



MobileNext Broadband Gateway

MX Chassis



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MobileNext Broadband Gateway MX Chassis

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Documentation and Release Notes

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

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

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

Supported Platforms

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

- MX240 Routers
- MX960 Routers
- MX480 Routers

Documentation Conventions

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.

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

Table 2: Text and Syntax Conventions

Convention	Description	Examples
Bold text like this	Represents text that you type.	To enter configuration mode, type the configure command: <code>user@host> configure</code>
Fixed-width text like this	Represents output that appears on the terminal screen.	<code>user@host> show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic text like this</i>	<ul style="list-style-type: none"> Introduces important new terms. Identifies book names. Identifies RFC and Internet draft titles. 	<ul style="list-style-type: none"> A policy <i>term</i> is a named structure that defines match conditions and actions. <i>Junos OS System Basics Configuration Guide</i> RFC 1997, <i>BGP Communities Attribute</i>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name: [edit] root@# set system domain-name <i>domain-name</i>
Text like this	Represents names of configuration statements, commands, files, and directories; interface names; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> To configure a stub area, include the stub statement at the [edit protocols ospf area area-id] hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	<code>stub <default-metric metric>;</code>

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

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

Documentation Feedback

We encourage you to provide feedback, comments, and suggestions so that we can improve the documentation. You can send your comments to techpubs-comments@juniper.net, or fill out the documentation feedback form at <https://www.juniper.net/cgi-bin/docbugreport/>. If you are using e-mail, be sure to include the following information with your comments:

- Document or topic name
- URL or page number
- Software release version (if applicable)

Requesting Technical Support

Technical product support is available through the Juniper Networks Technical Assistance Center (JTAC). If you are a customer with an active J-Care or JNASC support contract,

or are covered under warranty, and need post-sales technical support, you can access our tools and resources online or open a case with JTAC.

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

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

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

Opening a Case with JTAC

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

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

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

PART 1

Overview

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

CHAPTER 1

Mobility on MX 3D Devices Overview

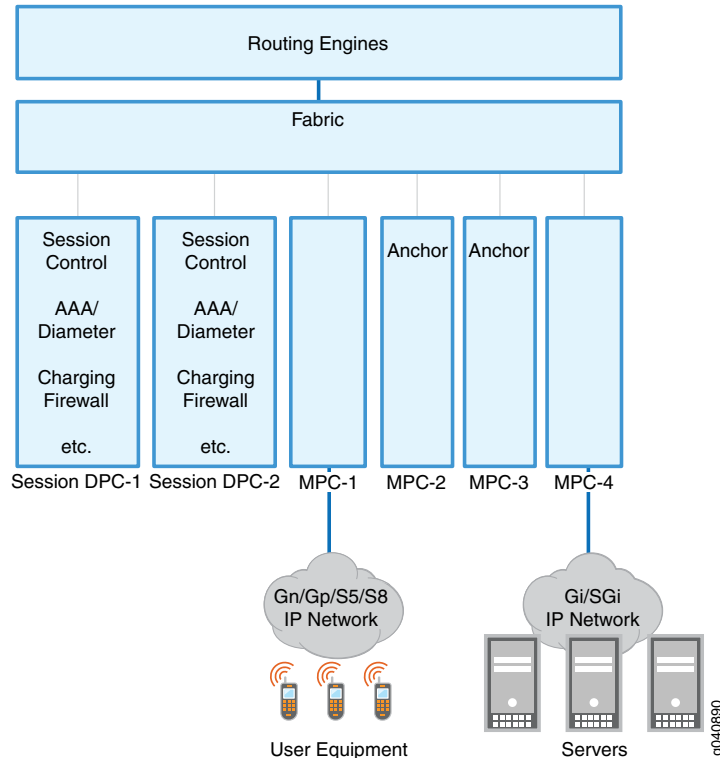
- [MobileNext Broadband Gateway Chassis Overview on page 4](#)
- [Understanding the MobileNext Broadband Gateway Anchors on page 6](#)

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 14](#)
- [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

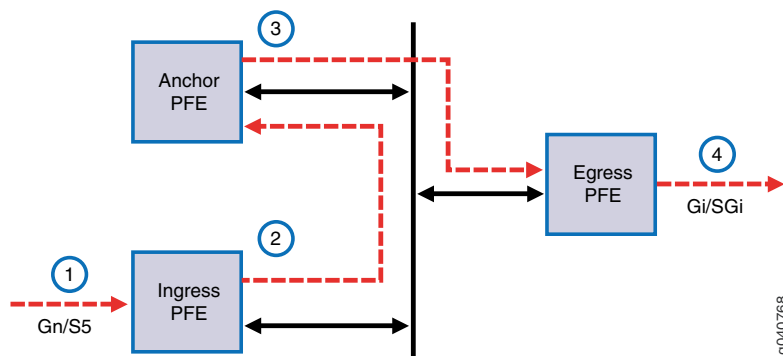


Figure 2 on page 6 shows how all GPRS tunneling protocol, user plane (GTP-U) traffic traverses an anchor Packet Forwarding Engine upstream from a Gn or S5 interface to a Gi or SGi interface:

- 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

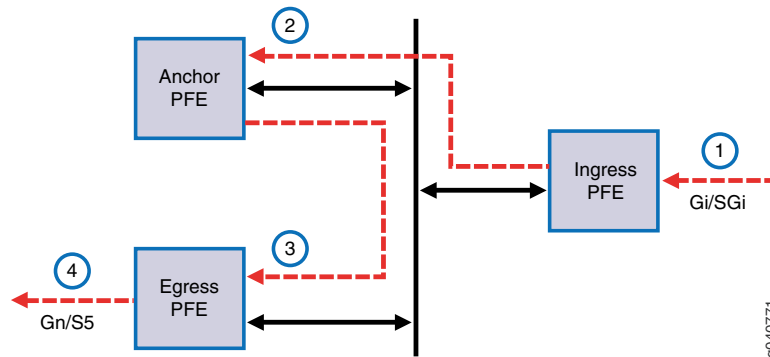


Figure 2 on page 6 shows how all GTP-U traffic traverses an anchor Packet Forwarding Engine downstream from a Gi or SGi interface to a Gn or S5 interface:

- 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 14](#)
- [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 14](#)

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 mobility services, 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 mobility services.

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: You must include every services PIC configured with the `jservices-mobile` package at the `[edit unified-edge gateways ggsn-pgw gateway-name system anchor-spics]` hierarchy level on the broadband gateway. If you do not include the services PIC as an anchor, then the services PIC will not be used by the broadband gateway.

Related Documentation

- [MobileNext Broadband Gateway Chassis Overview on page 4](#)
- [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 14](#)
- [Verifying the MobileNext Broadband Gateway Chassis Configuration on page 25](#)
- [Overview of Broadband Gateway System Architecture](#)

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 14](#)
- [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

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](#)
- [Example: Configuring the MobileNext Broadband Gateway Chassis](#)

interface (Packet Forwarding Engine)

Syntax	[interface <i>interface-name</i>];
Hierarchy Level	[edit unified-edge gateways ggsn-pgw <i>gateway-name</i> system pfes], [edit unified-edge gateways sgw <i>gateway-name</i> system pfes]
Release Information	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.
Description	<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"> The aggregated Packet Forwarding Engine interfaces (apfe) specified in this statement must already be defined at the [edit interfaces] hierarchy level. 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 mobility ggsn-pgw as their forwarding package at [edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages] hierarchy level. <p> NOTE: If the specified Packet Forwarding Engine interface is an apfe interface, then all the member interfaces of the apfe interface must have mobility ggsn-pgw 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"> For a broadband gateway configured as a Serving Gateway (S-GW), the Packet Forwarding Engine interfaces must have mobility sgw as their forwarding package at the [edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages] hierarchy level. <p> NOTE: If the specified Packet Forwarding Engine interface is an apfe interface, then all member interfaces of the apfe interface must have mobility sgw 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"> If a Packet Forwarding Engine interface is a member of an apfe interface, then that interface cannot be specified here. For example, if pfe-2/0/0 is a member interface of apfe interface apfe0, then pfe-2/0/0 cannot be directly specified here.
Options	<p>interface-name—Name of the interface representing the Packet Forwarding Engine.</p> <p>Syntax: The interface must be a valid Packet Forwarding Engine interface (apfe or pfe-); for example, apfe0 or pfe-1/0/0.</p>

Required Privilege Level	unified-edge—To view this statement in the configuration. unified-edge-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• pfes• Configuring Interface Redundancy• Configuring Interface DPCs or MPCs for User Mobility Traffic on page 13• Example: Configuring Broadband Gateway Redundancy• show unified-edge ggsn-pgw system interfaces on page 49• show unified-edge sgw system interfaces

interface (Session PIC)

Syntax	[interface <i>interface-name</i>];
Hierarchy Level	[edit unified-edge gateways ggsn-pgw <i>gateway-name</i> system session-pics], [edit unified-edge gateways sgw <i>gateway-name</i> system session-pics]
Release Information	Statement introduced in Junos OS Mobility Release 11.2W. Support at the [edit unified-edge gateways sgw <i>gateway-name</i> system session-pics] hierarchy level introduced in Junos OS Mobility Release 11.4W.
Description	<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"> • The aggregated multiservices interfaces (ams) specified in this statement must already be defined at the [edit interfaces] hierarchy level. • The session PIC must have the jservices-mobile package configured at the [edit chassis fpc <i>slot-number</i> pic <i>pic-number</i> adaptive-services service-package extension-provider] hierarchy level. • If a session PIC interface is a member of an aggregated multiservices interface, then that member interface cannot be specified here. For example, if mams-2/0/0 is a member interface of the aggregated multiservices interface ams0, then ms-2/0/0/ cannot be directly specified here.
Options	<p>interface-name—Name of the interface representing the session PIC.</p> <p>Syntax: The interface must be a valid multiservices interface (ams or ms-a/b/0, where a is the Flexible PIC Concentrator [FPC] slot number and b is the PIC slot number); for example, ams0 or ms-1/0/0.</p>
Required Privilege Level	<p>unified-edge—To view this statement in the configuration.</p> <p>unified-edge-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Anchor Session DPCs and PFEs on page 14 • session-pics • show unified-edge ggsn-pgw system interfaces on page 49 • show unified-edge sgw system interfaces

mobility

Syntax	<pre>mobility { ggsn-pgw; sgw; }</pre>
Hierarchy Level	[edit chassis fpc <i>fpc-slot</i> pfe <i>pfe-id</i> forwarding-packages]
Release Information	Statement introduced in Junos OS Mobility Release 11.2W. sgw statement introduced in Junos OS Mobility Release 11.4W.
Description	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.

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

PART 3

Administration

- [Monitoring on page 25](#)
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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 14](#)

CHAPTER 5

Operational Commands

request unified-edge ggsn-pgw call-trace clear

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

Syntax	request unified-edge ggsn-pgw call-trace show <all completed current> <brief detail>
Release Information	Command introduced in Junos OS Mobility Release 11.2W.
Description	Display the information related to subscriber call tracing on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
Options	<p>none—(Same as brief) Display the information related to subscriber call tracing in brief.</p> <p>all completed current—(Optional) Display the call trace information for the following:</p> <ul style="list-style-type: none"> all—All calls. completed—Completed calls only. current—Call traces that are currently active. <p>brief detail—(Optional) Display the specified level of output.</p>
Required Privilege Level	unified-edge
Related Documentation	<ul style="list-style-type: none"> request unified-edge ggsn-pgw call-trace clear on page 28 request unified-edge ggsn-pgw call-trace start on page 32 request unified-edge ggsn-pgw call-trace stop on page 34
List of Sample Output	request unified-edge ggsn-pgw call-trace show brief on page 30 request unified-edge ggsn-pgw call-trace show detail on page 30
Output Fields	Table 3 on page 29 lists the output fields for the request unified-edge ggsn-pgw call-trace show 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
Status	Status of the call trace: <ul style="list-style-type: none"> done—Call trace complete. not-done—Call trace in progress. duplicate—Another call trace record is present that has the same attributes. 	All levels

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

Field Name	Field Description	Level of Output
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 user@host> request unified-edge ggsn-pgw call-trace show brief
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 user@host> request unified-edge ggsn-pgw call-trace show detail
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

Syntax	request unified-edge ggsn-pgw call-trace start <apn-name <i>name</i> > <fpc-slot <i>slot</i> > <imsi <i>imsi</i> > <msisdn <i>msisdn</i> > <next-call <i>next-call</i> > <pic-slot <i>slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 11.2W.
Description	Start the subscriber call tracing on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
Options	<p>none—Start the subscriber call tracing.</p> <p>apn-name <i>apn-name</i>—(Optional) Start the call tracing for subscribers accessing the specified access point name (APN).</p> <p>fpc-slot <i>slot</i>—(Optional) Start the call tracing for subscribers on the specified FPC slot.</p> <p>imsi <i>imsi</i>—(Optional) Start the call tracing for subscribers with the specified International Mobile Subscriber Identity (IMSI) number.</p> <p>msisdn <i>msisdn</i>—(Optional) Start the call tracing for subscribers with the specified Mobile station ISDN (MSISDN) number.</p> <p>next-call <i>next-call</i>—(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>pic-slot <i>slot</i>—(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>
Required Privilege Level	unified-edge
Related Documentation	<ul style="list-style-type: none"> • request unified-edge ggsn-pgw call-trace clear on page 28 • request unified-edge ggsn-pgw call-trace show on page 29 • request unified-edge ggsn-pgw call-trace stop on page 34
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
Session PIC	Session PIC for which the call trace status is displayed.
Status	Status of the call trace: <ul style="list-style-type: none">• duplicate—Another call trace record is present that has the same attributes.• success—Call trace started successfully.• fail—Call tracing could not be started.

Sample Output

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

request unified-edge ggsn-pgw call-trace stop

Syntax	request unified-edge ggsn-pgw call-trace stop <all> <identifier <i>call-trace-identifier</i> >
Release Information	Command introduced in Junos OS Mobility Release 11.2W.
Description	Stop the previously configured subscriber call tracing on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs).
Options	<p>none—(Same as all) Stop all the subscriber call tracing options.</p> <p>all—(Optional) Stop all the subscriber call tracing operations.</p> <p>identifier <i>identifier</i>—(Optional) Stop the call tracing for the specified call trace identifier.</p>
Required Privilege Level	unified-edge
Related Documentation	<ul style="list-style-type: none"> • request unified-edge ggsn-pgw call-trace clear on page 28 • request unified-edge ggsn-pgw call-trace show on page 29 • request unified-edge ggsn-pgw call-trace start on page 32
List of Sample Output	request unified-edge ggsn-pgw call-trace stop on page 34
Output Fields	Table 5 on page 34 lists the output fields for the request unified-edge ggsn-pgw call-trace stop 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
Session PIC	Session PIC for which the call trace status is displayed.
Status	Status of the call trace: <ul style="list-style-type: none"> • success—Call trace stopped successfully. • fail—Call tracing could not be stopped.

Sample Output

```

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

```

show services flows (Aggregated Multiservices)

Syntax	<pre>show services flows <brief extensive terse> <application-protocol <i>protocol</i>> <count> <destination-port <i>destination-port</i>> <destination-prefix <i>destination-prefix</i>> <interface <i>interface-name</i>> <limit <i>number</i>> <protocol <i>protocol</i>> <service-set <i>service-set</i>> <source-port <i>source-port</i>> <source-prefix <i>source-prefix</i>></pre>
Release Information	<p>Command introduced in Junos OS Release 9.5.</p> <p>Support for aggregated multiservices (AMS) introduced in Junos OS Mobility Release 11.2W.</p>
Description	Display the flow session table entries for the active members of the AMS interface for services applications.
Options	<p>none—Display standard information about all flows.</p> <p>brief extensive terse—(Optional) Display the specified level of output.</p> <p>application-protocol—(Optional) Display information about one of the following application protocols:</p> <ul style="list-style-type: none"> • 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 <p>count—(Optional) Display a count of the total number of flows of the service sets in each member interface of the AMS.</p> <p>destination-port <i>destination-port</i>—(Optional) Display information for the specified destination port. The range is from 0 through 65,535.</p> <p>destination-prefix <i>destination-prefix</i>—(Optional) Display information for the specified destination prefix.</p>

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
List of Sample Output	show services flows interface ams0 on page 37 show services flows count interface ams0 on page 38
Output Fields	Table 6 on page 37 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
Interface	Name of the aggregated multiservices member interface (mams-) and the aggregated multiservices interface (ams) to which it belongs.	All levels
Service set	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
Flow Count	Number of flows in a session.	count only
Flow or Flow Prot	Protocol used for this flow.	All levels
Source	Source prefix of the flow in the format <i>source-prefix:port</i> . For ICMP flows, port information is not displayed.	All levels
Dest	Destination prefix of the flow. For ICMP flows, port information is not displayed.	All levels
State	Status of the flow: <ul style="list-style-type: none"> • Drop—Drop all packets in the flow without response. • Forward—Forward the packet in the flow without looking at it. • Reject—Drop all packets in the flow with response. • Watch—Inspect packets in the flow. 	All levels
Dir	Direction of the flow: input (I) or output (O).	All levels
Frm count	Number of frames in the flow.	All levels
Byte count	Number of bytes in the flow.	extensive
Flow role	Flow role.	extensive
Timeout	Timeout value.	extensive
Flow path	Flow path: symmetric or asymmetric.	extensive

Sample Output

```

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

```

```
show services flows count interface ams0
user@host> show services flows count interface ams0
```

Interface	Service set	Flow count
mams-1/0/0	nap_t_set	38
mams-1/0/0	ssl	0
mams-1/1/0	nap_t_set	36
mams-1/1/0	ssl	0
mams-5/0/0	nap_t_set	18
mams-5/0/0	ssl	0
mams-5/1/0	nap_t_set	34
mams-5/1/0	ssl	0

show unified-edge ggsn-pgw statistics

Syntax	<pre>show unified-edge ggsn-pgw statistics <apn <i>apn</i>> <gateway <i>gateway</i>> <gtpv1-arp <i>gtpv1-arp</i>> <gtpv2-priority-level <i>gtpv2-priority-level</i>> <qci <i>qci</i>></pre>
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	<p>apn <i>apn</i>—(Optional) Display the statistics for the specified APN on one or more GGSNs or P-GWs.</p> <p>gateway <i>gateway</i>—(Optional) Display the statistics for the specified GGSN or P-GW.</p> <p>gtpv1-arp <i>gtpv1-arp</i>—(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.</p> <p>gtpv2-priority-level <i>gtpv2-priority-level</i>—(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.</p> <p>qci <i>qci</i>—(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.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> clear unified-edge ggsn-pgw statistics show unified-edge ggsn-pgw statistics traffic-class
List of Sample Output	show unified-edge ggsn-pgw statistics on page 41
Output Fields	Table 7 on page 39 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
Gateway	Name of the GGSN or P-GW.
Control Plane Statistics	

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

Field Name	Field Description
Session establishment attempts	Number of attempted session establishments.
Successful session establishments	Number of successful session establishments.
MS/peer initiated session deactivations	Number of attempted deactivations initiated by the mobile station (MS) or GPRS tunneling protocol (GTP) peer.
Successful MS/peer initiated deactivations	Number of deactivations initiated by the MS or GTP peer that were successful.
Gateway initiated session deactivations	Number of attempted deactivations initiated by the broadband gateway.
Successful gateway initiated deactivations	Number of deactivations initiated by the broadband gateway that were successful.
Data Plane Global statistics	
Source address violation packets	Number of packets with an incorrect source address.
Source address violation bytes	Number of octets 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
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.

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

Field Name	Field Description
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
Control plane statistics:
  Session establishment attempts:      187501
  Successful session establishments:    187501
  MS/peer initiated session deactivations: 46878
  Successful MS/peer initiated deactivations: 46878
  Gateway initiated session deactivations: 0
  Successful gateway initiated deactivations: 0
Data plane global statistics:
  Source address violation packets:      0
  Source address violation bytes:        0
  Non-existent TEID/TID packets:        0
  GTP length error packets:             0
  Non-existent UE address packets:      0
Data plane GTP statistics (Gn/S5/S8):
  Input packets:      2999505
  Input bytes:        2111435520
  Output packets:     221199
  Output bytes:       14156736
  Discarded packets:  0
Data plane GTP statistics (Gi):
  Input packets:      221199
  Input bytes:        14156736
  Output packets:     2999505
  Output bytes:       2111435520
  Discarded packets:  0

```

show unified-edge ggsn-pgw status

Syntax `show unified-edge ggsn-pgw status`
`<apn-name apn-name>`
`<brief | detail>`
`<fpc-slot fpc-slot>`
`<gateway gateway>`
`<gtpv1-arp gtpv1-arp>`
`<gtpv2-priority-level gtpv2-priority-level>`
`<pic-slot pic-slot>`
`<pdn-type>`
`<qci qci>`
`<rat-type (eutan | gan | geran | hspa | others | utran | wlan)>`
`<traffic-class (background | conversational | interactive | streaming)>`

Release Information Command introduced in Junos OS Mobility Release 11.2W. **extensive** and **pdn-type** 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 (*eutran | gan | geran | hspa | others | utran | wlan*)—(Optional) Display the status information for the specified Radio Access Technology (RAT).

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 47](#)
- [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 44](#)
[show unified-edge ggsn-pgw status detail on page 44](#)
[show unified-edge ggsn-pgw status detail on page 45](#)
[show unified-edge ggsn-pgw status extensive on page 45](#)
[show unified-edge ggsn-pgw status pdn-type detail on page 45](#)

Output Fields

[Table 8 on page 43](#) 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
PIC SLOT	PIC slot number of the FPC for which the status information is displayed.	detail
State	State of the services or session PIC on the GGSN or P-GW: <ul style="list-style-type: none"> • Standalone • Active—PIC is an active member. • Backup—PIC is a backup. 	detail
Type	Indicates whether the PIC is a session PIC or a services PIC.	detail
Active Subscribers	Number of active subscribers.	All levels none
Active Subscribers (with services)	Number of active subscribers who are using subscriber-aware services and who are anchored on a services PIC.	
Active Sessions	Number of active sessions.	All levels none

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

Field Name	Field Description	Level of Output
Active Bearers	Number of active bearers or Packet Data Protocol (PDP) contexts.	All levels none
CPU Load (%)	Percentage of the CPU load.	All levels none
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

Sample Output

```

show unified-edge ggsn-pgw status user@host> show unified-edge ggsn-pgw status
Gateway: PGW
Active Subscribers           :           3
Active Subscribers (with services) :           0
Active Sessions              :           3
Active Bearers               :           3
CPU Load (%)                 :           0
Memory Load (%)              :          55

show unified-edge ggsn-pgw status detail user@host> show unified-edge ggsn-pgw status detail
Gateway: PGW
FPC SLOT: 4    PIC SLOT: 0
State          : Standalone
Type           : Session-PIC
Active Subscribers :           3
Active Sessions  :           3
Active Bearers   :           3
CPU Load (%)    :           0
Memory Load (%) :          55
FPC SLOT: 4    PIC SLOT: 1
State          : Standalone
Type           : Session-PIC
Active Subscribers :           0
Active Sessions  :           0
Active Bearers   :           0

```



```

CPU Load (%)           : 0
Memory Load (%)        : 55

```

```

show unified-edge user@host> show unified-edge ggsn-pgw status detail
ggsn-pgw status detail Gateway: PGW
FPC SLOT: 4    PIC SLOT: 0
State          : Standalone
Type           : Session-PIC
Active Subscribers : 3
Active Sessions : 3
Active Bearers   : 3
CPU Load (%)    : 0
Memory Load (%) : 55
FPC SLOT: 4    PIC SLOT: 1
State          : Standalone
Type           : Session-PIC
Active Subscribers : 0
Active Sessions : 0
Active Bearers   : 0
CPU Load (%)    : 0
Memory Load (%) : 55

```

```

show unified-edge user@host> show unified-edge ggsn-pgw status extensive
ggsn-pgw status extensive Gateway: PGW
FPC SLOT: 1    PIC SLOT: 0
State          : Active
Type           : Service-PIC
Active Subscribers : 0
Active Sessions : 0
CPU Load (%)    : 0
Memory Load (%) : 22
Connections to Session PICs :
ms-2/0

FPC SLOT: 2    PIC SLOT: 0
State          : Active
Type           : Session-PIC
Active Subscribers : 0
Active Sessions : 0
Active Bearers   : 0
CPU Load (%)    : 0
Memory Load (%) : 29

```

```

show unified-edge user@host> show unified-edge ggsn-pgw status pdn-type detail
ggsn-pgw status pdn-type detail Gateway: PGW
FPC SLOT: 4    PIC SLOT: 0
State          : Standalone
Type           : Session-PIC
IPv4 Active Sessions : 3
IPv6 Active Sessions : 0
IPv4-v6 Active Sessions : 0
FPC SLOT: 4    PIC SLOT: 1
State          : Standalone
Type           : Session-PIC

```

IPv4 Active Sessions	:	0
IPv6 Active Sessions	:	0
IPv4-v6 Active Sessions	:	0

show unified-edge ggsn-pgw status gtp-peer

Syntax	<code>show unified-edge ggsn-pgw status gtp-peer remote-address <i>remote-address</i></code> <code><fpc-slot <i>fpc-slot</i>></code> <code><gateway <i>gateway</i>></code> <code><local-address <i>local-address</i>></code> <code><pic-slot <i>pic-slot</i>></code> <code><routing-instance <i>name</i>></code>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	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.
Options	<p>remote-address <i>remote-address</i>—Display the information for the GTP peer with the specified remote address.</p> <p>fpc-slot <i>fpc-slot</i>—(Optional) Display the information for the specified FPC slot number pertaining to the session PIC.</p> <p>gateway <i>gateway</i>—(Optional) Display the information for the specified GGSN or P-GW.</p> <p>local-address <i>local-address</i>—(Optional) Display the information for the local address of the specified peer on the gateway.</p> <p>pic-slot <i>pic-slot</i>—(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>routing-instance <i>routing-instance</i>—(Optional) Display the information for the peer on the specified routing instance ID.</p>
Required Privilege Level	unified-edge, view
Related Documentation	<ul style="list-style-type: none"> show unified-edge ggsn-pgw status on page 42
List of Sample Output	show unified-edge ggsn-pgw status gtp-peer remote-address 200.6.1.2 on page 48
Output Fields	Table 9 on page 47 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.
FPC-slot/PIC-slot	FPC and PIC slot numbers of the aggregated Packet Forwarding Engine interface for which the information is displayed.

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

Field Name	Field Description
Number of bearers	Number of bearers on the corresponding FCP and PIC slot.

Sample Output

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

show unified-edge ggsn-pgw system interfaces

Syntax	show unified-edge ggsn-pgw system interfaces <gateway gateway>
Release Information	Command introduced in Junos OS Mobility Release 11.2W. gateway option introduced in Junos OS Mobility Release 11.4W.
Description	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.
Options	none —Display information for one or more GGSNs and P-GWs. gateway gateway-name —(Optional) Display information for the specified gateway.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show interfaces anchor-group (Aggregated Packet Forwarding Engine) • show interfaces load-balancing (Aggregated Multiservices) • show unified-edge ggsn-pgw resource-manager clients • show unified-edge ggsn-pgw system interfaces service-mode
List of Sample Output	show unified-edge ggsn-pgw system interfaces on page 50
Output Fields	Table 10 on page 49 lists the output fields for the show unified-edge ggsn-pgw system interfaces 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
Gateway	Name of the GGSN or P-GW.
Interfaces	Name of the interface: <ul style="list-style-type: none"> • Aggregated multiservices; for example, ams0 • Aggregated Packet Forwarding Engine; for example, apfe1 • Member of aggregated multiservices; for example, mams-1/0/0 • Multiservices; for example, ms-1/0/0 • Packet Forwarding Engine; for example, pfe-0/1/0
Members	For ams and apfe interfaces, the member interfaces that are part of the aggregated interfaces are displayed.
Operational State	Indicates whether the interface is operational (Active) or not (Inactive).

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

Field Name	Field Description
Redundancy Role	Redundancy state in which the interface is configured: <ul style="list-style-type: none"> • Primary—The interface is a primary member. • Secondary—The interface is a backup to all the primary members. • Standalone—The interface has not been configured for redundancy.

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

```

PART 4

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