefix:      2001:db8:3000:0:8001::5/128
  Client DUID:             LL0x1-00:00:65:03:01:02
  State:                   BOUND(DHCPV6_RELAY_STATE_BOUND)
  Lease Expires:           2011-11-21 06:14:50 PST
  Lease Expires in:        293 seconds
  Preferred Lease Expires: 2012-07-24 00:18:14 UTC
  Preferred Lease Expires in: 600 seconds
  Lease Start:             2011-11-21 06:09:50 PST
  Incoming Client Interface: ge-1/0/0.0
  Interface tag:           None
  Server Address:          unknown
  Next Hop Server Facing Relay: 2001:db8:4000::2
  Server Interface:        none
  Client Id Length:        10
  Client Id:               /0x00030001/0x00006503/0x0102

```

show dhcpv6 relay binding (Session ID)

```

user@host> show dhcpv6 relay binding 41
Prefix          Session Id  Expires  State  Interface  Client DUID
2001:db8:3c4d:15::/64  41        78837    BOUND  ge-1/0/0.0
LL_TIME0x1-0x4bfa26af-00:10:94:00:00:01

```

show dhcpv6 relay binding (Subscriber with Multiple Addresses)

```
user@host> show dhcpv6 relay binding
```

Prefix	Session Id	Expires	State	Interface	Client DUID
2001:db8:1001::1:24/128	23	593	BOUND	ge-9/0/9.0	LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:1001::1:1c/128	23	393	BOUND	ge-9/0/9.0	LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:1001::1:14/128	23	193	BOUND	ge-9/0/9.0	LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:3001::300/120	23	293	BOUND	ge-9/0/9.0	LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:3001::200/120	23	193	BOUND	ge-9/0/9.0	LL_TIME0x1-0x55306754-00:10:94:00:00:02
2001:db8:3001::100/120	23	93	BOUND	ge-9/0/9.0	LL_TIME0x1-0x55306754-00:10:94:00:00:02

When DHCPv6 relay binding is configured with prefix exclude option, we get the following output:

```
user@host> show dhcpv6 relay binding detail
```

```
Session Id: 6
```

Hardware Address:	00:10:94:00:00:01
Client IPv6 Address:	7001:2:3::d/128
Lease Expires:	2017-12-11 07:45:27 IST
Lease Expires in:	9999952 seconds
Preferred Lease Expires:	2017-12-11 07:45:27 IST
Preferred Lease Expires in:	9999952 seconds
Client IPv6 Prefix:	7001::1000:0:0:0/68
Client IPv6 Excluded Prefix:	7001::1fff:ffff:ffff:ff00/120
Lease Expires:	2017-12-11 07:45:27 IST
Lease Expires in:	9999952 seconds
Preferred Lease Expires:	2017-12-11 07:45:27 IST
Preferred Lease Expires in:	9999952 seconds
Client DUID:	LL_TIME0x1-0x599553b0-00:10:94:00:00:01
State:	BOUND(DHCPV6_RELAY_STATE_BOUND)
Lease Start:	2017-08-17 13:58:33 IST
Last Packet Received:	2017-08-17 13:58:48 IST
Incoming Client Interface:	ge-0/0/0.100
Interface tag:	None
Client Interface Vlan Id:	100
Server Ip Address:	7002::1


```

Server Interface:      none
Client Id Length:     14
Client Id:            /0x00010001/0x599553b0/0x00109400/0x0001
Generated Circuit ID:  ge-0/0/0:100

```

show dhcpv6 relay binding detail (Subscriber with Multiple Addresses)

```
user@host> show dhcpv6 relay binding detail
```

```
Session Id: 3
```

```

Client IPv6 Address:      2001:db8:1001::1:2/128
Lease Expires:           2015-05-15 02:34:51 PDT
Lease Expires in:        24 seconds
Preferred Lease Expires:  2015-05-15 02:34:51 PDT
Preferred Lease Expires in: 24 seconds
Client IPv6 Address:      2001:db8:1001::1:12/128
Lease Expires:           2015-05-15 02:41:31 PDT
Lease Expires in:        424 seconds
Preferred Lease Expires:  2015-05-15 02:41:31 PDT
Preferred Lease Expires in: 424 seconds
Client IPv6 Address:      2001:db8:1001::1:a/128
Lease Expires:           2015-05-15 02:38:11 PDT
Lease Expires in:        224 seconds
Preferred Lease Expires:  2015-05-15 02:38:11 PDT
Preferred Lease Expires in: 224 seconds
Client IPv6 Prefix:       2001:db8:3001::/120
Lease Expires:           2015-05-15 02:34:51 PDT
Lease Expires in:        24 seconds
Preferred Lease Expires:  2015-05-15 02:34:51 PDT
Preferred Lease Expires in: 24 seconds
Client IPv6 Prefix:       2001:db8:3001::200/120
Lease Expires:           2015-05-15 02:38:11 PDT
Lease Expires in:        224 seconds
Preferred Lease Expires:  2015-05-15 02:38:11 PDT
Preferred Lease Expires in: 224 seconds
Client IPv6 Prefix:       2001:db8:3001::100/120
Lease Expires:           2015-05-15 02:36:31 PDT
Lease Expires in:        124 seconds
Preferred Lease Expires:  2015-05-15 02:36:31 PDT
Preferred Lease Expires in: 124 seconds
Client DUID:              LL_TIME0x1-0x55554c6e-00:10:94:00:00:02
State:                    BOUND(DHCPV6_RELAY_STATE_BOUND)

```

```

Lease Start:                2015-05-15 02:34:21 PDT
Last Packet Received:       2015-05-15 02:34:22 PDT
Incoming Client Interface:   ge-9/0/9.0
Interface tag:               None
Client Interface Vlan Id:    111
Demux Interface:             demux0.3221225475
Server Ip Address:           2001:db8:5001::1
Server Interface:            none
Client Profile Name:         DHCP-IPDEMUX-PROF
Client Id Length:            14
Client Id:                   /0x00010001/0x55554c6e/0x00109400/0x0002
Generated Circuit ID:        ge-9/0/9:111
Generated Remote ID Enterprise Number: 1411
Generated Remote ID:         ge-9/0/9:111

```

show dhcpv6 relay binding (Interfaces VLAN)

```

user@host> show dhcpv6 relay binding ge-1/0/0:100-200
Prefix          Session Id Expires State Interface Client DUID
2001:DB8::/32   11      87583 BOUND ge-1/0/0.1073741827
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:19::/32 12      87583 BOUND ge-1/0/0.1073741827
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01

```

show dhcpv6 relay binding (Interfaces Wildcard)

```

user@host> show dhcpv6 relay binding demux0
Prefix          Session Id Expires State Interface Client DUID
2001:DB8::/32   30      79681 BOUND demux0.1073741824
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:19::/32 31      79681 BOUND demux0.1073741825
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:C9::/32 32      79681 BOUND demux0.1073741826
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01

```

show dhcpv6 relay binding (Interfaces Wildcard)

```
user@host> show dhcpv6 relay binding ge-1/3/*
```

Prefix	Session Id	Expires	State	Interface	Client DUID
2001:DB8::/32	22	79681	BOUND	ge-1/3/0.110	LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:19::/32	33	79681	BOUND	ge-1/3/0.110	LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01
2001:DB8:C9::/32	24	79681	BOUND	ge-1/3/0.110	LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01

show dhcpv6 relay binding summary

```
user@host> show dhcpv6 relay binding summary
```

5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)

show dhcpv6 relay binding interface-tag <interface-tag-name>

```
user@host> show dhcpv6 relay binding interface-tag sample_tag
```

IP address	Session Id	Hardware address	Expires	State	Interface
2001:db8:1001::1:a/128	77	00:10:94:00:00:01	740	BOUND	ge-0/0/1.3221225472

Release Information

Command introduced in Junos OS Release 11.4.

interfaces-vlan and *interfaces-wildcard* options introduced in Junos OS Release 12.1.

RELATED DOCUMENTATION

[Viewing and Clearing DHCP Bindings](#)

No Link Title

show dhcp server binding

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Syntax

```
show dhcp server binding  
<address>  
<interfaces-vlan><brief | detail | summary>  
<interface interface-name>  
<interface-tag interface-tag-name>  
<interfaces-vlan>  
<interfaces-wildcard>  
<logical-system logical-system-name>  
<routing-instance routing-instance-name>
```

Description

Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol (DHCP) local server.

NOTE: If you delete the DHCP server configuration, DHCP server bindings might still remain. To ensure that DHCP bindings are removed, issue the `clear dhcp server binding` command before you delete the DHCP server configuration.

Options

<i>address</i>	(Optional) Display DHCP binding information for a specific client identified by one of the following entries: <ul style="list-style-type: none"> • <i>ip-address</i>—The specified IP address. • <i>mac-address</i>—The specified MAC address. • <i>session-id</i>—The specified session ID.
brief detail summary	(Optional) Display the specified level of output about active client bindings. The default is <code>brief</code> , which produces the same output as <code>show dhcp server binding</code> .
interface <i>interface-name</i>	(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.
interface-tag <i>interface-tag-name</i>	(Optional) Displays the binding information for the specified interface-tag.
<i>interfaces-vlan</i>	(Optional) Show the binding state information on the interface VLAN ID and S-VLAN ID.
<i>interfaces-wildcard</i>	(Optional) The set of interfaces on which to show the binding state information. This option supports the use of the wildcard character (*).
logical-system <i>logical-system-name</i>	(Optional) Display information about active client bindings for DHCP clients on the specified logical system.
routing-instance <i>routing-instance-name</i>	(Optional) Display information about active client bindings for DHCP clients on the specified routing instance.

Required Privilege Level

view

Output Fields

Table 4 on page 89 lists the output fields for the `show dhcp server binding` command. Output fields are listed in the approximate order in which they appear.

Table 4: show dhcp server binding Output Fields

Field Name	Field Description	Level of Output
<i>number</i> clients, (<i>number</i> init, <i>number</i> bound, <i>number</i> selecting, <i>number</i> requesting, <i>number</i> renewing, <i>number</i> releasing)	Summary counts of the total number of DHCP clients and the number of DHCP clients in each state.	summary
IP address	IP address of the DHCP client.	brief detail
Session Id	Session ID of the subscriber session.	brief detail
Hardware address	Hardware address of the DHCP client.	brief detail
Expires	Number of seconds in which lease expires.	brief detail

Table 4: show dhcp server binding Output Fields *(Continued)*

Field Name	Field Description	Level of Output
State	<p>State of the address binding table on the extended DHCP local server:</p> <ul style="list-style-type: none"> • BOUND—Client has active IP address lease. • FORCERENEW—Client has received forcerenew message from server. • INIT—Initial state. • RELEASE—Client is releasing IP address lease. • RENEWING—Client sending request to renew IP address lease. • REQUESTING—Client requesting a DHCP server. • SELECTING—Client receiving offers from DHCP servers. 	brief detail
Interface	Interface on which the request was received.	brief
Lease Expires	Date and time at which the client's IP address lease expires.	detail
Lease Expires in	Number of seconds in which lease expires.	detail
Lease Start	Date and time at which the client's IP address lease started.	detail
Lease time violated	Lease time violation has occurred.	detail
Last Packet Received	Date and time at which the router received the last packet.	detail
Incoming Client Interface	Client's incoming interface.	detail

Table 4: show dhcp server binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Interface tag	Name of the Interface tag.	detail
Client Interface Svlan Id	S-VLAN ID of the client's incoming interface.	detail
Client Interface Vlan Id	VLAN ID of the client's incoming interface.	detail
Demux Interface	Name of the IP demultiplexing (demux) interface.	detail
Server IP Address or Server Identifier	IP address of DHCP server.	detail
Server Interface	Interface of DHCP server.	detail
Client Pool Name	Name of address pool used to assign client IP address lease.	detail

Table 4: show dhcp server binding Output Fields (*Continued*)

Field Name	Field Description	Level of Output
Liveness Detection State	<p>State of the liveness detection status for a subscriber's Bidirectional Forwarding Detection (BFD) protocol session:</p> <p>NOTE: This output field displays status only when liveness detection has been explicitly configured for a subscriber and the liveness detection protocol is actively functioning for that subscriber.</p> <ul style="list-style-type: none"> DOWN—Liveness detection has been enabled for a subscriber but the broadband network gateway (BNG) detects that the liveness detection session for the BFD protocol is in the DOWN state. <p>A liveness detection session that was previously in an UP state has transitioned to a DOWN state, beginning with a liveness detection failure, and ending with the deletion of the client binding. The DOWN state is reported only during this transition period of time.</p> <ul style="list-style-type: none"> UNKNOWN—Liveness detection has been enabled for a subscriber but the actual liveness detection state has not yet been determined. <p>The UNKNOWN state is reported after a DHCP subscriber initially logs in while the underlying liveness detection protocol handshake, such as BFD, is still processing and the BFD session has not yet reached the UP state.</p> <ul style="list-style-type: none"> UP—Liveness detection has been enabled for a subscriber, and the BNG and the subscriber or client have <i>both</i> determined that the liveness detection session for the BFD protocol is in the UP state. WENT_DOWN—State is functionally equivalent to the DOWN state. A liveness detection session that was previously in an UP state has transitioned to a DOWN state implying a liveness detection failure. 	detail

Table 4: show dhcp server binding Output Fields (*Continued*)

Field Name	Field Description	Level of Output
	The WENT_DOWN state applies to the internal distribution of the liveness detection mechanism between the Junos DHCP Daemon for Subscriber Services (JDHCPd), the BFD plug-in within the Broadband Edge Subscriber Management Daemon (BBE-SMGD), and the Packet Forwarding Engine.	
ACI Interface Set Name	Internally generated name of the dynamic agent circuit identifier (ACI) interface set.	detail
ACI Interface Set Index	Index number of the dynamic ACI interface set.	detail
ACI Interface Set Session ID	Identifier of the dynamic ACI interface set entry in the session database.	detail
Client Profile Name	DHCP client profile name.	detail
Dual Stack Group	DHCP server profile name.	detail
Dual Stack Peer Prefix	IPv6 prefix of peer.	detail
Dual Stack Peer Address	IPv6 address of peer.	detail

Sample Output

show dhcp server binding

```
user@host> show dhcp server binding
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.51.100.15	6	00:00:5e:00:53:01	86180	BOUND	ge-1/0/0.0

192.51.100.16	7	00:00:5e:00:53:02	86180	BOUND	ge-1/0/0.0
192.51.100.17	8	00:00:5e:00:53:03	86180	BOUND	ge-1/0/0.0
192.51.100.18	9	00:00:5e:00:53:04	86180	BOUND	ge-1/0/0.0
192.51.100.19	10	00:00:5e:00:53:05	86180	BOUND	ge-1/0/0.0

show dhcp server binding detail

```

user@host> show dhcp server binding detail
Client IP Address: 192.51.100.15
    Hardware Address:      00:00:5e:00:53:01
    State:                 BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)
    Lease Expires:         2009-07-21 10:10:25 PDT
    Lease Expires in:      86151 seconds
    Lease Start:           2009-07-20 10:10:25 PDT
    Incoming Client Interface: ge-1/0/0.0
    Interface tag:         None
    Server Ip Address:     192.51.100.9
    Server Interface:      none
    Session Id:            6
    Client Pool Name:      6
    Liveness Detection State: UP
Client IP Address: 192.51.100.16
    Hardware Address:      00:00:5e:00:53:02
    State:                 BOUND(LOCAL_SERVER_STATE_BOUND_ON_INTF_DELETE)
    Lease Expires:         2009-07-21 10:10:25 PDT
    Lease Expires in:      86151 seconds
    Lease Start:           2009-07-20 10:10:25 PDT
    Lease time violated:    yes
    Incoming Client Interface: ge-1/0/0.0
    Server Ip Address:     192.51.100.9
    Server Interface:      none
    Session Id:            7
    Client Pool Name:      7
    Liveness Detection State: UP

```

When DHCP binding is configured with dual-stack, we get the following output:

```

user@host> show dhcp server binding detail
Client IP Address: 192.51.100.10
    Hardware Address:      00:00:64:03:01:02

```

```

State:                                BOUND(LOCAL_SERVER_STATE_BOUND)
Protocol-Used:                        DHCP
Lease Expires:                        2016-11-07 08:30:39 PST
Lease Expires in:                     43706 seconds
Lease Start:                          2016-11-04 11:00:37 PDT
Last Packet Received:                 2016-11-06 09:00:39 PST
Incoming Client Interface:            ae0.3221225472
Interface tag:                        None
Client Interface Svlan Id:            2000
Client Interface Vlan Id:             1
Server Ip Address:                    192.51.100.2
Session Id:                           2
Client Pool Name:                     my-v4-pool
Client Profile Name:                  dhcp-retail
Dual Stack Group:                     my-dual-stack
Dual Stack Peer Prefix:               2001:db8:ffff:0:4::/64
Dual Stack Peer Address:              2001:db8:0:8003::1/128

```

show dhcp server binding detail (ACI Interface Set Configured)

```

user@host> show dhcp server binding detail
Client IP Address: 192.51.100.14
  Hardware Address: 00:00:5e:00:53:02
  State:            BOUND(LOCAL_SERVER_STATE_BOUND)
  Lease Expires:    2012-03-13 09:53:32 PDT
  Lease Expires in: 82660 seconds
  Lease Start:      2012-03-12 10:23:32 PDT
  Last Packet Received: 2012-03-12 10:23:32 PDT
  Incoming Client Interface: demux0.1073741827
  Interface tag:      None
  Client Interface Svlan Id: 1802
  Client Interface Vlan Id: 302
  Demux Interface:    demux0.1073741832
  Server Identifier:  192.51.100.202
  Session Id:         11
  Client Pool Name:    poolA
  Client Profile Name: DEMUXprofile
  Liveness Detection State: UP
  ACI Interface Set Name: aci-1002-demux0.1073741827

```

```
ACI Interface Set Index:    2
ACI Interface Set Session ID: 6
```

show dhcp server binding interface <vlan-id>

```
user@host> show dhcp server binding interface ge-1/1/0:100
IP address      Session Id  Hardware address  Expires  State  Interface
192.51.100.15   6          00:00:5e:00:53:01 86124    BOUND  ge-1/1/0:100
```

show dhcp server binding interface <svlan-id>

```
user@host> show dhcp server binding interface ge-1/1/0:10-100
IP address      Session Id  Hardware address  Expires  State  Interface
192.51.100.16   7          00:00:5e:00:53:02 86124    BOUND  ge-1/1/0:10-100
```

show dhcp server binding <ip-address>

```
user@host> show dhcp server binding 192100.19
IP address      Session Id  Hardware address  Expires  State  Interface
192.51.100.19   10         00:00:5e:00:53:05 86081    BOUND  ge-1/0/0.0
```

show dhcp server binding <session-id>

```
user@host> show dhcp server binding 6
IP address      Session Id  Hardware address  Expires  State  Interface
192.51.100.15   6          00:00:5e:00:53:01 86124    BOUND  ge-1/0/0.0
```

show dhcp server binding summary

```
user@host> show dhcp server binding summary
3 clients, (2 init, 1 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```

show dhcp server binding <interfaces-vlan>

```
user@host> show dhcp server binding ge-1/0/0:100-200
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.168.0.17	42	00:00:5e:00:53:02	86346	BOUND	ge-1/0/0.1073741827
192.168.0.16	41	00:00:5e:00:53:01	86346	BOUND	ge-1/0/0.1073741827

show dhcp server binding <interfaces-wildcard>

```
user@host> show dhcp server binding ge-1/3/*
```

IP address	Session Id	Hardware address	Expires	State	Interface
192.168.0.9	24	00:00:5e:00:53:04	86361	BOUND	ge-1/3/0.110
192.168.0.8	23	00:00:5e:00:53:03	86361	BOUND	ge-1/3/0.110
192.168.0.7	22	00:00:5e:00:53:02	86361	BOUND	ge-1/3/0.110

Release Information

Command introduced in Junos OS Release 9.0.

Options *interfaces-vlan* and *interfaces-wildcard* added in Junos OS Release 12.1.

RELATED DOCUMENTATION

Viewing and Clearing DHCP Bindings

Verifying and Managing Agent Circuit Identifier-Based Dynamic VLAN Configuration

clear dhcp server binding

show dhcpv6 server binding

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Syntax

```
show dhcpv6 server binding
<address>
<brief | detail | summary>
<interface interface-name>
<interface-tag interface-tag-name>
<interfaces-vlan>
<interfaces-wildcard>
<logical-system logical-system-name>
<routing-instance routing-instance-name>
```

Description

Display the address bindings in the client table on the extended Dynamic Host Configuration Protocol for IPv6 (DHCPv6) local server.

Options

<i>address</i>	(Optional) One of the following identifiers for the DHCPv6 client whose binding state you want to show: <ul style="list-style-type: none"> • <i>CID</i>—The specified Client ID (CID). • <i>ipv6-prefix</i>—The specified IPv6 prefix. • <i>session-id</i>—The specified session ID.
brief detail summary	(Optional) Display the specified level of output about active client bindings. The default is brief, which produces the same output as <code>show dhcpv6 server binding</code> .
interface <i>interface-name</i>	(Optional) Display information about active client bindings on the specified interface. You can optionally filter on VLAN ID and SVLAN ID.
interface-tag <i>interface-tag-name</i>	(Optional) Displays the binding information for the specified interface-tag.
<i>interfaces-vlan</i>	(Optional) Interface VLAN ID or S-VLAN ID interface on which to show binding state information.
<i>interfaces-wildcard</i>	(Optional) Set of interfaces on which to show binding state information. This option supports the use of the wildcard character (*).
logical-system <i>logical-system-name</i>	(Optional) Display information about active client bindings for DHCPv6 clients on the specified logical system.
routing-instance <i>routing-instance-name</i>	(Optional) Display information about active client bindings for DHCPv6 clients on the specified routing instance.

Required Privilege Level

view

Output Fields

Table 5 on page 100 lists the output fields for the `show dhcpv6 server binding` command. Output fields are listed in the approximate order in which they appear.

Table 5: show dhcpv6 server binding Output Fields

Field Name	Field Description	Level of Output
<i>number</i> clients, (<i>number</i> init, <i>number</i> bound, <i>number</i> selecting, <i>number</i> requesting, <i>number</i> renewing, <i>number</i> releasing)	Summary counts of the total number of DHCPv6 clients and the number of DHCPv6 clients in each state.	summary
Prefix	Client's DHCPv6 prefix, or prefix used to support multiple address assignment.	brief detail
Session Id	Session ID of the subscriber session.	brief detail
Expires	Number of seconds in which lease expires.	brief detail
State	<p>State of the address binding table on the extended DHCPv6 local server:</p> <ul style="list-style-type: none"> • BOUND—Client has active IP address lease. • INIT—Initial state. • RECONFIGURE—Server has sent reconfigure message to client. • RELEASE—Client is releasing IP address lease. • RENEWING—Client sending request to renew IP address lease. • REQUESTING—Client requesting a DHCPv6 server. • SELECTING—Client receiving offers from DHCPv6 servers. 	brief detail
Interface	Interface on which the DHCPv6 request was received.	brief
Client IPv6 Address	Client's IPv6 address.	detail

Table 5: show dhcpv6 server binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Client IPv6 Prefix	Client's IPv6 prefix.	detail
Client IPv6 Excluded Prefix	IPv6 Prefix of the DHCP client excluded.	detail
Client DUID	Client's DHCP Unique Identifier (DUID).	brief detail
Lease expires	Date and time at which the client's IP address lease expires.	detail
Lease expires in	Number of seconds in which lease expires.	detail
Preferred Lease Expires	Date and UTC time at which the client's IPv6 prefix expires.	detail
Preferred Lease Expires in	Number of seconds at which client's IPv6 prefix expires.	detail
Lease Start	Date and time at which the client's address lease was obtained.	detail
Lease time violated	Lease time violation has occurred.	detail
Incoming Client Interface	Client's incoming interface.	detail
Server IP Address	IP address of DHCPv6 server.	detail
Interface tag	Name of the Interface tag.	detail
Server Interface	Interface of DHCPv6 server.	detail

Table 5: show dhcpv6 server binding Output Fields (Continued)

Field Name	Field Description	Level of Output
Client Pool Name	Address pool used to assign IPv6 address.	detail
Client Prefix Pool Name	Address pool used to assign IPv6 prefix.	detail
Client Id length	Length of the DHCPv6 client ID, in bytes.	detail
Client Id	ID of the DHCPv6 client.	detail
Server Id	DHCP unique identifier (DUID) for the DHCPv6 server.	detail
Client Interface Svlan Id	S-VLAN ID of the client's incoming interface.	detail
Client Interface Vlan Id	VLAN ID of the client's incoming interface.	detail
Dual Stack Group	DHCPv6 server profile name.	detail
Dual Stack Peer Address	DHCPv6 Peer IP address.	detail

Sample Output

show dhcpv6 server binding

```

user@host> show dhcpv6 server binding
Prefix          Session Id Expires State   Interface  Client DUID
2001:db8:1111:2222::/64 6      86321   BOUND   ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:01

```

```

2001:db8:1111:2222::/64 7      86321    BOUND    ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
2001:db8:1111:2222::/64 8      86321    BOUND    ge-1/0/0.0
LL_TIME0x1-0x2e159c0-00:10:94:00:00:03
2001:db8:1111:2222::/64 9      86321    BOUND    ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:04
2001:db8:1111:2222::/64 10     86321    BOUND    ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:05
2001:db8:2002::1/74 11         86321    BOUND    ge-1/0/0.0
LL_TIME0x1-0x2e159c1-00:10:94:00:00:06

```

show dhcpv6 server binding detail

```

user@host> show dhcpv6 server binding detail
Session Id: 2
  Client IPv6 Prefix:      2001:db8:ffff:0:4::/64
  Client IPv6 Address:     2001:db8:0:8003::1/128
  Client DUID:             LL0x1-00:00:64:01:01:02
  State:                   BOUND(DHCPV6_LOCAL_SERVER_STATE_BOUND)
  Lease Expires:           2016-11-07 08:30:39 PST
  Lease Expires in:        43706 seconds
  Preferred Lease Expires: 2016-11-07 08:30:39 PST
  Preferred Lease Expires in: 43706 seconds
  Lease Start:             2016-11-04 11:00:37 PDT
  Last Packet Received:    2016-11-06 09:00:39 PST
  Incoming Client Interface: ae0.3221225472
  Interface tag:           None
  Client Interface Svlan Id: 2000
  Client Interface Vlan Id: 1
  Server Ip Address:       2001:db8::2
  Server Interface:        none
  Client Profile Name:     my-dual-stack
  Client Id Length:        10
  Client Id:               /0x00030001/0x00006401/0x0102
  Dual Stack Group:        my-dual-stack
  Dual Stack Peer Address: 192.0.2.10

```

command-name

When DHCPv6 binding is configured with prefix exclude option, we get the following output:

```
user@host> show dhcpv6 server binding detail
```

```
Session Id: 5
```

```

Client IPv6 Address:      2001:db8:2:3::d/128
Lease Expires:           2017-12-11 07:45:15 IST
Lease Expires in:        9999995 seconds
Preferred Lease Expires: 2017-12-11 07:45:15 IST
Preferred Lease Expires in: 9999995 seconds
Client IPv6 Prefix:      2001:db8::1000:0:0/68
  Client IPv6 Excluded Prefix: 2001:db8::1fff:ffff:ff00/120
Lease Expires:           2017-12-11 07:45:15 IST
Lease Expires in:        9999995 seconds
Preferred Lease Expires: 2017-12-11 07:45:15 IST
Preferred Lease Expires in: 9999995 seconds
Client DUID:             LL_TIME0x1-0x599553b0-00:10:94:00:00:01
State:                   BOUND(DHCPV6_LOCAL_SERVER_STATE_BOUND)
Lease Start:             2017-08-17 13:58:32 IST
Last Packet Received:    2017-08-17 13:58:36 IST
Incoming Client Interface: ge-0/0/0.0
Interface tag:           None
Client Interface Vlan Id: 100
Client Pool Name:        ia_na_pool
Client Prefix Pool Name: prefix_delegate_pool
Client Id Length:        14
Client Id:               /0x00010001/0x599553b0/0x00109400/0x0001
Relay Id Length:         31
Relay Id:                /0x00020000/0x05830130/0x303a3035/0x3a38363a
Relay Id:                /0x34343a65/0x323a6330/0x00000000/0x000000

```

show dhcpv6 server binding interface

```
user@host> show dhcpv6 server binding interface ge-1/0/0:10-101
```

```

Prefix          Session Id Expires State   Interface  Client DUID
2001:db8:1111:2222::/64 1      86055  BOUND   ge-1/0/0.100
LL_TIME0x1-0x4b0a53b9-00:10:94:00:00:01

```

show dhcpv6 server binding interface detail

```

user@host> show dhcpv6 server binding interface ge-1/0/0:10-101 detail
Session Id: 7
  Client IPv6 Prefix:      2001:db8:1111:2222::/64
  Client DUID:             LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
  State:                   BOUND(bound)
  Lease Expires:           2009-07-21 10:41:15 PDT
  Lease Expires in:        86136 seconds
  Preferred Lease Expires: 2012-07-24 00:18:14 UTC
  Preferred Lease Expires in: 600 seconds
  Lease Start:             2009-07-20 10:41:15 PDT
  Incoming Client Interface: ge-1/0/0.0
  Interface tag:           None
  Server Ip Address:        0.0.0.0
  Server Interface:         none
  Client Id Length:         14
  Client Id:                /0x00010001/0x02e159c0/0x00109400/0x0002

```

show dhcpv6 server binding (IPv6 Prefix)

```

user@host> show dhcpv6 server binding 14/0x00010001/0x02b3be8f/0x00109400/0x0005 detail
Session Id: 7
  Client IPv6 Prefix:      2001:db8:1111:2222::/64
  Client DUID:             LL_TIME0x1-0x2e159c0-00:10:94:00:00:02
  State:                   BOUND(bound)
  Lease Expires:           2009-07-21 10:41:15 PDT
  Lease Expires in:        86136 seconds
  Preferred Lease Expires: 2012-07-24 00:18:14 UTC
  Preferred Lease Expires in: 600 seconds
  Lease Start:             2009-07-20 10:41:15 PDT
  Incoming Client Interface: ge-1/0/0.0
  Interface tag:           None
  Server Ip Address:        0.0.0.0
  Server Interface:         none
  Client Id Length:         14
  Client Id:                /0x00010001/0x02e159c0/0x00109400/0x0002

```

show dhcpv6 server binding (Session ID)

```
user@host> show dhcpv6 server binding 8
```

Prefix	Session Id	Expires	State	Interface	Client DUID
2001:db8::/32	8	86235	BOUND	ge-1/0/0.0	
LL_TIME0x1-0x2e159c0-00:10:94:00:00:03					

show dhcpv6 server binding (Interfaces VLAN)

```
user@host> show dhcpv6 server binding ge-1/0/0:100-200
```

Prefix	Session Id	Expires	State	Interface	Client DUID
2001:db8::/32	11	87583	BOUND	ge-1/0/0.1073741827	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					
2001:db8:19::/32	12	87583	BOUND	ge-1/0/0.1073741827	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					

show dhcpv6 server binding (Interfaces Wildcard)

```
user@host> show dhcpv6 server binding demux0
```

Prefix	Session Id	Expires	State	Interface	Client DUID
2001:db8::/32	30	79681	BOUND	demux0.1073741824	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					
2001:db8:19::/32	31	79681	BOUND	demux0.1073741825	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					
2001:db8:C9::/32	32	79681	BOUND	demux0.1073741826	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					

show dhcpv6 server binding (Interfaces Wildcard)

```
user@host> show dhcpv6 server binding ge-1/3/*
```

Prefix	Session Id	Expires	State	Interface	Client DUID
2001:db8::/32	22	79681	BOUND	ge-1/3/0.110	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					
2001:db8:19::/32	33	79681	BOUND	ge-1/3/0.110	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					
2001:db8:C9::/32	24	79681	BOUND	ge-1/3/0.110	
LL_TIME0x1-0x4d5d009f-00:10:94:00:00:01					

show dhcpv6 server binding summary

```
user@host> show dhcpv6 server binding summary
5 clients, (0 init, 5 bound, 0 selecting, 0 requesting, 0 renewing, 0 releasing)
```

show dhcpv6 server binding interface-tag <interface-tag-name>

```
user@host> show dhcpv6 server binding interface-tag sample_tag
IP address Session Id Hardware address Expires State Interface
2001:db8:1001::1:a/128 00:10:94:00:00:01 740 BOUND ge-0/0/1.3221225472
```

Release Information

Command introduced in Junos OS Release 9.6.

Options *interfaces-vlan* and *interfaces-wildcard* added in Junos OS Release 12.1.

RELATED DOCUMENTATION

Viewing and Clearing DHCP Bindings

clear dhcpv6 server binding

show network access nas-5g

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Syntax

```
show network access nas-5g (state | statistics)
```

Description

Display statistics on the interactions between the Access Gateway Function (AGF) and other network functions during subscriber authentication.

Options

- state** Display the status of the 5G connections
- statistics** Display the statistics for the 5G core (5GC) connections.

Required Privilege Level

view

Output Fields

[Table 6 on page 109](#) lists the output fields for the `show network access nas-5g` command.

Table 6: show network access nas-5g

Field Name	Field Description
Connection up transitions	Number of established Non-Access Stratum (NAS) connections.
Connection down transitions	Number of NAS connections shut down.
Connection errors	Number of NAS connections that failed.
Total messages sent	Number of NAS signaling messages sent.
Total messages received	Number of NAS signaling messages received.
Total request retries	Number of retry attempts for NAS signaling messages.
Total request timeouts	Number of request messages that timed out.
Authentication request attempts	Number of attempted authentication requests.
Authentication request messages sent	Number of authentication request messages sent successfully.
Authentication request messages authenticated	Number of authentication request messages authenticated.
Authentication request failures	Number of authentication request messages that failed.

Table 6: show network access nas-5g (Continued)

Field Name	Field Description
Authentication response failures	Number of errors encountered during the processing of authentication response messages.
Authentication request timeouts	Number of timed out authentication request messages.
Maximum number of outstanding requests exceeded failures	Number of times the outstanding requests exceeded the failure count.
Session terminate request messages sent	Number of session termination request messages sent.
Session terminate response messages received	Number of session termination response messages received
Session terminate request message failures	Number of session termination request messages that failed.
Session terminate request timeouts	Number of session termination request messages that timed out.
Session command logout received	Number of session log-out command messages received.
Session command logout receive failures	Number of received log-out messages that failed.
Session disconnect request sent	Number of session disconnect request messages sent.

Table 6: show network access nas-5g (Continued)

Field Name	Field Description
Session disconnect request send failures	Number of errors encountered while sending the session disconnect request messages.
Session disconnect response received	Number of session disconnect response messages received.
Session disconnect response receive failures	Number of errors encountered during the processing of session disconnect response messages.
Number of outstanding requests	Number of pending sessions that have not been processed.
Total number of allocated messages	Total number of messages allocated in memory.

Sample Output

show network-access nas-5g state

```
user@host> show network-access nas-5g state
```

```
NAS-5G module state information
  Connection state: UP
  Total number of subscribers: 11
```

show network-access nas-5g statistics

```
user@host> show network-access nas-5g statistics
```

```
NAS-5G module
```

```
statistics
```

```
    Connection up transitions:
```

```
2
```

```
    Connection down transitions:
```

```
1
```

```
    Connection errors:
```

```
0
```

```
    Total messages sent:
```

```
11
```

```
    Total messages received:
```

```
11
```

```
    Total request retries:
```

```
0
```

```
    Total request timeouts:
```

```
0
```

```
    Authentication request attempts:
```

```
5
```

```
    Authentication request messages sent:
```

```
5
```

```
    Authentication request messages authenticated:
```

```
5
```

```
    Authentication request failures:
```

```
0
```

```
    Authentication response failures:
```

```
0
```

```
    Authentication request timeouts:
```

```
0
```

```
    Maximum number of outstanding requests exceeded failures:
```

```
0
```

```
    Session terminate request messages sent:
```

```
6
```

```
    Session terminate response messages received:
```

```
6
```

```
Session terminate request message failures:
0
Session terminate response failures:
0
Session terminate request timeouts:
0
Number of outstanding requests:
0
Total number of allocated messages:
0
```

Release Information

Command introduced in Junos OS Release 22.3R1.

show services agf fiveqi remarking

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Syntax

```
show services agf fiveqi-remarking
<session-id session-id>
```

Description

Displays the 5QI marking table for the subscribers

Options

- none** Displays the shadow 5QI Table marking table.
- session-id *session-id*** ID of the subscriber session.

Required Privilege Level

view

Output Fields

[Table 7 on page 114](#) lists the output fields for the `name-of-command` command.

Table 7: show services agf fiveqi remarking

Field Name	Field Description
5QI	5QI value

Table 7: show services agf fiveqi remarking (Continued)

Field Name	Field Description
QFI	QoS Flow Identifier. The 5GC supports up to 64 QFIs for a single PDU session.
Forwarding Class	Name of the forwarding class.
Upstream DSCP	IPv4 and IPv6 DSCP mapping on the IP packet containing user data that is sent on the N3 interface. The output displays the DSCP value using 6 bits.
Upstream N3-DSCP	IPv4 and IPv6 DSCP mapping on the encapsulated GTP-U packet that is the N3 interface. The output displays the N3-DSCP value using 6 bits.
PLP	Packet loss priority (PLP) for dropping packets. <ul style="list-style-type: none"> • high—High probability of a packet being dropped at times of congestion. • low—Low probability of a packet being dropped at times of congestion.

Sample Output

show services agf fiveqi-remarking session-id

```
user@host> show services agf fiveqi-remarking session-id 8995
```

5QI	QFI	Forwarding Class	Upstream DSCP	Upstream N3-DSCP	PLP
6	16			011110	high
7	17	EXPEDITED	100000		
8	18		100010	100011	
9	19	PREMIUM			low

Release Information

Command introduced in Junos OS Release 23.2R1.

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show services agf nas

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Syntax

```
show services agf nas (statistics | user-equipment <ue-id>  
<session-id session-id>  
<brief | detail | extensive | summary > )
```

Description

Display information about the Non-Access Stratum (NAS) operation between the Access Gateway Function (AGF) and the user equipment (UE).

Options

<code>statistics</code>	(Optional) Display the statistics for different NAS messages that are sent and received on the AGF.
<code>user-equipment <i>ue-id</i></code>	(Optional) Display NAS connection information on user equipment.
<code>session-id <i>session-id</i></code>	Display information for a specified session ID.
<code>brief detail extensive summary</code>	(Optional) Display the specified level of output.

Required Privilege Level

view

Output Fields

[Table 8 on page 117](#) lists the output fields for the `show services agf nas` command.

Table 8: show-services-agf-nas

Field Name	Field Description
Message counts	Number of messages sent and received by the Access Gateway Function (AGF).
Messages received	Type and number of NAS signaling messages that has received sent by the AGF.

Table 8: show-services-agf-nas (Continued)

Field Name	Field Description
Messages sent	Type and number of NAS signaling messages that has been sent by the AGF.
PDU ID	PDU identifier
Session ID	Session identifier
Session State	<p>Status of the session. The session can have one of the following states:</p> <ul style="list-style-type: none"> • Inactive • Activating • Active • Deactivating • Deactivated
UE ID	User equipment (UE) identifier
UE State	<p>Status of the UE. The UE can have one of the following states:</p> <ul style="list-style-type: none"> • Initial • Registering • Registered • Deregistering • Deregistered • Releasing

Sample Output

show services agf nas statistics

```
user@host> show services agf nas user-equipment
```

UE id	UE State	PDU id	Session State	Session id
10076162	Registered	1	Active	4

show services agf nas statistics

```
user@host> show services agf nas statistics
```

Message counts:

Sent	13
Sent discards	0
Received	6
Receive discards	0

Messages sent:

Registration Request	2
Registration Complete	2
Deregistration Request	1
Deregistration Accept	0
Identity Response	0
Authentication Response	0
Authentication Failure	0
Security Mode Complete	0
Security Mode Reject	0
Service Request	0
UL Nas Transport	4
5GMM Status	0
PDU Session Establishment Request	2
PDU Session Modification Complete	0
PDU Session Modification Reject	0
PDU Session Release Request	1

PDU Session Release Complete	1
5GSM Status	0

Messages received:

Registration Accept	2
Registration Reject	0
Deregistration Accept	1
Deregistration Request	0
Identity Request	0
Authentication Request	0
Authentication Result	0
Authentication Reject	0
Security Mode Command	0
Service Accept	0
Service Reject	0
DL Nas Transport	3
5GMM Status	0
PDU Session Establishment Accept	2
PDU Session Establishment Reject	0
PDU Session Modification Command	0
PDU Session Release Command	1
PDU Session Release Reject	0
5GSM Status	0

Release Information

Command introduced in Junos OS Release 22.3R1.

show services agf ngap

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Syntax

```
show services agf ngap (amf <amf-name>| user-equipment <ue-id>
<brief | detail | summary>)
```

Description

Display information about the Next Generation Application Protocol (NGAP) operations.

Options

- | | |
|--|---|
| <code>amf <i>amf-name</i></code> | (Optional) Display the Next Generation Application Protocol (NGAP) information about the Access and Mobility Management Function (AMF). |
| <code>user-equipment <i>ue-id</i></code> | (Optional) Display NGAP information about user equipment (UE). |
| <code>brief detail summary</code> | (Optional) Display the specified level of output. |

Required Privilege Level

view

Output Fields

Table 9 on page 122 lists the Access and Mobility Management Function (AMF) output fields for the `show services agf ngap` command.

Table 9: show services agf ngap (AMF outputs)

Field Name	Field Description
AMF	AMF name in the configuration.
Backup AMF name	Fully qualified domain name (FQDN) of the backup AMF for the Globally Unique AMF ID (GUAMI). The AMF provides the GUAMI during the NG Setup Procedure. If the AMF does not provide a backup AMF name, then Junos OS displays None is displayed.
Default	Identifies whether the AMF is configured as a default AMF. <ul style="list-style-type: none"> • Yes—This is configured as the default AMF. • No—This is not a default AMF.
IP address	IP address configured for the AMF.
MCC	Mobile Country Code
MNC	Mobile Network Code
Name	Globally unique FQDN provided by the AMF during the NG Setup Procedure. This name must be published in the Domain Name System (DNS).
Node id	Uniquely configured AMF node ID used internally by the AGF to identify the AMF.
Overload State	Current AMF overload state. When the AMF is in the overload state, the AGF does not select the AMF for any new user equipment (UE) setups
Port	If you do not configure the number, Junos OS uses the default port 38412.

Table 9: show services agf ngap (AMF outputs) (Continued)

Field Name	Field Description
Routing Instance	Configured AMF routing instance. The IP address for the AMF must be reachable in the configured routing instance.
SD	Slice Differentiator
Served GUAMI	<p>List of Global Unique AMF Identifier (GUAMIs). The GUAMI consists of:</p> <ul style="list-style-type: none"> • PLMN ID—Public land mobile network identifier which consists of an MCC and MNC. • Region ID—AMF region identifier. • AMF Set ID—AMF set identifier. The AMF set ID identifies the AMF set within the AMF region. • Pointer—AMF pointer. The AMF pointer identifies one or more AMFs within the AMF set.
SST	<p>Service Slice Type</p> <ul style="list-style-type: none"> • Emmbb—Enhanced mobile broadband • Miot— Massive IoT • Ullc—Ultra-reliable, low latency communications • V2x—Vehicle-to-everything
State	<p>The AMF can have one of the following states:</p> <ul style="list-style-type: none"> • Offline—The AGF is not connected to the AMF. • Offline (Admin) —The AGF is administratively disabled. The AMF configuration was not found. • Connecting—The AGF is in the process of connecting to the AMF. • Initializing—The AGF is in the initial state of NG Setup. • Online—The AGF has completed the NG setup and is ready to service UE contexts.

Table 9: show services agf ngap (AMF outputs) (Continued)

Field Name	Field Description
Tracking areas	Configured AMF tracking areas.
UE count	Current number of UE being serviced by the AMF.

[Table 10 on page 124](#) lists the UE output fields for the `show services agf ngap` command.

Table 10: show services agf ngap Output Fields (UE outputs)

Field Name	Field Description
AMF	Name of the AMF servicing the UE.
AMF GUAMI	Globally Unique AMF Identifier assigned to service the UE context.
AMF UE ID	UE identifier allocated by the AMF.
RM State	<p>Current registration management state. Registration management state is defined by the Third-Generation Partnership Project (3GPP).</p> <ul style="list-style-type: none"> • RM_REGISTERED—The UE is registered with the 5GC. • RM_DEREGISTERED—The UE is not registered with the 5GC.
State	<p>Current internal Next Generation Application Protocol (NGAP) UE state.</p> <ul style="list-style-type: none"> • Establishing—The UE context is being set up in the AMF. • Established—The UE context setup is complete. • Releasing —The UE has requested the AMF to release the UE logical NG connection. • Released —The UE context has been released.

Table 10: show services agf ngap Output Fields (UE outputs) (Continued)

Field Name	Field Description
Type	UE Type. <ul style="list-style-type: none"> • Fixed Network Residential Gateway (FN-RG) • 5G Residential Gateway (5G-RG)
UE identifier	User equipment identifier. The identifier uniquely identifies the UE within the AGF.

[Table 11 on page 125](#) lists the PDU session output fields for the `show services agf ngap` command.

Table 11: show services agf ngap Output Fields (PDU Session)

Field Name	Field Description
AGF IP address	Local AGF IP address.
Local GTP tunnel	The local GPRS tunneling protocol (GTP) attributes for the Protocol Data Unit (PDU) session allocated by the AGF.
PDU Session id	PDU session identifier allocated by the 5GC.
Remote GTP tunnel	The remote GTP tunnel attributes for the PDU session allocated by the user plane function (UPF).
SD	Slice Differentiator
S-NSSAI	Single Network Service Slice Assistance Information. It consists of SST and SD values.

Table 11: show services agf ngap Output Fields (PDU Session) (Continued)

Field Name	Field Description
SST	Service Slice Type <ul style="list-style-type: none"> • Embb—Enhanced mobile broadband • Miot— Massive IoT • Urllc—Ultra-reliable, low latency communications • V2x—Vehicle-to-everything
State	Current state of the PDU session. <ul style="list-style-type: none"> • Activating—The PDU session resource setup is in progress. • Active—The PDU session has been set up and the session is active on the AGF. • Failed—The PDU session setup has failed on the AGF.
TEID	GTP tunnel endpoint identifier.
UPF IP address	Remote GTP tunnel endpoint IP address.

Sample Output

show services agf ngap amf

```
user@host> show services agf ngap amf
```

AMF	Routing instance	Default	State	Overload	UEs
amf1	default	Yes	Online	Off	1

show services agf ngap amf detail

```
user@host> show services agf ngap amf detail

AMF: amf.spirent.com
  Name:          amf.spirent.com
  Node id:       1
  Default:       Yes
  Ip address:    10.1.1.7
  Port:          38412
  Routing instance: default
  Tracking areas: 0
  State:         Online
  Overload state: Off
  UE count:      1

TNLA: 1
  Type:          Static
  Usage type:    UE and Non-UE associated signalling
  Weight factor: 128
  State:         Established
  Packets sent:  16
  Packets received: 10
  Local ip address  Port
  10.1.1.1         55465
  Peer ip address  Port      State
  10.1.1.7*        38412   Active

Served GUAMI    PLMN id  Region id  Set id  Pointer  Backup AMF name
0x123456090207  123456   9          8       7
None

PLMN id: 123456 (MCC: 123, MNC: 456)
  SST: Embb, SD: 0
  SST: Miot, SD: 0
  SST: Urrlc, SD: 0
```

show services agf ngap user-equipment detail

```
user@host> show services agf ngap user-equipment detail
```

```
UE identifier: 33
  State:          Established
  RM state:       RM-REGISTERED
  Type:          FN-RG
  AMF:           amf1
  AMF UE id:     3690987520
  AMF GUAMI:     0x123456090207
  PLMN id:       MCC: 123, MNC: 456
  AMF region id: 9
  AMF set id:    8
  AMF pointer:   7

PDU session id: 1
  State: Active
  S-NSSAI: SST: Emmb, SD: 0
  Remote GTP tunnel
    TEID: 0x001e8480
    UPF ip address: 10.250.1.62
    QoS flow identifier: 1
  Local GTP tunnel
    TEID: 0x000000e9
    AGF ip address: 10.1.1.51
```

Release Information

Command introduced in Junos OS Release 22.3R1.

show subscribers

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Syntax

```
show subscribers
<detail | extensive | terse>
<aci-interface-set-name aci-interface-set-name>
<address address>
<agent-circuit-identifier agent-circuit-identifier>
<agent-remote-identifier agent-remote-identifier>
<aggregation-interface-set-name interface-set-name>
<client-type client-type>
<count>
<id session-id <accounting-statistics>>
<interface interface <accounting-statistics>>
<logical-system logical-system>
<mac-address mac-address>
<physical-interface physical-interface-name>
<profile-name profile-name>
<routing-instance routing-instance>
<stacked-vlan-id stacked-vlan-id>
<sub-system (agf | bng)>
<subscriber-state subscriber-state>
```

```
<user-name user-name>
<vci vci-identifier>
<vpi vpi-identifier>
<vlan-id vlan-id>
```

Description

Display information for active subscribers on both the broadband network gateway (BNG) and Access Gateway Function (AGF) subsystems. When you have subscribers logged in to both the BNG and the AGF, you can use the `sub-system` option to view the outputs specific to either subsystem.

See ["Sample Output for AGF" on page 180](#) for subscriber session information about the AGF subsystem.

Options

<code>detail extensive</code> <code> terse</code>	(Optional) Display the specified level of output.
<code>aci-interface-set-name</code>	(Optional) Display all the dynamic subscriber sessions that use the specified agent circuit identifier (ACI) interface set. You must use the ACI interface set name generated by the router, such as <code>aci-1003-ge-1/0/0.4001</code> , and not the actual ACI value found in the Dynamic Host Configuration Protocol (DHCP) or Point-to-Point Protocol over Ethernet (PPPoE) control packets.
<code>address</code>	(Optional) Display subscribers whose IP address matches the specified address. You must specify the IPv4 or IPv6 address prefix without a netmask (for example, <code>192.0.2.0</code>). If you specify the IP address as a prefix with a netmask (for example, <code>192.0.2.0/32</code>), the router displays a message that the IP address is invalid and rejects the command.
<code>agent-circuit-identifier</code>	(Optional) Display all the dynamic subscriber sessions whose ACI value matches the specified string. You can specify either the complete ACI string or a substring. To specify a substring, you must enter characters that form the beginning of the string, followed by an asterisk (*) as a wildcard to substitute for the remainder of the string. The wildcard can be used only at the end of the specified substring; for example:

```
user@host1> show subscribers agent-circuit-identifier substring*
```

The table below lists supported string values for different Junos OS releases.

Table 12: Supported Substring

Junos OS Release	Substring Support
Junos OS Release 13.3R1	You can specify a substring without a wildcard.
Starting in Junos OS Release 14.1R1	You must specify the complete ACI string; you cannot specify a wildcard.
Starting in Junos OS Releases 15.1R7, 16.1R7, 16.2R3, 17.1R3, 17.2R3, 17.3R3, 17.4R2, 18.1R2, 18.2R1	You can specify a substring, but you must include the wildcard character at the end of the substring.

agent-remote-identifier

(Optional) Display all the dynamic subscriber sessions whose agent remote identifier (ARI) value matches the specified string. You must specify the complete ACI string; you cannot specify a wildcard.

*aggregation-interface-set-name
interface-set-name*

(Optional) Display summary information for the specified aggregation node interface set, including interface, VLAN ID, username, and logical system and routing instance (LS:RI).

client-type

(Optional) Display subscribers whose client type matches one of the following client types:

- dhcp—Dynamic Host Configuration Protocol (DHCP) clients only.
- dot1x—802.1X clients only.
- essm—Extensible Subscribers Services Manager (ESSM) clients only.
- fixed-wireless-access—Fixed wireless access clients only.
- fwauth—FwAuth (authenticated across a firewall) clients only.
- l2tp—Layer 2 Tunneling Protocol (L2TP) clients only.
- mlppp—Multilink Point-to-Point Protocol (MLPPP) clients only.
- ppp—Point-to-Point Protocol (PPP) clients only.
- pppeo—Point-to-Point Protocol over Ethernet (PPPoE) clients only.

- `static`—Static clients only.
- `vlan`—VLAN clients only.
- `vlan-oob`—VLAN out-of-band (triggered by by Access Node Control Protocol or ANCP) clients only.
- `vpls-pw`—Virtual private LAN service (VPLS) pseudowire clients only.
- `xauth`—Extended Authentication (XAuth) clients only.

count

(Optional) Display the count of the total subscribers and active subscribers for any specified option. You can use the `count` option alone or in combination with one or more of the following options:

- `address`
- `client-type`
- `interface`
- `logical-system`
- `mac-address`
- `profile-name`
- `routing-instance`
- `stacked-vlan-id`
- `subscriber-state`
- `vlan-id`

id *session-id*

(Optional) Display a specific subscriber session whose session ID matches the specified subscriber ID. You can display the subscriber IDs by using the `show subscribers extensive command` or the `show subscribers interface extensive command`.

**id *session-id*
accounting-
statistics**

(Optional) Display accurate subscriber accounting statistics for a subscriber session based on the session ID you specify. You must configure the `actual-transmit-statistics` statement in the dynamic profile for the dynamic logical interface. If you do not configure statement, the CLI displays a value of 0 for the accounting statistics.

interface

(Optional) Display subscribers whose interface matches the specified interface.

<i>interface accounting-statistics</i>	(Optional) Display subscriber accounting statistics for the specified interface. If you do not configure statement, the CLI displays a value of 0 for the accounting statistics.
<i>logical-system</i>	(Optional) Display subscribers whose logical system matches the specified logical system.
<i>mac-address</i>	(Optional) Display subscribers whose MAC address matches the specified MAC address.
<i>physical-interface-name</i>	(M120, M320, and MX Series routers only) (Optional) Display subscribers whose physical interface matches the specified physical interface.
<i>profile-name</i>	(Optional) Display subscribers whose dynamic profile matches the specified profile name.
<i>routing-instance</i>	(Optional) Display subscribers whose routing instance matches the specified routing instance.
<i>stacked-vlan-id</i>	(Optional) Display subscribers whose stacked VLAN ID matches the specified stacked VLAN ID.
subsystem (agf bng)	(Optional) Display information for subscribers on the AGF or BNG subsystem.
<div> <p>NOTE: The subsystem option is only available when both the AGF and BNG subscribers are logged into the router at the same time.</p> </div>	
<i>subscriber-state</i>	(Optional) Display subscribers whose subscriber state matches the specified subscriber state (ACTIVE, CONFIGURED, INIT, TERMINATED, or TERMINATING).
<i>user-name</i>	(M120, M320, and MX Series routers only) (Optional) Display subscriber whose username matches the specified subscriber name.
<i>vci-identifier</i>	(MX Series routers with MPCs and ATM MICs with SFP only) (Optional) Display active Asynchronous Transfer Mode (ATM) subscribers whose ATM virtual circuit identifier (VCI) matches the specified VCI identifier. The range of values is 0 through 255.
<i>vpi-identifier</i>	(MX Series routers with MPCs and ATM MICs with SFP only) (Optional) Display active ATM subscribers whose ATM virtual path identifier (VPI) matches the specified VPI identifier. The range of values is 0 through 65,535.

vlan-id (Optional) Display subscribers whose VLAN ID matches the specified VLAN ID, regardless of whether the subscriber uses a single-tagged or double-tagged VLAN. Among the subscribers using a double-tagged VLAN, this option displays subscribers where the inner VLAN tag matches the specified VLAN ID. To see the subscribers (among subscribers using a double-tagged VLAN) whose outer VLAN tag matches the specified value, you can use the stacked-vlan-id *stacked-vlan-id* option to match the outer VLAN tag.

NOTE: Because of display limitation, the logical system and routing instance output values are truncated when necessary.

Required Privilege Level

view

Output Fields

Table 13 on page 134 lists the output fields for the show subscribers command. Output fields are listed in the approximate order in which they appear.

Table 13: show subscribers Output Fields

Field Name	Field Description
Interface	Interface associated with the subscriber. The router or the switch displays the subscribers whose interface matches or begins with the specified interface. The asterisk (*) indicates a continuation of addresses for the same session.
IP Address/VLAN ID	Subscriber IP address or VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> No IP address or VLAN ID is assigned to an L2TP tunnel-switched session. For these subscriber sessions, the value is Tunnel-switched.
User Name	Name of subscriber.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
LS:RI	Logical system and routing instance associated with the subscriber.
Type	Subscriber client type (DHCP, FWA, GRE, L2TP, PPP, PPPoE, STATIC-INTERFACE, VLAN).
IP Address	Subscriber IPv4 address.
IP Netmask	Subscriber IP netmask. (MX Series) This field displays 255.255.255.255 by default. For tunneled or terminated PPP subscribers only, this field displays the actual value of Framed-IP-Netmask when the SDB_FRAMED_PROTOCOL attribute in the session database is equal to AUTHD_FRAMED_PROTOCOL_PPP. This occurs in the use case where the L2TP network server (LNS) generates access-internal routes when it receives Framed-IP-Netmask from RADIUS during authorization. When it receives Framed-Pool from RADIUS, the pool mask is ignored and the default /32 mask is used.
Primary DNS Address	IP address of the primary Domain Name System (DNS) server. This field is displayed with the extensive option only when the address is provided by RADIUS.
Secondary DNS Address	IP address of the secondary DNS server. This field is displayed with the extensive option only when the address is provided by RADIUS.
IPv6 Primary DNS Address	IPv6 address of the primary DNS server. This field is displayed with the extensive option only when the address is provided by RADIUS.
IPv6 Secondary DNS Address	IPv6 address of the secondary DNS server. This field is displayed with the extensive option only when the address is provided by RADIUS.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Domain name server inet	IP addresses for the DNS server, displayed in order of configuration. This field is displayed with the extensive option only when the addresses are derived from the access profile or the global access configuration.
Domain name server inet6	IPv6 addresses for the DNS server, displayed in order of configuration. This field is displayed with the extensive option only when the addresses are derived from the access profile or the global access configuration.
Primary WINS Address	IP address of the primary Windows Internet Name Service (WINS) server.
Secondary WINS Address	IP address of the secondary WINS server.
IPv6 Address	Subscriber IPv6 address, or multiple addresses.
IPv6 Prefix	Subscriber IPv6 prefix. If you are using DHCPv6 prefix delegation, this is the delegated prefix.
IPv6 User Prefix	IPv6 prefix obtained through Neighbor Discovery Router Advertisement (NDRA).
IPv6 Address Pool	Subscriber IPv6 address pool. The IPv6 address pool is used to allocate IPv6 prefixes to the DHCPv6 clients.
IPv6 Network Prefix Length	Length of the network portion of the IPv6 address.
IPv6 Prefix Length	Length of the subscriber IPv6 prefix.
Logical System	Logical system associated with the subscriber.
Routing Instance	Routing instance associated with the subscriber.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Interface	(Enhanced subscriber management for the MX Series routers) Name of the enhanced subscriber management logical interface, in the form demux0.nnnn (for example, demux0.3221225472), to which access-internal and framed subscriber routes are mapped.
Interface Type	Subscriber interface (Static or Dynamic)
Interface Set	<p>Internally generated name of the dynamic agent circuit identifier (ACI) or ATM line interface (ALI) interface set used by the subscriber session. The prefix of the name indicates the string received in DHCP or PPPoE control packets on which the interface set is based. For ALI interface sets, the prefix indicates that the value is configured as a trusted option to identify the subscriber line.</p> <p>The name of the interface set uses one of the following prefixes:</p> <ul style="list-style-type: none"> • aci—ACI; for example, aci-1033-demux0.3221225524. This is the only prefix allowed for ACI interface sets. • ari—ARI or agent remote identifier; for example, ari-1033-demux0.3221225524. • aci+ari—Both the ACI and the ARI; for example, aci+ari-1033-demux0.3221225524. • noids—Neither the ACI nor the ARI were received; for example, noids-1033-demux0.3221225524. <p>NOTE: ACI interface sets are configured with the agent-circuit-identifier autoconfiguration stanza. ALI interface sets are configured with the line-identity autoconfiguration stanza.</p> <p>Besides dynamic ACI and ALI interface sets, this field can be an interface set based on a substring of the ARI string. This occurs when the dynamic profile includes the predefined variable <i>\$junos-pon-id-interface-set-name</i>, and the profile is applied for a passive optical network (PON). The ARI string is inserted by the optical line terminal (OLT). The final substring in the string, unique for the PON, identifies individual subscriber circuits, and is used as the name of the interface set.</p>
Interface Set Type	Interface type of the ACI interface set: Dynamic. This is the only ACI interface set type currently supported.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Interface Set Session ID	Identifier of the dynamic ACI interface set entry in the session database.
Underlying Interface	Name of the underlying interface for the subscriber session.
Dynamic Profile Name	Dynamic profile used for the subscriber.
Dynamic Profile Version	Version number of the dynamic profile used for the subscriber.
MAC Address	MAC address associated with the subscriber.
State	Current state of the subscriber session (Init, Configured, Active, Terminating, or Tunneled).
L2TP State	Current state of the L2TP session (Tunneled or Tunnel-switched). When the value is Tunnel-switched, two entries are displayed for the subscriber; the first entry is at the L2TP network server (LNS) interface on the L2TP tunnel switch (LTS) and the second entry is at the L2TP access concentrator (LAC) interface on the LTS.
Tunnel switch Profile Name	Name of the L2TP tunnel switch profile that initiates tunnel switching.
Local IP Address	IP address of the local gateway (LAC).
Remote IP Address	IP address of the remote peer (LNS).
PFE Flow ID	Forwarding flow identifier.
VLAN Id	VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .
Stacked VLAN Id	Stacked VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i> .

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
RADIUS Accounting ID	RADIUS accounting ID associated with the subscriber.
Agent Circuit ID	<p>For the dhcp client type, option 82 agent circuit ID associated with the subscriber. The ID is displayed as an ASCII string unless the value has nonprintable characters, in which case it is displayed in the hexadecimal format.</p> <p>For the vlan-oob client type, the agent circuit ID or access-loop circuit identifier that identifies the subscriber line based on the subscriber-facing DSL access multiplexer (DSLAM) interface on which the subscriber request originates.</p>
Agent Remote ID	<p>For the dhcp client type, option 82 agent remote ID associated with the subscriber. The ID is displayed as an ASCII string unless the value has nonprintable characters, in which case it is displayed in hexadecimal format.</p> <p>For the vlan-oob client type, the agent remote ID or access-loop remote identifier that identifies the subscriber line based on the network access server (NAS)-facing DSLAM interface on which the subscriber request originates.</p>
Aggregation Interface-set Name	<p>Value of the \$junos-aggregation-interface-set-name predefined variable. The value is determined based on the following factors::</p> <ul style="list-style-type: none"> • When the hierarchical-access-network-detection option is configured for the access lines and the value of the Access-Aggregation-Circuit-ID-ASCII attribute (TLV 0x0003) received either in the Access Node Control Protocol (ANCP) Port Up message or PPPoE Active Discover Request (PADR) IA tags begins with a # character, then the variable takes the value of the remainder of the string after the # character. • When the hierarchical-access-network-detection option is not configured, or if the sting does not begin with the # character, then the variable takes the value specified with the predefined-variable-defaults statement.
Accounting Statistics	Actual transmitted subscriber accounting statistics by the session ID or the interface. Service accounting statistics are not included. These statistics do not include overhead bytes or dropped packets; they are the accurate statistics used by RADIUS. The statistics are counted when the actual-transmit-statistics statement is included in the dynamic profile.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
DHCP Relay IP Address	IP address used by the DHCP relay agent.
ATM VPI	(MX Series routers with MPCs and ATM MICs with SFP only) ATM virtual path identifier (VPI) on the subscriber's physical interface.
ATM VCI	(MX Series routers with MPCs and ATM MICs with SFP only) ATM virtual circuit identifier (VCI) for each VPI configured on the subscriber interface.
Login Time	Date and time at which the subscriber logged in.
DHCPV6 Options	len = number of hex values in the message. The hex values specify the type, length, value (TLV) for the DHCPv6 options.
Server DHCP Options	len = number of hex values in the message. The hex values specify the type, length, value (TLV) for the DHCP options.
Server DHCPV6 Options	len = number of hex values in the message. The hex values specify the type, length, value (TLV) for the DHCPv6 options.
DHCPV6 Header	len = number of hex values in the message. The hex values specify the type, length, value (TLV) for the DHCPv6 options.
Effective shaping-rate	Actual downstream traffic shaping rate for the subscriber in kilobits per second.
IPv4 Input Service Set	Input service set in access dynamic profile.
IPv4 Output Service Set	Output service set in access dynamic profile.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
PCEF Profile	Policy and charging enforcement function (PCEF) profile in access dynamic profile.
PCEF Rule/Rulebase	PCC rule or rulebase used in dynamic profile.
Dynamic configuration	Values for variables that are passed into the dynamic profile from RADIUS.
Service activation time	Time at which the first family in this service became active.
IPv4 rpf-check Fail Filter Name	Name of the filter applied by the dynamic profile to the IPv4 packets that fail the reverse-path-forwarding (RPF) check.
IPv6 rpf-check Fail Filter Name	Name of the filter applied by the dynamic profile to the IPv6 packets that fail the RPF check.
DHCP Options	len = number of hex values in the message. The hex values specify the type, length, value (TLV) for the DHCP options, as defined in RFC 2132.
Session ID	ID number for a subscriber session.
Underlying Session ID	Session ID of the underlying PPPoE interface for the DHCPv6 subscribers on a PPPoE network.
Service Sessions	Number of service sessions (that is, a service activated using RADIUS Change of Authorization or CoA) associated with the subscribers.
Service Session ID	ID number for a subscriber service session.
Service Session Name	Service session profile name.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Session Timeout (seconds)	Number of seconds of access provided to the subscriber before the session is automatically terminated.
Idle Timeout (seconds)	Number of seconds for which the subscriber can be idle before the session is automatically terminated.
IPv6 Delegated Address Pool	Name of the pool used for DHCPv6 prefix delegation.
IPv6 Delegated Network Prefix Length	Length of the prefix configured for the IPv6 delegated address pool.
IPv6 Interface Address	Address assigned by the Framed-Ipv6-Prefix AAA attribute. This field is displayed only when the predefined variable \$junos-ipv6-address is used in the dynamic profile.
IPv6 Framed Interface Id	Interface ID assigned by the Framed-Interface-Id AAA attribute.
ADF IPv4 Input Filter Name	Name assigned to the Ascend-Data-Filter (ADF) interface IPv4 input filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.
ADF IPv4 Output Filter Name	Name assigned to the Ascend-Data-Filter (ADF) interface IPv4 output filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.
ADF IPv6 Input Filter Name	Name assigned to the ADF interface IPv6 input filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.
ADF IPv6 Output Filter Name	Name assigned to the ADF interface IPv6 output filter (client or service session). The filter name is followed by the rules (in hexadecimal format) associated with the ADF filter and the decoded rule in Junos OS filter style.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
IPv4 Input Filter Name	Name assigned to the IPv4 input filter (client or service session).
IPv4 Output Filter Name	Name assigned to the IPv4 output filter (client or service session).
IPv6 Input Filter Name	Name assigned to the IPv6 input filter (client or service session).
IPv6 Output Filter Name	Name assigned to the IPv6 output filter (client or service session).
IFL Input Filter Name	Name assigned to the logical interface input filter (client or service session).
IFL Output Filter Name	Name assigned to the logical interface output filter (client or service session).
DSL type	PPPoE subscriber's access line type reported by the PPPoE intermediate agent in a PPPoE Active Discovery Initiation (PADI) or PPPoE Active Discovery Offer (PADO) packet in the Vendor-Specific-Tags TLV in subattribute DSL-Type (0x0091). The DSL can be one of the following types: ADSL, ADSL2, ADSL2+, OTHER, SDSL, VDSL, or VDSL2.
Frame/Cell Mode	<p>Mode type of the PPPoE subscriber's access line determined by the PPPoE daemon based on the received subattribute DSL-Type (0x0091):</p> <ul style="list-style-type: none"> • Cell—When the DSL line type is one of the following: asymmetric digital subscriber line (ADSL), asymmetric digital subscriber line 2 (ADSL2), or asymmetric digital subscriber line 2 plus (ADSL2+). • Frame—When the DSL line type is one of the following: OTHER, SDSL, VDSL, or VDSL2. <p>The value is stored in the subscriber session database.</p>

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Overhead accounting bytes	Number of bytes added to or subtracted from the actual downstream cell or frame overhead to account for the technology overhead of the DSL line type. The value is determined by the PPPoE daemon based on the received subattribute DSL-Type (0x0091). The value is stored in the subscriber session database.
Actual upstream data rate	Unadjusted upstream data rate for the PPPoE subscriber's access line reported by the PPPoE intermediate agent in a PADI or PADO packet in the Vendor-Specific-Tags TLV in subattribute Actual-Net-Data-Rate-Upstream (0x0081).
Actual downstream data rate	Unadjusted downstream data rate for the PPPoE subscriber's access line reported by the PPPoE intermediate agent in a PADI or PADO packet in the Vendor-Specific-Tags TLV in subattribute Actual-Net-Data-Rate-Downstream (0x0082).
Adjusted downstream data rate	Adjusted downstream data rate for the PPPoE subscriber's access line, calculated by the PPPoE daemon and stored in the subscriber session database.
Adjusted upstream data rate	Adjusted upstream data rate for the PPPoE subscriber's access line, calculated by the PPPoE daemon and stored in the subscriber session database. NOTE: This output field is only available on Junos Release 19.1R1 or earlier versions.
AGF Mode	Type of access. Adaptive mode indicates an FN-RG.
Local TEID-U	Tunnel endpoint identifier (TEID) on the BNG for the GPRS Tunnelling Protocol User Plane (GTP-U) tunnel to the evolved node B (eNodeB). The identifier is allocated by the BNG. A fully qualified local TEID-C consists of this identifier and the GTPU Tunnel Local IP address value.
Local TEID-C	Tunnel endpoint identifier on the BNG for the GTP-C control plane tunnel to the Mobility management Entity (MME). The identifier is allocated by the BNG. A fully qualified local TEID-C consists of this identifier and the GTPC Local IP address value.

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Remote TEID-U	<p>Tunnel endpoint identifier on the eNodeB for the GTP-U user plane tunnel to the BNG. The identifier is allocated by the eNodeB.</p> <p>A fully qualified remote TEID-U consists of this identifier and the GTPU Tunnel Remote IP address value.</p>
Remote TEID-C	<p>Tunnel endpoint identifier on the MME for the GPRS tunneling protocol, control (GTP-C) plane tunnel to the BNG. The identifier is allocated by the MME.</p> <p>A fully qualified remote TEID-C consists of this identifier and the GTPC Remote IP address value.</p>
GTPU Tunnel Remote IP address	<p>IP address of the S1-U interface on the eNodeB for the GPRS tunneling protocol, user plane (GTP-U) tunnel endpoint.</p> <p>A fully qualified remote TEID-U consists of this address and the Remote TEID-U value.</p>
GTPU Tunnel Local IP address	<p>IP address of the S1-U interface on the BNG for the GTP-U tunnel endpoint.</p> <p>A fully qualified local TEID-U consists of this address and the Local TEID-U value.</p>
GTPC Remote IP address	<p>IP address of the S11 interface on the MME for the GTP-C tunnel endpoint.</p> <p>A fully qualified remote TEID-C consists of this address and the Remote TEID-C value.</p>
GTPC Local IP address	<p>IP address of the S11 interface on the BNG for the GTP-C tunnel endpoint.</p> <p>A fully qualified local TEID-C consists of this address and the Local TEID-C value.</p>
Access Point Name	<p>Access point name (APN) for the user equipment. The APN corresponds to the connection and service parameters that the subscriber's mobile device can use for connecting to the carrier's gateway to the Internet.</p>
Tenant	<p>Name of the tenant system. You can create multiple tenant system administrators for a tenant system and assign the administrators different permission levels based on your requirements.</p>

Table 13: show subscribers Output Fields (Continued)

Field Name	Field Description
Routing instance	Name of the routing instance. When a custom routing instance is created for a tenant system, all the interfaces defined in that tenant system are added to that routing instance.
Dynamic Profile Version Alias	Configured name for a specific variation of a base dynamic profile. The presence of this name presence indicates that the profile configuration is different from that of the base profile. The value is conveyed to the RADIUS server during authentication in the Client-Profile-Name VSA (26-4874-174).

Sample Output

show subscribers (IPv4)

```
user@host> show subscribers
```

Interface	IP Address/VLAN ID	User Name	LS:RI
ge-1/3/0.1073741824	10		default:default
demux0.1073741824	203.0.113.10	WHOLESALE-CLIENT	default:default
demux0.1073741825	203.0.113.3	RETAILER1-CLIENT	test1:retailer1
demux0.1073741826	203.0.113.3	RETAILER2-CLIENT	test1:retailer2

show subscribers (IPv6)

```
user@host> show subscribers
```

Interface	IP Address/VLAN ID	User Name	LS:RI
ge-1/0/0.0	2001:db8:c0:0:0:0/74	WHOLESALE-CLIENT	default:default
*	2001:db8:1/128	subscriber-25	default:default

show subscribers (IPv4 and IPv6 Dual Stack)

```
user@host> show subscribers
```

Interface	IP Address/VLAN ID	User Name	LS:RI
demux0.1073741834	0x8100.1002 0x8100.1		default:default

demux0.1073741835	0x8100.1001 0x8100.1		default:default
pp0.1073741836	203.0.113.13	dualstackuser1@example1.com	default:ASP-1
*	2001:db8:1::/48		
*	2001:db8:1:1::/64		
pp0.1073741837	203.0.113.33	dualstackuser2@example1.com	default:ASP-1
*	2001:db8:1:2:5::/64		

show subscribers (Single Session DHCP Dual Stack)

```
user@host> show subscribers
```

Interface	IP Address/VLAN ID	User Name	LS:RI
demux0.1073741364	192.168.10.10	dual-stack-retail35	default:default
	2001:db8::100:0:0:0/74		default:default
	2001:db8:3ffe:0:4::/64		

show subscribers (Single Session DHCP Dual Stack detail)

```
user@host> show subscribers id 27 detail
```

Type: DHCP

User Name: dual-stack-retail33

IP Address: 10.10.0.53

IPv6 Address: 2001:db8:3000:0:0:8003::2

IPv6 Prefix: 2001:db8:3ffe:0:4::/64

Logical System: default

Routing Instance: default

Interface: ae0.3221225472

Interface type: Static

Underlying Interface: ae0.3221225472

Dynamic Profile Name: dhcp-retail-18

MAC Address: 00:00:5E:00:53:02

State: Active

DHCP Relay IP Address: 10.10.0.1

Radius Accounting ID: 27

Session ID: 27

PFE Flow ID: 2

Stacked VLAN Id: 2000

VLAN Id: 1

Login Time: 2014-05-15 10:12:10 PDT


```
DHCP Options: len 60
00 08 00 02 00 00 00 01 00 0a 00 03 00 01 00 00 64 01 01 02
00 06 00 04 00 03 00 19 00 03 00 0c 00 00 00 00 00 00 00 00
00 00 00 00 00 19 00 0c 00 00 00 00 00 00 00 00 00 00 00 00
```

show subscribers (LNS on MX Series Routers)

```
user@host> show subscribers
Interface          IP Address/VLAN ID  User Name          LS:RI
si-4/0/0.1         192.0.2.0           user@example.com    default:default
```

show subscribers (L2TP Switched Tunnels)

```
user@host> show subscribers
Interface          IP Address/VLAN ID  User Name          LS:RI
si-2/1/0.1073741842 Tunnel-switched     user@example.com    default:default
si-2/1/0.1073741843 Tunnel-switched     user@example.com    default:default
```

show subscribers aggregation-interface-set-name

```
user@host> show subscribers aggregation-interface-set-name FRA*

Interface          IP Address/VLAN ID  User Name          LS:RI
ge-1/0/0.3221225472 50                   ancp               default:isp1-
subscriber
```

show subscribers client-type dhcp detail

```
user@host> show subscribers client-type dhcp detail
Type: DHCP
IP Address: 203.0.113.29
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: demux0.1073744127
```

```

Interface type: Dynamic
Dynamic Profile Name: dhcp-demux
MAC Address: 00:00:5e:00:53:98
State: Active
Radius Accounting ID: user :2304
Login Time: 2009-08-25 14:43:52 PDT

Type: DHCP
IP Address: 203.0.113.27
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: demux0.1073744383
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:00:5e:00:53:f3
State: Active
Radius Accounting ID: 1234 :2560
Login Time: 2009-08-25 14:43:56 PDT

```

show subscribers client-type dhcp detail (DHCPv6)

```

user@host> show subscribers client-type dhcp detail
Type: DHCP
User Name: DEFAULTUSER
IPv6 Address: 2001:db8::2
IPv6 Prefix: 2001:db8:1::/64
Logical System: default
Routing Instance: default
Interface: demux0.3221225602
Interface type: Static
Underlying Interface: demux0.3221225602
Dynamic Profile Name: client-profile
MAC Address: 00:00:5E:00:53:01
State: Active
Radius Accounting ID: 142
Session ID: 142
PFE Flow ID: 148
Stacked VLAN Id: 1
VLAN Id: 1
Login Time: 2018-03-29 12:27:38 EDT

```

```

DHCP Options: len 56
00 08 00 02 00 00 00 01 00 0e 00 01 00 01 22 4f d0 33 00 11
01 00 00 01 00 03 00 0c 00 00 00 0a 00 04 9d 40 00 07 62 00
00 19 00 0c 00 00 00 0b 00 04 9d 40 00 07 62 00
Server DHCPV6 Options: len 94
00 0a 00 06 11 22 33 44 55 66 00 11 00 09 00 00 0c 4c 00 02
00 01 aa 00 11 00 20 00 00 0a 4c 00 02 00 02 32 33 00 03 00
03 34 35 36 00 05 00 06 31 32 33 34 35 36 00 06 00 01 31 00
11 00 09 00 00 0b 4c 00 02 00 01 bb 00 11 00 12 00 00 0d e9
00 01 00 03 aa bb cc 00 02 00 03 dd ee cc
DHCPV6 Header: len 4
01 fc e4 96

```

show subscribers client-type dhcp extensive

```

user@host> show subscribers client-type dhcp extensive
Type: DHCP
User Name: user
IP Address: 192.0.2.4
IP Netmask: 255.0.0.0
IPv6 Address: 2001:db8:3::103
IPv6 Prefix: 2001:db8::/68
Domain name server inet6: 2001:db8:1 abcd::2
Logical System: default
Routing Instance: default
Interface: ge-0/0/0.0
Interface type: Static
Underlying Interface: ge-0/0/0.0
MAC Address: 00:00:5e:00:53:01
State: Configured
Radius Accounting ID: 10
Session ID: 10
PFE Flow ID: 2
VLAN Id: 100
Agent Circuit ID: ge-0/0/0:100
Agent Remote ID: ge-0/0/0:100
Login Time: 2017-05-23 12:52:22 IST
DHCPV6 Options: len 69
00 01 00 0e 00 01 00 01 59 23 e3 31 00 10 94 00 00 01 00 08
00 02 00 00 00 19 00 29 00 00 00 00 00 04 9d 40 00 07 62 00
00 1a 00 19 00 09 3a 80 00 27 8d 00 00 00 00 00 00 00 00 00

```

```

00 00 00 00 00 00 00 00 00
Server DHCP Options: len 13
3a 04 00 00 00 ff 00 3b 04 00 00 0f 00
Server DHCPV6 Options: len 8
00 0a 00 04 ab cd ef ab
DHCPV6 Header: len 4
01 00 00 04
IP Address Pool: al_pool30
IPv6 Address Pool: ia_na_pool
IPv6 Delegated Address Pool: prefix_delegate_pool

```

show subscribers client-type fixed-wireless-access

```
user@host> show subscribers client-type fixed-wireless-access
```

Interface	IP Address/VLAN ID	User Name	LS:RI
ps1.3221225472	192.0.2.10	505024101215074	default:default
ps1.3221225473	192.0.2.11	505024101215075	default:default

show subscribers client-type fixed-wireless-access detail (Detail)

```
user@host> show subscribers client-type fixed-wireless-access detail
```

Type: FWA

```

User Name: 505024101215074
IP Address: 192.0.2.10
IP Netmask: 255.255.0.0
Interface: ps1.3221225472
Interface type: Dynamic
Dynamic Profile Name: fwa-profile
State: Active
Radius Accounting ID: 1
Session ID: 1
PFE Flow ID: 11
Login Time: 2019-04-10 14:10:12 PDT
Local TEID-U: 1
Local TEID-C: 1
Remote TEID-U: 2000000
Remote TEID-C: 1000000
GTPU Tunnel Remote IP Address: 203.0.113.1.3
GTPU Tunnel Local IP Address: 203.0.113.2.5

```

```

GTPC Remote IP Address: 203.0.113.1.2
GTPC Local IP Address: 203.0.113.1.1
Access Point Name: user21

```

show subscribers client-type vlan-oob detail

```

user@host> show subscribers client-type vlan-oob detail
Type: VLAN-OOB
User Name: L2WS.line-aci-1.line-ari-1
Logical System: default
Routing Instance: ISP1
Interface: demux0.1073744127
Interface type: Dynamic
Underlying Interface: ge-1/0/0
Dynamic Profile Name: Prof_L2WS
Dynamic Profile Version: 1
State: Active
Radius Accounting ID: 1234
Session ID: 77
VLAN Id: 126
Core-Facing Interface: ge-2/1/1
VLAN Map Id: 6
Inner VLAN Map Id: 2001
Agent Circuit ID: line-aci-1
Agent Remote ID: line-ari-1
Login Time: 2013-10-29 14:43:52 EDT

```

show subscribers count

```

user@host> show subscribers count
Total Subscribers: 188, Active Subscribers: 188

```

show subscribers address detail (IPv6)

```

user@host> show subscribers address 203.0.113.137 detail
Type: PPPoE
User Name: pppoeTerV6User1Svc
IP Address: 203.0.113.137

```

```

IP Netmask: 255.0.0.0
IPv6 User Prefix: 2001:db8:0:c88::/32
Logical System: default
Routing Instance: default
Interface: pp0.1073745151
Interface type: Dynamic
Underlying Interface: demux0.8201
Dynamic Profile Name: pppoe-client-profile
MAC Address: 00:00:5e:00:53:53
Session Timeout (seconds): 31622400
Idle Timeout (seconds): 86400
State: Active
Radius Accounting ID: example demux0.8201:6544
Session ID: 6544
Agent Circuit ID: ifl3720
Agent Remote ID: ifl3720
Login Time: 2012-05-21 13:37:27 PDT
Service Sessions: 1

```

show subscribers detail (IPv4)

```

user@host> show subscribers detail
Type: DHCP
IP Address: 203.0.113.29
IP Netmask: 255.255.0.0
Primary DNS Address: 192.0.2.0
Secondary DNS Address: 192.0.2.1
Primary WINS Address: 192.0.2.3
Secondary WINS Address: 192.0.2.4
Logical System: default
Routing Instance: default
Interface: demux0.1073744127
Interface type: Dynamic
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:00:5e:00:53:98
State: Active
Radius Accounting ID: example :2304
Idle Timeout (seconds): 600
Login Time: 2009-08-25 14:43:52 PDT
DHCP Options: len 52
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 08 33 04 00 00

```

```

00 3c 0c 15 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 36 2f
33 2d 37 2d 30 37 05 01 06 0f 21 2c
Service Sessions: 2

```

show subscribers detail (IPv6)

```

user@host> show subscribers detail
Type: DHCP
User Name: pd-user1
IPv6 Prefix: 2001:db8:ffff:1::/32
Logical System: default
Routing Instance: default
Interface: ge-3/1/3.2
Interface type: Static
MAC Address: 00:00:5e:00:53:03
State: Active
Radius Accounting ID: 1
Session ID: 1
Login Time: 2011-08-25 12:12:26 PDT
DHCP Options: len 42
00 08 00 02 00 00 00 01 00 0a 00 03 00 01 00 51 ff ff 00 03
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00 00
00 00

```

show subscribers detail (pseudowire Interface for GRE Tunnel)

```

user@host> show subscribers detail

```

Interface	IP Address/VLAN ID	User Name	LS:RI
ps0.3221225484	192.0.2.2		
ps0.3221225485	192.0.2.3		
demux0.3221225486	1		default:default
demux0.3221225487	1		default:default
demux0.3221225488	198.51.0.1		default:default
demux0.3221225489	198.51.0.2		default:default

show subscribers detail (IPv6 Static Demux Interface)

```

user@host> show subscribers detail
Type: STATIC-INTERFACE
User Name: user@example.com
IPv6 Prefix: 2001:db8:3:4:5:6:7:aa/32
Logical System: default
Routing Instance: default
Interface: demux0.1
Interface type: Static
Dynamic Profile Name: junos-default-profile
State: Active
Radius Accounting ID: 185
Login Time: 2010-05-18 14:33:56 EDT

```

show subscribers detail (L2TP LNS Subscribers on MX Series Routers)

```

user@host> show subscribers detail
Type: L2TP
User Name: user@example.com
IP Address: 203.0.113.58
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: si-5/2/0.1073749824
Interface type: Dynamic
Dynamic Profile Name: dyn-lns-profile2
Dynamic Profile Version: 1
State: Active
Radius Accounting ID: 8001
Session ID: 8001
Login Time: 2011-04-25 20:27:50 IST

```

show subscribers detail (L2TP Switched Tunnels)

```

user@host> show subscribers detail
Type: L2TP
User Name: user@example.com
Logical System: default

```



```

Routing Instance: default
Interface: si-2/1/0.1073741842
Interface type: Dynamic
Dynamic Profile Name: dyn-lts-profile
State: Active
L2TP State: Tunnel-switched
Tunnel switch Profile Name: ce-lts-profile
Local IP Address: 203.0.113.51
Remote IP Address: 192.0.2.0
Radius Accounting ID: 21
Session ID: 21
Login Time: 2013-01-18 03:01:11 PST

```

```

Type: L2TP
User Name: user@example.com
Logical System: default
Routing Instance: default
Interface: si-2/1/0.1073741843
Interface type: Dynamic
Dynamic Profile Name: dyn-lts-profile
State: Active
L2TP State: Tunnel-switched
Tunnel switch Profile Name: ce-lts-profile
Local IP Address: 203.0.113.31
Remote IP Address: 192.0.2.1
Session ID: 22
Login Time: 2013-01-18 03:01:14 PST

```

show subscribers detail (Tunneled Subscriber)

```

user@host> show subscribers detail
Type: PPPoE
User Name: user1@example.com
Logical System: default
Routing Instance: default
Interface: pp0.1
State: Active, Tunneled
Radius Accounting ID: 512

```

show subscribers detail (IPv4 and IPv6 Dual Stack)

```
user@host> show subscribers detail
```

```
Type: VLAN
```

```
Logical System: default
```

```
Routing Instance: default
```

```
Interface: demux0.1073741824
```

```
Interface type: Dynamic
```

```
Dynamic Profile Name: svlanProfile
```

```
State: Active
```

```
Session ID: 1
```

```
Stacked VLAN Id: 0x8100.1001
```

```
VLAN Id: 0x8100.1
```

```
Login Time: 2011-11-30 00:18:04 PST
```

```
Type: PPPoE
```

```
User Name: dualstackuser1@example1.com
```

```
IP Address: 203.0.113.13
```

```
IPv6 Prefix: 2001:db8:1::/32
```

```
IPv6 User Prefix: 2001:db8:1:1::/32
```

```
Logical System: default
```

```
Routing Instance: ASP-1
```

```
Interface: pp0.1073741825
```

```
Interface type: Dynamic
```

```
Dynamic Profile Name: dualStack-Profile1
```

```
MAC Address: 00:00:5e:00:53:02
```

```
State: Active
```

```
Radius Accounting ID: 2
```

```
Session ID: 2
```

```
Login Time: 2011-11-30 00:18:05 PST
```

```
Type: DHCP
```

```
IPv6 Prefix: 2001:db8:1::/32
```

```
Logical System: default
```

```
Routing Instance: ASP-1
```

```
Interface: pp0.1073741825
```

```
Interface type: Static
```

```
MAC Address: 00:00:5e:00:53:02
```

```
State: Active
```

```
Radius Accounting ID: test :3
```

```
Session ID: 3
```

```
Underlying Session ID: 2
```

```

Login Time: 2011-11-30 00:18:35 PST
DHCP Options: len 42
00 08 00 02 0b b8 00 01 00 0a 00 03 00 01 00 00 64 03 01 02
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00 00
00 00

```

show subscribers detail (ACI Interface Set Session)

```

user@host> show subscribers detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ge-1/0/0
Interface Set: aci-1001-ge-1/0/0.2800
Interface Set Session ID: 0
Underlying Interface: ge-1/0/0.2800
Dynamic Profile Name: aci-vlan-set-profile-2
Dynamic Profile Version: 1
State: Active
Session ID: 1
Agent Circuit ID: aci-ppp-dhcp-20
Login Time: 2012-05-26 01:54:08 PDT

```

show subscribers detail (PPPoE Subscriber Session with ACI Interface Set)

```

user@host> show subscribers detail
Type: PPPoE
User Name: ppphint2
IP Address: 203.0.113.15
Logical System: default
Routing Instance: default
Interface: pp0.1073741825
Interface type: Dynamic
Interface Set: aci-1001-demux0.1073741824
Interface Set Type: Dynamic
Interface Set Session ID: 2
Underlying Interface: demux0.1073741824
Dynamic Profile Name: aci-vlan-pppoe-profile
Dynamic Profile Version: 1

```

```
MAC Address: 00:00:5e:00:53:02
State: Active
Radius Accounting ID: 3
Session ID: 3
Agent Circuit ID: aci-ppp-dhcp-dvlan-50
Login Time: 2012-03-07 13:46:53 PST
```

show subscribers detail (Dynamic Profile Version Alias)

```
user@host> show subscribers detail

Type: PPPoE
User Name: DEFAULTUSER
IP Address: 192.0.2.21
IP Netmask: 255.255.255.255
IPv6 Address: 2001:db8::17
Logical System: default
Routing Instance: default
Interface: pp0.3221225720
Interface type: Dynamic
Underlying Interface: demux0.3221225719
Dynamic Profile Name: pppoe-client-profile
Dynamic Profile Version Alias: profile-version1a
MAC Address: 00:00:5E:00:53:38
State: Active
Radius Accounting ID: 288
Session ID: 288
PFE Flow ID: 344
VLAN Id: 1
Login Time: 2019-09-23 10:40:56 IST
```

show subscribers extensive

```
user@host> show subscribers extensive

Type: DHCP
User Name: uer@host
IP Address: 192.0.2.136
IP Netmask: 255.0.0.0
Logical System: default
Routing Instance: default
```

```

Interface: ge-0/0/0.0
Interface type: Static
Underlying Interface: ge-0/0/0.0
MAC Address: 00:10:94:00:00:01
State: Active
Radius Accounting ID: 15
Session ID: 15
PFE Flow ID: 2
VLAN Id: 100
Login Time: 2021-05-24 11:30:07 IST
DHCP Options: len 52
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 01 33 04 00 00
00 3c 0c 15 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 31 2f
31 2d 30 2d 30 37 05 01 06 0f 21 2c
DHCP Header: len 44
01 01 06 00 00 00 00 1d 00 00 80 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 10 94 00 00 01 00 00 00 00 00 00
00 00 00 00
IP Address Pool: al_pool30
Access Line Attributes:
  Actual upstream data rate: 19998
  Actual downstream data rate: 79999
  Access loop encapsulation: 01 02 00

```

show subscribers extensive (Aggregation Node Interface Set and DSL Forum Attributes)

```

user@host> show subscribers extensive
Type: VLAN-OOB
User Name: ancp
Logical System: default
Routing Instance: isp1-subscriber
Interface: ge-1/0/0.3221225472
Interface type: Dynamic
Interface Set: FRA-DPU-C-100
Underlying Interface: ge-1/0/0
Core IFL Name: ge-1/0/4.0
Dynamic Profile Name: Prof_L2BSA
State: Active
Radius Accounting ID: 1
Session ID: 1
PFE Flow ID: 13

```

```

VLAN Id: 50
VLAN Map Id: 20
Inner VLAN Map Id: 1
Inner VLAN Tag Protocol Id: 0x88a8
Agent Circuit ID: circuit 201
Agent Remote ID: remote-id
Aggregation Interface-set Name: FRA-DPU-C-100
Login Time: 2018-05-29 08:43:42 EDT
Accounting interval: 72000
Dynamic configuration:
    junos-cos-scheduler-map: 100m
    junos-inner-vlan-tag-protocol-id: 0x88a8
    junos-vlan-map-id: 20

Type: PPPoE
IP Address: 192.85.128.1
IP Netmask: 255.255.255.255
Logical System: default
Routing Instance: default
Interface: pp0.3221225474
Interface type: Dynamic
Interface Set: ge-1/0/0
Underlying Interface: demux0.3221225473
Dynamic Profile Name: pppoe-client-profile-with-cos
MAC Address: 00:10:94:00:00:03
State: Active
Radius Accounting ID: 3
Session ID: 3
PFE Flow ID: 16
Stacked VLAN Id: 50
VLAN Id: 7
Agent Circuit ID: circuit 201
Agent Remote ID: remote-id
Aggregation Interface-set Name: FRA-DPU-C-100
Login Time: 2018-05-29 08:43:45 EDT
IP Address Pool: pool-1
Accounting interval: 72000
DSL type: G.fast
Frame/cell mode: Frame
Overhead accounting bytes: 10
Actual upstream data rate: 100000 kbps
Actual downstream data rate: 200000 kbps
Calculated downstream data rate: 180000 kbps

```

Calculated upstream data rate: 90000 kbps

Adjusted downstream data rate: 160000 kbps

DSL Line Attributes

Agent Circuit ID: circuit 201

Agent Remote ID: remote-id

Actual upstream data rate: 100000

Actual downstream data rate: 200000

DSL type: G.fast

Access Aggregation Circuit ID: #FRA-DPU-C-100

Attribute type: 0xAA, Attribute length: 4

198 51 100 78

show subscribers extensive (Passive Optical Network Circuit Interface Set)

```
user@host> show subscribers client-type dhcp extensive
```

Type: DHCP

IP Address: 192.0.2.136

IP Netmask: 255.255.0.0

Logical System: default

Routing Instance: default

Interface: demux0.1073741842

Interface type: Dynamic

Interface Set: ot101.xyz101-202

Underlying Interface: demux0.1073741841

Dynamic Profile Name: dhcp-profile

MAC Address: 00:00:5e:00:53:02

State: Active

Radius Accounting ID: user :19

Session ID: 19

VLAN Id: 1100

Agent Remote ID: ABCD01234|100M|AAAA01234|ot101.xyz101-202

Login Time: 2017-03-29 10:30:46 PDT

DHCP Options: len 97

```
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 02 33 04 00 00
17 70 0c 15 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 32 2f
32 2d 31 2d 31 37 05 01 06 0f 21 2c 52 2b 02 29 41 42 43 44
30 31 32 33 34 7c 31 30 30 4d 7c 41 41 41 41 30 31 32 33 34
```

```
7c 6f 74 6c 30 31 2e 78 79 7a 31 30 31 2d 32 30 32
IP Address Pool: POOL-V4
```

show subscribers extensive (DNS Addresses from Access Profile or Global Configuration)

```
user@host> show subscribers extensive
Type: DHCP
User Name: test-user@example-com
IP Address: 192.0.2.119
IP Netmask: 255.255.255.255
Domain name server inet: 198.51.100.1 198.51.100.2
IPv6 Address: 2001:db8::1:11
Domain name server inet6: 2001:db8:5001::12 2001:db8:3001::12
Logical System: default
Routing Instance: default
Interface: ge-2/0/3.0
Interface type: Static
Underlying Interface: ge-2/0/3.0
MAC Address: 00:00:5E:00:53:00
State: Active
Radius Accounting ID: 5
Session ID: 5
Login Time: 2017-01-31 11:16:21 IST
DHCP Options: len 53
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 03 33 04 00 00
00 3c 0c 16 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 35 2f
31 32 2d 30 2d 30 37 05 01 06 0f 21 2c
IP Address Pool: v4-pool
```

show subscribers extensive (DNS Addresses from RADIUS)

```
user@host> show subscribers extensive
Type: DHCP
User Name: test-user@example-com
IP Address: 192.0.2.119
IP Netmask: 255.255.255.255
Primary DNS Address: 198.51.100.1
Secondary DNS Address: 198.51.100.2
IPv6 Address: 2001:db8::1:11
IPv6 Primary DNS Address: 2001:db8:5001::12
```



```

IPv6 Secondary DNS Address: 2001:db8:3001::12
Logical System: default
Routing Instance: default
Interface: ge-2/0/3.0
Interface type: Static
Underlying Interface: ge-2/0/3.0
MAC Address: 00:00:5E:00:53:00
State: Active
Radius Accounting ID: 5
Session ID: 5
Login Time: 2017-01-31 11:16:21 IST
DHCP Options: len 53
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 03 33 04 00 00
00 3c 0c 16 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 35 2f
31 32 2d 30 2d 30 37 05 01 06 0f 21 2c
IP Address Pool: v4-pool

```

show subscribers extensive (IPv4 DNS Addresses from RADIUS, IPv6 from Access Profile or Global Configuration)

```

user@host> show subscribers extensive
Type: DHCP
User Name: test-user@example-com
IP Address: 192.0.2.119
IP Netmask: 255.255.255.255
Primary DNS Address: 198.51.100.1
Secondary DNS Address: 198.51.100.2
IPv6 Address: 2001:db8::1:11
Domain name server inet6: 2001:db8:5001::12 2001:db8:3001::12
Logical System: default
Routing Instance: default
Interface: ge-2/0/3.0
Interface type: Static
Underlying Interface: ge-2/0/3.0
MAC Address: 00:00:5E:00:53:00
State: Active
Radius Accounting ID: 5
Session ID: 5
Login Time: 2017-01-31 11:16:21 IST
DHCP Options: len 53
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 03 33 04 00 00

```

```
00 3c 0c 16 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 35 2f
31 32 2d 30 2d 30 37 05 01 06 0f 21 2c
IP Address Pool: v4-pool
```

show subscribers extensive (RPF Check Fail Filter)

```
user@host> show subscribers extensive
...
Type: VLAN
  Logical System: default
  Routing Instance: default
  Interface: ae0.1073741824
  Interface type: Dynamic
  Dynamic Profile Name: vlan-prof
  State: Active
  Session ID: 9
  VLAN Id: 100
  Login Time: 2011-08-26 08:17:00 PDT
  IPv4 rpf-check Fail Filter Name: rpf-allow-dhcp
  IPv6 rpf-check Fail Filter Name: rpf-allow-dhcpv6
...
```

show subscribers extensive (L2TP LNS Subscribers on MX Series Routers)

```
user@host> show subscribers extensive
Type: L2TP
  User Name: user@example.com
  IP Address: 203.0.113.58
  IP Netmask: 255.255.0.0
  Logical System: default
  Routing Instance: default
  Interface: si-5/2/0.1073749824
  Interface type: Dynamic
  Dynamic Profile Name: dyn-lns-profile2
  Dynamic Profile Version: 1
  State: Active
  Radius Accounting ID: 8001
  Session ID: 8001
  Login Time: 2011-04-25 20:27:50 IST
```

```
IPv4 Input Filter Name: classify-si-5/2/0.1073749824-in
IPv4 Output Filter Name: classify-si-5/2/0.1073749824-out
```

show subscribers extensive (IPv4 and IPv6 Dual Stack)

```
user@host> show subscribers extensive
Type: VLAN
Logical System: default
Routing Instance: default
Interface: demux0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlanProfile
State: Active
Session ID: 1
Stacked VLAN Id: 0x8100.1001
VLAN Id: 0x8100.1
Login Time: 2011-11-30 00:18:04 PST

Type: PPPoE
User Name: dualstackuser1@example1.com
IP Address: 203.0.113.13
IPv6 Prefix: 2001:db8:1::/32
IPv6 User Prefix: 2001:db8:1:1::/32
Logical System: default
Routing Instance: ASP-1
Interface: pp0.1073741825
Interface type: Dynamic
Dynamic Profile Name: dualStack-Profile1
MAC Address: 00:00:5e:00:53:02
State: Active
Radius Accounting ID: 2
Session ID: 2
Login Time: 2011-11-30 00:18:05 PST
IPv6 Delegated Network Prefix Length: 48
IPv6 Interface Address: 2001:db8:2016:1:1::1/64
IPv6 Framed Interface Id: 1:1:2:2
IPv4 Input Filter Name: FILTER-IN-pp0.1073741825-in
IPv4 Output Filter Name: FILTER-OUT-pp0.1073741825-out
IPv6 Input Filter Name: FILTER-IN6-pp0.1073741825-in
IPv6 Output Filter Name: FILTER-OUT6-pp0.1073741825-out
```

```

Type: DHCP
IPv6 Prefix: 2001:db8:1::/32
Logical System: default
Routing Instance: ASP-1
Interface: pp0.1073741825
Interface type: Static
MAC Address: 00:00:5e:00:53:02
State: Active
Radius Accounting ID: test :3
Session ID: 3
Underlying Session ID: 2
Login Time: 2011-11-30 00:18:35 PST
DHCP Options: len 42
00 08 00 02 0b b8 00 01 00 0a 00 03 00 01 00 00 64 03 01 02
00 06 00 02 00 19 00 19 00 0c 00 00 00 00 00 00 00 00 00 00
00 00
IPv6 Delegated Network Prefix Length: 48

```

show subscribers extensive (ADF Rules)

```

user@host> show subscribers extensive
...
Service Session ID: 12
Service Session Name: SERVICE-PROFILE
State: Active
Family: inet
ADF IPv4 Input Filter Name: __junos_adf_12-demux0.3221225474-inet-in
Rule 0: 010101000b0101020b020200201811
    from {
        source-address 203.0.113.232;
        destination-address 198.51.100.0/24;
        protocol 17;
    }
    then {
        accept;
    }

```

show subscribers extensive (Effective Shaping-Rate)

```

user@host> show subscribers extensive
Type: VLAN
Logical System: default
Routing Instance: default
Interface: demux0.1073741837
Interface type: Dynamic
Interface Set: ifset-1
Underlying Interface: ae1
Dynamic Profile Name: svlan-dhcp-test
State: Active
Session ID: 1
Stacked VLAN Id: 0x8100.201
VLAN Id: 0x8100.201
Login Time: 2011-11-30 00:18:04 PST
Effective shaping-rate: 31000000k
...

```

show subscribers extensive (PPPoE Subscriber Access Line Rates)

```

user@host> show subscribers extensive
Type: PPPoE
IP Address: 198.51.100.1
IP Netmask: 255.255.255.255
Logical System: default
Routing Instance: default
Interface: pp0.3221225475
Interface type: Dynamic
Underlying Interface: demux0.3221225474
Dynamic Profile Name: pppoe-client-profile-with-cos
MAC Address: 00:00:5e:00:53:02
State: Active
Radius Accounting ID: 4
Session ID: 4
PFE Flow ID: 14
Stacked VLAN Id: 40
VLAN Id: 1
Agent Circuit ID: circuit0
Agent Remote ID: remote0

```

Login Time: 2017-04-06 15:52:32 PDT

User Name: DAVE-L2BSA-SERVICE

Logical System: default

Routing Instance: isp-1-subscriber

Interface: ge-1/2/4.3221225472

Interface type: Dynamic

Interface Set: ge-1/2/4

Underlying Interface: ge-1/2/4

Core IFL Name: ge-1/3/4.0

Dynamic Profile Name: L2BSA-88a8-400LL1300V0

State: Active

Radius Accounting ID: 1

Session ID: 1

PFE Flow ID: 14

VLAN Id: 13

VLAN Map Id: 102

Inner VLAN Map Id: 1

Agent Circuit ID: circuit-aci-3

Agent Remote ID: remote49-3

Login Time: 2017-04-05 16:59:29 EDT

Service Sessions: 4

IFL Input Filter Name: L2BSA-CP-400LL1300V0-ge-1/2/4.3221225472-in

IFL Output Filter Name: L2BSA-CP-400LL1300V0-ge-1/2/4.3221225472-out

Accounting interval: 900

DSL type: VDSL

Frame/Cell Mode: Frame

Overhead accounting bytes: -10

Actual upstream data rate: 1024 kbps

Actual downstream data rate: 4096 kbps

Adjusted downstream data rate: 3686 kbps

Dynamic configuration:

junos-vlan-map-id: 102

Service Session ID: 5

Service Session Name: SRL-L1

State: Active

Family: inet, inet6

IFL Input Filter Name: L2BSA-FWF-in-10048-ge-1/2/4.3221225472-in

IFL Output Filter Name: L2BSA-FWF-out-25088-ge-1/2/4.3221225472-out

Service Activation time: 2017-04-05 16:59:30 EDT

Dynamic configuration:

l2bsa-fwf-in: L2BSA-FWF-in-10048

l2bsa-fwf-out: L2BSA-FWF-out-25088

rldown: 25088

rlup: 10048

show subscribers extensive (Subscriber Session Using PCEF Profile)

```
user@host> show subscribers extensive
```

Type: VLAN

Logical System: default

Routing Instance: default

Interface: demux0.3221225517

Interface type: Dynamic

Underlying Interface: ge-1/0/3

Dynamic Profile Name: svlan-dhcp

State: Active

Session ID: 59

PFE Flow ID: 71

Stacked VLAN Id: 0x8100.1

VLAN Id: 0x8100.2

Login Time: 2017-03-28 08:23:08 PDT

Type: DHCP

User Name: pcefuser

IP Address: 192.0.2.26

IP Netmask: 255.0.0.0

Logical System: default

Routing Instance: default

Interface: demux0.3221225518

Interface type: Dynamic

Underlying Interface: demux0.3221225517

Dynamic Profile Name: dhcp-client-prof

MAC Address: 00:00:5e:00:53:01

State: Active

Radius Accounting ID: 60

Session ID: 60

PFE Flow ID: 73

Stacked VLAN Id: 1

VLAN Id: 2

Login Time: 2017-03-28 08:23:08 PDT

Service Sessions: 1

DHCP Options: len 9

35 01 01 37 04 01 03 3a 3b

```

IP Address Pool: pool-ipv4
IPv4 Input Service Set: tdf-service-set
IPv4 Output Service Set: tdf-service-set
PCEF Profile: pcef-prof-1
PCEF Rule/Rulebase: default
Dynamic configuration:
  junos-input-service-filter: svc-filt-1
  junos-input-service-set: tdf-service-set
  junos-output-service-filter: svc-filt-1
  junos-output-service-set: tdf-service-set
  junos-pcef-profile: pcef-prof-1
  junos-pcef-rule: default

Service Session ID: 61
Service Session Name: pcef-serv-prof
State: Active
Family: inet
IPv4 Input Service Set: tdf-service-set
IPv4 Output Service Set: tdf-service-set
PCEF Profile: pcef-prof-1
PCEF Rule/Rulebase: limit-fb
Service Activation time: 2017-03-28 08:31:19 PDT
Dynamic configuration:
  pcef-prof: pcef-prof-1
  pcef-rule1: limit-fb
  svc-filt: svc-filt-1
  svc-set: tdf-service-set

```

show subscribers aci-interface-set-name detail (Subscriber Sessions Using Specified ACI Interface Set)

```

user@host> show subscribers aci-interface-set-name aci-1003-ge-1/0/0.4001 detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ge-1/0/0.
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-set-profile
Dynamic Profile Version: 1
State: Active
Session ID: 13

```



```

Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:56 PDT

Type: PPPoE
User Name: ppphint2
IP Address: 203.0.113.17
Logical System: default
Routing Instance: default
Interface: pp0.1073741834
Interface type: Dynamic
Interface Set: aci-1003-ge-1/0/0.4001
Interface Set Type: Dynamic
Interface Set Session ID: 13
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-pppoe-profile
Dynamic Profile Version: 1
MAC Address:
State: Active
Radius Accounting ID: 14
Session ID: 14
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:57 PDT

```

show subscribers agent-circuit-identifier detail (Subscriber Sessions Using Specified ACI Substring)

```

user@host> show subscribers agent-circuit-identifier aci-ppp-vlan detail
Type: VLAN
Logical System: default
Routing Instance: default
Interface: ge-1/0/0.
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-set-profile
Dynamic Profile Version: 1
State: Active
Session ID: 13
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:56 PDT

Type: PPPoE
User Name: ppphint2

```

```

IP Address: 203.0.113.17
Logical System: default
Routing Instance: default
Interface: pp0.1073741834
Interface type: Dynamic
Interface Set: aci-1003-ge-1/0/0.4001
Interface Set Type: Dynamic
Interface Set Session ID: 13
Underlying Interface: ge-1/0/0.4001
Dynamic Profile Name: aci-vlan-pppoe-profile
Dynamic Profile Version: 1
MAC Address: 00:00:5e:00:53:52
State: Active
Radius Accounting ID: 14
Session ID: 14
Agent Circuit ID: aci-ppp-vlan-10
Login Time: 2012-03-12 10:41:57 PDT

```

show subscribers id accounting-statistics

```

user@host> show subscribers id 601 accounting-statistics
Session ID: 601
Accounting Statistics:
Input bytes : 199994
Output bytes : 121034
Input packets: 5263
Output packets: 5263
IPv6:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

show subscribers interface accounting-statistics

```

user@host> show subscribers interface pp0.3221226949 accounting-statistics
Session ID: 501
Accounting Statistics:
Input bytes : 199994
Output bytes : 121034

```

```

Input packets: 5263
Output packets: 5263
IPv6:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

```

Session ID: 502
Accounting Statistics:
Input bytes : 87654
Output bytes : 72108
Input packets: 3322
Output packets: 3322
IPv6:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

```

Session ID: 503
Accounting Statistics:
Input bytes : 156528
Output bytes : 123865
Input packets: 7448
Output packets: 7448
IPv6:
Input bytes : 0
Output bytes : 0
Input packets: 0
Output packets: 0

```

show subscribers interface extensive

```

user@host> show subscribers interface demux0.1073741826 extensive
Type: VLAN
User Name: user@test.example.com
Logical System: default
Routing Instance: testnet
Interface: demux0.1073741826
Interface type: Dynamic

```

Dynamic Profile Name: profile-vdemux-relay-23qos

MAC Address: 00:00:5e:00:53:04

State: Active

Radius Accounting ID: 12

Session ID: 12

Stacked VLAN Id: 0x8100.1500

VLAN Id: 0x8100.2902

Login Time: 2011-10-20 16:21:59 EST

Type: DHCP

User Name: user@test.example.com

IP Address: 192.0.2.0

IP Netmask: 255.255.255.0

Logical System: default

Routing Instance: testnet

Interface: demux0.1073741826

Interface type: Static

MAC Address: 00:00:5e:00:53:04

State: Active

Radius Accounting ID: 21

Session ID: 21

Login Time: 2011-10-20 16:24:33 EST

Service Sessions: 2

Service Session ID: 25

Service Session Name: SUB-QOS

State: Active

Service Session ID: 26

Service Session Name: service-cb-content

State: Active

IPv4 Input Filter Name: content-cb-in-demux0.1073741826-in

IPv4 Output Filter Name: content-cb-out-demux0.1073741826-out

show subscribers logical-system terse

user@host> show subscribers logical-system test1 terse

Interface	IP Address/VLAN ID	User Name	LS:RI
demux0.1073741825	203.0.113.3	RETAILER1-CLIENT	test1:retailer1
demux0.1073741826	203.0.113.4	RETAILER2-CLIENT	test1:retailer2

show subscribers physical-interface count

```
user@host> show subscribers physical-interface ge-1/0/0 count  
Total subscribers: 3998, Active Subscribers: 3998
```

show subscribers routing-instance inst1 count

```
user@host> show subscribers routing-instance inst1 count  
Total Subscribers: 188, Active Subscribers: 183
```

show subscribers stacked-vlan-id detail

```
user@host> show subscribers stacked-vlan-id 101 detail  
Type: VLAN  
Interface: ge-1/2/0.1073741824  
Interface type: Dynamic  
Dynamic Profile Name: svlan-prof  
State: Active  
Stacked VLAN Id: 0x8100.101  
VLAN Id: 0x8100.100  
Login Time: 2009-03-27 11:57:19 PDT
```

show subscribers stacked-vlan-id vlan-id detail (Combined Output)

```
user@host> show subscribers stacked-vlan-id 101 vlan-id 100 detail  
Type: VLAN  
Interface: ge-1/2/0.1073741824  
Interface type: Dynamic  
Dynamic Profile Name: svlan-prof  
State: Active  
Stacked VLAN Id: 0x8100.101  
VLAN Id: 0x8100.100  
Login Time: 2009-03-27 11:57:19 PDT
```

show subscribers stacked-vlan-id vlan-id interface detail (Combined Output for a Specific Interface)

```
user@host> show subscribers stacked-vlan-id 101 vlan-id 100 interface ge-1/2/0.* detail
Type: VLAN
Interface: ge-1/2/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: svlan-prof
State: Active
Stacked VLAN Id: 0x8100.101
VLAN Id: 0x8100.100
Login Time: 2009-03-27 11:57:19 PDT
```

show subscribers user-name detail

```
user@host> show subscribers user-name larry1 detail
Type: DHCP
User Name: larry1
IP Address: 203.0.113.37
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: ge-1/0/0.1
Interface type: Static
Dynamic Profile Name: foo
MAC Address: 00:00:5e:00:53:01
State: Active
Radius Accounting ID: 1
Session ID: 1
Login Time: 2011-11-07 08:25:59 PST
DHCP Options: len 52
35 01 01 39 02 02 40 3d 07 01 00 10 94 00 00 01 33 04 00 00
00 3c 0c 15 63 6c 69 65 6e 74 5f 50 6f 72 74 20 2f 2f 32 2f
37 2d 30 2d 30 37 05 01 06 0f 21 2c
```

show subscribers vlan-id

```
user@host> show subscribers vlan-id 100
```

Interface	IP Address	User Name
-----------	------------	-----------

```
ge-1/0/0.1073741824
ge-1/2/0.1073741825
```

show subscribers vlan-id detail

```
user@host> show subscribers vlan-id 100 detail
Type: VLAN
Interface: ge-1/0/0.1073741824
Interface type: Dynamic
Dynamic Profile Name: vlan-prof-tpid
State: Active
VLAN Id: 100
Login Time: 2009-03-11 06:48:54 PDT

Type: VLAN
Interface: ge-1/2/0.1073741825
Interface type: Dynamic
Dynamic Profile Name: vlan-prof-tpid
State: Active
VLAN Id: 100
Login Time: 2009-03-11 06:48:54 PDT
```

show subscribers vpi vci extensive (PPPoE-over-ATM Subscriber Session)

```
user@host> show subscribers vpi 40 vci 50 extensive
Type: PPPoE
User Name: testuser
IP Address: 203.0.113.2
IP Netmask: 255.255.0.0
Logical System: default
Routing Instance: default
Interface: pp0.0
Interface type: Static
MAC Address: 00:00:5e:00:53:02
State: Active
Radius Accounting ID: 2
Session ID: 2
ATM VPI: 40
ATM VCI: 50
Login Time: 2012-12-03 07:49:26 PST
```

```
IP Address Pool: pool_1
IPv6 Framed Interface Id: 200:65ff:fe23:102
```

show subscribers address detail (Enhanced Subscriber Management)

```
user@host> show subscribers address 203.0.113.111 detail
Type: DHCP
User Name: simple_filters_service
IP Address: 203.0.113.111
IP Netmask: 255.0.0.0
Logical System: default
Routing Instance: default
Interface: demux0.3221225482
Interface type: Dynamic
Underlying Interface: demux0.3221225472
Dynamic Profile Name: dhcp-demux-prof
MAC Address: 00:00:5e:00:53:0f
State: Active
Radius Accounting ID: 11
Session ID: 11
PFE Flow ID: 15
Stacked VLAN Id: 210
VLAN Id: 209
Login Time: 2014-03-24 12:53:48 PDT
Service Sessions: 1
DHCP Options: len 3
35 01 01
```

show subscribers extensive (Tenant Systems)

```
user@host:TSYS1> show subscribers extensive
Type: XAUTH
User Name: userX
+   Tenant: TSYS1
    Routing Instance: TSYS1-ri
IP Address: 192.0.2.0
IP Netmask: 203.0.113.0
Primary DNS Address: 198.51.100.0
Secondary DNS Address: 198.51.100.1
Dynamic Profile Name: radius
```



```

State: Active
Session ID: 1
Login Time: 2018-09-18 13:49:00 PDT

```

Sample Output for AGF

The following sample output shows subscribers connected to the AGF:

show subscribers extensive (DHCP on an FN-RG)

```

user@host> show subscribers extensive
Type: DHCP
User Name: USER2
IP Address: 172.16.0.227
Logical System: default
Routing Instance: default
Interface: demux0.3221230587
Interface type: Dynamic
Underlying Interface: demux0.3221230586
Dynamic Profile Name: dhcp-profile
MAC Address: 00:44:46:44:44:44
State: Active
DHCP Relay IP Address: 10.1.0.1
Radius Accounting ID: 5128
Session ID: 5128
PFE Flow ID: 5185
Stacked VLAN Id: 1
VLAN Id: 1
Agent Circuit ID: aci1
Agent Remote ID: ari1
Login Time: 2022-04-26 09:24:56 PDT
Service Sessions: 1
DHCP Options: len 9
35 01 01 37 04 01 03 3a 3b
DHCP Header: len 44
01 01 06 00 10 bd b4 93 00 00 00 00 00 00 00 00 00 00 00
00 00 00 00 00 00 00 00 00 00 44 46 44 44 44 00 00 00 00 00
00 00 00 00
AGF Mode: Adaptive

```

```

Local TEID-U: 10183810
Remote TEID-U: 6354992
GTPU Tunnel Remote IP Address: 10.0.0.1
GTPU Tunnel Local IP Address: 10.0.0.1
5G-QFI: 1
IPv6 Framed Interface Id: 0:7fff:ffff:eea0
IPv4 Input Filter Name: RG-LWAC-V4-INPUT-FILTER-01-demux0.3221230587-in
IPv4 Output Filter Name: RG-LWAC-V4-OUTPUT-FILTER-01-demux0.3221230587-out
Access Line Attributes:
  Agent Circuit ID: aci1
  Agent Remote ID: ari1
Dynamic configuration:
  junos-cos-guaranteed-rate: 1000000
  junos-cos-guaranteed-rate-burst: 250000
    junos-cos-scheduler: GOLD
      junos-cos-scheduler-shaping-rate: 200000000
      junos-cos-scheduler-tx: 200000000
  junos-cos-scheduler-map: DATA_VOICE_VIDEO_SMAP_UID1468
  junos-cos-shaping-rate: 200000000
  junos-cos-shaping-rate-burst: 50000
  junos-cos-traffic-control-profile: TRAFFIC_CONTROL_PROFILE
  junos-input-filter: RG-LWAC-V4-INPUT-FILTER-01
  junos-input-ipv6-filter: RG-LWAC-V6-INPUT-FILTER-01
  junos-output-filter: RG-LWAC-V4-OUTPUT-FILTER-01
  junos-output-ipv6-filter: RG-LWAC-V6-OUTPUT-FILTER-01

Service Session ID: 5129
Service Session Name: SERVICE-PROFILE-BASIC-POLICER
State: Active
Family: inet
Service session type: Service-Profile
IPv4 Input Filter Name: CAP-POLICER-demux0.3221230587-in
IPv4 Output Filter Name: CAP-POLICER-demux0.3221230587-out
Service Activation time: 2022-04-26 09:24:57 PDT
Dynamic configuration:
  bandwidth-limit: 200k
  burst-size-limit: 75k

```

Release Information

Command introduced in Junos OS Release 9.3.

`client-type`, `mac-address`, `subscriber-state`, and extensive options introduced in Junos OS Release 10.2.

`count` option usage with other options introduced in Junos OS Release 10.2.

Options `aci-interface-set-name` and `agent-circuit-identifier` introduced in Junos OS Release 12.2.

The `physical-interface` and `user-name` options introduced in Junos OS Release 12.3.

Options `vci` and `vpi` introduced in Junos OS Release 12.3R3 and supported in later 12.3Rx releases.

Options `vci` and `vpi` supported in Junos OS Release 13.2 and later releases. (Not supported in Junos OS Release 13.1.)

Enhanced subscriber management supported in Junos OS Release 15.1R3 on MX Series routers.

`accounting-statistics` option added in Junos OS Release 15.1R3 and 17.4R1 on MX Series routers.

`aggregation-interface-set-name` option added in Junos OS Release 18.4R1 on MX Series routers.

`sub-system` added in Junos OS Release 22.3R1.

RELATED DOCUMENTATION

Verifying and Managing Agent Circuit Identifier-Based Dynamic VLAN Configuration

Verifying and Managing Configurations for Dynamic VLANs Based on Access-Line Identifiers

Verifying and Managing Junos OS Enhanced Subscriber Management

show subscribers summary

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Syntax

```
show subscribers summary
<all>
<detail | extensive | terse>
<count>
<physical-interface physical-interface-name>
<logical-system logical-system pic | port | routing-instance routing-instance | slot>
<sub-system (agf | bng)>
```

Description

Display summary information for subscribers.

Options

none	Display summary information by state and client type for all subscribers.
all	(Optional) Display summary information by state, client type, and logical system and routing instance (LS:RI).
detail extensive terse	(Not supported on MX Series routers) (Optional) Display the specified level of output.
count	(Not supported on MX Series routers) (Optional) Display the count of total subscribers and active subscribers for any specified option.

logical-system <i>logical-system</i>	(Optional) Display subscribers whose logical system matches the specified logical system.
physical-interface <i>physical-interface-name</i>	(M120, M320, and MX Series routers only) (Optional) Display the count of subscribers whose physical interface matches the specified physical interface, by subscriber state, client type, and LS:RI.
pic	(M120, M320, and MX Series routers only) (Optional) Display the count of subscribers by PIC number and the total number of subscribers.
port	(M120, M320, and MX Series routers only) (Optional) Display the count of subscribers by port number and the total number of subscribers.
routing-instance <i>routing-instance</i>	(Optional) Display subscribers whose routing instance matches the specified routing instance.
slot	(M120, M320, and MX Series routers only) (Optional) Display the count of subscribers by Flexible PIC Concentrator (FPC) slot number and the total number of subscribers.
sub-system (agf bng)	(Optional) Display a count of subscribers using either the Access Gateway Function (AGF) or broadband network gateway (BNG) services.

NOTE: The subsystem option is only available when both the AGF and BNG subscribers are logged into the router at the same time.

NOTE: Because of display limitation, the logical system and routing instance output values are truncated when necessary.

Starting from Junos OS 20.4R1 release, you need a license to use the Extensible Subscribers Services Manager (ESSM) feature.

Required Privilege Level

view

Output Fields

Table 14 on page 185 lists the output fields for the `show subscribers summary` command. Output fields are listed in the approximate order in which they appear.

Table 14: show subscribers summary Output Fields

Field Name	Field Description	Level of Output
Subscribers by State	<p>Number of subscribers summarized by state. The summary includes the following information:</p> <ul style="list-style-type: none"> • Init—Number of subscribers currently in the initialization state. • Configured—Number of configured subscribers. • Active—Number of active subscribers. • Terminating—Number of subscribers currently terminating. • Terminated—Number of terminated subscribers. • Total—Total number of subscribers for all states. 	detail none
Subscribers by Client Type	Number of subscribers summarized by client type. Client types can include DHCP, GRE, L2TP, PPP, PPPoE, STATIC-INTERFACE, VLAN, and VLAN-OOB. This field also displays the total number of subscribers for all client types (Total).	detail extensive none
Subscribers by LS:RI	Number of subscribers summarized by logical system:routing instance (LS:RI) combination. This field also displays the total number of subscribers for all the LS:RI combinations (Total).	detail none
Subscribers by Connection Type	Number of subscribers summarized by connection type, Cross-connected or Terminated.	extensive
Subscribers by Sub-System	Number of subscribers on the subsystem—AGF or BNG as well as the total number of subscriber.	All levels

Table 14: show subscribers summary Output Fields (*Continued*)

Field Name	Field Description	Level of Output
Interface	<p>Interface associated with the subscriber. The router or the switch displays subscribers whose interface matches or begins with the specified interface.</p> <p>The asterisk (*) indicates a continuation of addresses for the same session.</p> <p>For aggregated Ethernet interfaces, the output of the summary (pic port slot) options prefixes the interface name with ae0:.</p> <p>For pseudowire IFDs, this field displays both the pseudowire and the associated logical tunnel (LT) and the redundant logical tunnel (RLT) anchor interface. For example:</p> <pre>ps0: lt-2/1/0 ps1: rlt0: lt-4/0/0</pre>	All levels
Count	<p>Count of subscribers displayed for each PIC, port, or slot when those options are specified with the summary option. For an aggregated Ethernet configuration, the total subscriber count does not equal the sum of the individual PIC, port, or slot counts, because each subscriber can be in more than one aggregated Ethernet link.</p> <p>Multiple pseudowire interfaces can share a given logical tunnel or redundant logical tunnel anchor interface. Starting in Junos OS Release 18.1R1, the field displays subscribers per individual pseudowire interface.</p> <p>In earlier releases, the field displays the same number of subscribers for all the pseudowire interfaces that share the same tunnel interface as their anchor point.</p>	detail extensive none
Total Subscribers	Total number of subscribers for all physical interfaces, all PICs, all ports, or all LS:RI slots.	detail extensive none
IP Address/VLAN ID	Subscriber IP address or VLAN ID associated with the subscriber in the form <i>tpid.vlan-id</i>	terse

Table 14: show subscribers summary Output Fields (Continued)

Field Name	Field Description	Level of Output
User Name	Name of the subscriber.	terse
LS:RI	Logical system and routing instance associated with the subscriber.	terse

Sample Output

show subscribers summary

```
user@host> show subscribers summary
```

Subscribers by State

Active: 52194

Total: 52194

Subscribers by Client Type

DHCP: 10000

VLAN: 15997

VLAN-OOB: 3600

PPPoE: 15998

ESSM: 6599

Total: 52194

show subscribers summary all

```
user@host> show subscribers summary all
```

Subscribers by State

Init 3

Configured 2

Active 183

Terminating 2

Terminated 1

TOTAL	191
-------	-----

Subscribers by Client Type

DHCP	107
PPP	76
VLAN	8

TOTAL	191
-------	-----

Subscribers by LS:RI

default:default	1
default:ri1	28
default:ri2	16
ls1:default	22
ls1:riA	38
ls1:riB	44
logsysX:routinstY	42

TOTAL	191
-------	-----

show subscribers summary physical-interface

```
user@host> show subscribers summary physical-interface ge-1/0/0
```

Subscribers by State

```
Active: 3998
Total: 3998
```

Subscribers by Client Type

```
DHCP: 3998
Total: 3998
```

Subscribers by LS:RI

```
default:default: 3998
Total: 3998
```

show subscribers summary physical-interface pic

```
user@host> show subscribers summary physical-interface ge-0/2/0 pic
```

Subscribers by State

```
Active: 4825
```

Total: 4825

Subscribers by Client Type

DHCP: 4825

Total: 4825

Subscribers by LS:RI

default:default: 4825

Total: 4825

show subscribers summary physical-interface port

```
user@host> show subscribers summary physical-interface ge-0/3/0 port
```

Subscribers by State

Active: 4825

Total: 4825

Subscribers by Client Type

DHCP: 4825

Total: 4825

Subscribers by LS:RI

default:default: 4825

Total: 4825

show subscribers summary physical-interface slot

```
user@host> show subscribers summary physical-interface ge-2/0/0 slot
```

Subscribers by State

Active: 4825

Total: 4825

Subscribers by Client Type

DHCP: 4825

Total: 4825

Subscribers by LS:RI

default:default: 4825

Total: 4825

show subscribers summary pic

```
user@host> show subscribers summary pic
Interface          Count
ge-1/0             1000
ge-1/3             1000

Total Subscribers: 2000
```

show subscribers summary pic (Aggregated Ethernet Interfaces)

```
user@host> show subscribers summary pic
Interface          Count
ae0: ge-1/0        801
ae0: ge-1/3        801

Total Subscribers: 801
```

show subscribers summary port

```
user@host> show subscribers summary port
Interface          Count
ge-5/0/1           201
ge-5/0/2           301

Total Subscribers: 502
```

show subscribers summary port (Pseudowire Interfaces)

```
user@host> show subscribers summary port
ps0: lt-2/1/0 10
ps1: lt-2/1/0 20

Total Subscribers: 30
```

show subscribers summary port extensive

```

user@host>show subscribers summary port extensive
Interface: xe-3/0/3
Port Count: 100
Detail:
Subscribers by Client Type
  PPPoE: 1
  ESSM: 99
Subscribers by Connection Type
  Terminated: 1

Interface: xe-3/1/3
Port Count: 3100
Detail:
Subscribers by Client Type
  PPPoE: 1600
  ESSM: 1100
  VLAN-OOB: 400
Subscribers by Connection Type
  Tunneled: 500
  Terminated: 1100
  Cross-connected: 400

Total Subscribers: 26197

```

show subscribers summary slot

```

user@host> show subscribers summary slot
Interface      Count
ge-1           2000

Total Subscribers: 2000

```

show subscribers summary terse

```

user@host> show subscribers summary terse
Interface      IP Address/VLAN ID  User Name      LS:RI
ge-1/3/0.1073741824  100                default:default

```

demux0.1073741824	203.0.113.10	WHOLESALE-CLIENT	default:default
demux0.1073741825	203.0.113.13	RETAILER1-CLIENT	test1:retailer1
demux0.1073741826	203.0.113.213	RETAILER2-CLIENT	test1:retailer2

show subscribers summary (agf)

```
user@host> show subscribers summary
```

Subscribers by Sub-System

AGF: 3000

BNG: 0

Total: 3000

Subscribers by State

Active: 4000

Total: 4000

Subscribers by Client Type

VLAN: 1000

PPPoE: 3000

Total: 4000

show subscribers summary sub-system agf

```
user@host> show subscribers summary sub-system agf
```

AGF Subscribers by State

Init: 3

Active: 12

Total: 15

AGF Subscribers by Client Type

DHCP: 2

PPPOE: 5

PPPOE-5G 5

TOTAL 12

Release Information

Command introduced in Junos OS Release 10.2.

sub-system added in Junos OS Release 22.3R1.

RELATED DOCUMENTATION

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