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# MobileNext Broadband Gateway

## MX Chassis



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*MobileNext Broadband Gateway MX Chassis*

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# About the Documentation

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- Documentation Feedback on page xi
- Requesting Technical Support on page xii

## Documentation and Release Notes

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

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

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## Documentation Conventions

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Table 1 on page x defines notice icons used in this guide.

Table 1: Notice Icons







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

Table 2 on page x defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  user@host> <b>configure</b>
Fixed-width text like this	Represents output that appears on the terminal screen.	user@host> <b>show chassis alarms</b>  No alarms currently active
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies guide names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS CLI User Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  [edit] root@# <b>set system domain-name</b> <i>domain-name</i>

Table 2: Text and Syntax Conventions (continued)

Convention	Description	Examples
Text like this	Represents names of configuration statements, commands, files, and directories; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"><li>To configure a stub area, include the <b>stub</b> statement at the <b>[edit protocols ospf area area-id]</b> hierarchy level.</li><li>The console port is labeled <b>CONSOLE</b>.</li></ul>
< > (angle brackets)	Encloses optional keywords or variables.	<b>stub &lt;default-metric <i>metric</i>&gt;;</b>
(pipe symbol)	Indicates a choice between the mutually exclusive keywords or variables on either side of the symbol. The set of choices is often enclosed in parentheses for clarity.	<b>broadcast   multicast</b>  <b>(<i>string1</i>   <i>string2</i>   <i>string3</i>)</b>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Encloses a variable for which you can substitute one or more values.	<b>community name members [ <i>community-ids</i> ]</b>
Indentation and braces ( { } )	Identifies a level in the configuration hierarchy.	<pre>[edit] routing-options {   static {     route default {       nexthop <i>address</i>;       retain;     }   } }</pre>
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
GUI Conventions		
Bold text like this	Represents graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"><li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li><li>To cancel the configuration, click <b>Cancel</b>.</li></ul>
> (bold right angle bracket)	Separates levels in a hierarchy of menu selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

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

- Online feedback rating system—On any page of the Juniper Networks TechLibrary site at <https://www.juniper.net/documentation/index.html>, simply click the stars to rate the content, and use the pop-up form to provide us with information about your experience. Alternately, you can use the online feedback form at <https://www.juniper.net/documentation/feedback/>.

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

## Requesting Technical Support

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

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

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

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

## Opening a Case with JTAC

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

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

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



## PART 1

# Overview

- [Mobility on MX 3D Devices Overview on page 3](#)





## CHAPTER 1

# Mobility on MX 3D Devices Overview

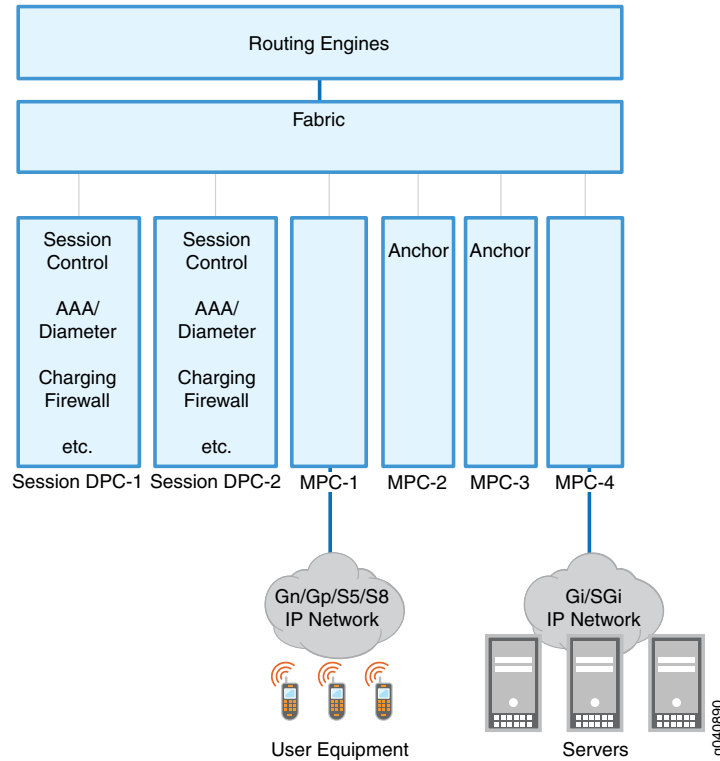
- [MobileNext Broadband Gateway Chassis Overview on page 4](#)
- [Understanding the MobileNext Broadband Gateway Anchors on page 6](#)

## MobileNext Broadband Gateway Chassis Overview

You should begin MobileNext Broadband Gateway configuration with basic chassis configuration. Whether you used the broadband gateway as a gateway GPRS support node (GGSN) or Packet Data Network Gateway (P-GW), determining the number of service and interface cards running the mobility package will make it easier to complete software configuration. Also, the relationship between physical devices such as Modular Port Concentrator (MPC) ports and logical constructs such as access point names (APNs) is not always obvious on the broadband gateway.

The broadband gateway consists of Routing Engines (we recommend two), session Dense Port Concentrators (DPCs) (we recommend two or more), and interface DPCs or MPCs (we recommend two or more). The interface DPCs and MPCs house the input and output Packet Forwarding Engine and physical interfaces. Other service DPCs and interface cards can be installed, but only the elements configured to run the mobility software package can be part of the broadband gateway function. In other words, some elements of the broadband gateway might not be involved in mobile packet flows at all, but these elements implement a provider edge (PE) router function, related network address translation (NAT) or IP security (IPsec) services, and so on. This topic describes only the mobile portion of the configuration. In [Figure 1 on page 4](#), the session DPCs are shown on the left and the interface boards are shown as MPCs on the right.

*Figure 1: Session DPCs and Interfaces on the Broadband Gateway*



This chassis configuration overview covers:

- [Session DPCs for Mobility on page 5](#)
- [Overview of Mobility Interface Types on page 5](#)

## Session DPCs for Mobility

The session Dense Port Concentrators (DPCs) are multiservices DPCs that are used for mobile purposes. Incoming control packets from user equipment using the GPRS tunneling protocol, control (GTP-C) tunneling protocol are sent to one of these session DPCs. The selected session DPC becomes the *anchor* session DPC for this particular flow of packets. All control packets (GTP-C packets) relating to the session are sent to this anchor device.

The mobile services performed by the session DPC include:

- Session control
- Authentication, authorization, and accounting (AAA) checking using the Diameter protocol
- Charging parameters
- Admission control functions

## Overview of Mobility Interface Types

The interfaces that allow GPRS tunneling protocol, user plane (GTP-U) messages to flow into and out of the MobileNext Broadband Gateway can be Modular Port Concentrators (MPCs) or Dense Port Concentrators (DPCs). These mobile interfaces are configured as regular device interfaces; for example, **ge-0/1/2**, where the first position digit indicates the FPC slot (0), the second position digit indicates the PIC (Packet Forwarding Engine) position (1), and the last digit indicates the physical port (2). Some or all of the interface cards can be configured as anchor DPCs or MPCs. Once a session is established with the GTP-C control packets, all uplink and downlink user packets sent with the GTP-U tunnel protocol flow through the designated anchor device.

Examples of mobile interface DPCs or MPCs include:

- Mobile 60-Gigabit Ethernet Enhanced Queuing MPC
- Mobile 10-Gigabit Ethernet MPC with SFP+

The above list is for illustration only and is not an exclusive or comprehensive list.

### Related Documentation

- [Configuring Session DPCs for Mobility on page 11](#)
- [Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13](#)
- [Understanding the MobileNext Broadband Gateway Anchors on page 6](#)
- [Configuring Anchor Session DPCs and PFEs on page 15](#)
- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)
- [Overview of Broadband Gateway System Architecture](#)

## Understanding the MobileNext Broadband Gateway Anchors

The MobileNext Broadband Gateway processes GPRS tunneling protocol (GTP) and IP packets as they make their way upstream from mobile device to IP network or downstream from IP network to mobile device. Both control and data GTP packets are processed by an *anchor* session Dense Port Concentrator (DPC) or Packet Forwarding Engine (which are part of an interface DPC or Modular Port Concentrator [MPC] inside the broadband gateway). Anchor session PICs or Packet Forwarding Engines can be configured in a redundant manner to provide a failover data path in case of hardware problems.

Session DPCs use 1:1 redundancy and the component PICs (session DPCs have two PICs) are essentially configured in pairs to provide backup. For example, you can configure **ams0** so that PIC 1 in FPC slot 5 backs up PIC 1 in FPC slot 4. In other words, **mams-5/1/0** backs up **mams-4/1/0**. However, this configuration alone does not make **ams0** (or **mams-4/1/0**) an anchor session DPC. A separate configuration step is required for that. This “anchor or not” capability allows session DPCs to be used for services other than mobility.

The same logic applies to interface DPCs or MPCs (Packet Forwarding Engines), except that the redundancy is N:1. In this case, you can configure **apfe0** so that **pfe-9/0/0** is a warm standby for **pfe-7/0/0** and **pfe-8/0/0**. However, another configuration step is required to make the Packet Forwarding Engines in FPC slot 7 and 8 anchor Packet Forwarding Engines.

Figure 2: Upstream GTP-U Traffic

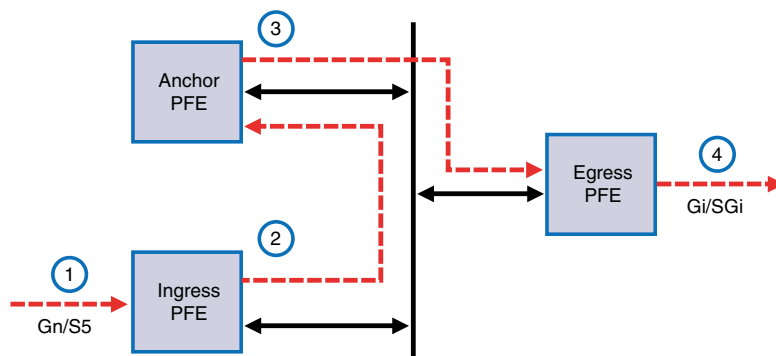


Figure 2 on page 6 shows how all GPRS tunneling protocol, user plane (GTP-U) traffic traverses an anchor Packet Forwarding Engine upstream from a Gn or S5 interface to a Gi or SGi interface:

- The arriving GTP-U packet is filtered by the outer IP address and associated with the proper Virtual Routing and Forwarding (VRF) table .
- The packet is sent to the anchor Packet Forwarding Engine associated with that group tunnel endpoint identifier (TEID) in the GTP header.

- The packet is decapsulated and the TEID is processed. The correct charging and quality-of-service (QoS) parameters are applied and the inner IP address is used for a route table lookup. The packet is sent to the correct egress interface.
- The packet is sent out on the correct Gi or SGi interface (other service functions such as network address translation [NAT] might be applied).

The downstream GTP-U packet process is a mirror of the upstream process.

*Figure 3: Downstream GTP-U Traffic*

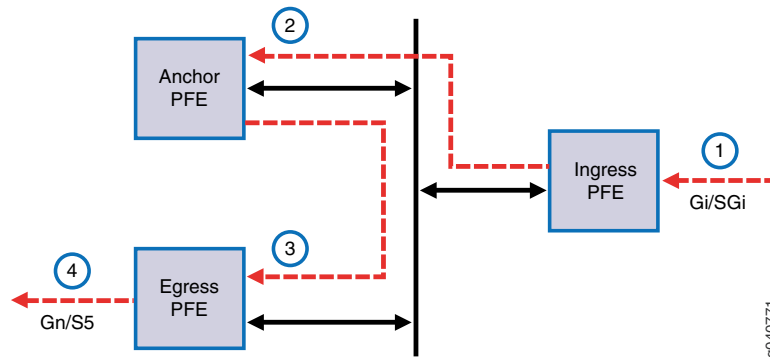


Figure 2 on page 6 shows how all GTP-U traffic traverses an anchor Packet Forwarding Engine downstream from a Gi or SGi interface to a Gn or S5 interface:

- The arriving IP packet is looked up in the route table associated with the proper virtual routing and forwarding table (VRF).
- The packet is sent to the anchor Packet Forwarding Engine associated with that route.
- The TEID associated with the packet is processed and the correct charging and QoS parameters are applied. The packet is then encapsulated with the TEID and the outer IP address. The outer IP address in the GTP header is used for a route lookup for the SGSN or S-GW. The packet is sent to the egress interface.
- The packet is sent from the correct Gn or S5 interface.

#### Related Documentation

- [Configuring Anchor Session DPCs and PFEs on page 15](#)
- [MobileNext Broadband Gateway Chassis Overview on page 4](#)
- [Configuring Session DPCs for Mobility on page 11](#)
- [Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13](#)
- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)



## PART 2

# Configuration

- [Configuration Tasks on page 11](#)
- [Configuration Statements on page 17](#)





## CHAPTER 2

# Configuration Tasks

- [Configuring Session DPCs for Mobility on page 11](#)
- [Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13](#)
- [Configuring Anchor Session DPCs and PFEs on page 15](#)

### Configuring Session DPCs for Mobility

The MobileNext Broadband Gateway chassis has a number of open slots for cards (also called boards). Once installed, the cards must be configured. This topic describes the configuration process for the mobility FPC slots that hold session Dense Port Concentrators (DPCs).

Before you begin, you should have done the following:

- Installed the broadband gateway
- Installed the cards in the broadband gateway
- Decided which slots will be used for mobility

The session DPC cards of the broadband gateway must run in 64-bit mode. To simplify the configuration process, the broadband gateway software includes a predefined **mobility** group. This group includes all the parameters required for stable system operation. You apply the **mobility** group to the session DPC slots in the same way you apply any Junos OS group.

The predefined **mobility** group contains the following statements:

```
[edit groups]
mobility {
  chassis {
    fpc <*> {
      pic <*> {
        adaptive-services {
          service-package {
            extension-provider {
              boot-os embedded-junos64;
              control-cores 1;
              data-pollers 1;
              object-cache-size 512;
              package jservices-mobile;
              total-wired-memory 14336;
              wired-max-processes 8;
              wired-process-memory-size 1024;
            }
          }
        }
      }
    }
  }
}
```



**NOTE:** These parameters promote stable system operation. You should *not* change these parameters except under the advice of JTAC.

To configure a session DPC for the mobility control plane, you load the default configuration file and merge it with your configuration, then apply the predefined **mobility** group to the session DPC. This task assumes that the session DPC is installed in chassis slot 1 and that both PICs are used for the mobility control plane.

1. Load and merge the **mobility-defaults.conf** file.

```
[edit]
user@host# load merge /etc/config/mobility-defaults.conf
```

2. Configure the **mobility** group to run on both PICs in FPC 0.

```
[edit chassis]
user@host# set fpc 0 pic 0 apply-groups mobility
user@host# set fpc 0 pic 1 apply-groups mobility
```

**NOTE:**

- For the broadband gateway configured as a Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW), you must include every session PIC that is configured with the `jservices-mobile` package at the `[edit unified-edge gateways ggsn-pgw gateway-name system session-pics]` hierarchy level. If you do not specify that the session PIC is used for the mobile control plane, then the session PIC will not be used by the broadband gateway.
- For the broadband gateway configured as a Serving Gateway (S-GW), you must include every session PIC that is configured with the `jservices-mobile` package at the `[edit unified-edge gateways sgw gateway-name system session-pics]` hierarchy level. If you do not specify that the session PIC is used for the mobile control plane, then the session PIC will not be used by the broadband gateway.

**Related Documentation**

- [Configuring Anchor Session DPCs and PFEs on page 15](#)
- [Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13](#)
- [Configuring Services DPCs for Mobility](#)
- [interface \(Session PIC\) on page 20](#)
- [MobileNext Broadband Gateway Chassis Overview on page 4](#)
- [Overview of Broadband Gateway System Architecture](#)
- [Understanding the MobileNext Broadband Gateway Anchors on page 6](#)
- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)

## Configuring Interface DPCs or MPCs for User Mobility Traffic

The MobileNext Broadband Gateway chassis has a number of open slots for cards (also called boards). Once installed, the cards must be configured. This topic describes the configuration process for the interface Modular Port Concentrators (MPCs) or Dense Port Concentrators (DPCs) used for user mobile traffic.

Before you begin, you should have done the following:

- Installed the MobileNext Broadband Gateway
- Installed the cards of the broadband gateway
- Decided which DPCs or MPCs will be used for user mobility traffic

To configure an interface DPC or MPC for user mobility traffic, you configure the DPC or MPC to run the mobility forwarding package. You can configure this capability at the card (FPC) or Packet Forwarding Engine level. To configure the DPC or MPC:

1. Configure the forwarding package at the FPC level (so that all Packet Forwarding Engines understand what to do with mobility packets) by configuring the **mobility ggsn-pgw** (for a GGSN or P-GW) forwarding package or the **mobility sgw** (for a S-GW) forwarding package at the FPC level.

```
[edit chassis]
user@host# set fpc 0 forwarding-packages mobility ggsn-pgw
user@host# set fpc 0 forwarding-packages mobility sgw
```

In this example, all Packet Forwarding Engines on the DPC or MPC in FPC slot 0 are configured for mobility traffic.

2. Optionally, configure the forwarding package at the PIC level, so that *only* this PIC understands what to do with mobility packets by configuring the **mobility ggsn-pgw** or **mobility sgw** forwarding package at the PIC level:

```
[edit chassis]
user@host# set fpc 0 pfe 0 forwarding-packages mobility ggsn-pgw
user@host# set fpc 0 pfe 0 forwarding-packages mobility sgw
```

In this example, only Packet Forwarding Engine 0 on the DPC or MPC in FPC slot 0 is configured for mobility traffic.



**NOTE:** You must include every Packet Forwarding Engine configured with the **ggsn-pgw** forwarding package or **sgw** forwarding package at the [edit unified-edge gateways **ggsn-pgw gateway-name** system anchor-pfes] hierarchy level on the broadband gateway. If you do not specify the Packet Forwarding Engine as an anchor, then the Packet Forwarding Engine will not be used by the broadband gateway.

---

**Related  
Documentation**

- [Configuring Session DPCs for Mobility on page 11](#)
- [Configuring Anchor Session DPCs and PFEs on page 15](#)
- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)

## Configuring Anchor Session DPCs and PFEs

Even with redundancy configured, a separate step is required to make a session Dense Port Concentrator (DPC) or Packet Forwarding Engine (Packet Forwarding Engines are part of an interface DPC or Modular Port Concentrator [MPC]) a mobility anchor. An anchor acts as a tunnel endpoint for control and data GPRS tunneling protocol (GTP) packets.

Before you begin configuring anchors on a broadband gateway, you should have done the following:

- Configured the chassis of the MobileNext Broadband Gateway
- Configured the interfaces of the broadband gateway
- (Optional) Configured the general redundancy parameters for the broadband gateway

To determine the anchor session DPCs (PICs) and Packet Forwarding Engines, you configure the components as anchors.

To configure anchor session DPCs (PICs):

1. Add the PIC to the list of **anchor-spics**.

```
[edit unified-edge gateway ggsn-pgw MBG1 system]
user@host# set anchor-spics interface ams0
```



**NOTE:** You can set the anchor PICs individually if you do not have redundancy configured. For example, you can use `ms-1/1/0` instead of `ams0`.

2. Add the Packet Forwarding Engine to the list of **anchor-pfes**.

```
[edit unified-edge gateway ggsn-pgw MBG1 system]
user@host# set anchor-pfes interface apfe0
user@host# set anchor-pfes interface apfe1
```



**NOTE:** You can set the anchor Packet Forwarding Engines individually if you do not have redundancy configured. For example, you can use `pfe-4/1/0` and `pfe-4/2/0`.

### Related Documentation

- [Configuring Session DPCs for Mobility on page 11](#)
- [Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13](#)
- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)



## CHAPTER 3

# Configuration Statements

- [forwarding-packages](#) on page 17
- [interface \(Packet Forwarding Engine\)](#) on page 18
- [interface \(Session PIC\)](#) on page 20
- [mobility](#) on page 21

### forwarding-packages

---

**Syntax**    forwarding-packages {  
              mobility {  
                  ggsn-pgw;  
                  sgw;  
              }  
          }

**Hierarchy Level**    [edit chassis fpc *fpc-slot* pfe *pfe-id*]

**Release Information**    Statement introduced in Junos OS Mobility Release 11.2W.

**Description**    Configure the Packet Forwarding Engine so that it can be used to anchor mobile sessions. If this configuration is changed, then the FPC reboots.



The **forwarding-packages** statement can be configured at the Packet Forwarding Engine level. Therefore, you can configure a subset of Packet Forwarding Engines in an FPC to be mobile anchors.

The remaining statements are explained separately.

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

**Related Documentation**    • [Configuring Interface DPCs or MPCs for User Mobility Traffic](#) on page 13

## interface (Packet Forwarding Engine)

<b>Syntax</b>	[interface <i>interface-name</i> ];
<b>Hierarchy Level</b>	[edit unified-edge gateways ggsn-pgw <i>gateway-name</i> system pfes], [edit unified-edge gateways sgw <i>gateway-name</i> system pfes]
<b>Release Information</b>	Statement introduced in Junos OS Mobility Release 11.2W. Support at the [edit unified-edge gateways sgw <i>gateway-name</i> system pfes] hierarchy level introduced in Junos OS Mobility Release 11.4W.
<b>Description</b>	<p>Configure the interface representing the Packet Forwarding Engine used for anchoring subscribers in the broadband gateway. The following conditions are applicable to the Packet Forwarding Engine interfaces configured here:</p> <ul style="list-style-type: none"> <li>The aggregated Packet Forwarding Engine interfaces (<b>apfe</b>) specified in this statement must already be defined at the [edit interfaces] hierarchy level.</li> <li>For a broadband gateway configured as a Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW), the Packet Forwarding Engine interfaces must have <b>mobility ggsn-pgw</b> as their forwarding package at the [edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages] hierarchy level.</li> </ul> <p> <b>NOTE:</b> If the specified Packet Forwarding Engine interface is an <b>apfe</b> interface, then all the member interfaces of the <b>apfe</b> interface must have <b>mobility ggsn-pgw</b> as their forwarding package (at the [edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages] hierarchy level).</p> <ul style="list-style-type: none"> <li>For a broadband gateway configured as a Serving Gateway (S-GW), the Packet Forwarding Engine interfaces must have <b>mobility sgw</b> as their forwarding package at the [edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages] hierarchy level.</li> </ul> <p> <b>NOTE:</b> If the specified Packet Forwarding Engine interface is an <b>apfe</b> interface, then all member interfaces of the <b>apfe</b> interface must have <b>mobility sgw</b> as their forwarding package (at the [edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages] hierarchy levels).</p> <ul style="list-style-type: none"> <li>If a Packet Forwarding Engine interface is a member of an <b>apfe</b> interface, then that interface cannot be directly specified here. For example, if <b>pfe-2/0/0</b> is a member interface of <b>apfe</b> interface <b>apfe0</b>, then <b>pfe-2/0/0</b> cannot be directly specified here.</li> </ul>
<b>Options</b>	<p><b>interface-name</b>—Name of the interface representing the Packet Forwarding Engine.</p> <p><b>Syntax:</b> The interface must be a valid Packet Forwarding Engine interface (<b>apfe</b> or <b>pfe-</b>); for example, <b>apfe0</b> or <b>pfe-1/0/0</b>.</p>



<b>Required Privilege Level</b>	unified-edge—To view this statement in the configuration. unified-edge-control—To add this statement to the configuration.
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <i>pfes</i></li><li>• <i>Configuring Interface Redundancy</i></li><li>• <a href="#">Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13</a></li><li>• <i>Example: Configuring Broadband Gateway Redundancy</i></li><li>• <a href="#">show unified-edge ggsn-pgw system interfaces on page 56</a></li><li>• <i>show unified-edge sgw system interfaces</i></li></ul>

## interface (Session PIC)

<b>Syntax</b>	<code>[interface <i>interface-name</i>];</code>
<b>Hierarchy Level</b>	<code>[edit unified-edge gateways ggsn-pgw <i>gateway-name</i> system session-pics]</code> , <code>[edit unified-edge gateways sgw <i>gateway-name</i> system session-pics]</code>
<b>Release Information</b>	Statement introduced in Junos OS Mobility Release 11.2W. Support at the <code>[edit unified-edge gateways sgw <i>gateway-name</i> system session-pics]</code> hierarchy level introduced in Junos OS Mobility Release 11.4W.
<b>Description</b>	<p>Configure the interface representing the session PIC used for the mobile control plane in the broadband gateway. The following conditions are applicable to the session PIC interfaces configured here:</p> <ul style="list-style-type: none"> <li>• The aggregated multiservices interfaces (<b>ams</b>) specified in this statement must already be defined at the <code>[edit interfaces]</code> hierarchy level.</li> <li>• The session PIC must have the <b>jservices-mobile</b> package configured at the <code>[edit chassis fpc slot-number pic pic-number adaptive-services service-package extension-provider]</code> hierarchy level.</li> <li>• If a session PIC interface is a member of an aggregated multiservices interface, then that member interface cannot be specified here. For example, if <b>mams-2/0/0</b> is a member interface of the aggregated multiservices interface <b>ams0</b>, then <b>ms-2/0/0/</b> cannot be directly specified here.</li> </ul>
<b>Options</b>	<p><b><i>interface-name</i></b>—Name of the interface representing the session PIC.</p> <p><b>Syntax:</b> The interface must be a valid multiservices interface (<b>ams</b> or <b>ms-a/b/0</b>, where <b>a</b> is the Flexible PIC Concentrator [FPC] slot number and <b>b</b> is the PIC slot number); for example, <b>ams0</b> or <b>ms-1/0/0</b>.</p>
<b>Required Privilege Level</b>	<p>unified-edge—To view this statement in the configuration.</p> <p>unified-edge-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring Anchor Session DPCs and PFEs on page 15</a></li> <li>• <a href="#">Configuring Session DPCs for Mobility on page 11</a></li> <li>• <a href="#">session-pics</a></li> <li>• <a href="#">show unified-edge ggsn-pgw system interfaces on page 56</a></li> <li>• <a href="#">show unified-edge sgw system interfaces</a></li> </ul>

## mobility

<b>Syntax</b>	<pre>mobility {   ggsn-pgw;   sgw; }</pre>
<b>Hierarchy Level</b>	[edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages]
<b>Release Information</b>	Statement introduced in Junos OS Mobility Release 11.2W. <b>sgw</b> statement introduced in Junos OS Mobility Release 11.4W.
<b>Description</b>	Specify the forwarding package that the Packet Forwarding Engines associated with mobility must use.



### NOTE:

- You must include every Packet Forwarding Engine configured with the **ggsn-pgw** forwarding package at the [edit unified-edge gateways **ggsn-pgw gateway-name** system anchor-pfes] hierarchy level on the broadband gateway. If you do not specify the Packet Forwarding Engine as an anchor interface, then the Packet Forwarding Engine will not be used by the broadband gateway.
- You must include every Packet Forwarding Engine configured with the **sgw** forwarding package at the [edit unified-edge gateways **sgw gateway-name** system anchor-pfes] hierarchy level on the broadband gateway. If you do not specify the Packet Forwarding Engine as an anchor interface, then the Packet Forwarding Engine will not be used by the broadband gateway.

<b>Options</b>	<p><b>ggsn-pgw</b>—Configure the router as a gateway GPRS support node (GGSN) or as a Packet Data Network Gateway (P-GW).</p> <p><b>sgw</b>—Configure the router as a Serving Gateway (S-GW).</p>
<b>Required Privilege Level</b>	<p>interface—To view this statement in the configuration.</p> <p>interface-control—To add this statement to the configuration.</p>
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13</a></li> <li>• <a href="#">forwarding-packages on page 17</a></li> </ul>



## PART 3

# Administration

- [Monitoring on page 25](#)
- [Operational Commands on page 27](#)



## CHAPTER 4

# Monitoring

- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)

### Verifying the MobileNext Broadband Gateway Chassis Configuration

---

**Purpose** Display information about the MobileNext Broadband Gateway chassis configuration.

**Action**

- To display information about the chassis:  
`user@host> show chassis hardware`

**Related Documentation**

- [Configuring Session DPCs for Mobility on page 11](#)
- [Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13](#)
- [Configuring Anchor Session DPCs and PFEs on page 15](#)





## CHAPTER 5

# Operational Commands

- request unified-edge ggsn-pgw call-trace clear
- request unified-edge ggsn-pgw call-trace show
- request unified-edge ggsn-pgw call-trace start
- request unified-edge ggsn-pgw call-trace stop
- show services flows (Aggregated Multiservices)
- show unified-edge ggsn-pgw statistics
- show unified-edge ggsn-pgw status
- show unified-edge ggsn-pgw status gtp-peer
- show unified-edge ggsn-pgw system interfaces

## request unified-edge ggsn-pgw call-trace clear

---

<b>Syntax</b>	request unified-edge ggsn-pgw call-trace clear
<b>Release Information</b>	Command introduced in Junos OS Mobility Release 11.2W.
<b>Description</b>	Clear the completed or duplicate subscriber call traces on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
<b>Options</b>	This command has no options.
<b>Required Privilege Level</b>	unified-edge
<b>Related Documentation</b>	<ul style="list-style-type: none"><li>• <a href="#">request unified-edge ggsn-pgw call-trace show on page 29</a></li><li>• <a href="#">request unified-edge ggsn-pgw call-trace start on page 32</a></li><li>• <a href="#">request unified-edge ggsn-pgw call-trace stop on page 34</a></li></ul>
<b>List of Sample Output</b>	<a href="#">request unified-edge ggsn-pgw call-trace on page 28</a>
<b>Output Fields</b>	No message is displayed on successful execution of this command; otherwise an error message is displayed.

## Sample Output

### request unified-edge ggsn-pgw call-trace

```
user@host> request unified-edge ggsn-pgw call-trace clear
```

## request unified-edge ggsn-pgw call-trace show

<b>Syntax</b>	request unified-edge ggsn-pgw call-trace show <all   completed   current> <brief   detail>
<b>Release Information</b>	Command introduced in Junos OS Mobility Release 11.2W.
<b>Description</b>	Display the information related to subscriber call tracing on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
<b>Options</b>	<p><b>none</b>—(Same as brief) Display the information related to subscriber call tracing in brief.</p> <p><b>all   completed   current</b>—(Optional) Display the call trace information for the following:</p> <ul style="list-style-type: none"> <li>• <b>all</b>—All calls.</li> <li>• <b>completed</b>—Completed calls only.</li> <li>• <b>current</b>—Call traces that are currently active.</li> </ul> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p>
<b>Required Privilege Level</b>	unified-edge
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request unified-edge ggsn-pgw call-trace clear on page 28</a></li> <li>• <a href="#">request unified-edge ggsn-pgw call-trace start on page 32</a></li> <li>• <a href="#">request unified-edge ggsn-pgw call-trace stop on page 34</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request unified-edge ggsn-pgw call-trace show brief on page 30</a> <a href="#">request unified-edge ggsn-pgw call-trace show detail on page 31</a>
<b>Output Fields</b>	<a href="#">Table 3 on page 29</a> lists the output fields for the <b>request unified-edge ggsn-pgw call-trace show</b> command. Output fields are listed in the approximate order in which they appear.

*Table 3: request unified-edge ggsn-pgw call-trace show Output Fields*

Field Name	Field Description	Level of Output
Identifier	Identifier for the call trace.	All levels
File name or Trace file	Name of the call trace file.	All levels

Table 3: request unified-edge ggsn-pgw call-trace show Output Fields (continued)

Field Name	Field Description	Level of Output
Status	Status of the call trace: <ul style="list-style-type: none"> <li><b>done</b>—Call trace complete.</li> <li><b>not-done</b>—Call trace in progress.</li> <li><b>duplicate</b>—Another call trace record is present that has the same attributes.</li> </ul>	All levels
SPIC Mask Create or Create Mask	Internal mask of the services PIC where this call trace was enabled.	All levels
SPIC Mask Complete or Complete Mask	Internal mask of the services PIC where this call trace was completed.	All levels
IMSI	International Mobile Subscriber Identity (IMSI) of the subscriber's user equipment (UE).	
MSISDN	Mobile station ISDN (MSISDN) of the subscriber's user equipment.	
Calls Traced	Number of calls traced.	detail
Next Call	Number of next calls to be traced. For example, a value of 10 indicates that the next 10 calls are traced.	detail
APN	Access Point Name (APN) pertaining to the subscriber's call.	detail
FPC	FPC slot on which the call trace was enabled. This field is displayed only if the call trace is enabled on the FPC slot.	detail
PIC	PIC slot on which the call trace was enabled. This field is displayed only if the call trace is enabled on the PIC slot.	detail

## Sample Output

### request unified-edge ggsn-pgw call-trace show brief

```

user@host> request unified-edge ggsn-pgw call-trace show brief
Identifier      File name      Status      SPIC Mask    SPIC Mask
                  create      complete
call_trace_id_2 call_trace_id_2_02112012_060450    done 0x10    0x10
call_trace_id_3 call_trace_id_3_02112012_070614    done 0x10    0x10
call_trace_id_4 call_trace_id_4_02112012_071342    duplicate 0x0    0x0
call_trace_id_5 call_trace_id_5_02112012_201317    duplicate 0x0    0x0
call_trace_id_6 call_trace_id_6_02112012_201649    duplicate 0x0    0x0
call_trace_id_7 call_trace_id_7_02112012_202501    done 0x0    0x0
call_trace_id_8 call_trace_id_8_02112012_204718    duplicate 0x0    0x0
call_trace_id_9 call_trace_id_9_02112012_204759    not-done 0x10    0x0

```

## request unified-edge ggsn-pgw call-trace show detail

```

user@host> request unified-edge ggsn-pgw call-trace show detail
Call trace information :

Identifier : call_trace_id_13      Trace file :
call_trace_id_13_02292012_001343
Status : not-done   Create Mask : 0x200   Complete Mask : 0x0
IMSI : 29299
Calls Traced : 0
Identifier : call_trace_id_14      Trace file :
call_trace_id_14_02292012_001348
Status : not-done   Create Mask : 0x200   Complete Mask : 0x0
                                                MS-ISDN: 2929910000000000
Calls Traced : 0
Identifier : call_trace_id_15      Trace file :
call_trace_id_15_02292012_001408
Status : not-done   Create Mask : 0x200   Complete Mask : 0x0
Next Call : 1      APN : jnpr-sunnyvale
Calls Traced : 0
Identifier : call_trace_id_16      Trace file :
call_trace_id_16_02292012_001416
Status : not-done   Create Mask : 0x200   Complete Mask : 0x0
Calls Traced : 0      FPC : 3   PIC : 1
Identifier : call_trace_id_17      Trace file :
call_trace_id_17_02292012_001424
Status : done       Create Mask : 0x200   Complete Mask : 0x200
Next Call : 2
Calls Traced : 2

```

## request unified-edge ggsn-pgw call-trace start

<b>Syntax</b>	<pre>request unified-edge ggsn-pgw call-trace start &lt;apn-name <i>name</i>&gt; &lt;comment <i>comment</i>&gt; &lt;file-name-prefix <i>file-name-prefix</i>&gt; &lt;fpc-slot <i>slot</i>&gt; &lt;imsi <i>imsi</i>&gt; &lt;msisdn <i>msisdn</i>&gt; &lt;next-call <i>next-call</i>&gt; &lt;pic-slot <i>slot</i>&gt;</pre>
<b>Release Information</b>	Command introduced in Junos OS Mobility Release 11.2W.
<b>Description</b>	Start the subscriber call tracing on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
<b>Options</b>	<p><b>none</b>—Start the subscriber call tracing.</p> <p><b>apn-name <i>apn-name</i></b>—(Optional) Start the call tracing for subscribers accessing the specified access point name (APN).</p> <p><b>comment <i>comment</i></b>—(Optional) Comment to be added in the file. You can enter a comment between 4 and 100 characters.</p> <p><b>file-name-prefix <i>file-name-prefix</i></b>—(Optional) Prefix for the call trace filename. You can enter a prefix between 3 and 24 characters.</p> <p><b>fpc-slot <i>slot</i></b>—(Optional) Start the call tracing for subscribers on the specified FPC slot.</p> <p><b>imsi <i>imsi</i></b>—(Optional) Start the call tracing for subscribers with the specified International Mobile Subscriber Identity (IMSI) number.</p> <p><b>msisdn <i>msisdn</i></b>—(Optional) Start the call tracing for subscribers with the specified Mobile station ISDN (MSISDN) number.</p> <p><b>next-call <i>next-call</i></b>—(Optional) Start the call tracing for the specified number of next call events (1 through 50). For example, if you specify 10, then the next 10 calls will be traced.</p> <p><b>pic-slot <i>slot</i></b>—(Optional) Start the call tracing for subscribers on the specified PIC slot. You must specify an FPC slot before specifying a PIC slot number.</p>
<b>Required Privilege Level</b>	unified-edge
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request unified-edge ggsn-pgw call-trace clear on page 28</a></li> <li>• <a href="#">request unified-edge ggsn-pgw call-trace show on page 29</a></li> <li>• <a href="#">request unified-edge ggsn-pgw call-trace stop on page 34</a></li> </ul>

**List of Sample Output** [request unified-edge ggsn-pgw call-trace start fpc-slot 5 pic-slot 0 next-call 10 on page 33](#)

**Output Fields** [Table 4 on page 33](#) lists the output fields for the **request unified-edge ggsn-pgw call-trace start** command. Output fields are listed in the approximate order in which they appear.

*Table 4: request unified-edge ggsn-pgw call-trace start Output Fields*

Field Name	Field Description
<b>Session PIC</b>	Session PIC for which the call trace status is displayed.
<b>Status</b>	Status of the call trace: <ul style="list-style-type: none"> <li>• <b>duplicate</b>—Another call trace record is present that has the same attributes.</li> <li>• <b>success</b>—Call trace started successfully.</li> <li>• <b>fail</b>—Call tracing could not be started.</li> </ul>

## Sample Output

[request unified-edge ggsn-pgw call-trace start fpc-slot 5 pic-slot 0 next-call 10](#)

```

user@host> request unified-edge ggsn-pgw call-trace start fpc-slot 5 pic-slot 0 next-call 10
      Session PIC      Status
      ms-0/1/0         success
      ms-1/1/0         success
  
```

## request unified-edge ggsn-pgw call-trace stop

<b>Syntax</b>	request unified-edge ggsn-pgw call-trace stop <all> <identifier <i>call-trace-identifier</i> >
<b>Release Information</b>	Command introduced in Junos OS Mobility Release 11.2W.
<b>Description</b>	Stop the previously configured subscriber call tracing on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
<b>Options</b>	<p><b>none</b>—(Same as all) Stop all the subscriber call tracing options.</p> <p><b>all</b>—(Optional) Stop all the subscriber call tracing operations.</p> <p><b>identifier <i>identifier</i></b>—(Optional) Stop the call tracing for the specified call trace identifier.</p>
<b>Required Privilege Level</b>	unified-edge
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <a href="#">request unified-edge ggsn-pgw call-trace clear on page 28</a></li> <li>• <a href="#">request unified-edge ggsn-pgw call-trace show on page 29</a></li> <li>• <a href="#">request unified-edge ggsn-pgw call-trace start on page 32</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">request unified-edge ggsn-pgw call-trace stop on page 34</a>
<b>Output Fields</b>	Table 5 on page 34 lists the output fields for the <b>request unified-edge ggsn-pgw call-trace stop</b> command. Output fields are listed in the approximate order in which they appear.

Table 5: request unified-edge ggsn-pgw call-trace stop Output Fields

Field Name	Field Description
<b>Session PIC</b>	Session PIC for which the call trace status is displayed.
<b>Status</b>	Status of the call trace: <ul style="list-style-type: none"> <li>• <b>success</b>—Call trace stopped successfully.</li> <li>• <b>fail</b>—Call tracing could not be stopped.</li> </ul>

## Sample Output

### request unified-edge ggsn-pgw call-trace stop

```

user@host> request unified-edge ggsn-pgw call-trace stop
      Session PIC      Status
ms-0/1/0              success
ms-1/1/0              success

```





## show services flows (Aggregated Multiservices)

**Syntax** show services flows  
 <brief | extensive | terse>  
 <application-protocol *protocol*>  
 <count>  
 <destination-port *destination-port*>  
 <destination-prefix *destination-prefix*>  
 <interface *interface-name*>  
 <limit *number*>  
 <protocol *protocol*>  
 <service-set *service-set*>  
 <source-port *source-port*>  
 <source-prefix *source-prefix*>

**Release Information** Command introduced in Junos OS Release 9.5.  
 Support for aggregated multiservices (AMS) introduced in Junos OS Mobility Release 11.2W.

**Description** Display the flow session table entries for the active members of the AMS interface for services applications.

**Options** **none**—Display standard information about all flows.

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

**application-protocol**—(Optional) Display information about one of the following application protocols:

- **ftp**—File Transfer Protocol
- **icmp**—Internet Control Message Protocol
- **pptp**—Point-to-Point Tunneling Protocol
- **rtsp**—Real-Time Streaming Protocol
- **sqlnet**—SQL \*Net
- **tcp**—Transmission Control Protocol
- **traceroute**—Traceroute
- **tftp**—Trivial File Transfer Protocol
- **udp**—User Datagram Protocol

**count**—(Optional) Display a count of the total number of flows of the service sets in each member interface of the AMS.

**destination-port *destination-port***—(Optional) Display information for the specified destination port. The range is from 0 through 65,535.

**destination-prefix *destination-prefix***—(Optional) Display information for the specified destination prefix.

**interface *interface-name***—(Optional) Display information about the specified interface. The *interface-name* is in the format *ms-fpc/pic/port*.

**limit *number***—(Optional) Restrict the maximum number of entries displayed to the specified limit.

**protocol *protocol***—(Optional) Display information about one of the following IP types:

- ***number***—Numeric protocol value from 0 through 255
- ***ah***—IPsec Authentication Header protocol
- ***egp***—Exterior gateway protocol
- ***esp***—IPsec Encapsulating Security Payload protocol
- ***gre***—Generic routing encapsulation protocol
- ***icmp***—Internet Control Message Protocol
- ***icmp6***—Internet Control Message Protocol version 6
- ***igmp***—Internet Group Management Protocol
- ***ipip***—IP-over-IP encapsulation protocol
- ***ospf***—Open Shortest Path First protocol
- ***pim***—Protocol Independent Multicast protocol
- ***rsvp***—Resource Reservation Protocol
- ***sctp***—Stream Control Transmission Protocol
- ***tcp***—Transmission Control Protocol
- ***udp***—User Datagram Protocol

**service-set *service-set***—(Optional) Display information for the specified service set.

**source-port *source-port***—(Optional) Display information for the specified source port. The range is from 0 through 65,535.

**source-prefix *source-prefix***—(Optional) Display information for the specified source prefix.

**Required Privilege Level**

view

**Related Documentation**

- *show services sessions (Aggregated Multiservices)*
- *show services service-sets summary*

List of Sample Output [show services flows interface ams0 on page 39](#)  
[show services flows count interface ams0 on page 39](#)

**Output Fields** [Table 6 on page 38](#) lists the output fields for the **show services flows** (aggregated multiservices) command. Output fields are listed in the approximate order in which they appear.

*Table 6: show services flows Output Fields*

Field Name	Field Description	Level of Output
<b>Interface</b>	Name of the aggregated multiservices member interface ( <b>mams-</b> ) and the aggregated multiservices interface ( <b>ams</b> ) to which it belongs.	All levels
<b>Service set</b>	Name of a service set. Individual empty service sets are not displayed. If no service set has any flows, a flow table header is displayed for each service set.	All levels
<b>Flow Count</b>	Number of flows in a session.	<b>count</b> only
<b>Flow or Flow Prot</b>	Protocol used for this flow.	All levels
<b>Source</b>	Source prefix of the flow in the format <i>source-prefix:port</i> . For ICMP flows, port information is not displayed.	All levels
<b>Dest</b>	Destination prefix of the flow. For ICMP flows, port information is not displayed.	All levels
<b>State</b>	Status of the flow: <ul style="list-style-type: none"> <li>• <b>Drop</b>—Drop all packets in the flow without response.</li> <li>• <b>Forward</b>—Forward the packet in the flow without looking at it.</li> <li>• <b>Reject</b>—Drop all packets in the flow with response.</li> <li>• <b>Watch</b>—Inspect packets in the flow.</li> </ul>	All levels
<b>Dir</b>	Direction of the flow: input ( <b>I</b> ) or output ( <b>O</b> ).	All levels
<b>Frm count</b>	Number of frames in the flow.	All levels
<b>Byte count</b>	Number of bytes in the flow.	<b>extensive</b>
<b>Flow role</b>	Flow role.	<b>extensive</b>
<b>Timeout</b>	Timeout value.	<b>extensive</b>
<b>Flow path</b>	Flow path: symmetric or asymmetric.	<b>extensive</b>

## Sample Output

### show services flows interface ams0

```

user@host> show services flows interface ams0
Interface: mams-1/0/0 (ams0), Service set: napt_set
Flow                                     State   Dir      Frm count
UDP          30.30.30.2:63    ->    40.40.40.2:63    Forward I      83185
UDP          40.40.40.2:63    ->    30.30.30.160:6000 Forward O        0

```

### show services flows count interface ams0

```

user@host> show services flows count interface ams0
Interface  Service set      Flow count
mams-1/0/0  napt_set         38
mams-1/0/0  ssl              0
mams-1/1/0  napt_set         36
mams-1/1/0  ssl              0
mams-5/0/0  napt_set         18
mams-5/0/0  ssl              0
mams-5/1/0  napt_set         34
mams-5/1/0  ssl              0

```

## show unified-edge ggsn-pgw statistics

**Syntax** show unified-edge ggsn-pgw statistics  
 <apn *apn*>  
 <gateway *gateway*>  
 <gtpv1-arp *gtpv1-arp*>  
 <gtpv2-priority-level *gtpv2-priority-level*>  
 <qci *qci*>

**Release Information** Command introduced in Junos OS Mobility Release 11.2W.

**Description** Display the statistics for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then statistics for all GGSNs and P-GWs are displayed.

**Options** **apn *apn***—(Optional) Display the statistics for the specified APN on one or more GGSNs or P-GWs.



**NOTE:** The output of the `show unified-edge ggsn-pgw statistics` command with the `apn` option is the same as the output of the `show unified-edge ggsn-pgw apn statistics` command. Refer to the output fields of the `show unified-edge ggsn-pgw apn statistics` command.

**gateway *gateway***—(Optional) Display the statistics for the specified GGSN or P-GW.

**gtpv1-arp *gtpv1-arp***—(Optional) Display the statistics for the specified GTPv1 allocation and retention priority (ARP) on one or more gateways. You can specify an ARP value of 1 through 3.

**gtpv2-priority-level *gtpv2-priority-level***—(Optional) Display the statistics for the specified GTPv2 priority level on one or more gateways. You can specify a priority level of 1 through 15.

**qci *qci***—(Optional) Display the statistics for the specified QoS Class Identifier (QCI) on one or more gateways. You can specify a QCI of 1 through 9.

**Required Privilege Level** view

**Related Documentation**

- `clear unified-edge ggsn-pgw statistics`
- `show unified-edge ggsn-pgw apn statistics`
- `show unified-edge ggsn-pgw statistics traffic-class`

List of Sample Output [show unified-edge ggsn-pgw statistics on page 44](#)

**Output Fields** [Table 7 on page 41](#) lists the output fields for the **show unified-edge ggsn-pgw statistics** command. Output fields are listed in the approximate order in which they appear.

*Table 7: show unified-edge ggsn-pgw statistics Output Fields*

Field Name	Field Description
<b>Gateway</b>	Name of the GGSN or P-GW.
<b>Control Plane GTP Statistics</b>	
<b>Session establishment attempts</b>	Number of session establishments attempted and number of successful session establishments ( <b>Success</b> ).
<b>MS/peer initiated modification attempts</b>	Number of session modifications attempted by the mobile station (MS) and number of successful modifications ( <b>Success</b> ).
<b>Gateway initiated modification attempts</b>	Number of session modifications attempted by the broadband gateway and number of successful modifications ( <b>Success</b> ).
<b>MS/peer initiated session deactivations</b>	Number of attempted deactivations initiated by the mobile station , Mobility Management Entity (MME), or Serving Gateway (S-GW) and number of successful deactivations ( <b>Success</b> ).
<b>Gateway initiated session deactivations</b>	Number of attempted deactivations initiated by the broadband gateway and number of successful deactivations ( <b>Success</b> ).
<b>Dedicated Bearer Statistics</b>	
<b>MS/peer initiated activation attempts</b>	Number of attempted bearer activations initiated by the mobile station, MME, or S-GW and number of successful activations ( <b>Success</b> ).
<b>Network initiated activation attempts</b>	Number of attempted bearer activations initiated by the network (policy and charging rules function [PCRF] or the broadband gateway) and number of successful activations ( <b>Success</b> ).
<b>MS/peer initiated modification attempts</b>	Number of attempted bearer modifications initiated by the mobile station, MME, or S-GW and number of successful modifications ( <b>Success</b> ).
<b>Network initiated modification attempts</b>	Number of attempted bearer modifications initiated by the network (policy and charging rules function [PCRF] or the broadband gateway) and number of successful modifications ( <b>Success</b> ).
<b>MS/peer initiated deactivations</b>	Number of deactivations initiated by the mobile station, MME, or S-GW.

Table 7: show unified-edge ggsn-pgw statistics Output Fields (continued)

Field Name	Field Description
<b>Network initiated deactivations</b>	Number of deactivations initiated by the network (policy and charging rules function [PCRF] or the broadband gateway).
<b>Gateway initiated deactivations</b>	<p>Number of deactivations initiated by the broadband gateway. This counter increments when one of the following conditions is applicable:</p> <ul style="list-style-type: none"> <li>When the <b>clear unified-edge ggsn-pgw subscribers</b> is executed and the subscriber has a dedicated bearer.</li> <li>When the <b>clear unified-edge ggsn-pgw subscribers bearer ebi ebi</b> is executed.</li> </ul>
<b>Handover Statistics</b>	
<b>Inter-RAT Handover attempts</b>	Number of inter-RAT handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>Intra-RAT Handover attempts</b>	Number of intra-RAT handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>Version Change Statistics</b>	
<b>V0 to V1 Handover attempts</b>	Number of GTPv0 to GTPv1 handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>V1 to V0 Handover attempts</b>	Number of GTPv1 to GTPv0 handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>V1 to V2 Handover attempts</b>	Number of GTPv1 to GTPv2 handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>V2 to V1 Handover attempts</b>	Number of GTPv2 to GTPv1 handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>V2 to V0 Handover attempts</b>	Number of GTPv2 to GTPv0 handovers attempted and number of handovers that were successful ( <b>Success</b> ).
<b>Offline Charging Statistics</b>	
<b>CDRs Allocated</b>	Total number of Charging Data Records (CDRs) opened.
<b>Partial CDRs Allocated</b>	Total number of partial CDRs opened.
<b>CDRs Closed</b>	Total number of CDRs closed.
<b>Containers Closed</b>	Total number of containers closed.
<b>DCCA-Gy statistics (Diameter Credit Control Application [DCCA] Gy statistics)</b>	



Table 7: show unified-edge ggsn-pgw statistics Output Fields (continued)

Field Name	Field Description
Session establishments attempts	Number of Diameter session establishments attempted and number of sessions established ( <b>Success</b> ).
Session reauthorization attempts	Number of session reauthorizations attempted with the OCS and number of successful reauthorizations ( <b>Success</b> ).
Online authorization timeouts	Number of online authorizations that timed out.
MS/Peer initiated session deactivations	Number of Diameter session deactivations initiated by the mobile station , MME, or S-GW.
OCS initiated session deactivations	Number of Diameter session deactivations initiated by the OCS.
Gateway initiated session deactivations	Number of Diameter session deactivations initiated by the broadband gateway.
PCC Gx Statistics	
Session establishment attempts	Number of IP CAN session establishments attempted and number of successful session establishments ( <b>Success</b> ).
MS/Peer initiated modification attempts	Number of IP CAN session modifications attempted by the mobile station, MME, or S-GW and number of successful session modifications ( <b>Success</b> ).
PCRF initiated modification attempts	Number of IP CAN session modifications initiated by the PCRF and number of sessions established ( <b>Success</b> ).
MS/Peer initiated session deactivations	Number of session deactivations initiated by the mobile station, MME, or S-GW.
PCRF initiated session deactivations	Number of session deactivations initiated by the PCRF.
Gateway initiated session deactivations	Number of session deactivations initiated by the broadband gateway.
Data Plane Global statistics	

Table 7: show unified-edge ggsn-pgw statistics Output Fields (continued)

Field Name	Field Description
Source address violation packets	Number of packets with an incorrect source address.
Non-existent TEID/TID packets	Total number of packets received with nonexistent tunnel endpoint identifiers (TEIDs) or tunnel identifiers (TIDs).
GTP length error packets	Number of GTP packets with an incorrect length in the IP or UDP header.
Non-existent UE address packets	Number of packets received by the broadband gateway for which the IP address (IPv4 or IPv6) did not match the IP address of existing subscribers on the gateway.
Mobile-to-mobile packets	Number of packets received by the broadband gateway for another mobile device.
Data Plane GTP Statistics (Gn/S5/S8)	
Input packets	Number of incoming GTP data packets on the Gn, Gp, S5, and S8 interfaces.
Input bytes	Number of octets of incoming GTP data packets on the Gn, Gp, S5, and S8 interfaces.
Output packets	Number of outgoing GTP data packets on the Gn, Gp, S5, and S8 interfaces.
Output bytes	Number of octets of outgoing GTP data packets on the Gn, Gp, S5, and S8 interfaces.
Discarded packets	Number of discarded GTP data packets on the Gn, Gp, S5, and S8 interfaces.
Data Plane GTP statistics (Gi)	
Input packets	Number of incoming GTP data packets on the Gi interface.
Input bytes	Number of octets of incoming GTP data packets on the Gi interface.
Output packets	Number of outgoing GTP data packets on the Gi interface.
Output bytes	Number of octets of outgoing GTP data packets on the Gi interface.
Discarded packets	Number of discarded GTP data packets on the Gi interface.

## Sample Output

### show unified-edge ggsn-pgw statistics

```
user@host> show unified-edge ggsn-pgw statistics
```

```

Gateway: PGW
Control Plane GTP Statistics:
    Session establishment attempts:      5      Success: 5
    MS/Peer initiated modification attempts: 4      Success: 0
    Gateway initiated modification attempts: 0      Success: 0
    MS/Peer initiated session deactivations: 0      Success: 0
    Gateway initiated session deactivations: 2      Success: 2
Dedicated Bearer Statistics:
    MS/Peer initiated activation attempts: 0      Success: 0
    Network initiated activation attempts: 0      Success: 0
    MS/Peer initiated modification attempts: 0      Success: 0
    Network initiated modification attempts: 0      Success: 0
    MS/Peer initiated deactivations:      0
    Network initiated deactivations:      0
    Gateway initiated deactivations:      0
Handover Statistics:
    Inter-RAT Handover attempts:      0      Success: 0
    Intra-RAT Handover attempts:      4      Success: 0
Version Change Statistics:
    V0 to V1 Handover attempts:      0      Success: 0
    V1 to V0 Handover attempts:      4      Success: 0
    V1 to V2 Handover attempts:      0      Success: 0
    V2 to V1 Handover attempts:      0      Success: 0
    V2 to V0 Handover attempts:      0      Success: 0
Offline Charging Statistics:
    CDRs allocated:      0
    Partial CDRs allocated:      0
    CDRs closed:      0
    Containers closed:      0
DCCA-Gy Statistics:
    Session establishments attempts:      0      Success : 0
    Session reauthorization attempts:      0      Success : 0
    Online authorization timeouts:      0
    MS/Peer initiated session deactivations: 0
    OCS initiated session deactivations: 0
    Gateway initiated session deactivations: 0
PCC Gx statistics:
    Session establishment attempts:      0      Success: 0
    MS/Peer initiated modification attempts: 4      Success: 0
    PCRF initiated modification attempts: 0      Success: 0
    MS/Peer initiated session deactivations: 0
    PCRF initiated session deactivations: 0
    Gateway initiated session deactivations: 0
Data plane global statistics:
    Source address violation packets:      0
    Non-existent TEID/TID packets:      0
    GTP length error packets:      0
    Non-existent UE address packets:      0
    Mobile-to-mobile packets:      0
Data plane GTP statistics (Gn/S5/S8):
    Input      packets:      0
    Input      bytes:      0
    Output     packets:      0
    Output     bytes:      0
    Discarded packets:      0
Data plane GTP statistics (Gi):
    Input      packets:      0
    Input      bytes:      0
    Output     packets:      0
    Output     bytes:      0
    Discarded packets:      0

```



## show unified-edge ggsn-pgw status

**Syntax** show unified-edge ggsn-pgw status  
 <apn-name *apn-name*>  
 <brief | detail | extensive>  
 <fpc-slot *fpc-slot*>  
 <gateway *gateway*>  
 <gtpv1-arp *gtpv1-arp*>  
 <gtpv2-priority-level *gtpv2-priority-level*>  
 <pdn-type>  
 <pic-slot *pic-slot*>  
 <qci *qci*>  
 <rat-type>  
 <roaming-status>  
 <traffic-class (background | conversational | interactive | streaming)>

**Release Information** Command introduced in Junos OS Mobility Release 11.2W. **extensive** **pdn-type**, and **roaming-status** options introduced in Junos OS Mobility Release 11.4W.

**Description** Display the status information, such as the number of subscribers, active sessions, and so on, for one or more gateway GPRS support nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then status information for all GGSNs and P-GWs is displayed.

**Options** **none**—(Same as brief) Display the status information in brief.

**apn-name** *apn-name*—(Optional) Display the status information for the specified access point name (APN).

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

**fpc-slot** *fpc-slot*—(Optional) Display the status information for the specified FPC slot number.

**gateway** *gateway*—(Optional) Display the status information for the specified GGSN or P-GW.

**gtpv1-arp** *gtpv1-arp*—(Optional) Display the status information for the GTPv1 Allocation and Retention Priority (ARP) value specified. You can specify a GTPv1 ARP value of 1 through 3.

**gtpv2-priority-level** *gtpv2-priority-level*—(Optional) Display the status information for the GTPv2 priority specified. You can specify a priority of 1 through 15.

**pdn-type**—(Optional) Display the number of active sessions according to the type of Packet Data Network (PDN): IPv4, IPv6, and both IPv4 and IPv6.

**pic-slot** *pic-slot*—(Optional) Display the status information for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.

**qci *qci***—(Optional) Display the status information for the specified QoS Class Identifier (QCI). You can specify a QCI of 1 through 9.

**rat-type**—(Optional) Display the number of active subscribers, sessions, and bearers for each Radio Access Technology (RAT) type.

**roaming-status**—(Optional) Display the subscriber sessions based on the roaming status (home, roamer, or visitor).

**traffic-class (*background | conversational | interactive | streaming*)**—(Optional) Display the status information for the specified traffic class.

**Required Privilege Level** view

**Related Documentation**

- [show unified-edge ggsn-pgw status gtp-peer on page 54](#)
- [show unified-edge ggsn-pgw status preemption-list](#)
- [show unified-edge ggsn-pgw status session-state](#)

**List of Sample Output**

- [show unified-edge ggsn-pgw status on page 50](#)
- [show unified-edge ggsn-pgw status detail on page 50](#)
- [show unified-edge ggsn-pgw status extensive on page 51](#)
- [show unified-edge ggsn-pgw status pdn-type detail on page 52](#)
- [show unified-edge ggsn-pgw status rat-type detail on page 53](#)
- [show unified-edge ggsn-pgw status roaming-status detail on page 53](#)

**Output Fields** [Table 8 on page 48](#) lists the output fields for the **show unified-edge ggsn-pgw status** command. Output fields are listed in the approximate order in which they appear.

*Table 8: show unified-edge ggsn-pgw status Output Fields*

Field Name	Field Description	Level of Output
Gateway	Name of the GGSN or P-GW.	All levels
		none
FPC SLOT	FPC slot number of the interface for which the status information is displayed.	detail
		extensive
PIC SLOT	PIC slot number of the FPC for which the status information is displayed.	detail
		extensive

Table 8: show unified-edge ggsn-pgw status Output Fields (continued)

Field Name	Field Description	Level of Output
<b>Role</b>	Role of the Packet Forwarding Engine, services PIC, or session PIC on the GGSN or P-GW: <ul style="list-style-type: none"> <li>• <b>Standalone</b></li> <li>• <b>Primary</b>—Primary member.</li> <li>• <b>Secondary</b>—Secondary member.</li> </ul>	<b>detail</b> <b>extensive</b>
<b>Type</b>	Indicates whether the PIC is a Packet Forwarding Engine, a session PIC or a services PIC.	<b>detail</b> <b>extensive</b>
<b>Active Subscribers</b>	Number of active subscribers.	All levels none
<b>Active Subscribers (with services)</b>	Number of active subscribers who are using subscriber-aware services and who are anchored on a services PIC.	All levels none
<b>Active Sessions</b>	Number of active sessions.	All levels none
<b>Active Sessions (with services)</b>	Number of active sessions for subscribers who are using subscriber-aware services and who are anchored on a services PIC.	All levels none
<b>Active Bearers</b>	Number of active bearers or Packet Data Protocol (PDP) contexts.	All levels none
<b>Active GBR Bearers</b>	Number of active guaranteed bit rate (GBR) bearers or PDP contexts.	All levels none
<b>Active Non-GBR Bearers</b>	Number of active non-GBR bearers or PDP contexts.	All levels none
<b>Active Prepaid bearers</b>	Number of active prepaid bearers or PDP contexts.	All levels none
<b>Active Postpaid bearers</b>	Number of active postpaid bearers or PDP contexts.	All levels none
<b>CPU Load (%)</b>	Percentage of the CPU load.	All levels none

Table 8: show unified-edge ggsn-pgw status Output Fields (continued)

Field Name	Field Description	Level of Output
Memory Load (%)	Percentage of the memory load.	All levels none
Connections to Session PICs	Connections between the services PIC and the session PICs.  This field is displayed only when the services PIC has a connection to one or more session PICs.	extensive
IPv4 Active Sessions	Number of active IPv4 sessions.	pdn-type
IPv6 Active Sessions	Number of active IPv6 sessions.	pdn-type
IPv4-v6 Active Sessions	Number of active IPv4-IPv6 sessions.	pdn-type
Home	Number of active sessions belonging to home subscribers.	roaming-status
Roamer	Number of active sessions belonging to roaming subscribers.	roaming-status
Visitor	Number of active sessions belonging to visiting subscribers.	roaming-status

## Sample Output

### show unified-edge ggsn-pgw status

```

user@host> show unified-edge ggsn-pgw status
Gateway: PGW
  Mobile gateway status:
    Active Subscribers           :          2
    Active Subscribers (with services) :          2
    Active Sessions              :          2
    Active Sessions (with services) :          2
    Active Bearers               :          2
    Active GBR Bearers           :          0
    Active Non-GBR Bearers       :          2
    Active Prepaid bearers        :          0
    Active Postpaid bearers       :          2
    CPU Load (%)                 :          0
    Memory Load (%)              :         29

```

### show unified-edge ggsn-pgw status detail

```

user@host> show unified-edge ggsn-pgw status detail
Gateway: PGW

  FPC SLOT: 3   PIC SLOT: 0
  Role          : Primary
  Type          : Service-PIC
  Active Subscribers (with services) : 5000

```



```

Active Sessions (with services) : 5000
CPU Load (%) : 0
Memory Load (%) : 14

FPC SLOT: 3 PIC SLOT: 1
Role : Secondary
Type : Session-PIC
Active Subscribers : 9077
Active Sessions : 9077
Active Bearers : 9077
Active GBR Bearers : 0
Active Non-GBR Bearers : 9077
Active prepaid Bearers : 0
Active postpaid Bearers : 0
CPU Load (%) : 0
Memory Load (%) : 30

FPC SLOT: 5 PIC SLOT: 0
Role : Primary
Type : Session-PIC
Active Subscribers : 9077
Active Sessions : 9077
Active Bearers : 9077
Active GBR Bearers : 0
Active Non-GBR Bearers : 9077
Active prepaid Bearers : 0
Active postpaid Bearers : 0
CPU Load (%) : 0
Memory Load (%) : 30

FPC SLOT: 0 PIC SLOT: 0
Role : Standalone
Type : PFE
Active Sessions : 0
Active Bearers : 0
CPU Load (%) : 0
Memory Load (%) : 0

FPC SLOT: 0 PIC SLOT: 2
Role : Standalone
Type : PFE
Active Sessions : 0
Active Bearers : 0
CPU Load (%) : 0
Memory Load (%) : 0

```

### show unified-edge ggsn-pgw status extensive

```

user@host> show unified-edge ggsn-pgw status extensive
Gateway: PGW

```

```

FPC SLOT: 3 PIC SLOT: 1
Role : Secondary
Type : Session-PIC
Active Subscribers : 3687
Active Sessions : 3687
Active Bearers : 3687
Active GBR Bearers : 0
Active Non-GBR Bearers : 3687
Active Prepaid Bearers : 0

```

```

Active Postpaid Bearers      :      0
CPU Load (%)                 :      0
Memory Load (%)              :     34

FPC SLOT: 5   PIC SLOT: 0
Role                         :      Primary
Type                         :      Session-PIC
Active Subscribers           :     3687
Active Sessions              :     3687
Active Bearers               :     3687
Active GBR Bearers           :      0
Active Non-GBR Bearers       :     3687
Active Prepaid Bearers       :      0
Active Postpaid Bearers      :      0
CPU Load (%)                 :      0
Memory Load (%)              :     34

FPC SLOT: 5   PIC SLOT: 1
Role                         :      Secondary
Type                         :      Service-PIC
Active Subscribers (with services) :     3687
Active Sessions (with services) :     3687
CPU Load (%)                 :      0
Memory Load (%)              :     19
Connections to Session PICs   :
ms-5/0

FPC SLOT: 0   PIC SLOT: 0
Role                         :      Standalone
Type                         :      PFE
Active Sessions              :      0
Active Bearers               :      0
CPU Load (%)                 :      0
Memory Load (%)              :      0

FPC SLOT: 0   PIC SLOT: 2
Role                         :      Standalone
Type                         :      PFE
Active Sessions              :      0
Active Bearers               :      0
CPU Load (%)                 :      0
Memory Load (%)              :      0

```

### show unified-edge ggsn-pgw status pdn-type detail

```

user@host> show unified-edge ggsn-pgw status pdn-type detail
Gateway: PGW

```

```

FPC SLOT: 3   PIC SLOT: 1
State         :      Backup
Type          :      Session-PIC
IPv4 Active Sessions :      2
IPv6 Active Sessions :      0
IPv4-v6 Active Sessions :      0

FPC SLOT: 5   PIC SLOT: 0
State         :      Active
Type          :      Session-PIC
IPv4 Active Sessions :      2
IPv6 Active Sessions :      0

```

```
IPv4-v6 Active Sessions      :      0
```

### show unified-edge ggsn-pgw status rat-type detail

```
user@host> show unified-edge ggsn-pgw status rat-type detail
Gateway: PGW
```

```
RAT type list:
FPC SLOT: 4    PIC SLOT: 0
OTHER   Active Subscribers   :      0
        Active Sessions     :      0
        Active Bearers       :      0
UTRAN   Active Subscribers   :      0
        Active Sessions     :      0
        Active Bearers       :      0
GERAN   Active Subscribers   :      0
        Active Sessions     :      0
        Active Bearers       :      0
WLAN    Active Subscribers   :      0
        Active Sessions     :      0
        Active Bearers       :      0
GAN     Active Subscribers   :      0
        Active Sessions     :      0
        Active Bearers       :      0
HSPA    Active Subscribers   :      0
        Active Sessions     :      0
        Active Bearers       :      0
EUTRAN  Active Subscribers   :      1
        Active Sessions     :      1
        Active Bearers       :      1
```

### show unified-edge ggsn-pgw status roaming-status detail

```
user@host> show unified-edge ggsn-pgw status roaming-status detail
Gateway: PGW
```

```
FPC SLOT: 3    PIC SLOT: 1
State          :      Backup
Type           :      Session-PIC
Home           :      0
Roamer         :      0
Visitor        :      2

FPC SLOT: 5    PIC SLOT: 0
State          :      Active
Type           :      Session-PIC
Home           :      0
Roamer         :      0
Visitor        :      2
```

## show unified-edge ggsn-pgw status gtp-peer

<b>Syntax</b>	<code>show unified-edge ggsn-pgw status gtp-peer remote-address <i>remote-address</i></code> <code>&lt;fpc-slot <i>fpc-slot</i>&gt;</code> <code>&lt;gateway <i>gateway</i>&gt;</code> <code>&lt;local-address <i>local-address</i>&gt;</code> <code>&lt;pic-slot <i>pic-slot</i>&gt;</code> <code>&lt;routing-instance <i>name</i>&gt;</code>
<b>Release Information</b>	Command introduced in Junos OS Mobility Release 11.4W.
<b>Description</b>	Displays the count of the bearer distribution across multiple Packet Forwarding Engines for the specified GTP peer on one or more gateway GPRS support nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then information for all GGSNs and P-GWs is displayed.
<b>Options</b>	<p><b>remote-address <i>remote-address</i></b>—Display the information for the GTP peer with the specified remote address.</p> <p><b>fpc-slot <i>fpc-slot</i></b>—(Optional) Display the information for the specified FPC slot number pertaining to the session PIC.</p> <p><b>gateway <i>gateway</i></b>—(Optional) Display the information for the specified GGSN or P-GW.</p> <p><b>local-address <i>local-address</i></b>—(Optional) Display the information for the local address of the specified peer on the gateway.</p> <p><b>pic-slot <i>pic-slot</i></b>—(Optional) Display the information for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p> <p><b>routing-instance <i>routing-instance</i></b>—(Optional) Display the information for the peer on the specified routing instance ID.</p>
<b>Required Privilege Level</b>	unified-edge, view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li><a href="#">show unified-edge ggsn-pgw status on page 47</a></li> </ul>
<b>List of Sample Output</b>	<a href="#">show unified-edge ggsn-pgw status gtp-peer remote-address 200.6.1.2 on page 55</a>
<b>Output Fields</b>	<a href="#">Table 9 on page 54</a> lists the output fields for the <code>show unified-edge ggsn-pgw status gtp-peer</code> command. Output fields are listed in the approximate order in which they appear.

Table 9: show unified-edge ggsn-pgw status gtp-peer Output Fields

Field Name	Field Description
Gateway	Name of the GGSN or P-GW.

*Table 9: show unified-edge ggsn-pgw status gtp-peer Output Fields (continued)*

Field Name	Field Description
FPC-slot/PIC-slot	FPC and PIC slot numbers of the aggregated Packet Forwarding Engine interface for which the information is displayed.
Number of bearers	Number of bearers on the corresponding FCP and PIC slot.

## Sample Output

### show unified-edge ggsn-pgw status gtp-peer remote-address 200.6.1.2

```
user@host> show unified-edge ggsn-pgw status gtp-peer remote-address 200.6.1.2
Gateway: PGW
FPC-slot/PIC-slot      Number of bearers
-----
0/0                    1
0/1                    0
```

## show unified-edge ggsn-pgw system interfaces

<b>Syntax</b>	<b>show unified-edge ggsn-pgw system interfaces</b> <b>&lt;gateway gateway&gt;</b>
<b>Release Information</b>	Command introduced in Junos OS Mobility Release 11.2W. <b>gateway</b> option introduced in Junos OS Mobility Release 11.4W.
<b>Description</b>	Display information about the aggregated Packet Forwarding Engine and the aggregated multiservices (AMS) interfaces and their states on one or more gateway GPRS support nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then information for all GGSNs and P-GWs is displayed.
<b>Options</b>	<b>none</b> —Display information for one or more GGSNs and P-GWs.  <b>gateway gateway-name</b> —(Optional) Display information for the specified gateway.
<b>Required Privilege Level</b>	view
<b>Related Documentation</b>	<ul style="list-style-type: none"> <li>• <i>show interfaces anchor-group</i> (Aggregated Packet Forwarding Engine)</li> <li>• <i>show interfaces load-balancing</i> (Aggregated Multiservices)</li> <li>• <i>show unified-edge ggsn-pgw resource-manager clients</i></li> <li>• <i>show unified-edge ggsn-pgw system interfaces service-mode</i></li> </ul>
<b>List of Sample Output</b>	<a href="#">show unified-edge ggsn-pgw system interfaces on page 57</a>
<b>Output Fields</b>	<a href="#">Table 10 on page 56</a> lists the output fields for the <b>show unified-edge ggsn-pgw system interfaces</b> command. Output fields are listed in the approximate order in which they appear.

Table 10: show unified-edge ggsn-pgw system interfaces

Field Name	Field Description
<b>Gateway</b>	Name of the GGSN or P-GW.
<b>Interfaces</b>	Name of the interface: <ul style="list-style-type: none"> <li>• Aggregated multiservices; for example, <b>ams0</b></li> <li>• Aggregated Packet Forwarding Engine; for example, <b>apfe1</b></li> <li>• Member of aggregated multiservices; for example, <b>mams-1/0/0</b></li> <li>• Multiservices; for example, <b>ms-1/0/0</b></li> <li>• Packet Forwarding Engine; for example, <b>pfe-0/1/0</b></li> </ul>

Table 10: show unified-edge ggsn-pgw system interfaces (continued)

Field Name	Field Description
<b>Members</b>	For <b>ams</b> and <b>apfe</b> interfaces, the member interfaces that are part of the aggregated interfaces are displayed.
<b>Operational State</b>	Indicates whether the interface is operational ( <b>Active</b> ) or not ( <b>Inactive</b> ).
<b>Redundancy Role</b>	Redundancy state in which the interface is configured: <ul style="list-style-type: none"> <li>• <b>Primary</b>—The interface is a primary member.</li> <li>• <b>Secondary</b>—The interface is a backup to all the primary members.</li> <li>• <b>Standalone</b>—The interface has not been configured for redundancy.</li> </ul>

## Sample Output

### show unified-edge ggsn-pgw system interfaces

```
user@host> show unified-edge ggsn-pgw system interfaces
```

```
Gateway: PGW
```

Interfaces	Members	Operational State	Redundancy Role
ms-1/0/0		Active	Standalone
ms-1/1/0		Active	Standalone
ms-2/0/0		Active	Standalone
ms-2/1/0		Active	Standalone
pfe-0/0/0		Active	Standalone
pfe-0/1/0		Active	Standalone
pfe-0/2/0		Active	Standalone
pfe-0/3/0		Active	Standalone

