



MobileNext Broadband Gateway

Serving Gateway



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MobileNext Broadband Gateway Serving Gateway

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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.

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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: <code>[edit]</code> <code>root@# set system domain-name <i>domain-name</i></code>
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 <code>[edit protocols ospf area area-id]</code> hierarchy level. The console port is labeled CONSOLE.
< > (angle brackets)	Enclose optional keywords or variables.	<code>stub <default-metric <i>metric</i>>;</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</i> <i>string2</i> <i>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 <i>address</i> ; 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/> .
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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

- [Serving Gateway Overview on page 3](#)

CHAPTER 1

Serving Gateway Overview

- [MobileNext Broadband Gateway Configuration Overview on page 3](#)
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Standalone S-GW User Plane Packet Flow on page 8](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
- [Overview of Collocated Gateways: User Plane on page 10](#)

MobileNext Broadband Gateway Configuration Overview

The MobileNext Broadband Gateway offers flexible configuration to best service mobile subscribers. Different users can utilize the same broadband gateway chassis as a Packet Data Network Gateway (P-GW), a Service Gateway (S-GW), or both.

Figure 1: Collocated Gateways S-GW and P-GW Resources and Load Balancing

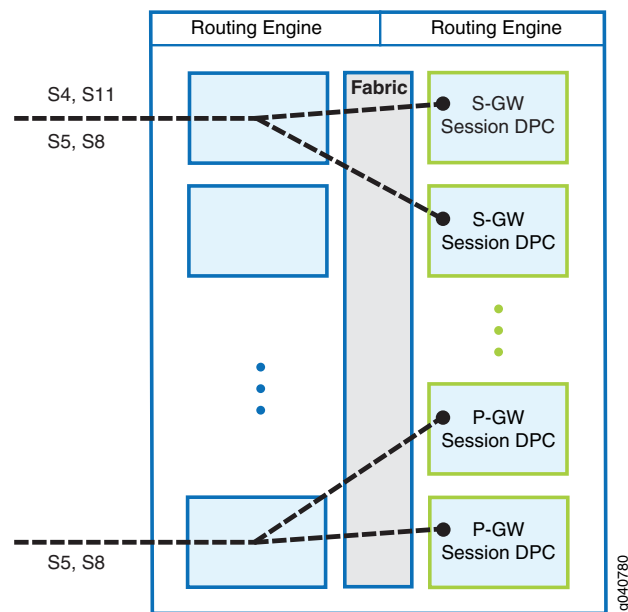


Figure 1 on page 3 shows how resource sharing and load balancing takes place in a collocated S-GW and P-GW configured on the broadband gateway. No matter how the

broadband gateway is utilized, the chassis configuration for Modular Port Concentrators (MPCs), Dense Port Concentrators (DPCs), anchors, and session and services DPCs is the same. This topic concerns functional configuration of the installed and configured hardware.

The session DPCs are dedicated (and load balanced) for P-GW and S-GW functions. Resources are not shared between S-GW and P-GW session DPCs. The resources of each DPC are dedicated to either one function or the other.



NOTE: You can only configure a session DPC to support the S-GW or the P-GW function. A DPC cannot be configured as part of both at the same time. If you try to configure the chassis this way, the commit operation will fail.

You can configure the broadband gateway so that separate mobile subscribers see the gateway as one of the following:

- P-GW
- S-GW
- Collocated P-GW and S-GW



NOTE: You can also configure multiple collocated P-GWs and S-GWs on the same chassis.

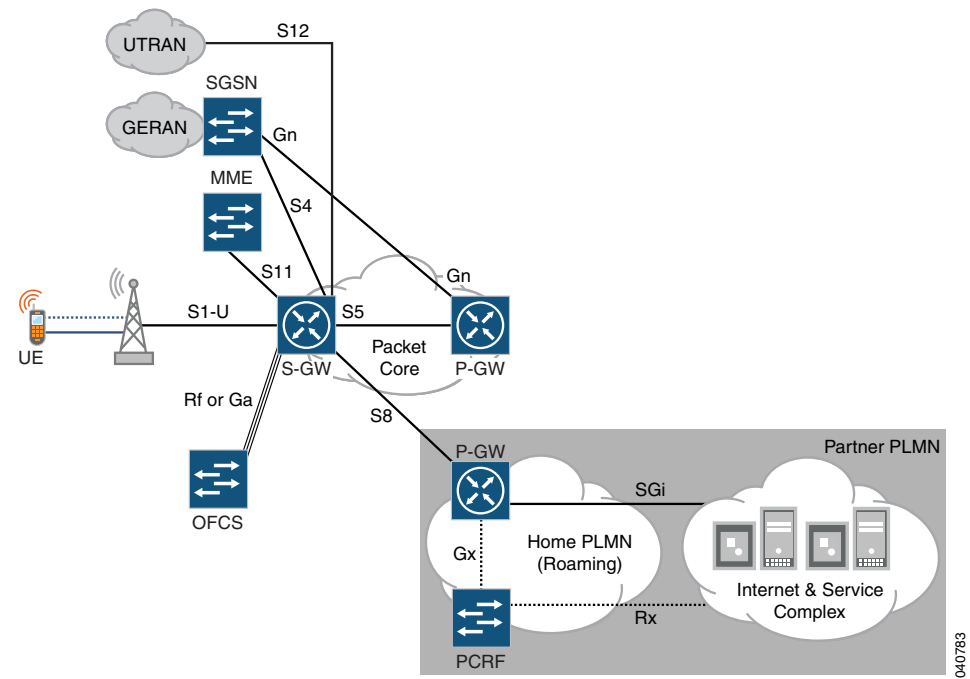
You assign various mobile subscribers to their respective gateways, packet networks, and mobile services.

Related Documentation

- Overview of Broadband Gateway System Architecture
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
- [Overview of Collocated Gateways: User Plane on page 10](#)
- [Configuring an S-GW on a Broadband Gateway on page 15](#)
- [Configuring S-GW-Specific Profiles on page 17](#)
- [Configuring S-GW Traceoptions on page 123](#)

The S-GW includes features that facilitate connection to the radio or mobile device side of the mobile network. Many of these functions involve maintaining the end-to-end connectivity between user equipment on the Radio Access Network (RAN) and gateway to IP-based services in the Packet Data Network (PDN) in an environment where users are constantly moving around. The key S-GW interfaces are shown in [Figure 2 on page 5](#).

Figure 2: S-GW Interfaces on the Broadband Gateway



- Control interfaces between S-GW and SGSN (S4 interface), S-GW and P-GW (S5) and S-GW and Mobility Management Entity (MME) (S11)
- Data interfaces between S-GW and eNodeB (S1-U interface), S-GW and SGSN (S4), S-GW and P-GW, local and roaming (S5/S8), and RNC (S12)
- Support for S-GW Charging Data Records (CDRs)
- Idle mode signaling reduction
- Support for 2G and 3G access



NOTE: There is no support for the S101, S103, or GXc interfaces on the broadband gateway.

A key function of the broadband gateway S-GW is buffering and idle mode handling. When a downlink packet for an idle user device arrives, the S-GW buffers the packet and initiates paging toward to MME/SGSN on the S11 or S4 interface. When the user device moves to active mode, the packet is delivered.

Also, the broadband gateway S-GW uses indirect data forwarding during handover to make sure that uplink or downlink data is not dropped. The S-GW forwards the data and an end marker through indirect data tunnels, and sends end marker packets to ensure in-order data delivery.

The fundamental interface of the S-GW is the S1 interface. The X2 interface is related, but X2 is not configured on the S-GW because the X2 interface connects one eNodeB to another. The S1 interface connects an eNodeB to Evolved Packet Core (EPC), in particular, the S-GW. Both the X2 and S1 interfaces are IP-based and include separate user plane and control plane protocol stacks. Application protocols define the signalling messages and procedures sent across the X2 and S1 interfaces.

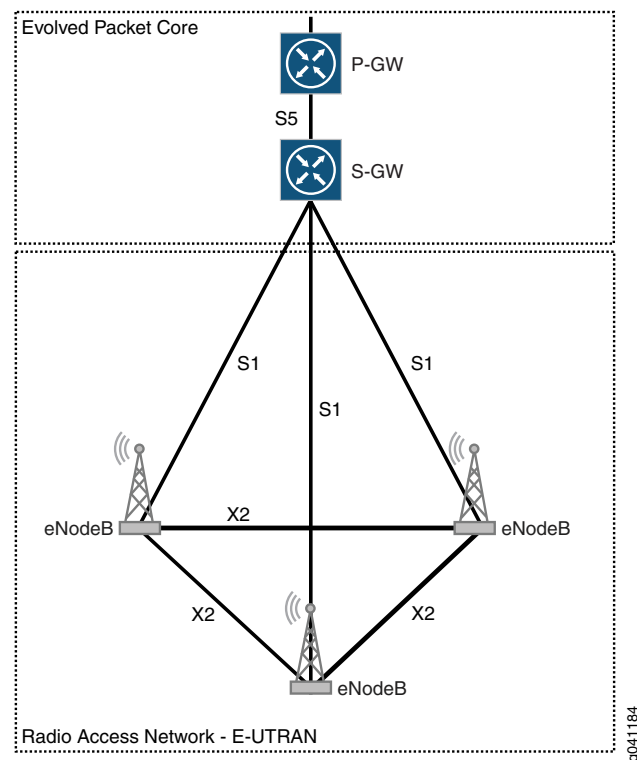
The S1 control plane runs between an eNodeB and a Mobility Management Entity (MME) and is called the S1-MME. Do not confuse the S1-MME (eNodeB-MME interface) with the S11 (S-GW-MME) interface, which carries GPRS tunneling protocol control (GTP-C) messages. On the other hand, the S1 user plane runs between the eNodeB and the S-GW and is called the S1-U interface and carries GTP user (GTP-U) payloads.

When the broadband gateway is configured as an S-GW, the S-GW provides the following hand-over capabilities:

- S1 interface (eNodeB to MME) hand-over with S-GW relocation
- S1 interface (eNodeB to MME) hand-over *without* S-GW relocation
- End marker packet support to downlink eNodeB when a path switch is made from the old eNodeB
- Indirect forwarding tunnels when there is no user plane available between source eNodeB and target eNodeB (or RNC)
- X2 interface (eNodeB to eNodeB) hand-over with S-GW relocation
- X2 interface (eNodeB to eNodeB) hand-over *without* S-GW relocation

Figure 3 on page 7 shows the relationship between the S1 and X2 interfaces.

Figure 3: S-GW and the S1 and X2 Interfaces



Related Documentation

- Overview of Broadband Gateway System Architecture
- [Overview of Standalone S-GW User Plane Packet Flow on page 8](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
- [Overview of Collocated Gateways: User Plane on page 10](#)
- [MobileNext Broadband Gateway Configuration Overview on page 3](#)
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- [Configuring S-GW Traceoptions on page 123](#)

Overview of Standalone S-GW User Plane Packet Flow

The architecture of the MobileNext Broadband Gateway, when configured as a Serving Gateway (S-GW) allows GPRS tunneling protocol (GTP) packets to pass efficiently from input to output interface.

Figure 4: GTP-U Packet Flow Through Standalone S-GW

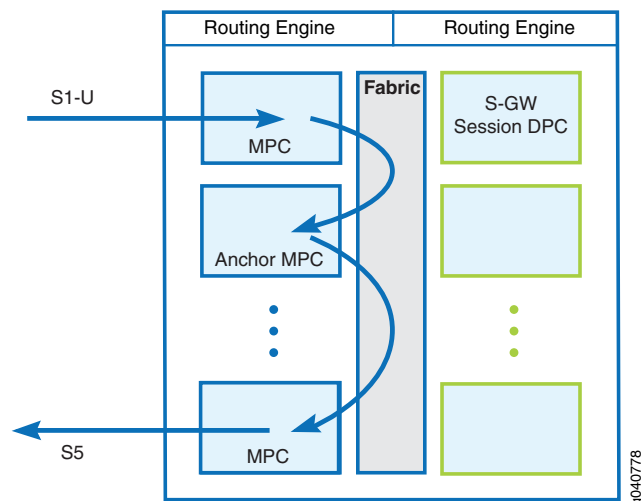


Figure 4 on page 8 shows the usual path of user packets (GTP-U) from eNodeB radio network (S1-U) to P-GW (S5) interfaces. Note that the user packet passes through the S-GW anchor Modular Port Concentrator (MPC) for that particular bearer. They do not flow through a service Packet Forwarding Engine unless absolutely necessary.

For user packet flows, the anchor MPC provides:

- Line rate GTP packet processing
- Stitching together of packet streams and packet forwarding
- Extremely low latency
- Hardware-based quality of service (QoS)
- Traffic counters and charging information

When necessary, the services Packet Forwarding Engine provides the following for the user packet flow:

- IP Security (IPsec)
- Internet Key Exchange (IKE)



NOTE: The broadband gateway can have other services Packet Forwarding Engines that are not associated with the S-GW.

Related Documentation

- Overview of Broadband Gateway System Architecture
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
- [Overview of Collocated Gateways: User Plane on page 10](#)
- [MobileNext Broadband Gateway Configuration Overview on page 3](#)
- [Configuring an S-GW on a Broadband Gateway on page 15](#)
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- [Configuring S-GW Traceoptions on page 123](#)

Overview of Collocated Gateways: Control Plane

You can configure the MobileNext Broadband Gateway as a collocated Serving Gateway (S-GW) and Packet Data Network Gateway (P-GW). GPRS Tunneling Protocol, control (GTP-C) packets pass through their respective session Dense Port Concentrators (DPCs).

Figure 5: Collocated S-GW and P-GW Control Packet Flow

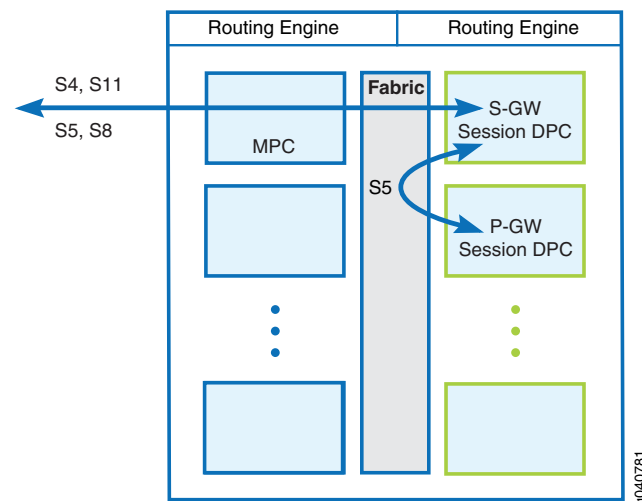


Figure 5 on page 9 shows the path of GTP-C packets through the broadband gateway when configured as a collocated S-GW and P-GW.

The Routing Engine(s) provide:

- Chassis management
- Storage of Charging Data Records (CDRs)
- A point for operations and management

The interface Modular Port Concentrators (MPCs) provide load balancing of the control plane packets and form a single network element.

The session DPCs constitute the mobility control plane and provide seamless 2G, 3G, or 4G subscriber management and multiple functions on the same card.

The control plane also handles all control functions such as GTP-C processing, charging using GTP-prime, Dynamic Host Configuration Protocol (DHCP) functions, and Authentication, Authorization, and Accounting (AAA) functions.

Related Documentation

- Overview of Broadband Gateway System Architecture
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Standalone S-GW User Plane Packet Flow on page 8](#)
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Overview of Collocated Gateways: User Plane

You can configure the MobileNext Broadband Gateway as a collocated Serving Gateway (S-GW) and Packet Data Network Gateway (P-GW). All GPRS tunneling protocol (GTP) packets pass efficiently from input to output interface through their respective anchor Modular Port Concentrators (MPCs).

Figure 6: Collocated S-GW and P-GW User Packet Flow

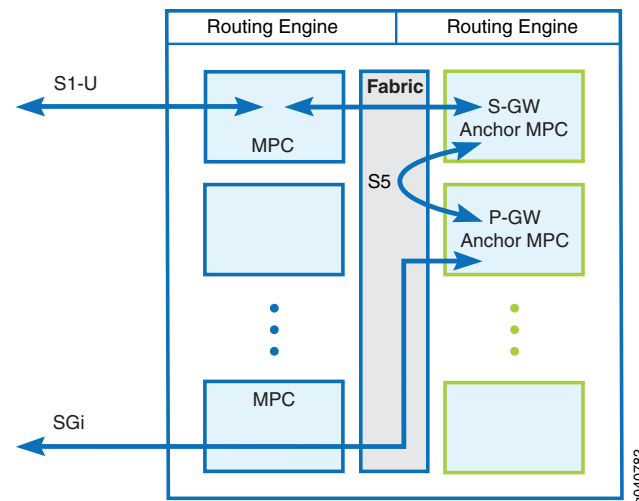


Figure 6 on page 10 shows a collocated P-GW and S-GW in the same broadband gateway. The usual path of user packets from eNodeB radio network (S1-U) to internal S5 interface to SGi interface is shown. Note that the user packet passes through the S-GW and P-GW anchor Modular Port Concentrators (MPCs) for a particular bearer, but the packets do not flow through a services Packet Forwarding Engine unless absolutely necessary.

For user packet flows, the anchor MPC provides:

- Line rate GTP packet processing
- Stitching together of packet streams and packet forwarding
- Extremely low latency
- Hardware-based quality of service (QoS)
- Traffic counters and charging information

When necessary, the services Packet Forwarding Engine provides the following for the user packet flow:

- IP Security (IPsec)
- Internet Key Exchange version 2 (IKEv2)
- Network Address Translation (NAT) and forwarding
- Deep Packet Inspection (DPI)



NOTE: The broadband gateway can have other services PFEs that are not associated with the S-GW or P-GW.

**Related
Documentation**

- Overview of Broadband Gateway System Architecture
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Standalone S-GW User Plane Packet Flow on page 8](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
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PART 2

Configuration

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- [Configuration Examples on page 21](#)
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CHAPTER 2

Serving Gateway Configuration Overview

- [Configuring an S-GW on a Broadband Gateway on page 15](#)

Configuring an S-GW on a Broadband Gateway

The MobileNext Broadband Gateway establishes a context and framework for mobile operations under the unified edge. The basic mobile framework unit is the gateway, which can be used as a Serving Gateway (S-GW). The S-GW also has one or more home public land mobile networks (HPLMNs) associated with it.

Before you begin configuring an S-GW on the broadband gateway, you should have done the following:

- Configured access to the MobileNext Broadband Gateway

To establish the mobile context for the S-GW, you name the gateway, configure a list of HPLMNs, and set various other parameters. The HPLMNs consist of the mobile country code (MCC) and mobile network code (MNC).

To configure the gateway and related parameters:

1. Configure a name for the gateway.

```
[edit unified-edge gateways sgw ]
user@host# set MGB-SGW1
```



NOTE: You can include dashes or underscores, up to 63 characters, but many special characters are not allowed in the gateway name.

2. Configure a list of HPLMNs for the gateway.

```
[edit unified-edge gateways sgw MBG-SGW1]
user@host# set home-plmn mcc 001 mnc 01
```



NOTE: The MMC/MNC combination 00101 is reserved for test networks.

3. (Option) Set idle mode buffering expiration timer on the gateway.

```
[edit unified-edge gateways sgw MBG-SGW1]
```

```
user@host# set idle-mode-buffering expire-timer 60
```



NOTE: By default, idle mode buffering is enabled. You can set the expiration timer to any value from 30 through 300 seconds. If you disable idle-mode buffering, the 1G memory is used for subscriber management.

4. (Option) Enable remote delete on peer failure on the gateway.

```
[edit unified-edge gateways sgw MBG-SGW1 ]
user@host# set remote-delete-on-peer-fail
```



NOTE: By default, the S-GW will not delete peers on failure.

5. (Option) Configure the maximum bearers allowed on the gateway.

```
[edit unified-edge gateways sgw MBG-SGW1 ]
user@host# set maximum-bearers 500000
```



NOTE: By default, the S-GW supports 12,000,000 bearers. You can set any value from 100000 through 12000000.

6. (Option) Enable preemption on the gateway to allow some bearers to pre-empt others.

```
[edit unified-edge gateways sgw MBG-SGW1 ]
user@host# set preemption enable
```



NOTE: By default, the S-GW does not perform preemption.

Related Documentation

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Configuration Tasks for Serving Gateway

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- [Configuring S-GW-Specific CAC Parameters on page 18](#)

Configuring S-GW-Specific Profiles

The MobileNext Broadband Gateway Serving Gateway (S-GW) uses two profile statements. This topic shows how to configure the profile statements that are unique to the S-GW configuration.

Before you begin configuring S-GW profiles on the broadband gateway, you should have done the following:

- Configured the chassis of the MobileNext Broadband Gateway
- Configured the interfaces used by the MobileNext Broadband Gateway
- Configured the IP reassembly parameters and local policy profiles referenced by the S-GW configuration

To establish the IP reassembly and local policy profiles for the S-GW, you apply the profile to the S-GW. The use of these profiles is optional.

To configure profiles for the S-GW:

1. Optionally, configure the S-GW IP reassembly profile.

```
[edit unified-edge gateways sgw MBG-SGW1]  
user@host# set ip-reassembly-profile ip-reassembly--one
```



NOTE: The IP reassembly parameters such as `timeout` are configure for the profile at the `[edit services ip-reassembly]` hierarchy level.

2. Optionally, configure the S-GW local policy profile.

```
[edit unified-edge gateways sgw MBG-SGW1]  
user@host# set local-policy-profile local-profile-1
```



NOTE: The local policy profile parameters must already be configured at the [edit unified-edge] hierarchy level. Only the classifier-profile and resource-threshold-profiles are supported on the S-GW.

**Related
Documentation**

- Overview of Broadband Gateway System Architecture
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Standalone S-GW User Plane Packet Flow on page 8](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
- [Overview of Collocated Gateways: User Plane on page 10](#)
- [Configuring an S-GW on a Broadband Gateway on page 15](#)
- [Configuring S-GW Traceoptions on page 123](#)

Configuring S-GW-Specific CAC Parameters

The MobileNext Broadband Gateway Serving Gateway (S-GW) uses three statements unique to the S-GW for connection admission control (CAC). This topic shows how to configure the CAC statements that are unique to the S-GW.

Before you begin configuring a S-GW CAC parameters on the broadband gateway, you should have done the following:

- Configured the chassis of the MobileNext Broadband Gateway
- Configured the interfaces used by the MobileNext Broadband Gateway

To establish the CAC parameters unique to the S-GW, you can establish values for the default bearers as a percentage of anchor PFEs, the guaranteed bandwidth of the anchor PFEs, and maximum number of bearers for the anchor PFE. The use of all three statements is optional and all have default values.

To configure the S-GW CAC parameters:

1. Optionally, configure the S-GW anchor PFE default bearer percentage.

```
[edit unified-edge gateways sgw MBG-SGW1]  
user@host# set anchor-pfe-default-bearers-percentage 50
```



NOTE: You can use any value from 10 through 100 percent.

2. Optionally, configure the S-GW anchor PFE guaranteed bandwidth.

```
[edit unified-edge gateways sgw MBG-SGW1]  
user@host# set anchor-pfe-guaranteed-bandwidth 10
```



NOTE: You can use any value from 10 through 100 Gigibits per second.

3. Optionally, configure the S-GW anchor PFE maximum bearers.

```
[edit unified-edge gateways sgw MBG-SGW1]  
user@host# set anchor-pfe-maximum-bearers 200
```



NOTE: You can use any value from 100 through 512 thousand bearers.

Related Documentation

- [Quality of Service Overview](#)
- [Call Admission Control Overview](#)
- [Example: Configuring QoS and CAC on a S-GW on page 27](#)

CHAPTER 4

Configuration Examples

- [Example: Configuring a Standalone S-GW on page 21](#)
- [Example: Configuring QoS and CAC on a S-GW on page 27](#)
- [Example: Configuring a Collocated P-GW and S-GW on page 32](#)
- [Example: Configuring a Multigateway P-GW and S-GW on page 43](#)

Example: Configuring a Standalone S-GW

This example describes how to configure the MobileNext Broadband Gateway as a standalone Serving Gateway (S-GW). The emphasis is on S-GW configuration, and does not include many other parameters that a full device configuration requires.

- [Requirements on page 21](#)
- [Overview on page 21](#)
- [Configuration on page 22](#)
- [Verification on page 26](#)

Requirements

This example uses the following hardware and software components:

- Junos OS Release 11.4W
- Juniper Networks MobileNext Broadband Gateway

Overview

This example describes how to configure the broadband gateway as a standalone S-GW (SGW-MBG1). The S-GW supports the following configuration:

- The S1-U data, S5, and S11 control interface are in the main routing instance.
- The anchor Packet Forwarding Engine is **pfe-1/0/0** and the anchor services PIC is **ms-5/0/0**.
- The S1-U interface uses **ge-0/0/0** and has IP address **10.44.0.1/16**
- The S5 interface uses **ge-0/0/1** and has IP address **10.5.0.1/16**
- The S11 interface uses **ge-0/0/2** and has IP address **10.2.2.1/16**

Configuration

- [Configuring the Chassis on page 22](#)
- [Configuring the IPv4 Interfaces on page 23](#)
- [Configuring Offline Charging on page 24](#)
- [Configuring System Anchors on page 25](#)
- [Configuring GTP Services on page 26](#)

Configuring the Chassis

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
load merge /etc/config/mobility-defaults.conf
set chassis fpc 1 pic 0 apply-groups mobility
set chassis fpc 1 forwarding-packages mobility sgw
set interfaces ms-5/0/0 unit 0 family inet address 10.4.1.1/32
set interfaces ge-0/0/0 unit 0 family inet address 10.44.0.1/16
set interfaces ge-0/0/1 unit 0 family inet address 10.5.0.1/16
set interfaces ge-0/0/2 unit 0 family inet address 10.2.2.0.1/16
set interfaces lo0 unit 0 family inet address 10.10.10.1/32
set interfaces lo0 unit 0 family inet address 127.0.0.1/32
set interfaces lo0 unit 0 family inet address 10.255.0.28/32 primary
```



NOTE: This configuration is for the S-GW only. Other statements are needed to make this a complete device configuration.

Step-by-Step Procedure

To configure the chassis:

1. Load and merge the default configuration file for the **mobility** group.

```
[edit]
user@sgw1# load merge /etc/config/mobility-defaults.conf
```

2. Configure the **mobility** group on the session DPC.

```
[edit]
user@sgw1# set chassis fpc 1 pic 0 apply-groups mobility
```



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

3. Configure the interface DPC or MPC at the FPC level.

```
[edit]
user@sgw1# set chassis fpc 1 forwarding-packages mobility ggsn-pgw
```



NOTE: 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.

4. Configure the Multiservices PIC interface.

```
[edit]
user@sgw1# set interfaces ms-5/0/0 unit 0 family inet address 10.10.10.1/32
```

5. Configure loopback interfaces.

```
[edit]
user@sgw1# set interfaces lo0 unit 0 family inet address 10.10.10.1/32
user@sgw1# set interfaces lo0 unit 0 family inet address 127.0.0.1/32
user@sgw1# set interfaces lo0 unit 0 family inet address 10.255.0.28/32 primary
```

Configuring the IPv4 Interfaces

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-0/0/0 unit 0 family inet address 10.44.0.1/16 description S1-U interface
set interfaces ge-0/0/1 unit 0 family inet address 10.5.0.1/16 description S5 interface
set interfaces ge-0/0/2 unit 0 family inet address 10.2.2.1/16 description S11 interface
```

Step-by-Step Procedure

To configure the IPv4 interfaces:

1. Configure IPv4 interfaces for the S1-U interface.

```
[edit]
user@sgw1# set interfaces ge-0/0/0 unit 0 family inet address 10.44.0.1/16
description S1-U interface
```

2. Configure IPv4 interfaces for the S5 interface.

```
[edit]
user@sgw1# set interfaces ge-0/0/1 unit 0 family inet address 10.5.0.1/16 description
S5 interface
```

3. Configure IPv4 interfaces for the S11 interface.

```
[edit]
user@sgw1# set interfaces ge-0/0/2 unit 0 family inet address 10.2.2.1/16 description
S11 interface
```

Configuring Offline Charging

CLI Quick Configuration	To quickly configure this example, copy the following commands and paste them into the router terminal window:
	<pre>[edit] set unified-edge gateways sgw SGW-MBG1 idle-mode-buffering set unified-edge gateways sgw SGW-MBG1 charging trigger-profiles s_tp offline volume-limit 1024 set unified-edge gateways sgw SGW-MBG1 charging trigger-profiles s_tp offline volume-limit direction both set unified-edge gateways sgw SGW-MBG1 charging transport-profiles p_tsp offline charging-gateways cdr-release r8 set unified-edge gateways sgw SGW-MBG1 charging transport-profiles p_tsp offline charging-gateways peer-order peer p_cfg set unified-edge gateways sgw SGW-MBG1 charging transport-profiles p_tsp offline charging-gateways switch-back-time 36 set unified-edge gateways sgw SGW-MBG1 charging charging-profiles p_juniper profile-id 1 set unified-edge gateways sgw SGW-MBG1 charging charging-profiles p_juniper transport-profile p_tsp set unified-edge gateways sgw SGW-MBG1 charging charging-profiles p_juniper trigger-profile s_tp set unified-edge gateways sgw SGW-MBG1 charging gtp transport-protocol tcp set unified-edge gateways sgw SGW-MBG1 charging gtp version v0 set unified-edge gateways sgw SGW-MBG1 charging gtp header-type long set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg destination-ipv4-address 10.42.0.2 set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg source-interface ms-5/0/0,0 set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg source-interface ipv4-address 10.10.10.1 set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg destination-port 3386 set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg transport-protocol tcp set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg n3-requests 1 set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg t3-response 3 set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg header-type long set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg pending-queue-size 1000 set unified-edge gateways sgw SGW-MBG1 charging global-profile default-profile p_juniper set unified-edge gateways sgw SGW-MBG1 charging global-profile profile-selection-order static</pre>

Step-by-Step Procedure	To configure the offline charging profile:
	<ol style="list-style-type: none"> 1. Configure charging for the S-GW called SGW-MBG1. <pre>[edit] user@sgw1# edit unified-edge gateways sgw SGW-MBG1 charging</pre> 2. Specify the global GTP Prime properties to transmit CDRs to the external charging gateway. <pre>[edit unified-edge gateways sgw SGW-MBG1 charging] user@sgw1# set gtp transport-protocol tcp</pre>

- ```

user@sgw1# set gtp version v0
user@sgw1# set gtp header-type long

```
- Specify the GTP Prime properties for the GTP Prime peers.
 

```

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@sgw1# set gtp peer p_cgf destination-ipv4-address 10.42.0.2
user@sgw1# set gtp peer p_cgf source-interface ms-5/0/0.0
user@sgw1# set gtp peer p_cgf source-interface ipv4-address 10.10.10.1
user@sgw1# set gtp peer p_cgf destination-port 3386
user@sgw1# set gtp peer p_cgf transport-protocol tcp
user@sgw1# set gtp peer p_cgf n3-requests 1
user@sgw1# set gtp peer p_cgf t3-response 3
user@sgw1# set gtp peer p_cgf header-type long
user@sgw1# set gtp peer p_cgf pending-queue-size 1000

```
  - Configure idle-mode buffering for the S-GW.
 

```

[edit unified-edge gateways sgw SGW-MBG1]
user@sgw1# set idle-mode-buffering

```
  - Configure the transport, trigger, and global profiles referenced by the charging profile for offline charging.
 

```

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@sgw1# set transport-profiles p_tsp offline charging-gateways cdr-release r8
user@sgw1# set transport-profiles p_tsp offline charging-gateways peer-order peer
p_cgf
user@sgw1# set transport-profiles p_tsp offline charging-gateways peer-order peer
p_cfg
user@sgw1# set transport-profiles p_tsp offline charging-gateways switch-back-time
36
user@sgw1# set trigger-profiles s_tp offline volume-limit 1024
user@sgw1# set trigger-profiles s_tp offline volume-limit direction both

```
  - Configure the charging profiles.
 

```

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@sgw1# set charging-profiles p_juniper profile-id 1
user@sgw1# set charging-profiles p_juniper transport-profile p_cfg
user@sgw1# set charging-profiles p_juniper trigger-profile s_tp

```

### Configuring System Anchors

**CLI Quick Configuration** To quickly configure this example, copy the following commands and paste them into the router terminal window:

```

[edit]
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-1/0/0
set unified-edge gateways sgw SGW-MBG1 system anchor-spics interface ms-5/0/0

```

**Step-by-Step Procedure** To configure the anchor Packet Forwarding Engine and services PIC:

- Configure the anchor Packet Forwarding Engine.
 

```

[edit unified-edge gateways sgw SGW-MBG1 system]
user@sgw1# set anchor-pfes interface pfe-1/0/0

```
- Configure the anchor services PIC.

```
[edit unified-edge gateways sgw SGW-MBG1 system]
user@sgw1# set anchor-spics interface ms-5/0/0
```

### Configuring GTP Services

**CLI Quick Configuration** To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways sgw SGW-MBG1 gtp interface lo0.0
set unified-edge gateways sgw SGW-MBG1 gtp interface v4-address 10.10.10.1
set unified-edge gateways sgw SGW-MBG1 gtp path-management disable
set unified-edge gateways sgw SGW-MBG1 gtp control path-management disable
set unified-edge gateways sgw SGW-MBG1 gtp data path-management disable
set unified-edge gateways sgw SGW-MBG1 gtp s1u echo-interval 60
set unified-edge gateways sgw SGW-MBG1 gtp s5 echo-n3-requests 5
set unified-edge gateways sgw SGW-MBG1 gtp s5 echo-t3-response 60
set unified-edge gateways sgw SGW-MBG1 gtp s5 echo-interval 60
set unified-edge gateways sgw SGW-MBG1 gtp s11 echo-n3-requests 5
set unified-edge gateways sgw SGW-MBG1 gtp s11 echo-t3-response 60
```

**Step-by-Step Procedure** To configure GTP services:

1. Configure the GTP services for the S-GW called SGW-MBG1.

```
[edit]
user@sgw1# edit unified-edge gateways sgw SGW-MBG1 gtp
```

2. Configure GTP services for the S1-U, S5, and S11 interfaces with path management disabled. The same address must be specified for all addresses.

```
[edit unified-edge gateways sgw SGW-MBG1 gtp]
user@sgw1# set interface lo0.0
user@sgw1# set interface v4-address 10.10.10.1
user@sgw1# set path-management disable
user@sgw1# set control path-management disable
user@sgw1# set data path-management disable
user@sgw1# set su1 echo-interval 60
user@sgw1# set s5 echo-interval 60
user@sgw1# set s5 echo-n3-requests 5
user@sgw1# set s5 echo-t3-response 60
user@sgw1# set s11 echo-n3-requests 5
user@sgw1# set s11 echo-t3-response 60
```

## Verification

### Verifying Gateway Status

**Purpose** Verify the gateways for the broadband gateway.

**Action** user@pgw-sgw-1> show unified-edge gateways brief

```
Total number of configured gateways: 1
```

```
Gateway name: SGW-MBG1
```

```
Gateway type: ggsn-pgw
Gateway id: 1
```

**Meaning** The **show unified-edge gateways brief** command displays information about the configured gateways.

**Related Documentation**

- [Example: Configuring a Multigateway P-GW and S-GW on page 43](#)
- [Example: Configuring a Collocated P-GW and S-GW on page 32](#)

## Example: Configuring QoS and CAC on a S-GW

This example describes how to configure the MobileNext Broadband Gateway Serving Gateway (S-GW) for quality of service (QoS) and connection access control (CAC). The emphasis is on QoS and CAC configuration, and does not include many other parameters that a full S-GW configuration requires.

The example configures classifiers and resource thresholds for the S-GW for forwarding classes af1 and af3, setting thresholds for bearer loads, memory, and CPU usage. Preemption is enabled for the S-GW. Rewrite rules are also configured for ingress and egress traffic, setting DCSP bits for high and low loss priority for classes af1 and af3. The classifier and threshold profiles, as well as the rewrite rules, are applied to a S-GW with anchor Packet Forwarding Engine CAC parameters, specifically the S5 and S11 interfaces.

- [Requirements on page 27](#)
- [Overview on page 27](#)
- [Configuration on page 28](#)

## Requirements

This example uses the following hardware and software components:

- Junos OS Release 11.4W
- Juniper Networks MobileNext Broadband Gateway

## Overview

This example describes how to configure the broadband gateway as a standalone S-GW (SGW-MBG1) with QoS and CAC parameters. The S-GW supports the following configuration:

- The S5 and S11 interfaces are in the main routing instance and use **xe-0/0/0** and **ge-5/0/2**, respectively.
- All eight queues are enabled, but only forwarding classes af1 and af3 have classifiers and rewrite rules for transport traffic.
- Rewrite rules for af1 and af3 are applied for ingress traffic on the S5 interface (**xe-0/0/0**) and egress traffic on the S11 interface (**ge-5/0/2**).



**NOTE:** This is not a complete S-GW configuration. This example illustrates QoS and CAC only.

## Configuration

- [Configuring the interfaces on page 28](#)
- [Configuring the IPv4 Interfaces on page 28](#)
- [Configuring the QoS and CAC Classifier and Resource Threshold Profiles and Parameters on page 29](#)
- [Configuring S-GW CAC Parameters on page 30](#)
- [Configuring Forwarding Classes and Rewrite Rules on page 31](#)
- [Apply the Rewrite Rule for Ingress \(S5\) and Egress \(S11\) on page 32](#)

### Configuring the interfaces

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set interface xe-0/0/0 description S5 interface
set interface xe-0/0/0 unit 0 family inet address 10.1.1.1/24
set interface ge-5/0/2 description S11 interface
set interface ge-5/0/2 unit 0 family inet address 172.16.1.1/24
```

#### Step-by-Step Procedure

To configure the IPv4 interfaces:

1. Configure the S5 interface.

```
[edit interfaces]
user@sgw1# set xe-0/0/0 description S5 interface
user@sgw1# set xe-0/0/0 unit 0 family inet address 10.1.1.1/24
```

2. Configure the S11 interface.

```
[edit interfaces]
user@sgw1# set ge-5/0/2 description S11 interface
user@sgw1# set ge-5/0/2 unit 0 family inet address 172.16.1.1/24
```

### Configuring the IPv4 Interfaces

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set interfaces ge-0/0/0 unit 0 family inet address 10.44.0.1/16 description S5 interface
set interfaces ge-0/0/1 unit 0 family inet address 10.2.2.1/16 description S11 interface
```

#### Step-by-Step Procedure

To configure the IPv4 interfaces:

1. Configure IPv4 interfaces for the S5 interface.



```
[edit]
user@sgw1# set interfaces ge-0/0/0 unit 0 family inet address 10.44.0.1/16
```

2. Configure IPv4 interfaces for the S11 interface.

```
[edit]
user@sgw1# set interfaces ge-0/0/1 unit 0 family inet address 10.2.2.1/16
```

### Configuring the QoS and CAC Classifier and Resource Threshold Profiles and Parameters

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge cos-cac classifier-profiles classifier_v2
set unified-edge cos-cac classifier-profiles classifier_v2 qos-class-identifier 6
 forwarding-class af1 loss-priority low
set unified-edge cos-cac classifier-profiles classifier_v2 qos-class-identifier 3
 forwarding-class af3 loss-priority high
set unified-edge cos-cac resources-threshold-profiles resource_v2
set unified-edge cos-cac resources-threshold-profiles resource_v2 bearers-load low
 percentage 70
set unified-edge cos-cac resources-threshold-profiles resource_v2 bearers-load low
 gtpv2-priority-level 9
set unified-edge cos-cac resources-threshold-profiles resource_v2 bearers-load high
 percentage 90
set unified-edge cos-cac resources-threshold-profiles resource_v2 bearers-load high
 gtpv2-priority-level 5
set unified-edge cos-cac resources-threshold-profiles resource_v2 memory low percentage
 60
set unified-edge cos-cac resources-threshold-profiles resource_v2 memory low
 gtpv2-priority-level 8
set unified-edge cos-cac resources-threshold-profiles resource_v2 memory high percentage
 70
set unified-edge cos-cac resources-threshold-profiles resource_v2 memory high
 gtpv2-priority-level 4
set unified-edge cos-cac resources-threshold-profiles resource_v2 cpu low percentage 65
set unified-edge cos-cac resources-threshold-profiles resource_v2 cpu low
 gtpv2-priority-level 10
set unified-edge cos-cac resources-threshold-profiles resource_v2cpu high percentage
 80
set unified-edge cos-cac resources-threshold-profiles resource_v2 cpu high
 gtpv2-priority-level 7
set unified-edge local-policies local_profile_v2 resource-threshold-profiles resource_v2
set unified-edge local-policies local_profile_v2 classifier-profiles classifier_v2
```

#### Step-by-Step Procedure

To configure the QoS and CAC classifier and resource threshold profiles and parameters:

1. Configure classifier profile **classifier\_v2**.

```
[edit]
user@sgw1# edit unified-edge cos-cac classifier-profiles classifier_v2
```

2. Specify the QoS parameters for af1 and af3.

```
[edit unified-edge cos-cac classifier-profiles classifier_v2]
```

- ```

user@sgw1# set qos-class-identifier 6 forwarding-class af1 loss-priority low
user@sgw1# set qos-class-identifier 3 forwarding-class af3 loss-priority high

```
3. Configure resource threshold profile `resource_v2`.


```

[edit]
user@sgw1# edit unified-edge cos-cac resource-threshold-profiles resource_v2

```
 4. Specify the resource threshold parameters for bearer load, memory, and CPU.


```

[edit unified-edge cos-cac resource-threshold-profiles resource_v2]
user@sgw1# set bearers-load low percentage 70
user@sgw1# set bearers-load low gtpv2-priority-level 9
user@sgw1# set bearers-load high percentage 90
user@sgw1# set bearers-load high gtpv2-priority-level 5
user@sgw1# set memory low percentage 60
user@sgw1# set memory low gtpv2-priority-level 8
user@sgw1# set memory high percentage 70
user@sgw1# set memory high gtpv2-priority-level 4
user@sgw1# set cpu low percentage 65
user@sgw1# set cpu low gtpv2-priority-level 10
user@sgw1# set cpu high percentage 80
user@sgw1# set cpu high gtpv2-priority-level 7

```
 5. Configure the local policy `local_profile_v2`.


```

[edit]
user@sgw1# edit unified-edge local-policies local_profile_v2

```
 6. Configure the local policies for the classifier and resource threshold profiles.


```

[edit unified-edge local-policies local_profile_v2]
user@sgw1# set resource-threshold-profile resource_v2
user@sgw1# set classifier-profile classifier_v2

```

Configuring S-GW CAC Parameters

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```

[edit]
set unified-edge gateways sgw SGW-MBG1 maximum-bearers 100000
set unified-edge gateways sgw SGW-MBG1 local-policy-profile local_profile_v2
set unified-edge gateways sgw SGW-MBG1 anchor-pfe-guaranteed-bandwidth 10 # Gbps
set unified-edge gateways sgw SGW-MBG1 anchor-pfe-maximum-bearers 100 # thousands
set unified-edge gateways sgw SGW-MBG1 anchor-pfe-guaranteed-bandwidth 10 # Gbps
set unified-edge gateways sgw SGW-MBG1 anchor-pfe-default-bearers-percentage 60
set unified-edge gateways sgw SGW-MBG1 preemption enable

```

Step-by-Step Procedure

To configure the S-GW CAC parameters:

1. Configure the maximum bearers and local policy profile.


```

[edit unified-edge gateways sgw SGW-MBG1]
user@sgw1# set maximum-bearers 100000
user@sgw1# set local-policy-profile local_profile_v2

```
2. Configure the anchor CAC parameters.

```
[edit unified-edge gateways sgw SGW-MBG1]
user@sgw1# set anchor-pfe-guaranteed-bandwidth 10 # Gbps
user@sgw1# set anchor-pfe-maximum-bearers 100 # thousands
user@sgw1# set anchor-pfe-default-bearers-percentage 60
user@sgw1# set preemption enable
```

Configuring Forwarding Classes and Rewrite Rules

CLI Quick Configuration To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set class-of-service forwarding-classes queue 0 be
set class-of-service forwarding-classes queue 1 ef
set class-of-service forwarding-classes queue 2 af1
set class-of-service forwarding-classes queue 3 af2
set class-of-service forwarding-classes queue 4 af3
set class-of-service forwarding-classes queue 5 af4
set class-of-service forwarding-classes queue 6 af5
set class-of-service forwarding-classes queue 7 nc
set class-of-service rewrite-rules dscp dscp_egress forwarding-class af1 loss-priority low
code-point 001010
set class-of-service rewrite-rules dscp dscp_egress forwarding-class af3 loss-priority high
code-point 011110
set class-of-service rewrite-rules dscp dscp_ingress forwarding-class af1 loss-priority low
code-point 001010
set class-of-service rewrite-rules dscp dscp_ingress forwarding-class af3 loss-priority high
code-point 011110
```

Step-by-Step Procedure To configure forwarding classes and rewrite rules:

1. Configure the forwarding classes.

```
[edit class-of-service]
user@sgw1# set forwarding-classes queue 0 be
user@sgw1# set forwarding-classes queue 1 ef
user@sgw1# set forwarding-classes queue 2 af1
user@sgw1# set forwarding-classes queue 3 af2
user@sgw1# set forwarding-classes queue 4 af3
user@sgw1# set forwarding-classes queue 5 af4
user@sgw1# set forwarding-classes queue 6 af5
user@sgw1# set forwarding-classes queue 7 nc
```

2. Configure the rewrite rules.

```
[edit class-of-service]
user@sgw1# set rewrite-rules dscp dscp_egress forwarding-class af1 loss-priority
low code-point 001010
user@sgw1# set rewrite-rules dscp dscp_egress forwarding-class af3 loss-priority
high code-point 011110
user@sgw1# set rewrite-rules dscp dscp_ingress forwarding-class af1 loss-priority
low code-point 001010
user@sgw1# set rewrite-rules dscp dscp_ingress forwarding-class af3 loss-priority
high code-point 011110
```

Apply the Rewrite Rule for Ingress (S5) and Egress (S11)

CLI Quick Configuration To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set class-of-service interfaces xe-0/0/0 unit 0 rewrite-rules dscp dcsp_ingress
set class-of-service interfaces ge-5/0/2 unit 0 rewrite-rules dscp dcsp_egress
```

Step-by-Step Procedure To configure the rewrite rules on the S5 and S11 interfaces:

1. Configure the ingress rewrite rule on the S5 interface.

```
[edit class-of-service]
user@sgw1# set interfaces xe-0/0/0 unit 0 rewrite-rules dscp dcsp_ingress
```
2. Configure the egress rewrite rule on the S11 interface.

```
[edit class-of-service]
user@sgw1# set interfaces ge-5/0/2 unit 0 rewrite-rules dscp dcsp_egress
```

- Related Documentation**
- [Quality of Service Overview](#)
 - [Call Admission Control Overview](#)
 - [Configuring S-GW-Specific CAC Parameters on page 18](#)

Example: Configuring a Collocated P-GW and S-GW

This example describes how to configure the MobileNext Broadband Gateway as a collocated Packet Data Network Gateway (P-GW) and Serving Gateway (S-GW) sharing a chassis. The emphasis is on P-GW and S-GW configuration, and does not include many other parameters that a full device configuration requires.

- [Requirements on page 32](#)
- [Overview on page 32](#)
- [Configuration on page 33](#)
- [Verification on page 43](#)

Requirements

This example uses the following hardware and software components:

- Junos OS Release 11.4W
- Juniper Networks MobileNext Broadband Gateway

Overview

This example describes how to configure the broadband gateway as a collocated P-GW (PGW-MBG1) and S-GW (SGW-MBG1). Both P-GW and S-GW use the same chassis, which is named **pgw-sgw-1**.

- For the S-GW portion of the broadband gateway:
 - The S1-U data, S5, and S11 control interface are in the main routing instance
 - The anchor Packet Forwarding Engines are **pfe-8/0/0**, **pfe-8/1/0**, **pfe-8/2/0**, **pfe-8/3/0**, **pfe-9/0/0**, **pfe-9/1/0**, **pfe-9/2/0**, and **pfe-9/3/0**
 - The anchor services PICs are **ms-0/0/0** and **ms-1/0/0**
 - The S1-U interface uses **ge-5/0/0** and has IP address **10.44.0.1/16**, and S-GW interface **lo0.0** with address **10.8.88.1**
 - The S5 interface uses **ge-5/0/1** and has IP address **10.5.0.1/16**, and S-GW interface **lo0.0** with address **10.7.88.1**
 - The S11 interface uses **ge-5/0/2** and has IP address **10.2.2.1/16**, and S-GW interface **lo0.0** with address **10.6.88.1**
- For the P-GW portion of the broadband gateway:
 - The Gn and Gi interfaces are in the main routing instance
 - The anchor Packet Forwarding Engines are **pfe-10/0/0**, **pfe-10/1/0**, **pfe-10/2/0**, **pfe-10/3/0**, **pfe-10/0/0**, **pfe-11/1/0**, **pfe-11/2/0**, and **pfe-11/3/0**
 - The anchor services PICs are **ms-0/1/0** and **ms-1/1/0**
 - Two APNs (**APN1** and **APN2**) are configured to use **mif.0** and **mif.1** respectively, and **lo0.0** address **10.9.88.1**

Configuration

To configure a collocated P-GW and S-GW, perform these tasks:

- [Configuring the Chassis on page 33](#)
- [Configuring Charging for the P-GW on page 36](#)
- [Configuring Charging for the S-GW on page 37](#)
- [Configuring System Anchors for the Broadband Gateway S-GW and P-GW on page 39](#)
- [Configuring GTP Services for the P-GW and S-GW on page 40](#)
- [Configure the APNs for the P-GW on page 41](#)

Configuring the Chassis

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
load merge /etc/config/mobility-defaults.conf
set chassis fpc 0 pic 0 apply-groups mobility
set chassis fpc 0 pic 1 apply-groups mobility
set chassis fpc 1 pic 0 apply-groups mobility
set chassis fpc 1 pic 1 apply-groups mobility
set chassis fpc 5 forwarding-packages mobility sgw
```

```

set chassis fpc 7 forwarding-packages mobility sgw
set chassis fpc 8 forwarding-packages mobility sgw
set chassis fpc 9 forwarding-packages mobility sgw
set chassis fpc 10 forwarding-packages mobility ggsn-pgw
set chassis fpc 11 forwarding-packages mobility ggsn-pgw
set interfaces ms-0/0/0 unit 0 family inet description Session PIC for S-GW
set interfaces ms-0/0/0 unit 16000 family inet description Reserved mobile interface
set interfaces ms-0/1/0 unit 0 family inet description Session PIC for P-GW
set interfaces ms-0/1/0 unit 16000 family inet description Reserved mobile interface
set interfaces ms-1/0/0 unit 0 family inet description Session PIC for S-GW
set interfaces ms-1/0/0 unit 16000 family inet description Reserved mobile interface
set interfaces ms-1/1/0 unit 0 family inet description Session PIC for S-GW
set interfaces ms-1/1/0 unit 16000 family inet description Reserved mobile interface
set interfaces ge-5/0/0 unit 0 family inet address 10.44.0.1/16
set interfaces ge-5/0/1 unit 0 family inet address 10.5.0.1/16
set interfaces ge-5/0/2 unit 0 family inet address 10.2.2.1/16
set interfaces xe-10/3/1 unit 0 family inet address 10.3.1.1/24
set interfaces xe-10/3/2 unit 0 family inet address 10.3.2.1/24
set interfaces lo0 unit 0 family inet address 10.6.88.1/32
set interfaces lo0 unit 0 family inet address 10.7.88.1/32
set interfaces lo0 unit 0 family inet address 10.8.88.1/32
set interfaces lo0 unit 0 family inet address 10.9.88.1/32

```



NOTE: This configuration is for the S-GW and P-GW only. Other statements are needed to make this a complete device configuration.

Step-by-Step Procedure

To configure the chassis:

1. Load and merge the default configuration file for the **mobility** group.

[edit]

```
user@pgw-sgw-1# load merge /etc/config/mobility-defaults.conf
```

2. Configure the **mobility** group on the session DPC.

[edit]

```
user@pgw-sgw-1# set chassis fpc 0 pic 0 apply-groups mobility
```

```
user@pgw-sgw-1# set chassis fpc 0 pic 1 apply-groups mobility
```

```
user@pgw-sgw-1# set chassis fpc 1 pic 0 apply-groups mobility
```

```
user@pgw-sgw-1# set chassis fpc 1 pic 1 apply-groups mobility
```



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

3. Configure the interface DPC or MPC at the FPC level.

[edit]

```
user@pgw-sgw-1# set chassis fpc 5 forwarding-packages mobility sgw
```

```

user@pgw-sgw-1# set chassis fpc 7 forwarding-packages mobility sgw
user@pgw-sgw-1# set chassis fpc 8 forwarding-packages mobility sgw
user@pgw-sgw-1# set chassis fpc 9 forwarding-packages mobility sgw
user@pgw-sgw-1# set chassis fpc 10 forwarding-packages mobility ggsn-pgw
user@pgw-sgw-1# set chassis fpc 11 forwarding-packages mobility ggsn-pgw

```



NOTE: You must include every Packet Forwarding Engine configured with the `sgw` or `ggsn-pgw` forwarding package at the [edit unified-edge gateways `sgw gateway-name` system anchor-pfes] or [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.

4. Configure the Multiservices PIC interfaces.

```

[edit]
user@pgw-sgw-1# set interfaces ms-0/0/0 unit 0 family inet description Session
PIC for S-GW
user@pgw-sgw-1# set interfaces ms-0/0/0 unit 16000 family inet description
Reserved mobile interface
user@pgw-sgw-1# set interfaces ms-0/1/0 unit 0 family inet description Session
PIC for P-GW
user@pgw-sgw-1# set interfaces ms-0/1/0 unit 16000 family inet description
Reserved mobile interface
user@pgw-sgw-1# set interfaces ms-1/0/0 unit 0 family inet description Session
PIC for S-GW
user@pgw-sgw-1# set interfaces ms-1/0/0 unit 16000 family inet description
Reserved mobile interface
user@pgw-sgw-1# set interfaces ms-1/1/0 unit 0 family inet description Session
PIC for P-GW
user@pgw-sgw-1# set interfaces ms-1/1/0 unit 16000 family inet description
Reserved mobile interface

```

5. Configure physical interfaces.

```

user@pgw-sgw-1# set interfaces ge-5/0/0 unit 0 family inet address 10.44.0.1/16
description S1-U
user@pgw-sgw-1# set interfaces ge-5/0/1 unit 0 family inet address 10.5.0.1/16
description S5
user@pgw-sgw-1# set interfaces ge-5/0/2 unit 0 family inet address 10.2.2.1/16
description S11
user@pgw-sgw-1# set interfaces xe-10/3/1 unit 0 family inet address 10.3.1.1/16
user@pgw-sgw-1# set interfaces xe-10/3/2 unit 0 family inet address 10.3.1.2/16

```

6. Configure loopback interfaces.

```

[edit]
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.6.88.1/32
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.7.88.1/32
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.8.88.1/32
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.9.88.1/32

```

Configuring Charging for the P-GW

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways ggsn-pgw PGW-MBG1 charging cdr-profiles cdr_p
  enable-reduced-partial-cdrs
set unified-edge gateways ggsn-pgw PGW-MBG1 charging cdr-profiles cdr_p
  exclude-ie-options serving-node-plmn-identifier
set unified-edge gateways ggsn-pgw PGW-MBG1 charging trigger-profiles p_tp offline
  time-limit 600
set unified-edge gateways ggsn-pgw PGW-MBG1 charging transport-profiles pgw_tsp
  offline charging-gateways cdr-release r8
set unified-edge gateways ggsn-pgw PGW-MBG1 charging transport-profiles pgw_tsp
  offline charging-gateways peer-order peer pgw_cfg
set unified-edge gateways ggsn-pgw PGW-MBG1 charging transport-profiles pgw_tsp
  offline charging-gateways switch-back-time 36
set unified-edge gateways ggsn-pgw PGW-MBG1 charging charging-profiles jnpr-1 profile-id
  1
set unified-edge gateways ggsn-pgw PGW-MBG1 charging charging-profiles jnpr-1
  transport-profile pgw_tsp
set unified-edge gateways ggsn-pgw PGW-MBG1 charging charging-profiles jnpr-1
  cdr-profile cdr_p
set unified-edge gateways ggsn-pgw PGW-MBG1 charging charging-profiles jnpr-1
  trigger-profile p_tp
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv transport-protocol tcp
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv version v2
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv header-type long
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg
  destination-ipv4-address 10.3.3.3
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg
  source-interface lo0.0
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg
  source-interface ipv4-address 10.9.88.1
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg
  destination-port 3386
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg
  transport-protocol udp
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg n3-requests
  1
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg t3-response
  5
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg header-type
  short
set unified-edge gateways ggsn-pgw PGW-MBG1 charging gtpv peer my_cfg
  pending-queue-size 1000
```

Step-by-Step Procedure

To configure the charging parameters:

1. Configure charging for the P-GW called PGW-MBG1.

```
[edit]
user@pgw-sgw-1# edit unified-edge gateways ggsn-pgw PGW-MBG1 charging
```


- Specify the global GTP Prime properties to transmit CDRs to the external charging gateway.

```
[edit unified-edge gateways ggsn-pgw PGW-MBG1 charging]
user@pgw-sgw-1# set gtp transport-protocol tcp
user@pgw-sgw-1# set gtp version v2
user@pgw-sgw-1# set gtp header-type long
```

- Specify the GTP Prime properties for the GTP Prime peers.

```
[edit unified-edge gateways ggsn-pgw PGW-MBG1 charging]
user@pgw-sgw-1# set gtp peer my_cgf destination-ipv4-address 10.3.3.3
user@pgw-sgw-1# set gtp peer my_cgf source-interface lo0.0
user@pgw-sgw-1# set gtp peer my_cgf source-interface ipv4-address 10.9.88.1
user@pgw-sgw-1# set gtp peer my_cgf destination-port 3386
user@pgw-sgw-1# set gtp peer my_cgf transport-protocol udp
user@pgw-sgw-1# set gtp peer my_cgf n3-requests 1
user@pgw-sgw-1# set gtp peer my_cgf t3-response 5
user@pgw-sgw-1# set gtp peer my_cgf header-type short
user@pgw-sgw-1# set gtp peer my_cgf pending-queue-size 1000
```

- Configure the transport, trigger, and CDR profiles referenced by the charging profile for offline charging.

```
[edit unified-edge gateways ggsn-pgw PGW-MBG1 charging]
user@pgw-sgw-1# set cdr-profiles cdr_p enable-reduced-partial-cdrs
user@pgw-sgw-1# set cdr-profiles cdr_p exclude-ie-options
    serving-node-plmn-identifier
user@pgw-sgw-1# set trigger-profiles p_tp offline time-limit 600
user@pgw-sgw-1# set transport-profiles pgw_tsp offline charging-gateways
    cdr-release r8
user@pgw-sgw-1# set transport-profiles pgw_tsp offline charging-gateways
    peer-order peer pgw_cfg
user@pgw-sgw-1# set transport-profiles pgw_tsp offline charging-gateways
    switch-back-time 36
```

- Configure the charging profiles.

```
[edit unified-edge gateways ggsn-sgw PGW-MBG1 charging]
user@pgw-sgw-1# set charging-profiles jnpr-1 profile-id 1
user@pgw-sgw-1# set charging-profiles jnpr-1 transport-profile pgw_tsp
user@pgw-sgw-1# set charging-profiles jnpr-1 cdr-profile cdr_p
user@pgw-sgw-1# set charging-profiles jnpr-1 trigger-profile p_tp
```

Configuring Charging for the S-GW

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways sgw SGW-MBG1 idle-mode-buffering
set unified-edge gateways sgw SGW-MBG1 charging trigger-profiles s_tp offline volume-limit
    1024
set unified-edge gateways sgw SGW-MBG1 charging trigger-profiles s_tp offline volume-limit
    direction both
set unified-edge gateways sgw SGW-MBG1 charging transport-profiles p_tsp offline
    charging-gateways cdr-release r8
```

```
set unified-edge gateways sgw SGW-MBG1 charging transport-profiles p_tsp offline
charging-gateways peer-order peer p_cfg
set unified-edge gateways sgw SGW-MBG1 charging transport-profiles p_tsp offline
charging-gateways switch-back-time 36
set unified-edge gateways sgw SGW-MBG1 charging charging-profiles p_juniper profile-id
1
set unified-edge gateways sgw SGW-MBG1 charging charging-profiles p_juniper
transport-profile p_tsp
set unified-edge gateways sgw SGW-MBG1 charging charging-profiles p_juniper
trigger-profile s_tp
set unified-edge gateways sgw SGW-MBG1 charging gtp transport-protocol tcp
set unified-edge gateways sgw SGW-MBG1 charging gtp version v0
set unified-edge gateways sgw SGW-MBG1 charging gtp header-type long
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg
destination-ipv4-address 10.42.0.2
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg source-interface
lo0.0
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg source-interface
ipv4-address 10.6.88.1
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg destination-port 3386
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg transport-protocol
tcp
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg n3-requests 1
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg t3-response 3
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg header-type long
set unified-edge gateways sgw SGW-MBG1 charging gtp peer p_cfg pending-queue-size
1000
set unified-edge gateways sgw SGW-MBG1 charging global-profile default-profile p_juniper
set unified-edge gateways sgw SGW-MBG1 charging global-profile profile-selection-order
static
```

**Step-by-Step
Procedure**

To configure the offline charging profile:

1. Configure charging for the S-GW called SGW-MBG1.

[edit]
user@pgw-sgw-1# edit unified-edge gateways sgw SGW-MBG1 charging
2. Specify the global GTP Prime properties to transmit CDRs to the external charging gateway.

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@pgw-sgw-1# set gtp transport-protocol tcp
user@pgw-sgw-1# set gtp version v0
user@pgw-sgw-1# set gtp header-type long
3. Specify the GTP Prime properties for the GTP Prime peers.

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@pgw-sgw-1# set gtp peer p_cfg destination-ipv4-address 10.42.0.2
user@pgw-sgw-1# set gtp peer p_cfg source-interface lo0.0
user@pgw-sgw-1# set gtp peer p_cfg source-interface ipv4-address 10.6.88.1
user@pgw-sgw-1# set gtp peer p_cfg destination-port 3386
user@pgw-sgw-1# set gtp peer p_cfg transport-protocol tcp
user@pgw-sgw-1# set gtp peer p_cfgw n3-requests 1
user@pgw-sgw-1# set gtp peer p_cfgw t3-response 3
user@pgw-sgw-1# set gtp peer p_cfgw header-type long

- ```

user@pgw-sgw-1# set gtp peer p_cfg pending-queue-size 1000

```
4. Configure idle-mode buffering for the S-GW.
 

```

[edit unified-edge gateways sgw SGW-MBG1]
user@pgw-sgw-1# set idle-mode-buffering

```
  5. Configure the transport, trigger, and global profiles referenced by the charging profile for offline charging.
 

```

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways cdr-release
r8
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways peer-order
peer p_cfg
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways peer-order
peer p_cfg
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways
switch-back-time 36
user@pgw-sgw-1# set trigger-profiles s_tp offline volume-limit 1024
user@pgw-sgw-1# set trigger-profiles s_tp offline volume-limit direction both

```
  6. Configure the charging profile.
 

```

[edit unified-edge gateways sgw SGW-MBG1 charging]
user@pgw-sgw-1# set charging-profiles p_juniper profile-id 1
user@pgw-sgw-1# set charging-profiles p_juniper transport-profile p_cfg
user@pgw-sgw-1# set charging-profiles p_juniper trigger-profile s_tp

```

### Configuring System Anchors for the Broadband Gateway S-GW and P-GW

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```

[edit]
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-10/0/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-10/1/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-10/2/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-10/3/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-11/0/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-11/1/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-11/2/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-pfes interface pfe-11/3/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-spics interface ms-1/1/0
set unified-edge gateways ggsn-pgw PGW-MBG1 system anchor-spics interface ms-0/1/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-8/0/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-8/1/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-8/2/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-8/3/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-9/0/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-9/1/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-9/2/0
set unified-edge gateways sgw SGW-MBG1 system anchor-pfes interface pfe-9/3/0
set unified-edge gateways sgw SGW-MBG1 system anchor-spics interface ms-0/0/0
set unified-edge gateways sgw SGW-MBG1 system anchor-spics interface ms-1/0/0

```

**Step-by-Step Procedure** To configure the anchor Packet Forwarding Engines and services PICs:

1. Configure the anchor Packet Forwarding Engines for the P-GW.

```
[edit unified-edge gateways ggsn-pgw PGW-MBG1 system]
user@pgw-sgw-1# set anchor-pfes interface pfe-10/0/0
user@pgw-sgw-1# set anchor-pfes interface pfe-10/1/0
user@pgw-sgw-1# set anchor-pfes interface pfe-10/2/0
user@pgw-sgw-1# set anchor-pfes interface pfe-10/3/0
user@pgw-sgw-1# set anchor-pfes interface pfe-11/0/0
user@pgw-sgw-1# set anchor-pfes interface pfe-11/1/0
user@pgw-sgw-1# set anchor-pfes interface pfe-11/2/0
user@pgw-sgw-1# set anchor-pfes interface pfe-11/3/0
```

2. Configure the anchor services PIC for the P-GW.

```
[edit unified-edge gateways ggsn-pgw PGW-MBG1 system]
user@pgw-sgw-1# set anchor-spics interface ms-1/1/0
user@pgw-sgw-1# set anchor-spics interface ms-0/1/0
```

3. Configure the anchor Packet Forwarding Engines for the S-GW.

```
[edit unified-edge gateways sgw SGW-MBG1 system]
user@pgw-sgw-1# set anchor-pfes interface pfe-8/0/0
user@pgw-sgw-1# set anchor-pfes interface pfe-8/1/0
user@pgw-sgw-1# set anchor-pfes interface pfe-8/2/0
user@pgw-sgw-1# set anchor-pfes interface pfe-8/3/0
user@pgw-sgw-1# set anchor-pfes interface pfe-9/0/0
user@pgw-sgw-1# set anchor-pfes interface pfe-9/1/0
user@pgw-sgw-1# set anchor-pfes interface pfe-9/2/0
user@pgw-sgw-1# set anchor-pfes interface pfe-9/3/0
```

4. Configure the anchor services PIC for the S-GW.

```
[edit unified-edge gateways sgw SGW-MBG1 system]
user@pgw-sgw-1# set anchor-spics interface ms-0/0/0
user@pgw-sgw-1# set anchor-spics interface ms-1/0/0
```

---

**Configuring GTP Services for the P-GW and S-GW****CLI Quick Configuration** To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp interface lo0.0
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp interface v4-address 10.9.88.1
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp n3-requests 5
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp t3-response 3
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp echo-interval 60
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp path-management-disable
set unified-edge gateways ggsn-pgw PGW-MBG1 gtp echo-n3-requests 5
set unified-edge gateways sgw SGW-MBG1 gtp path-management disable
set unified-edge gateways sgw SGW-MBG1 gtp control path-management disable
set unified-edge gateways sgw SGW-MBG1 gtp data path-management disable
set unified-edge gateways sgw SGW-MBG1 gtp s1u interface lo0.0
set unified-edge gateways sgw SGW-MBG1 gtp s1u interface v4-address 10.8.88.1
set unified-edge gateways sgw SGW-MBG1 gtp s5 interface lo0.0
set unified-edge gateways sgw SGW-MBG1 gtp s5 interface v4-address 10.7.88.1
```

```

set unified-edge gateways sgw SGW-MBG1 gtp s11 interface lo0.0
set unified-edge gateways sgw SGW-MBG1 gtp s11 interface v4-address 10.6.88.1
set unified-edge gateways sgw SGW-MBG1 gtp s11 n3-requests 5
set unified-edge gateways sgw SGW-MBG1 gtp s11 t3-response 5

```

### Step-by-Step Procedure

To configure GTP services:

1. Configure the GTP services for the P-GW called PGW-MBG1.  

```

[edit]
user@pgw-sgw-1# edit unified-edge gateways pgw PGW-MBG1 gtp

```
2. Configure GTP services for the P-GW interfaces with path management disabled.  

```

[edit unified-edge gateways pgw PGW-MBG1 gtp]
user@pgw-sgw-1# set interface lo0.0
user@pgw-sgw-1# set interface v4-address 10.9.88.1
user@pgw-sgw-1# set n3-requests 5
user@pgw-sgw-1# set t3-response 3
user@pgw-sgw-1# set echo-interval 60
user@pgw-sgw-1# set path-management disable
user@pgw-sgw-1# set echo-n3-requests 5

```
3. Configure the GTP services for the S-GW called SGW-MBG1.  

```

[edit]
user@pgw-sgw-1# edit unified-edge gateways sgw SGW-MBG1 gtp

```
4. Configure GTP services for the S1-U, S5, and S11 interfaces with path management disabled. The same address must be specified for all addresses.  

```

[edit unified-edge gateways sgw SGW-MBG1 gtp]
user@pgw-sgw-1# set path-management disable
user@pgw-sgw-1# set control path-management disable
user@pgw-sgw-1# set data path-management disable
user@pgw-sgw-1# set s1u interface lo0.0
user@pgw-sgw-1# set s1u interface v4-address 10.8.88.1
user@pgw-sgw-1# set s5 interface lo0.0
user@pgw-sgw-1# set s5 interface v4-address 10.7.88.1
user@pgw-sgw-1# set s11 interface lo0.0
user@pgw-sgw-1# set s11 interface v4-address 10.6.88.1
user@pgw-sgw-1# set s11 n3-requests 5
user@pgw-sgw-1# set s11 t3-response 5

```

### Configure the APNs for the P-GW

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```

[edit]
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 apn-data-type
 ipv4
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 mobile interface
 mif.0
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1
 address-assignment local

```

```

set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 charging
 default-profile jnpr
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 dns-server
 primary-v4 10.10.20.120
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 dns-server
 secondary-v4 10.10.20.119
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 dns-server
 primary-v6 10:10:20::120
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 dns-server
 secondary-v6 10:10:20::120
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 nbns-server
 primary-v4 192.168.23.23
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 nbns-server
 secondary-v4 192.168.23.24
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 p-cscf 10:10:10::10
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 selection-mode
 from-ms
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN2
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN2 apn-data-type
 ipv4
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN2 mobile interface
 mif.1
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1
 address-assignment local
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 charging
 default-profile jnpr
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 dns-server
 primary-v4 10.10.20.120
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 p-cscf 10:10:10::10
set unified-edge gateways ggsn-pgw PGW-MBG1 apn-services apns APN1 selection-mode
 from-ms

```

#### Step-by-Step Procedure

To configure APNs for the P-GW called PGW-MBG1:

1. Configure APN1 for the P-GW called PGW-MBG1.

```

[edit]
user@pgw-sgw-1# edit unified-edge gateways pgw PGW-MBG1 apn-services apns
 APN1
[edit unified-edge gateways pgw PGW-MBG1 apn-services apns APN1]
user@pgw-sgw-1# set apn-data-type ipv4
user@pgw-sgw-1# set mobile-interface mif.0
user@pgw-sgw-1# set address-assignment local
user@pgw-sgw-1# set charging default-profile jnpr
user@pgw-sgw-1# set charging dns-server primary-v4 10.10.20.119
user@pgw-sgw-1# set charging dns-server secondary-v4 10.10.20.120
user@pgw-sgw-1# set charging dns-server primary-v6 10:10:20::119
user@pgw-sgw-1# set charging dns-server secondary-v6 10:10:20::120
user@pgw-sgw-1# set charging nbns-server primary-v4 192.168.23.23
user@pgw-sgw-1# set charging nbns-server secondary-v4 192.168.23.24
user@pgw-sgw-1# set p-cscf 10:10:10::10
user@pgw-sgw-1# set selection-mode from-ms

```

2. Configure APN2 for the P-GW called PGW-MBG1.

```

[edit]

```

```

user@pgw-sgw-1# edit unified-edge gateways pgw PGW-MBG1 apn-services apns
APN2
[edit unified-edge gateways pgw PGW-MBG1 apn-services apns APN2]
user@pgw-sgw-1# set apn-data-type ipv4
user@pgw-sgw-1# set mobile-interface mif.0
user@pgw-sgw-1# set address-assignment local
user@pgw-sgw-1# set charging default-profile jnpr
user@pgw-sgw-1# set p-cscf 10:10:10::10
user@pgw-sgw-1# set selection-mode from-ms

```

## Verification

### Verifying Gateway Status

|                              |                                                                                                                                                                                                                                                                 |
|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Purpose</b>               | Verify the gateways for the broadband gateway.                                                                                                                                                                                                                  |
| <b>Action</b>                | <pre> user@pgw-sgw-1&gt; show unified-edge gateways brief </pre> <p>Total number of configured gateways: 2</p> <p>Gateway name: PGW-MBG1<br/>Gateway type: ggsn-pgw<br/>Gateway id: 1</p> <p>Gateway name: SGW-MBG1<br/>Gateway type: sgw<br/>Gateway id: 2</p> |
| <b>Meaning</b>               | The <code>show unified-edge gateways brief</code> command displays information about the configured gateways.                                                                                                                                                   |
| <b>Related Documentation</b> | <ul style="list-style-type: none"> <li>• <a href="#">Example: Configuring a Multigateway P-GW and S-GW on page 43</a></li> <li>• <a href="#">Example: Configuring a Standalone S-GW on page 21</a></li> </ul>                                                   |

## Example: Configuring a Multigateway P-GW and S-GW

This example describes how to configure the MobileNext Broadband Gateway with multiple Packet Data Network Gateways (P-GWs) and Serving Gateways (S-GWs) sharing a chassis. The emphasis is on P-GW and S-GW configuration, and does not include many other parameters that a full device configuration requires.

- [Requirements on page 44](#)
- [Overview on page 44](#)
- [Configuration on page 44](#)
- [Verification on page 57](#)

## Requirements

This example uses the following hardware and software components:

- Junos OS Release 11.4W
- Juniper Networks MobileNext Broadband Gateway

## Overview

This example describes how to configure the broadband gateway as a multigateway P-GW (PGW1-MBG1 and PGW2-MBG1) and S-GW (SGW1-MBG1 and SGW2-MBG1). All P-GWs and S-GWs use the same chassis, which is named **pgw-sgw-1**.

- For the two S-GWs on the broadband gateway:
  - The S1-U data, S5, and S11 control interface are in the main routing instance
  - The anchor Packet Forwarding Engine for SGW1-MBG1 is **pfe-1/0/0** and the anchor Packet Forwarding Engine for SGW2-MBG1 is **pfe-1/2/0**
  - The anchor services PIC for SGW1-MBG1 is **ms-5/0/0** and the anchor services PIC for SGW2-MBG1 is **ms-5/1/0**
  - The loopback address (**lo0.0**) for SGW1-MBG1 is **10.11.11.11** and the loopback address for SGW2-MBG1 is **10.22.22.22**



**NOTE:** The physical interfaces for the S1-U, S5, and S11 interfaces are not listed. These interfaces are established at runtime in a heuristic manner.

- For the two P-GWs on the broadband gateway:
  - The Gn and Gi interfaces are in the main routing instance and determined by runtime heuristics
  - The anchor Packet Forwarding Engine for PGW1-MBG1 is **pfe-0/0/0** and the anchor Packet Forwarding Engine for PGW2-MBG1 is **pfe-0/2/0**
  - The anchor services PIC for PGW1-MBG1 is **ms-3/0/0** and the anchor services PIC for SGW2-MBG1 is **ms-3/1/0**
  - The APN (**APN1** on PGW1-MBG1) uses mobile interface **mif.3** and the APN (**APN2** on PGW2-MBG1) uses mobile interface **mif.4**

## Configuration

To configure multiple P-GWs and S-GWs on the broadband gateway, perform these tasks:

- [Configuring the Chassis on page 45](#)
- [Configuring Charging for the P-GWs on page 47](#)



- [Configuring Charging for the S-GWs on page 50](#)
- [Configuring System Anchors for the Broadband Gateway P-GWs Named PGW1-MBG1 and PGW2-MBG2 on page 54](#)
- [Configuring System Anchors for the Broadband Gateway S-GWs Named SGW1-MBG1 and SGW2-MBG1 on page 54](#)
- [Configuring GTP Services for the P-GWs Named PGW1-MBG1 and PGW2-MBG2 on page 55](#)
- [Configuring GTP Services for the S-GW Named SGW1-MBG1 and SGW2-MBG1 on page 56](#)
- [Configure the APNs for the P-GW on page 57](#)

### Configuring the Chassis

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
load merge /etc/config/mobility-defaults.conf
set chassis fpc 3 pic 0 apply-groups mobility
set chassis fpc 3 pic 1 apply-groups mobility
set chassis fpc 5 pic 0 apply-groups mobility
set chassis fpc 5 pic 1 apply-groups mobility
set chassis fpc 0 forwarding-packages mobility ggsn-pgw
set chassis fpc 1 forwarding-packages mobility sgw
set interfaces ms-3/0/0 unit 0 family inet description Session PIC for PGW1-MBG1
set interfaces ms-3/0/0 unit 0 family inet address 10.4.1.3/32
set interfaces ms-3/1/0 unit 0 family inet description Session PIC for PGW2-MBG1
set interfaces ms-3/1/0 unit 0 family inet address 10.4.1.4/32
set interfaces ms-5/0/0 unit 0 family inet description Session PIC for SGW1-MBG1
set interfaces ms-5/0/0 unit 0 family inet address 10.4.1.1/32
set interfaces ms-5/1/0 unit 0 family inet description Session PIC for SGW2-MBG1
set interfaces ms-5/1/0 unit 0 family inet address 10.4.1.2/32
set interfaces ge-1/0/0 unit 0 family inet address 10.45.0.1/16
set interfaces ge-1/0/1 unit 0 family inet address 10.55.0.1/16
set interfaces ge-1/0/2 unit 0 family inet address 10.66.2.1/16
set interfaces ge-1/0/3 unit 0 family inet address 10.77.2.1/16
set interfaces lo0 unit 0 family inet address 10.11.11.11/32
set interfaces lo0 unit 0 family inet address 10.22.22.22/32
set interfaces lo0 unit 0 family inet address 10.33.33.33/32
set interfaces lo0 unit 0 family inet address 10.44.44.44/32
```



**NOTE:** This configuration is for the S-GWs and P-GWs only. Other statements are needed to make this a complete device configuration.

#### Step-by-Step Procedure

To configure the chassis:

1. Load and merge the default configuration file for the **mobility** group.

```
[edit]
user@pgw-sgw-1# load merge /etc/config/mobility-defaults.conf
```

2. Configure the **mobility** group on the session DPC.

```
[edit]
user@pgw-sgw-1# set chassis fpc 3 pic 0 apply-groups mobility
user@pgw-sgw-1# set chassis fpc 3 pic 1 apply-groups mobility
user@pgw-sgw-1# set chassis fpc 5 pic 0 apply-groups mobility
user@pgw-sgw-1# set chassis fpc 5 pic 1 apply-groups mobility
```



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

3. Configure the interface DPC or MPC at the FPC level.

```
[edit]
user@pgw-sgw-1# set chassis fpc 0 forwarding-packages mobility sgw
user@pgw-sgw-1# set chassis fpc 1 forwarding-packages mobility ggsn-pgw
```



**NOTE:** You must include every Packet Forwarding Engine configured with the `sgw` or `ggsn-pgw` forwarding package at the `[edit unified-edge gateways sgw gateway-name system anchor-pfes]` or `[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.

4. Configure the Multiservices PIC interfaces.

```
[edit]
user@pgw-sgw-1# set interfaces ms-3/0/0 unit 0 family inet description Session
PIC for PGW1-MBG1
user@pgw-sgw-1# set interfaces ms-3/0/0 unit 0 family inet address 10.4.1.3/32
user@pgw-sgw-1# set interfaces ms-3/1/0 unit 0 family inet description Session
PIC for PGW2-MBG1
user@pgw-sgw-1# set interfaces ms-3/1/0 unit 0 family inet address 10.4.1.4/32
user@pgw-sgw-1# set interfaces ms-5/0/0 unit 0 family inet description Session
PIC for SGW1-MBG1
user@pgw-sgw-1# set interfaces ms-5/0/0 unit 0 family inet address 10.4.1.1/32
user@pgw-sgw-1# set interfaces ms-5/1/0 unit 0 family inet description Session
PIC for SGW1-MBG1
user@pgw-sgw-1# set interfaces ms-5/1/0 unit 0 family inet address 10.4.1.2/32
```

5. Configure physical interfaces.

```
user@pgw-sgw-1# set interfaces ge-1/0/0 unit 0 family inet address 10.45.0.1/16
user@pgw-sgw-1# set interfaces ge-1/0/1 unit 0 family inet address 10.55.0.1/16
user@pgw-sgw-1# set interfaces ge-1/0/2 unit 0 family inet address 10.66.2.1/16
user@pgw-sgw-1# set interfaces ge-1/0/3 unit 0 family inet address 10.77.2.1/16
```

## 6. Configure loopback interfaces.

```
[edit]
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.11.11.11/32
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.22.22.22/32
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.33.33.33/32
user@pgw-sgw-1# set interfaces lo0 unit 0 family inet address 10.44.44.44/32
```

### Configuring Charging for the P-GWs

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging trigger-profiles p_tp exclude
plmn-change
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging trigger-profiles p_tp exclude
rat-change
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging trigger-profiles p_tp offline
volume-limit 1024
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging trigger-profiles p_tp offline
volume-limit direction both
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging transport-profiles p_tsp offline
charging-gateways cdr-release r7
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging transport-profiles p_tsp offline
charging-gateways peer-order peer p_cfg
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging transport-profiles p_tsp offline
charging-gateways switch-back-time 36
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging charging-profiles p_juniper
profile-id 1
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging charging-profiles p_juniper
transport-profile p_tsp
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging charging-profiles p_juniper
trigger-profile p_tp
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp transport-protocol tcp
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp version v0
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp header-type long
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg
destination-ipv4-address 10.2.2.2
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg source-interface
ms-3/0/0.0
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg source-interface
ipv4-address 10.4.1.3
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg destination-port
3386
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg
transport-protocol tcp
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg n3-requests
1
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg t3-response
5
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg header-type
long
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging gtp peer p_cfg
pending-queue-size 1000
```

```

set unified-edge gateways ggsn-pgw PGW1-MBG1 charging global-profile default-profile
p_juniper
set unified-edge gateways ggsn-pgw PGW1-MBG1 charging global-profile
profile-selection-order static

[edit]
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging trigger-profiles p_tp exclude
plmn-change
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging trigger-profiles p_tp exclude
rat-change
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging trigger-profiles p_tp offline
volume-limit 1024
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging trigger-profiles p_tp offline
volume-limit direction both
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging transport-profiles p_tsp offline
charging-gateways cdr-release r7
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging transport-profiles p_tsp offline
charging-gateways peer-order peer p_cfg
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging charging-profiles p_juniper
profile-id 1
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging charging-profiles p_juniper
transport-profile p_tsp
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging charging-profiles p_juniper
trigger-profile p_tp
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp transport-protocol tcp
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp version v0
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp header-type long
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg
destination-ipv4-address 10.2.2.2
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg source-interface
ms-3/1/0.0
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg source-interface
ipv4-address 10.4.1.4
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg destination-port
3386
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg
transport-protocol tcp
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg n3-requests
1
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg t3-response
5
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg header-type
long
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging gtp peer p_cfg
pending-queue-size 1000
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging global-profile default-profile
p_juniper
set unified-edge gateways ggsn-pgw PGW2-MBG1 charging global-profile
profile-selection-order static

```

### Step-by-Step Procedure

To configure the charging parameters:

1. Configure charging for the P-GW called PGW1-MBG1.

```

[edit]
user@pgw-sgw-1# edit unified-edge gateways ggsn-pgw PGW1-MBG1 charging

```

2. Specify the global GTP Prime properties of PGW1- MBG1 to transmit CDRs to the external charging gateway.
 

```
[edit unified-edge gateways ggsn-pgw PGW1-MBG1 charging]
user@pgw-sgw-1# set gtp transport-protocol tcp
user@pgw-sgw-1# set gtp version v0
user@pgw-sgw-1# set gtp header-type long
```
3. Specify the GTP Prime properties of PGW1-MBG1 for the GTP Prime peers.
 

```
[edit unified-edge gateways ggsn-pgw PGW1-MBG1 charging]
user@pgw-sgw-1# set gtp peer p_cgf destination-ipv4-address 10.2.2.2
user@pgw-sgw-1# set gtp peer p_cgf source-interface ms-3/0/0.0
user@pgw-sgw-1# set gtp peer p_cgf source-interface ipv4-address 10.4.1.3
user@pgw-sgw-1# set gtp peer p_cgf destination-port 3386
user@pgw-sgw-1# set gtp peer p_cgf transport-protocol tcp
user@pgw-sgw-1# set gtp peer p_cgf version v0
user@pgw-sgw-1# set gtp peer p_cgf n3-requests 1
user@pgw-sgw-1# set gtp peer p_cgf t3-response 5
user@pgw-sgw-1# set gtp peer p_cgf header-type long
user@pgw-sgw-1# set gtp peer p_cgf pending-queue-size 1000
```
4. Configure the transport and profiles referenced by the charging profile of PGW1-MBG1 for offline charging.
 

```
[edit unified-edge gateways ggsn-pgw PGW1-MBG1 charging]
user@pgw-sgw-1# set trigger-profiles p_tp exclude plmn-change
user@pgw-sgw-1# set trigger-profiles p_tp exclude rat-change
user@pgw-sgw-1# set trigger-profiles p_tp offline volume-limit 1024
user@pgw-sgw-1# set trigger-profiles p_tp offline volume-limit direction both
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways cdr-release
r7
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways peer-order
peer p_cfg
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways
switch-back-time 36
```
5. Configure the charging and global profiles for PGW1-MBG1.
 

```
[edit unified-edge gateways ggsn-sgw PGW1-MBG1 charging]
user@pgw-sgw-1# set charging-profiles p_juniper profile-id 1
user@pgw-sgw-1# set charging-profiles p_juniper transport-profile p_tsp
user@pgw-sgw-1# set charging-profiles p_juniper trigger-profile p_tp
user@pgw-sgw-1# set charging-profiles p_juniper global-profile p_juniper
user@pgw-sgw-1# set charging-profiles p_juniper global-profile
profile-selection-order static
```
6. Configure charging for the P-GW called PGW2-MBG1.
 

```
[edit]
user@pgw-sgw-1# edit unified-edge gateways ggsn-pgw PGW2-MBG1 charging
```
7. Specify the global GTP Prime properties of PGW2-MBG1 to transmit CDRs to the external charging gateway.
 

```
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 charging]
user@pgw-sgw-1# set gtp transport-protocol tcp
user@pgw-sgw-1# set gtp version v0
user@pgw-sgw-1# set gtp header-type long
```

8. Specify the GTP Prime properties of PGW2-MBG1 for the GTP Prime peers.

```
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 charging]
user@pgw-sgw-1# set gtp peer p_cgf destination-ipv4-address 10.2.2.2
user@pgw-sgw-1# set gtp peer p_cgf source-interface ms-3/1/0.0
user@pgw-sgw-1# set gtp peer p_cgf source-interface ipv4-address 10.4.1.4
user@pgw-sgw-1# set gtp peer p_cgf destination-port 3386
user@pgw-sgw-1# set gtp peer p_cgf transport-protocol tcp
user@pgw-sgw-1# set gtp peer p_cgf version v0
user@pgw-sgw-1# set gtp peer p_cgf n3-requests 1
user@pgw-sgw-1# set gtp peer p_cgf t3-response 5
user@pgw-sgw-1# set gtp peer p_cgf header-type long
user@pgw-sgw-1# set gtp peer p_cgf pending-queue-size 1000
```

9. Configure the transport and profiles referenced by the charging profile of PGW2-MBG1 for offline charging.

```
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 charging]
user@pgw-sgw-1# set trigger-profiles p_tp exclude plmn-change
user@pgw-sgw-1# set trigger-profiles p_tp exclude rat-change
user@pgw-sgw-1# set trigger-profiles p_tp offline volume-limit 1024
user@pgw-sgw-1# set trigger-profiles p_tp offline volume-limit direction both
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways cdr-release
r7
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways peer-order
peer p_cfg
```

10. Configure the charging and global profiles for PGW2-MBG1.

```
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 charging]
user@pgw-sgw-1# set charging-profiles p_juniper profile-id 1
user@pgw-sgw-1# set charging-profiles p_juniper transport-profile p_tsp
user@pgw-sgw-1# set charging-profiles p_juniper trigger-profile p_tp
user@pgw-sgw-1# set charging-profiles p_juniper global-profile p_juniper
user@pgw-sgw-1# set charging-profiles p_juniper global-profile
profile-selection-order static
```

---

### Configuring Charging for the S-GWs

#### CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways sgw SGW1-MBG1 charging trigger-profiles s_tp offline
volume-limit 1024
set unified-edge gateways sgw SGW1-MBG1 charging trigger-profiles s_tp offline
volume-limit direction both
set unified-edge gateways sgw SGW1-MBG1 charging transport-profiles p_tsp offline
charging-gateways cdr-release r8
set unified-edge gateways sgw SGW1-MBG1 charging transport-profiles p_tsp offline
charging-gateways peer-order peer p_cfg
set unified-edge gateways sgw SGW1-MBG1 charging transport-profiles p_tsp offline
charging-gateways switch-back-time 36
set unified-edge gateways sgw SGW1-MBG1 charging charging-profiles p_juniper profile-id
1
set unified-edge gateways sgw SGW1-MBG1 charging charging-profiles p_juniper
transport-profile p_tsp
```

```

set unified-edge gateways sgw SGW1-MBG1 charging charging-profiles p_juniper
 trigger-profile s_tp
set unified-edge gateways sgw SGW1-MBG1 charging gtp transport-protocol tcp
set unified-edge gateways sgw SGW1-MBG1 charging gtp version v0
set unified-edge gateways sgw SGW1-MBG1 charging gtp header-type long
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg
 destination-ipv4-address 10.2.2.2
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg source-interface
 ms-5/0/0.0
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg source-interface
 ipv4-address 10.4.1.1
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg destination-port
 3386
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg transport-protocol
 tcp
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg version v0
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg n3-requests 1
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg t3-response 5
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg header-type long
set unified-edge gateways sgw SGW1-MBG1 charging gtp peer p_cfg pending-queue-size
 1000
set unified-edge gateways sgw SGW1-MBG1 charging global-profile default-profile p_juniper
set unified-edge gateways sgw SGW1-MBG1 charging global-profile profile-selection-order
 static

```

[edit]

```

set unified-edge gateways sgw SGW2-MBG1 charging trigger-profiles p_tp exclude
 plmn-change
set unified-edge gateways sgw SGW2-MBG1 charging trigger-profiles p_tp exclude
 rat-change
set unified-edge gateways sgw SGW2-MBG1 charging trigger-profiles s_tp offline
 volume-limit 1024
set unified-edge gateways sgw SGW2-MBG1 charging trigger-profiles s_tp offline
 volume-limit direction both
set unified-edge gateways sgw SGW2-MBG1 charging transport-profiles p_tsp offline
 charging-gateways cdr-release r8
set unified-edge gateways sgw SGW2-MBG1 charging transport-profiles p_tsp offline
 charging-gateways peer-order peer p_cfg
set unified-edge gateways sgw SGW2-MBG1 charging transport-profiles p_tsp offline
 charging-gateways switchback-time 36
set unified-edge gateways sgw SGW2-MBG1 charging charging-profiles p_juniper profile-id
 1
set unified-edge gateways sgw SGW2-MBG1 charging charging-profiles p_juniper
 transport-profile p_tsp
set unified-edge gateways sgw SGW2-MBG1 charging charging-profiles p_juniper
 trigger-profile s_tp
set unified-edge gateways sgw SGW2-MBG1 charging gtp transport-protocol tcp
set unified-edge gateways sgw SGW2-MBG1 charging gtp version v0
set unified-edge gateways sgw SGW2-MBG1 charging gtp header-type long
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg
 destination-ipv4-address 10.2.2.2
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg source-interface
 ms-5/1/0.0
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg source-interface
 ipv4-address 10.4.1.2

```

```
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg destination-port
3386
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg transport-protocol
tcp
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg version v0
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg n3-requests 1
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg t3-response 5
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg header-type long
set unified-edge gateways sgw SGW2-MBG1 charging gtp peer p_cfg pending-queue-size
1000
set unified-edge gateways sgw SGW2-MBG1 charging global-profile default-profile p_juniper
set unified-edge gateways sgw SGW2-MBG1 charging global-profile profile-selection-order
static
```

**Step-by-Step  
Procedure**

To configure the charging parameters:

1. Configure charging for the S-GW called SGW1-MBG1.  

```
[edit]
user@pgw-sgw-1# edit unified-edge gateways sgw SGW1-MBG1 charging
```
2. Specify the global GTP Prime properties of SGW1- MBG1 to transmit CDRs to the external charging gateway.  

```
[edit unified-edge gateways sgw SGW1-MBG1 charging]
user@pgw-sgw-1# set gtp transport-protocol tcp
user@pgw-sgw-1# set gtp version v0
user@pgw-sgw-1# set gtp header-type long
```
3. Specify the GTP Prime properties of SGW1-MBG1 for the GTP Prime peers.  

```
[edit unified-edge gateways sgw SGW1-MBG1 charging]
user@pgw-sgw-1# set gtp peer p_cfg destination-ipv4-address 10.2.2.2
user@pgw-sgw-1# set gtp peer p_cfg source-interface ms-5/0/0.0
user@pgw-sgw-1# set gtp peer p_cfg source-interface ipv4-address 10.4.1.1
user@pgw-sgw-1# set gtp peer p_cfg destination-port 3386
user@pgw-sgw-1# set gtp peer p_cfg transport-protocol tcp
user@pgw-sgw-1# set gtp peer p_cfg version v0
user@pgw-sgw-1# set gtp peer p_cfgfw n3-requests 1
user@pgw-sgw-1# set gtp peer p_cfg t3-response 5
user@pgw-sgw-1# set gtp peer p_cfg header-type long
user@pgw-sgw-1# set gtp peer p_cfg pending-queue-size 1000
```
4. Configure the transport and profiles referenced by the charging profile of SGW1-MBG1 for offline charging.  

```
[edit unified-edge gateways sgw SGW1-MBG1 charging]
user@pgw-sgw-1# set trigger-profiles s_tp offline volume-limit 1024
user@pgw-sgw-1# set trigger-profiles s_tp offline volume-limit direction both
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways cdr-release
r8
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways peer-order
peer p_cfg
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways
switch-back-time 36
```
5. Configure the charging and global profiles for SGW1-MBG1.  

```
[edit unified-edge gateways sgw SGW1-MBG1 charging]
```



- ```

user@pgw-sgw-1# set charging-profiles p_juniper profile-id 1
user@pgw-sgw-1# set charging-profiles p_juniper transport-profile p_tsp
user@pgw-sgw-1# set charging-profiles p_juniper trigger-profile s_tp
user@pgw-sgw-1# set charging-profiles p_juniper global-profile p_juniper
user@pgw-sgw-1# set charging-profiles p_juniper global-profile
profile-selection-order static

```
6. Configure charging for the S-GW called SGW2-MBG1.


```

[edit]
user@pgw-sgw-1# edit unified-edge gateways sgw SGW2-MBG1 charging

```
 7. Specify the global GTP Prime properties of SGW2-MBG1 to transmit CDRs to the external charging gateway.


```

[edit unified-edge gateways sgw SGW2-MBG1 charging]
user@pgw-sgw-1# set gtp transport-protocol tcp
user@pgw-sgw-1# set gtp version v0
user@pgw-sgw-1# set gtp header-type long

```
 8. Specify the GTP Prime properties of SGW2-MBG1 for the GTP Prime peers.


```

[edit unified-edge gateways sgw SGW2-MBG1 charging]
user@pgw-sgw-1# set gtp peer p_cgf destination-ipv4-address 10.2.2.2
user@pgw-sgw-1# set gtp peer p_cgf source-interface ms-5/1/0.0
user@pgw-sgw-1# set gtp peer p_cgf source-interface ipv4-address 10.4.1.2
user@pgw-sgw-1# set gtp peer p_cgf destination-port 3386
user@pgw-sgw-1# set gtp peer p_cgf transport-protocol tcp
user@pgw-sgw-1# set gtp peer p_cgf version v0
user@pgw-sgw-1# set gtp peer p_cgf n3-requests 1
user@pgw-sgw-1# set gtp peer p_cgf t3-response 5
user@pgw-sgw-1# set gtp peer p_cgf header-type long
user@pgw-sgw-1# set gtp peer p_cgf pending-queue-size 1000

```
 9. Configure the transport and profiles referenced by the charging profile of SGW2-MBG1 for offline charging.


```

[edit unified-edge gateways sgw SGW2-MBG1 charging]
user@pgw-sgw-1# set trigger-profiles p_tp exclude plmn-change
user@pgw-sgw-1# set trigger-profiles p_tp exclude rat-change
user@pgw-sgw-1# set trigger-profiles p_tp offline volume-limit 1024
user@pgw-sgw-1# set trigger-profiles p_tp offline volume-limit direction both
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways cdr-release
r8
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways peer-order
peer p_cfg
user@pgw-sgw-1# set transport-profiles p_tsp offline charging-gateways
switch-back-time 36

```
 10. Configure the charging and global profiles for SGW2-MBG1.


```

[edit unified-edge gateways sgw SGW2-MBG1 charging]
user@pgw-sgw-1# set charging-profiles p_juniper profile-id 1
user@pgw-sgw-1# set charging-profiles p_juniper transport-profile p_tsp
user@pgw-sgw-1# set charging-profiles p_juniper trigger-profile s_tp
user@pgw-sgw-1# set charging-profiles p_juniper global-profile p_juniper
user@pgw-sgw-1# set charging-profiles p_juniper global-profile
profile-selection-order static

```

Configuring System Anchors for the Broadband Gateway P-GWs Named PGW1-MBG1 and PGW2-MBG2

- CLI Quick Configuration** To quickly configure this example, copy the following commands and paste them into the router terminal window:
- ```
[edit]
set unified-edge gateways ggsn-pgw PGW1-MBG1 system anchor-pfes interface pfe-0/0/0
set unified-edge gateways ggsn-pgw PGW2-MBG1 system anchor-pfes interface pfe-0/2/0
set unified-edge gateways ggsn-pgw PGW1-MBG1 system anchor-spics interface ms-3/0/0
set unified-edge gateways ggsn-pgw PGW1-MBG1 system anchor-spics interface ms-3/1/0
```
- Step-by-Step Procedure** To configure the anchor Packet Forwarding Engines and services PICs for the P-GWs:
1. Configure the anchor Packet Forwarding Engine for PGW1-MBG1.  

```
[edit unified-edge gateways ggsn-pgw PGW1-MBG1 system]
user@pgw-sgw-1# set anchor-pfes interface pfe-0/0/0
```
  2. Configure the anchor Packet Forwarding Engine for PGW2-MBG1.  

```
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 system]
user@pgw-sgw-1# set anchor-pfes interface pfe-0/2/0
```
  3. Configure the anchor services PIC for PGW1-MBG1.  

```
[edit unified-edge gateways ggsn-pgw PGW1-MBG1 system]
user@pgw-sgw-1# set anchor-spics interface ms-3/0/0
```
  4. Configure the anchor services PIC for PGW2-MBG1.  

```
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 system]
user@pgw-sgw-1# set anchor-spics interface ms-3/1/0
```

### Configuring System Anchors for the Broadband Gateway S-GWs Named SGW1-MBG1 and SGW2-MBG1

---

- CLI Quick Configuration** To quickly configure this example, copy the following commands and paste them into the router terminal window:
- ```
[edit]
set unified-edge gateways sgw SGW1-MBG1 system anchor-pfes interface pfe-1/0/0
set unified-edge gateways sgw SGW1-MBG1 system anchor-pfes interface pfe-1/2/0
set unified-edge gateways sgw SGW1-MBG1 system anchor-spics interface ms-5/0/0
set unified-edge gateways sgw SGW1-MBG1 system anchor-spics interface ms-5/1/0
```
- Step-by-Step Procedure** To configure the anchor Packet Forwarding Engines and services PICs for the S-GWs:
1. Configure the anchor Packet Forwarding Engine for SGW1-MBG1.

```
[edit unified-edge gateways sgw SGW1-MBG1 system]
user@pgw-sgw-1# set anchor-pfes interface pfe-1/0/0
```
 2. Configure the anchor Packet Forwarding Engine for SGW2-MBG1.

```
[edit unified-edge gateways sgw SGW2-MBG1 system]
user@pgw-sgw-1# set anchor-pfes interface pfe-1/2/0
```

3. Configure the anchor services PIC for SGW1-MBG1.

```
[edit unified-edge gateways sgw SGW1-MBG1 system]
user@pgw-sgw-1# set anchor-spics interface ms-5/0/0
```
4. Configure the anchor services PIC for SGW2-MBG1.

```
[edit unified-edge gateways sgw SGW2-MBG1 system]
user@pgw-sgw-1# set anchor-spics interface ms-5/1/0
```

Configuring GTP Services for the P-GWs Named PGW1-MBG1 and PGW2-MBG2

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp interface lo0.0
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp interface v4-address 10.33.33.33
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp n3-requests 5
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp t3-response 3
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp echo-interval 60
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp path-management enable
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp echo-n3-requests 5
set unified-edge gateways ggsn-pgw PGW1-MBG1 gtp echo-t3-response 61
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp interface lo0.0
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp interface v4-address 10.44.44.44
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp n3-requests 5
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp t3-response 3
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp echo-interval 60
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp path-management enable
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp echo-n3-requests 5
set unified-edge gateways ggsn-pgw PGW2-MBG1 gtp echo-t3-response 61
```

Step-by-Step Procedure

To configure GTP services:

1. Configure the GTP services for the P-GW called PGW1-MBG1.

```
[edit]
user@pgw-sgw-1# edit unified-edge gateways ggsn-pgw PGW1-MBG1 gtp
```
2. Configure GTP services for the P-GW interfaces called PGW1-MBG1 with path management disabled.

```
[edit unified-edge gateways pgw PGW1-MBG1 gtp]
user@pgw-sgw-1# set interface lo0.0
user@pgw-sgw-1# set interface v4-address 10.33.33.33
user@pgw-sgw-1# set n3-requests 5
user@pgw-sgw-1# set t3-response 3
user@pgw-sgw-1# set echo-interval 60
user@pgw-sgw-1# set path-management disable
user@pgw-sgw-1# set echo-n3-requests 5
user@pgw-sgw-1# set echo-t3-responses 61
```
3. Configure GTP services for the P-GW interfaces called PGW2-MBG1 with path management disabled.

```
[edit unified-edge gateways pgw PGW2-MBG1 gtp]
user@pgw-sgw-1# set interface lo0.0
```

```
user@pgw-sgw-1# set interface v4-address 10.44.44.44
user@pgw-sgw-1# set n3-requests 5
user@pgw-sgw-1# set t3-response 3
user@pgw-sgw-1# set echo-interval 60
user@pgw-sgw-1# set path-management disable
user@pgw-sgw-1# set echo-n3-requests 5
user@pgw-sgw-1# set echo-t3-responses 61
```

Configuring GTP Services for the S-GW Named SGW1-MBG1 and SGW2-MBG1

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```
[edit]
set unified-edge gateways sgw SGW1-MBG1 gtp interface lo0.0
set unified-edge gateways sgw SGW1-MBG1 gtp interface v4-address 10.11.11.11
set unified-edge gateways sgw SGW1-MBG1 gtp path-management disable
set unified-edge gateways sgw SGW1-MBG1 gtp control path-management disable
set unified-edge gateways sgw SGW1-MBG1 gtp data path-management disable
set unified-edge gateways sgw SGW1-MBG1 gtp slu echo-interval 60
set unified-edge gateways sgw SGW1-MBG1 gtp s11 echo-n3-requests 5
set unified-edge gateways sgw SGW1-MBG1 gtp s11 echo-t3-response 60
set unified-edge gateways sgw SGW2-MBG1 gtp interface lo0.0
set unified-edge gateways sgw SGW2-MBG1 gtp interface v4-address 10.22.22.22
set unified-edge gateways sgw SGW2-MBG1 gtp control path-management disable
set unified-edge gateways sgw SGW2-MBG1 gtp data path-management disable
set unified-edge gateways sgw SGW2-MBG1 gtp slu echo-interval 60
set unified-edge gateways sgw SGW2-MBG1 gtp s11 echo-n3-requests 5
set unified-edge gateways sgw SGW2-MBG1 gtp s11 echo-t3-response 60
```

Step-by-Step Procedure

To configure GTP services:

1. Configure the GTP services for the S-GW called SGW-MBG1.

```
[edit]
user@pgw-sgw-1# edit unified-edge gateways sgw SGW-MBG1 gtp
```

2. Configure GTP services for the S-GW GTP interfaces for SGW1-MBG1 with path management disabled.

```
[edit unified-edge gateways sgw SGW1-MBG1 gtp]
user@pgw-sgw-1# set interface lo0.0
user@pgw-sgw-1# set interface v4-address 10.11.11.11
user@pgw-sgw-1# set path-management disable
user@pgw-sgw-1# set control path-management disable
user@pgw-sgw-1# set data path-management disable
user@pgw-sgw-1# set slu echo-interval 60
user@pgw-sgw-1# set s11 echo-n3-requests 5
user@pgw-sgw-1# set s11 echo-t3-resposnes 60
```

3. Configure GTP services for the S-GW GTP interfaces for SGW2-MBG1 with path management disabled.

```
[edit unified-edge gateways sgw SGW2-MBG1 gtp]
user@pgw-sgw-1# set interface lo0.0
user@pgw-sgw-1# set interface v4-address 10.22.22.22
user@pgw-sgw-1# set path-management disable
```

```

user@pgw-sgw-1# set control path-management disable
user@pgw-sgw-1# set data path-management disable
user@pgw-sgw-1# set slu echo-interval 60
user@pgw-sgw-1# set sll echo-n3-requests 5
user@pgw-sgw-1# set sll echo-t3-responses 60

```

Configure the APNs for the P-GW

CLI Quick Configuration

To quickly configure this example, copy the following commands and paste them into the router terminal window:

```

[edit]
set unified-edge gateways ggsn-pgw PGW1-MBG1 apn-services apns APN1
set unified-edge gateways ggsn-pgw PGW1-MBG1 apn-services apns APN1 mobile interface
mif.3
set unified-edge gateways ggsn-pgw PGW1-MBG1 apn-services apns APN1
address-assignment local
set unified-edge gateways ggsn-pgw PGW1-MBG1 apn-services apns APN1 selection-mode
from-ms
set unified-edge gateways ggsn-pgw PGW2-MBG1 apn-services apns APN2
set unified-edge gateways ggsn-pgw PGW2-MBG1 apn-services apns APN1 mobile interface
mif.4
set unified-edge gateways ggsn-pgw PGW2-MBG1 apn-services apns APN1
address-assignment local
set unified-edge gateways ggsn-pgw PGW2-MBG1 apn-services apns APN1 selection-mode
from-ms

```

Step-by-Step Procedure

To configure APNs for the P-GWs called PGW1-MBG1 and PGW2-MBG1:

1. Configure APN1 for the P-GW called PGW-MBG1.

```

[edit]
user@pgw-sgw-1# edit unified-edge gateways ggsn-pgw PGW1-MBG1 apn-services
apns APN1
[edit unified-edge gateways ggsn-pgw PGW1-MBG1 apn-services apns APN1]
user@pgw-sgw-1# set mobile-interface mif.3
user@pgw-sgw-1# set address-assignment local
user@pgw-sgw-1# set selection-mode from-ms

```

2. Configure APN2 for the P-GW called PGW2-MBG1.

```

[edit]
user@pgw-sgw-1# edit unified-edge gateways ggsn-pgw PGW2-MBG1 apn-services
apns APN2
[edit unified-edge gateways ggsn-pgw PGW2-MBG1 apn-services apns APN2]
user@pgw-sgw-1# set mobile-interface mif.4
user@pgw-sgw-1# set address-assignment local
user@pgw-sgw-1# set selection-mode from-ms

```

Verification

Verifying Gateway Status

Purpose Verify the gateways for the broadband gateway.

Action user@pgw-sgw-1> show unified-edge gateways brief

Total number of configured gateways: 4

Gateway name: PGW1-MBG1
Gateway type: ggsn-pgw
Gateway id: 1

Gateway name: PGW2-MBG1
Gateway type: ggsn-pgw
Gateway id: 2

Gateway name: SGW1-MBG1
Gateway type: sgw
Gateway id: 3

Gateway name: SGW2-MBG1
Gateway type: sgw
Gateway id: 4

Meaning The `show unified-edge gateways brief` command displays information about the configured gateways.

Related Documentation

- [Example: Configuring a Collocated P-GW and S-GW on page 32](#)
- [Example: Configuring a Standalone S-GW on page 21](#)

CHAPTER 5

Configuration Statements

- [\[edit unified-edge gateways sgw <gateway-name>\] Hierarchy Level on page 59](#)

[\[edit unified-edge gateways sgw <gateway-name>\] Hierarchy Level](#)

```
sgw gateway-name {
  anchor-pfe-default-bearers-percentage default-bearers-percentage;
  anchor-pfe-guaranteed-bandwidth anchor-pfe-guaranteed-bandwidth;
  anchor-pfe-maximum-bearers maximum-bearers;
  call-rate-statistics {
    history history;
    interval interval;
  }
  charging {
    cdr-profiles profile-name {
      description string;
      enable-reduced-partial-cdrs;
      exclude-ie-options {
        apn-ni;
        apn-selection-mode;
        cc-selection-mode;
        dynamic-address;
        list-of-service-data;
        list-of-traffic-volumes;
        lrsn;
        ms-time-zone;
        network-initiation;
        node-id;
        pdn-connection-id;
        pdppdn-type;
        pgw-address-used;
        pgw-plmn-identifier;
        rat-type;
        record-sequence-number;
        served-imeisv;
        served-msisdn;
        served-pdppdn-address;
        serving-node-plmn-identifier;
        sgw-change;
        start-time;
        stop-time;
        user-location-information;
```

```
    }  
  }  
  charging-profiles profile-name {  
    cdr-profile profile-name;  
    default-rating-group rg-num;  
    default-service-id id-num;  
    description string;  
    profile-id id-num;  
    transport-profile profile-name;  
    trigger-profile profile-name;  
    service-mode maintenance;  
  }  
  global-profile {  
    default-profile default-profile;  
    home-profile home-profile;  
    profile-selection-order [profile-selection-method];  
    roamer-profile roamer-profile;  
    visitor-profile visitor-profile;  
  }  
  gtp {  
    destination-port port-number;  
    down-detect-time duration;  
    echo-interval duration;  
    header-type (long | short);  
    n3-requests requests;  
    no-path-management;  
    pending-queue-size value;  
    peer peer-name {  
      destination-ipv4-address address;  
      destination-port port-number;  
      down-detect-time duration;  
      echo-interval duration;  
      header-type (long | short);  
      n3-requests requests;  
      no-path-management;  
      pending-queue-size value;  
      reconnect-time duration;  
      source-interface interface-name [ipv4-address address];  
      t3-response response-interval;  
      transport-protocol (tcp | udp);  
      version (v0 | v1 | v2);  
    }  
    reconnect-time duration;  
    source-interface {  
      interface-name;  
      ipv4-address address;  
    }  
    t3-response response-interval;  
    transport-protocol (tcp | udp);  
    version (v0 | v1 | v2);  
  }  
  local-persistent-storage-options {  
    cdrs-per-file value;  
    disable-replication;  
    disk-space-policy {  
      watermark-level-1 {
```



```

        notification-level (both | snmp-alarm | syslog);
        percentage value;
    }
    watermark-level-2 {
        notification-level (both | snmp-alarm | syslog);
        percentage value;
    }
    watermark-level-3 {
        notification-level (both | snmp-alarm | syslog);
        percentage value;
    }
}
file-age {
    age;
    disable;
}
file-creation-policy (shared-file | unique-file);
file-format (3gpp | raw-asn);
file-name-private-extension string;
file-size {
    size;
    disable;
}
}
traceoptions {
    file file-name <files number> <match regular-expression> <no-world-readable |
        world-readable> <size size>;
    flag flag;
    level (all | critical | error | info | notice | verbose | warning);
    no-remote-trace;
}
user-name string;
world-readable;
}
traceoptions {
    file file-name <files number> <no-world-readable | world-readable> <size size>;
    flag flag;
    level (all | critical | error | info | notice | verbose | warning);
    no-remote-trace;
}
}
transport-profiles profile-name {
    description string;
    offline {
        charging-gateways {
            cdr-aggregation-limit value;
            cdr-release (r7 | r8 | r99);
            mtu value;
            peer-order {
                [peer charging-gateway-peer-name];
            }
            persistent-storage-order {
                local-storage;
            }
            switch-back-time seconds;
        }
    }
}
service-mode maintenance;

```

```
}
trigger-profiles profile-name {
  description string;
  offline {
    container-limit value;
    exclude {
      ms-timezone-change;
      plmn-change;
      qos-change;
      rat-change;
      sgsn-mme-change;
      user-location-change;
    }
    sgsn-mme-change-limit value;
    time-limit value;
    volume-limit {
      value;
      direction (both | uplink);
    }
  }
}
tariff-time-list {
  [tariff-time];
}
}
gtp {
  control {
    ddn-delay-sync (disable | enable);
    dscp-code-point value;
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    forwarding-class class-name;
    interface {
      interface-name;
      v4-address v4-address;
    }
    n3-requests requests;
    no-response-cache;
    path-management (disable | enable);
    response-cache-timeout interval-in-seconds;
    t3-response response-interval;
    ttl-value ttl-value;
  }
  data {
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    error-indication-interval seconds;
    indirect-tunnel (disable | enable);
    interface {
      interface-name;
      v4-address v4-address;
    }
    num-gtpu-end-markers num-gtpu-end-markers;
    path-management (disable | enable);
  }
}
```

```

}
echo-interval interval;
echo-n3-requests requests;
echo-t3-response response-interval;
interface {
    interface-name;
    v4-address v4-address;
}
n3-requests requests;
path-management (disable | enable);
peer-history number;
s11 {
    dscp-code-point value;
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    forwarding-class class-name;
    interface {
        interface-name;
        v4-address v4-address;
    }
    n3-requests requests;
    path-management (disable | enable);
    t3-response response-interval;
    ttl-value ttl-value;
}
s12 {
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    interface {
        interface-name;
        v4-address v4-address;
    }
    path-management (disable | enable);
}
s1u {
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    interface {
        interface-name;
        v4-address v4-address;
    }
    path-management (disable | enable);
}
s4 {
    control {
        dscp-code-point value;
        echo-interval interval;
        echo-n3-requests requests;
        echo-t3-response response-interval;
        forwarding-class class-name;
        interface {
            interface-name;
            v4-address v4-address;

```

```
    }
    n3-requests requests;
    path-management (disable | enable);
    t3-response response-interval;
    ttl-value ttl-value;
  }
data {
  echo-interval interval;
  echo-n3-requests requests;
  echo-t3-response response-interval;
  interface {
    interface-name;
    v4-address v4-address;
  }
  path-management (disable | enable);
}
echo-interval interval;
echo-n3-requests requests;
echo-t3-response response-interval;
interface {
  interface-name;
  v4-address v4-address;
}
n3-requests requests;
path-management (disable | enable);
t3-response response-interval;
}
s5 {
  control {
    dscp-code-point value;
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    forwarding-class class-name;
    interface {
      interface-name;
      v4-address v4-address;
    }
    n3-requests requests;
    path-management (disable | enable);
    t3-response response-interval;
    ttl-value ttl-value;
  }
  data {
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    interface {
      interface-name;
      v4-address v4-address;
    }
    path-management (disable | enable);
  }
  echo-interval interval;
  echo-n3-requests requests;
  echo-t3-response response-interval;
```

```

interface {
    interface-name;
    v4-address v4-address;
}
n3-requests requests;
path-management (disable | enable);
t3-response response-interval;
}
s8 {
    control {
        dscp-code-point value;
        echo-interval interval;
        echo-n3-requests requests;
        echo-t3-response response-interval;
        forwarding-class class-name;
        interface {
            interface-name;
            v4-address v4-address;
        }
        n3-requests requests;
        path-management (disable | enable);
        t3-response response-interval;
        ttl-value ttl-value;
    }
    data {
        echo-interval interval;
        echo-n3-requests requests;
        echo-t3-response response-interval;
        interface {
            interface-name;
            v4-address v4-address;
        }
        path-management (disable | enable);
    }
    echo-interval interval;
    echo-n3-requests requests;
    echo-t3-response response-interval;
    interface {
        interface-name;
        v4-address v4-address;
    }
    n3-requests requests;
    path-management (disable | enable);
    t3-response response-interval;
}
t3-response response-interval;
traceoptions {
    file filename {
        files files;
        (no-world-readable | world-readable);
        size size;
    }
    flag {
        flag;
    }
    level level;
}

```

```
        no-remote-trace;
    }
}
home-plmn {
    mcc [mcc] {
        mnc [mnc];
    }
}
idle-mode-buffering {
    disable;
    expire-timer time-in-seconds;
}
inline-services {
    ip-reassembly;
}
ip-reassembly-profile {
    profile-name;
}
local-policy-profile local-policy-profile;
maximum-bearers maximum-bearers;
preemption {
    enable;
}
remote-delete-on-peer-fail;
service-mode
software-datapath {
    traceoptions {
        file filename {
            files files;
            match match;
            size size;
            (no-world-readable | world-readable);
        }
        flag {
            flag;
        }
        level level;
        no-remote-trace;
    }
}
system {
    pfes {
        [interface interface-name];
    }
    session-pics {
        [interface interface-name];
    }
}
traceoptions {
    file filename {
        files files;
        match match;
        (no-world-readable | world-readable);
        size size;
    }
    flag {
```

```

        flag;
    }
    level level;
    no-remote-trace;
}


```

- Related Documentation**
- [edit unified-edge gateways] Hierarchy Level
 - [Notational Conventions Used in Junos OS Configuration Hierarchies](#)

anchor-pfe-default-bearers-percentage (Serving Gateway)

Syntax	anchor-pfe-default-bearers-percentage <i>default-bearers-percentage</i> ;
Hierarchy Level	[edit unified-edge gateways sgw <i>gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	Configure the maximum number of Evolved Packet System (EPS) default bearers allowed for each anchor Packet Forwarding Engine on the Serving Gateway (S-GW). This value is specified as a percentage of the maximum number of EPS default bearers allowed for an anchor Packet Forwarding Engine.
Options	<p><i>default-bearers-percentage</i>—Maximum number of EPS default bearers per anchor Packet Forwarding Engine, specified as a percentage of the maximum number of EPS default bearers or allowed.</p> <p>Range: 10 through 100 percent</p> <p>Default: 100 percent, which indicates that there is no restriction on the maximum number of EPS default bearers admitted on an anchor Packet Forwarding Engine. The only limitation is that the total number of bearers admitted on the anchor Packet Forwarding Engine cannot exceed the maximum number of bearers allowed for an anchor Packet Forwarding Engine.</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"> • anchor-pfe-guaranteed-bandwidth (Serving Gateway) on page 68 • anchor-pfe-maximum-bearers (Serving Gateway) on page 69 • Configuring S-GW-Specific CAC Parameters on page 18


anchor-pfe-guaranteed-bandwidth (Serving Gateway)

Syntax	<code>anchor-pfe-guaranteed-bandwidth <i>anchor-pfe-guaranteed-bandwidth</i>;</code>
Hierarchy Level	[edit unified-edge gateways sgw <i>gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	Configure the guaranteed bandwidth for each anchor Packet Forwarding Engine on the Serving Gateway (S-GW). This value limits the bandwidth available to guaranteed bit rate (GBR) bearers on an anchor Packet Forwarding Engine, which in turn limits the number of GBR bearers that can be created on an anchor Packet Forwarding Engine.
	<div> NOTE: Configuring a value that is more than the actual physical bandwidth of the anchor Packet Forwarding Engine results in oversubscription; in this scenario only a best-effort service can be provided.</div>
Options	<p><i>anchor-pfe-guaranteed-bandwidth</i>—Guaranteed bandwidth per anchor Packet Forwarding Engine.</p> <p>Range: 10 through 100 gigabits per second (Gbps)</p> <p>Default: 40 Gbps</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• anchor-pfe-default-bearers-percentage (Serving Gateway) on page 67• anchor-pfe-maximum-bearers (Serving Gateway) on page 69• Configuring S-GW-Specific CAC Parameters on page 18

anchor-pfe-maximum-bearers (Serving Gateway)

Syntax	anchor-pfe-maximum-bearers <i>maximum-bearers</i> ;
Hierarchy Level	[edit unified-edge gateways sgw <i>gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	Configure the maximum number of Evolved Packet System (EPS) bearers, both default and dedicated, allowed for each anchor Packet Forwarding Engine on the Serving Gateway (S-GW).
Options	<p><i>maximum-bearers</i>—Maximum number of EPS bearers, in multiples of one thousand, per anchor Packet Forwarding Engine.</p> <p>Range: 100 through 510,000 bearers</p> <p>Default: 510,000 bearers</p>
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• anchor-pfe-default-bearers-percentage (Serving Gateway) on page 67• anchor-pfe-guaranteed-bandwidth (Serving Gateway) on page 68• Configuring S-GW-Specific CAC Parameters on page 18

disable (Idle Mode Buffering)

Syntax	disable;
Hierarchy Level	[edit unified-edge gateways sgw <i>gateway-name</i> idle-mode-buffering]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	<p>Disable idle mode buffering on the Serving Gateway (S-GW). When idle mode buffering is disabled, the S-GW does <i>not</i> buffer the downlink packets meant for the user equipment (UE) that is in idle mode.</p> <p>Idle mode buffering uses 1 GB of memory when it is enabled. When it is disabled, this memory is used by the daemon handling subscriber management.</p> <div><p>NOTE: Idle mode buffering can be disabled only when the S-GW is in maintenance mode. When idle mode buffering is changed from enabled to disabled or vice versa, all services PICs of the corresponding S-GW are rebooted.</p></div>
Default	If you do not configure this statement, then idle mode buffering is enabled.
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">• Configuring an S-GW on a Broadband Gateway on page 15• idle-mode-buffering on page 71


expire-timer (Idle Mode Buffering)

Syntax	<code>expire-timer <i>time-in-seconds</i>;</code>
Hierarchy Level	<code>[edit unified-edge gateways sgw <i>gateway-name</i> idle-mode-buffering]</code>
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	Configure the expire timer for idle mode buffering in the Serving Gateway (S-GW). After the configured time elapses for a bearer, buffered packets are discarded by the S-GW.
Options	<p><i>time-in-seconds</i>—Expire timer, in seconds.</p> <p>Default: 200 seconds</p> <p>Range: 30 through 300 seconds</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 an S-GW on a Broadband Gateway on page 15 • idle-mode-buffering on page 71

idle-mode-buffering

Syntax	<pre>idle-mode-buffering { disable; expire-timer <i>time-in-seconds</i>; }</pre>
Hierarchy Level	<code>[edit unified-edge gateways sgw <i>gateway-name</i>]</code>
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	<p>Configure the idle mode buffering options for the Serving Gateway (S-GW). When a user equipment (UE) is in idle mode, the S-GW buffers the downlink packets meant for that user equipment.</p> <p>The remaining statements are explained separately.</p>
Default	If you do not configure this statement, then idle mode buffering is enabled with an expire-timer of 200 seconds.
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 an S-GW on a Broadband Gateway on page 15 • sgw on page 76


local-policy-profile (Broadband Gateway)

Syntax	<code>local-policy-profile <i>local-policy-profile</i>;</code>
Hierarchy Level	[edit unified-edge gateways ggsn-pgw <i>gateway-name</i>], [edit unified-edge gateways sgw <i>gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.2W. Support at the [edit unified-edge gateways <i>sgw name</i>] hierarchy level introduced in Junos OS Mobility Release 11.4W.
Description	<p>Specify a local policy profile for the broadband gateway.</p> <ul style="list-style-type: none">• For the broadband gateway configured as a gateway GPRS support node (GGSN) or Packet Data Network Gateway (P-GW), the local policy profile is a combination of the quality-of-service (QoS) policy (cos-policy-profile), the classifier policy (classifier-profile), and the resource threshold policy (resource-threshold-policy).• For the broadband gateway configured as a Serving Gateway (S-GW), the local policy profile is a combination of the classifier policy (classifier-profile) and the resource threshold policy (resource-threshold-policy).
	<div><p>NOTE: The local policy profile must already be configured at the [edit unified-edge] hierarchy level.</p></div>
Options	<i>local-policy-profile</i> —Name of the local policy profile.
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">• local-policy-profile (APN) (P-GW only)

maximum-bearers (Broadband Gateway)

Syntax	<code>maximum-bearers <i>maximum-bearers</i>;</code>
Hierarchy Level	[edit unified-edge gateways <i>ggsn-pgw gateway-name</i>], [edit unified-edge gateways <i>sgw gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.2W. Support at the [edit unified-edge gateways <i>sgw name</i>] hierarchy level introduced in Junos OS Mobility Release 11.4W.
Description	For the broadband gateway configured as a gateway GPRS support node (GGSN) or Packet Data Network Gateway (P-GW), configure the maximum number of Evolved Packet System (EPS) bearers or packet data protocol (PDP) contexts allowed. For the broadband gateway configured as a Serving Gateway (S-GW), configure the maximum number of EPS bearers allowed.
Options	<i>maximum-bearers</i> —Maximum number of bearers for the broadband gateway. Range: 100,000 through 12,000,000 bearers Default: 12,000,000 bearers
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"> Configuring the Maximum Number of Bearers maximum-bearers (APN) (P-GW only)

preemption (Serving Gateway)

Syntax	<pre>preemption { enable; }</pre>
Hierarchy Level	[edit unified-edge gateways <i>sgw gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	<p>Configure whether preemption should be enabled or disabled on the Serving Gateway (S-GW). Preemption aids in call admission control and enables the gateway to accommodate higher priority bearers over the lower priority ones, based on the Preemption Capability Indicator (PCI) and Preemption Vulnerability Indicator (PVI).</p> <p>The PCI value defines whether a bearer with a lower priority level (PL) should be dropped to free the resources required. The PVI value defines whether a bearer is liable to be dropped in favor of a preemption-capable bearer with a higher priority level value.</p> <p>Preemption can be applied based on bearer load or memory load, both of which can be configured at the [edit unified-edge cos-cac resource-threshold-profiles] hierarchy level.</p> <div><p>NOTE: In the S-GW, only bearers that are of the same type can preempt each other: guaranteed bit rate (GBR) bearers can preempt only GBR bearers, and non-GBR bearers can preempt only non-GBR bearers.</p></div>
Default	If you do not configure this statement, preemption is disabled by default.
Options	enable —Enable preemption on the S-GW.
Required Privilege Level	interface—To view this statement in the configuration. interface-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring an S-GW on a Broadband Gateway on page 15

remote-delete-on-peer-fail

Syntax	<code>remote-delete-on-peer-fail;</code>
Hierarchy Level	[edit unified-edge gateways <i>sgw gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	Specify that the Serving Gateway (S-GW) sends a delete message to the Packet Data Network Gateway (P-GW) when the S-GW detects that a peer has failed.
Default	If you do not include the remote-delete-on-peer-fail statement, then the S-GW only deletes the packet data protocol (PDP) contexts or bearers locally on the S-GW.
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"> • Configuring an S-GW on a Broadband Gateway on page 15 • sgw on page 76

service-mode (Serving Gateway)

Syntax	<code>service-mode <i>service-mode-options</i>;</code>
Hierarchy Level	[edit unified-edge gateways <i>sgw gateway-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	<p>Specify that the Serving Gateway (S-GW) should be in maintenance mode. You do this if you want to perform maintenance tasks such as deleting certain GTP parameters or modifying the GTP interface address on the S-GW. See the <i>MobileNext Broadband Gateway Configuration Guide</i> for a list of maintenance tasks that you can perform when the S-GW is in maintenance mode.</p> <p>When in the Maintenance Mode Active Phase, you can modify all valid attributes on the object. In all other cases, you can modify only the non-maintenance mode attributes.</p>
Options	<i>service-mode-options</i> —Specify the service mode. Currently, only the maintenance mode is option supported.
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"> • sgw on page 76 • show unified-edge sgw service-mode on page 97

sgw

Syntax	<code>sgw gateway-name { ... }</code>
Hierarchy Level	[edit unified-edge gateways]
Release Information	Statement introduced in Junos OS Mobility Release 11.4W.
Description	<p>Specify the name to be used for the Serving Gateway (S-GW).</p> <p>The remaining statements are explained separately.</p>
Options	<p>gateway-name—Name of the gateway.</p> <p>Range: Up to 63 characters in length.</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">• [edit unified-edge gateways sgw <gateway-name>] Hierarchy Level on page 59• Configuring an S-GW on a Broadband Gateway on page 15

PART 3

Administration

- [Operational Commands on page 79](#)

CHAPTER 6

Operational Commands

clear unified-edge sgw idle-mode-buffering statistics

Syntax	clear unified-edge sgw idle-mode-buffering statistics <all> <fpc-slot <i>fpc-slot</i>> <gateway <i>gateway</i>> <pic-slot <i>pic-slot</i>>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Clear the idle mode buffering statistics for one or more Serving Gateways (S-GWs). If a gateway name is not specified, then statistics for all S-GWs are cleared.
Options	none —Clear the idle mode buffering statistics for all S-GWs. all —(Optional) Clear all the buffering statistics including the idle mode buffering statistics and the statistics collected during the initial bearer setup. fpc-slot <i>fpc-slot</i> pic-slot <i>pic-slot</i> —(Optional) Clear the idle mode buffering statistics for the specified Flexible PIC Concentrator (FPC) and PIC slot numbers. gateway —(Optional) Clear the idle mode buffering statistics for all the services PICs in the specified gateway.
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none">• show unified-edge sgw idle-mode-buffering statistics on page 93
List of Sample Output	clear unified-edge sgw idle-mode-buffering statistics on page 80
Output Fields	When you enter this command, you are provided feedback on the status of your request.

Sample Output

clear unified-edge sgw idle-mode-buffering statistics	<pre>user@host> clear unified-edge sgw idle-mode-buffering statistics Cleared idle mode buffering statistics</pre>
--	---

clear unified-edge sgw statistics

Syntax	clear unified-edge sgw statistics gateway <i>gateway-name</i>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Clear all the statistics for the specified Serving Gateway (S-GW).
Options	gateway <i>gateway-name</i> —Clear the statistics for the specified S-GW.
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none">• show unified-edge sgw statistics on page 107
List of Sample Output	clear unified-edge sgw statistics gateway SGW on page 81
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

clear unified-edge sgw statistics gateway SGW	user@host> clear unified-edge sgw statistics gateway SGW
---	--


clear unified-edge sgw subscribers

Syntax	clear unified-edge sgw subscribers gateway <i>gateway</i> <ams-interface-name <i>ams-interface-name</i> > <apfe-interface-name <i>apfe-interface-name</i> > <imsi <i>imsi</i> > <ms-interface-name <i>ms-interface-name</i> > <msisdn <i>msisdn</i> > <pfe-interface-name <i>pfe-interface-name</i> >
Release Information	Command introduced in Junos OS Mobility Release 11.4W. ams-interface-name , apfe-interface-name , ms-interface-name , and pfe-interface-name options introduced in Junos OS Mobility Release 11.4W.
Description	Clear the subscribers for the Serving Gateway (S-GW) based on the options specified.
Options	gateway <i>gateway</i> —Clear the subscribers for the specified S-GW. ams-interface-name <i>ams-interface-name</i> —Clear the subscribers on the specified aggregated multiservices interface name. apfe-interface-name <i>apfe-interface-name</i> —Clear the subscribers on the specified aggregated Packet Forwarding Engine interface name. imsi <i>imsi</i> —(Optional) Clear the subscriber matching the specified International Mobile Subscriber Identity (IMSI). ms-interface-name <i>ms-interface-name</i> —Clear the subscribers on the specified multiservices interface name. msisdn <i>msisdn</i> —(Optional) Clear the subscriber matching the specified Mobile Station ISDN (MSISDN) number. pfe-interface-name <i>pfe-interface-name</i> —Clear the subscribers on the specified Packet Forwarding Engine interface name.
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none">• clear unified-edge sgw subscribers charging on page 84• clear unified-edge sgw subscribers peer on page 85• show unified-edge sgw subscribers on page 110
List of Sample Output	clear unified-edge sgw subscribers gateway SGW on page 83
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

```
clear unified-edge sgw    user@host> clear unified-edge sgw subscribers gateway SGW
subscribers gateway
SGW
```

clear unified-edge sgw subscribers charging

Syntax	<code>clear unified-edge sgw subscribers charging gateway <i>gateway</i></code> <code><charging-profile <i>charging-profile</i>></code> <code><transport-profile <i>transport-profile</i>></code>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Clear the charging information for subscribers on the Serving Gateway (S-GW) based on the options specified.
Options	<p>gateway <i>gateway</i>—Clear the charging information for all subscribers for the specified S-GW.</p> <p>charging-profile <i>charging-profile</i>—(Optional) Clear the subscriber matching the specified charging profile name.</p> <p>transport-profile <i>transport-profile</i>—(Optional) Clear the subscriber matching the specified transport profile name.</p>
	<div><p>NOTE: You must specify either a charging profile or a transport profile to run this command.</p></div>
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none">• clear unified-edge sgw subscribers on page 82• show unified-edge sgw subscribers on page 110• clear unified-edge sgw subscribers peer on page 85
List of Sample Output	clear unified-edge sgw subscribers charging gateway SGW on page 84
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

clear unified-edge sgw subscribers charging gateway SGW	<pre>user@host> clear unified-edge sgw subscribers charging gateway SGW</pre>
---	--

clear unified-edge sgw subscribers peer

Syntax	<code>clear unified-edge sgw subscribers peer gateway <i>gateway</i> remote-addr <i>remote-addr</i> <local-addr <i>local-addr</i>> <routing-instance <i>routing-instance</i>></code>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Clear the information for subscribers anchored for the specified GPRS tunneling protocol (GTP) peer. The GTP peer can be an S4 Serving GPRS Support Node (S4-SGSN), Mobility Management Entity (MME), or a Packet Data Network Gateway (P-GW).
Options	<p>gateway <i>gateway</i>—Clear the subscribers for the specified gateway.</p> <p>remote-addr <i>remote-addr</i>—Clear the information for subscribers anchored on the peer with the specified IPv4 address.</p> <p>local-addr <i>local-addr</i>—(Optional) Clear the subscriber matching the specified local IPv4 address of the broadband gateway on that interface.</p> <p>routing-instance <i>routing-instance</i>—(Optional) Clear the subscriber matching the specified routing instance.</p>
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge sgw subscribers on page 82 • clear unified-edge sgw subscribers charging on page 84 • show unified-edge sgw subscribers on page 110
List of Sample Output	clear unified-edge sgw subscribers peer gateway pgw remote-addr 11.11.11.2 on page 85
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

```
clear unified-edge sgw subscribers peer
gateway pgw
remote-addr 11.11.11.2
```

```
user@host> clear unified-edge sgw subscribers peer gateway pgw remote-addr 11.11.11.2
```

request unified-edge sgw call-trace clear

Syntax	request unified-edge sgw call-trace clear
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Clear the completed or duplicate subscriber call traces on one or more Serving Gateways (S-GWs).
Options	This command has no options.
Required Privilege Level	unified-edge
Related Documentation	<ul style="list-style-type: none">• request unified-edge sgw call-trace show on page 87• request unified-edge sgw call-trace start on page 90• request unified-edge sgw call-trace stop on page 92
List of Sample Output	request unified-edge sgw call-trace clear on page 86
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

request unified-edge sgw call-trace clear	user@host> request unified-edge sgw call-trace clear
--	--

request unified-edge sgw call-trace show

Syntax	request unified-edge sgw call-trace show <all completed current> <brief detail>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Display the information related to subscriber call tracing on one or more Serving Gateways (S-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 sgw call-trace clear on page 86 • request unified-edge sgw call-trace start on page 90 • request unified-edge sgw call-trace stop on page 92
List of Sample Output	request unified-edge sgw call-trace show brief on page 88 request unified-edge sgw call-trace show detail on page 88
Output Fields	Table 3 on page 87 lists the output fields for the request unified-edge sgw call-trace show command. Output fields are listed in the approximate order in which they appear.

Table 3: request unified-edge sgw 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 sgw 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
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 sgw call-trace show brief
sgw call-trace show
brief
Identifier           File name           Status           SPIC Mask      SPIC Mask
                    create             complete
call_trace_id_10    call_trace_id_10_02112012_205634    done 0x0      0x0
call_trace_id_11    call_trace_id_11_02112012_205932    done 0x40     0x40
call_trace_id_12    call_trace_id_12_02112012_210001    not-done 0x40  0x0
call_trace_id_13    call_trace_id_13_02112012_210353    duplicate 0x0   0x0

```

```

request unified-edge user@host> request unified-edge sgw call-trace show detail
sgw call-trace show
detail
Call trace information :
Identifier : call_trace_id_10      Trace file :
call_trace_id_10_02112012_205634
Status : done      Create Mask : 0x0      Complete Mask : 0x0
Next Call : 10
Calls Traced : 0      FPC : 5    PIC : 0
Identifier : call_trace_id_11      Trace file :
call_trace_id_11_02112012_205932
Status : done      Create Mask : 0x40      Complete Mask : 0x40
Calls Traced : 0
Identifier : call_trace_id_12      Trace file :
call_trace_id_12_02112012_210001
Status : not-done   Create Mask : 0x40      Complete Mask : 0x0
Next Call : 5
Calls Traced : 0      FPC : 4    PIC : 0
Identifier : call_trace_id_13      Trace file :
call_trace_id_13_02112012_210353

```

Status : duplicate Create Mask : 0x0 Complete Mask : 0x0
Next Call : 5
Calls Traced : 0 FPC : 4 PIC : 0

request unified-edge sgw call-trace start

Syntax	request unified-edge sgw call-trace start <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 11.4W.
Description	Start the subscriber call tracing on one or more Serving Gateways (S-GWs).
Options	<p>none—Start the subscriber call tracing.</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 sgw call-trace clear on page 86 • request unified-edge sgw call-trace show on page 87 • request unified-edge sgw call-trace stop on page 92
List of Sample Output	request unified-edge sgw call-trace start fpc-slot 4 pic-slot 0 next-call 10 on page 91
Output Fields	Table 4 on page 90 lists the output fields for the request unified-edge sgw call-trace start command. Output fields are listed in the approximate order in which they appear.

Table 4: request unified-edge sgw call-trace start Output Fields

Field Name	Field Description
Session PIC	Session PIC for which the call trace status is displayed.

Table 4: request unified-edge sgw call-trace start Output Fields (*continued*)

Field Name	Field Description
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 sgw call-trace start fpc-slot 4 pic-slot 0 next-call 10
sgw call-trace start      Session PIC      Status
fpc-slot 4 pic-slot 0    ms-0/0/0      success
next-call 10             ms-1/0/0      success
```

request unified-edge sgw call-trace stop

Syntax	request unified-edge sgw call-trace stop <all> <identifier <i>call-trace-identifier</i> >
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Stop the previously configured subscriber call tracing on one or more Serving Gateways (S-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 sgw call-trace clear on page 86 • request unified-edge sgw call-trace show on page 87 • request unified-edge sgw call-trace start on page 90
List of Sample Output	request unified-edge sgw call-trace stop on page 92
Output Fields	Table 5 on page 92 lists the output fields for the request unified-edge sgw call-trace stop command. Output fields are listed in the approximate order in which they appear.

Table 5: request unified-edge sgw 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 sgw call-trace stop
sgw call-trace stop    Session PIC      Status
                        ms-0/0/0         success
                        ms-1/0/0         success
```


show unified-edge sgw idle-mode-buffering statistics


Syntax	show unified-edge sgw idle-mode-buffering statistics <brief detail> <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Display the idle mode buffering statistics for one or more Serving Gateways (S-GWs). If a gateway name is not specified, then statistics for all S-GWs are displayed.
Options	<p>none—(Same as brief) Display the idle mode buffering statistics for all S-GWs.</p> <p>brief detail—(Optional) Display the specified level of output.</p>
	<div>  <p>NOTE: The brief option displays the aggregated statistics from all the services PICs for each S-GW. The detail option displays the statistics for each services PIC separately for each S-GW.</p> </div>
	<p>fpc-slot <i>fpc-slot</i> pic-slot <i>pic-slot</i>—(Optional) Display the idle mode buffering statistics for the specified Flexible PIC Concentrator (FPC) and PIC slot numbers.</p> <p>gateway—(Optional) Display the idle mode buffering statistics for all the services PICs in the specified gateway.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge sgw idle-mode-buffering statistics on page 80
List of Sample Output	<p>show unified-edge sgw idle-mode-buffering statistics brief on page 95</p> <p>show unified-edge sgw idle-mode-buffering statistics detail on page 96</p>
Output Fields	Table 6 on page 93 lists the output fields for the show unified-edge sgw idle-mode-buffering statistics command. Output fields are listed in the approximate order in which they appear.

Table 6: show unified-edge sgw idle-mode-buffering statistics Output Fields

Field Name	Field Description	Level of Output
Gateway	Name of the S-GW.	All levels
FPC Slot	FPC slot number for which the statistics are displayed.	detail
PIC slot	PIC slot number for which the statistics are displayed.	detail

Table 6: show unified-edge sgw idle-mode-buffering statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Idle Mode Buffering Statistics: —The following idle mode buffering statistics related to GTPv1 downlink are displayed.		
Total Packets received	Total number of packets received from the Packet Forwarding Engine for idle subscribers.	All levels
Invalid packets	Total number of packets received that failed validation checks; these packets are received from the Packet Forwarding Engine.	All levels
Flows created	Total number of flows created to handle packets.	All levels
Flows aged out	Total number of flows aged out.	All levels
Active Flows	Number of current active flows.	All levels
Active Buffered Flows	Number of active flows that are currently being buffered.	All levels
Buffering Statistics —The following consolidated statistics are displayed for packets buffered for idle subscribers and for packets buffered during the initial bearer setup.		
Active Buffered Flows	Number of current active flows that are handling buffering for idle subscribers and for packets buffered during initial bearer setup.	All levels
Packets/Bytes	The following information about packets that need buffering is displayed: <ul style="list-style-type: none"> • Total Received—Total number of packets received from the Packet Forwarding Engine for idle subscribers and buffered during initial bearer setup. • Invalid—Total number of packets received that failed validation checks. • Current Buffered—Number of currently buffered packets and their size, in bytes. • Reinjected—Total number of packets reinjected to the Packet Forwarding Engine and their size, in bytes. • Dropped (Exceeded limit)—Total number of packets dropped because the buffering limit was exceeded and the size of the dropped packets, in bytes. • Buffered (Dropped)—Total number of buffered packets that were dropped and their size, in bytes. 	All levels

Table 6: show unified-edge sgw idle-mode-buffering statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Limit Exceeded	<p>The following information about the number of times that the buffer and memory limits are exceeded is displayed:</p> <ul style="list-style-type: none"> • Dedicated buffer-limit—Number of times the dedicated buffer limit of 2 KB is exceeded. • Shared buffer-limit—Number of times the shared buffer limit of 10 KB is exceeded. • Dedicated memory-limit—Number of times the dedicated memory limit of 75 percent is exceeded. • Shared memory-limit—Number of times the shared memory limit of 25 percent is exceeded. 	All levels
Memory Usage	<p>The following information about memory usage is displayed:</p> <ul style="list-style-type: none"> • Memory used (Bytes)—Amount of dedicated and shared memory used, in bytes. • Memory free (Bytes)—Amount of free memory, in bytes. • Dedicated memory used (%)—Percentage of dedicated memory used. • Shared memory used (%)—Percentage of shared memory used. 	All levels

Sample Output

```

user@host> show unified-edge sgw idle-mode-buffering statistics brief
Gateway: SGW

Idle Mode Buffering statistics:
GTPv1 Downlink:
  Total Packets received:          102
  Invalid packets:                0
  Flows created:                  12
  Flows aged out:                 0
  Active Flows:                   10
  Active Buffered Flows:          10

Buffering statistics:
  Active Buffered Flows:          10
  Packets/Bytes:
    Total Received:               102
    Invalid:                      0
    Current Buffered:             100 / 16400
    Rejected:                     2 / 280
    Dropped (Exceeded limit):     0 / 0
    Buffered Dropped:             0 / 0
  Limit Exceeded:
    Dedicated buffer-limit:       0
    Shared buffer-limit:         0
    Dedicated memory-limit:      0
    Shared memory-limit:         0
  Memory Usage:
    Memory used (Bytes):          7991432
    Memory free (Bytes):         124129144

```

Dedicated memory used (%):	0
Shared memory used (%):	0

show unified-edge sgw
idle-mode-buffering
statistics detail

user@host> show unified-edge sgw idle-mode-buffering statistics detail
Gateway: SGW

Idle Mode Buffering statistics (FPC 0 PIC 0):

GTPv1 Downlink:

Total Packets received:	102
Invalid packets:	0
Flows created:	12
Flows aged out:	0
Active Flows:	0
Active Buffered Flows:	0

Buffering statistics (FPC 0 PIC 0):

Active Buffered Flows:	0
------------------------	---

Packets/Bytes:

Total Received:	102
Invalid:	0
Current Buffered:	0 / 0
Reinjected:	2 / 280
Dropped (Exceeded limit):	0 / 0
Buffered Dropped:	100 / 16400

Limit Exceeded:

Dedicated buffer-limit:	0
Shared buffer-limit:	0
Dedicated memory-limit:	0
Shared memory-limit:	0

Memory Usage:

Memory used (Bytes):	7954632
Memory free (Bytes):	124165944
Dedicated memory used (%):	0
Shared memory used (%):	0

show unified-edge sgw service-mode

Syntax	<code>show unified-edge sgw service-mode</code> <code><brief detail></code> <code><gateway gateway-name></code>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Display the service mode information for one or more Serving Gateways (S-GWs). If a gateway is not specified, then information for all S-GWs is displayed.
Options	<p>none—(Same as brief) Display the service mode information in brief.</p> <p>brief detail—(Optional) Display the specified level of output.</p> <p>gateway gateway-name—(Optional) Display the service mode information for the specified gateway.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> service-mode (Serving Gateway) on page 75
List of Sample Output	show unified-edge sgw service-mode brief on page 97 show unified-edge sgw service-mode detail on page 98
Output Fields	Table 7 on page 97 lists the output fields for the show unified-edge sgw service-mode command. Output fields are listed in the approximate order in which they appear.

Table 7: show unified-edge sgw service-mode Output Fields

Field Name	Field Description	Level of Output
Gateway Name	Name of the S-GW.	All levels
Service Mode	Service mode for the gateway: <ul style="list-style-type: none"> Operational—Gateway is in operational mode. Maintenance—Gateway is in maintenance mode. 	All levels

Sample Output

```

user@host> show unified-edge sgw service-mode brief
Maintenance Mode
  MM Active Phase - System is ready to accept configuration changes for all
                    attributes of this object and its sub-hierarchies.
  MM In/Out Phase - System is ready to accept configuration changes only for
                    non-maintenance mode attributes of this object and
                    its sub-hierarchies.

Gateway Name          Service Mode

```

SGW	Operational
SGW2	Operational

```
show unified-edge sgw service-mode detail
user@host> show unified-edge sgw service-mode detail
Service Mode Status
Gateway Name    : SGW
Service Mode    : Operational
Service Mode Status
Gateway Name    : SGW2
Service Mode    : Operational
```

show unified-edge sgw status

Syntax	<pre>show unified-edge sgw status <brief detail> <fpc-slot fpc-slot> <gateway gateway> <gtpv2-priority-level gtpv2-priority-level> <pic-slot pic-slot> <qci qci> <rat-type (eutan gan geran hspa others utran wlan)></pre>
Release Information	Command 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 Serving Gateways (S-GWs). If a gateway name is not specified, then the status information for all the S-GWs is displayed.
Options	<p>none—(Same as brief) Display the gateway status information in brief.</p> <p>brief detail —(Optional) Display the specified level of output.</p> <p>fpc-slot fpc-slot—(Optional) Display the status information for the specified FPC slot number.</p> <p>gateway gateway—(Optional) Display the status information for the specified gateway name.</p> <p>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.</p> <p>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.</p> <p>qci qci—(Optional) Display the status information for the specified QoS Class Identifier (QCI).</p> <p>rat-type (eutan gan geran hspa others utran wlan)—(Optional) Display the status information for the specified Radio Access Technology (RAT).</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show unified-edge sgw status gtp-peer on page 102 • show unified-edge sgw status preemption-list on page 104 • show unified-edge sgw status session-state
List of Sample Output	<p>show unified-edge sgw status brief on page 101</p> <p>show unified-edge sgw status detail on page 101</p>

Output Fields Table 8 on page 100 lists the output fields for the **show unified-edge sgw status** command. Output fields are listed in the approximate order in which they appear.

Table 8: show unified-edge sgw status Output Fields

Field Name	Field Description	Level of Output
Gateway	Name of the S-GW.	All levels
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 S-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 on the gateway.	All levels
Active Sessions	Number of active sessions on the gateway.	All levels
Active Bearers	Number of bearers in Active state.	All levels
Idle Subscribers	Number of idle subscribers on the gateway.	All levels
Idle Sessions	Number of idle sessions on the gateway.	All levels
Idle Bearers	Number of idle bearers on the gateway.	All levels
Suspended Subscribers	Number of suspended subscribers on the gateway.	All levels
Suspended Sessions	Number of suspended sessions on the gateway.	All levels
Suspended Bearers	Number of suspended bearers on the gateway.	All levels
Indirect Tunnels	Number of indirect tunnels created during handover procedures.	All levels
Direct Tunnels	Number of direct tunnels created to the Radio Network Controller (RNC).	All levels
CPU Load (%)	Percentage of the CPU load.	All levels
Memory Load (%)	Percentage of the memory load.	All levels

Sample Output

```

show unified-edge sgw status brief  user@host> show unified-edge sgw status brief
status brief Gateway: SGW
Active Subscribers      :          3
Active Sessions         :          3
Active Bearers          :         11
Idle Subscribers        :          0
Idle Sessions           :          0
Suspended Subscribers  :          0
Suspended Sessions     :          0
Indirect Tunnels        :          0
Direct Tunnels          :         11
Idle Bearers            :          0
Suspended Bearers      :          0
CPU Load (%)            :          4
Memory Load (%)         :         23

show unified-edge sgw status detail user@host> show unified-edge sgw status detail
status detail Gateway: SGW

FPC SLOT: 0   PIC SLOT: 0
State          : Standalone
Type           : Session-PIC
Active Subscribers : 1
Active Sessions  : 1
Active Bearers   : 1
Idle Subscribers : 0
Idle Sessions    : 0
Suspended Subscribers : 0
Suspended Sessions : 0
Indirect Tunnels : 0
Direct Tunnels   : 1
Idle Bearers     : 0
Suspended Bearers : 0
CPU Load (%)     : 0
Memory Load (%)  : 23

```

show unified-edge sgw status gtp-peer

Syntax	<pre>show unified-edge sgw status gtp-peer remote-address <i>remote-address</i> <fpc-slot <i>fpc-slot</i>> <gateway <i>gateway</i>> <local-address <i>local-address</i>> <pic-slot <i>pic-slot</i>> <routing-instance <i>name</i>></pre>
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 Serving Gateways (S-GWs). If an S-GW is not specified, then information for all S-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 S-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 sgw status on page 99
List of Sample Output	show unified-edge sgw status gtp-peer remote-address 2.2.2.1 on page 103
Output Fields	Table 9 on page 102 lists the output fields for the show unified-edge sgw status gtp-peer command. Output fields are listed in the approximate order in which they appear.

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

Field Name	Field Description
Gateway	Name of the S-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 sgw 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 sgw status gtp-peer remote-address 2.2.2.1
user@host> show unified-edge sgw status gtp-peer remote-address 2.2.2.1
Gateway: S`GW
FPC-slot/PIC-slot      Number of bearers
-----
0/0                      1
0/1                      0
```

show unified-edge sgw status preemption-list


Syntax	<pre>show unified-edge sgw status preemption-list <brief detail> <fpc-slot fpc-slot> <gateway gateway> <pic-slot pic-slot></pre>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Display the preemption list for guaranteed bit rate (GBR) and non-GBR bearers in the Serving Gateways (S-GWs). If a gateway name is not specified, then the preemption list for all S-GWs is displayed.
	<div>  <p>NOTE:</p> <ul style="list-style-type: none"> In load conditions, to accommodate higher-priority bearers, lower-priority bearers are preempted. This list displays the number of bearers in each candidate priority level for preemption. This command displays a preemption list only if preemption is enabled on the S-GW. </div>
Options	<p>none—(Same as brief) Display the preemption list information in brief.</p> <p>brief detail —(Optional) Display the specified level of output.</p> <p>fpc-slot fpc-slot—(Optional) Display the preemption list information for the specified Flexible PIC Concentrator (FPC) slot number. You must specify a PIC slot number along with an FPC slot number.</p> <p>gateway gateway—(Optional) Display the preemption list for the specified gateway.</p> <p>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.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show unified-edge sgw status on page 99
List of Sample Output	<p>show unified-edge ggsn-pgw status preemption-list brief on page 105</p> <p>show unified-edge ggsn-pgw status preemption-list detail on page 105</p>
Output Fields	Table 10 on page 105 lists the output fields for the show unified-edge sgw status preemption-list command. Output fields are listed in the approximate order in which they appear.

Table 10: show unified-edge sgw status preemption-list Output Fields

Field Name	Field Description	Level of Output
Gateway	Name of the S-GW.	All levels
FPC Slot	FPC slot number of the interface for which the preemption list information is displayed.	detail
PIC Slot	PIC slot number of the FPC for which the preemption list information is displayed.	detail
Priority Level	<p>Priority of the call that was set up: 1 is the highest and 15 is the lowest. For each priority level, the following information is displayed:</p> <ul style="list-style-type: none"> • GBR—Number of GBR bearers for the corresponding priority level. • NON-GBR—Number of GBR bearers for the corresponding priority level. 	All levels

Sample Output

```
show unified-edge user@host> show unified-edge ggsn-pgw status preemption-list brief
ggsn-pgw status Gateway: SGW
preemption-list brief
```

		GBR	NON-GBR
Priority Level 1	:	0	0
Priority Level 2	:	0	0
Priority Level 3	:	0	0
Priority Level 4	:	0	0
Priority Level 5	:	1034	0
Priority Level 6	:	0	1000
Priority Level 7	:	0	0
Priority Level 8	:	0	0
Priority Level 9	:	1000	0
Priority Level 10	:	0	1060
Priority Level 11	:	0	0
Priority Level 12	:	0	0
Priority Level 13	:	0	0
Priority Level 14	:	0	0
Priority Level 15	:	0	0

```
show unified-edge user@host> show unified-edge ggsn-pgw status preemption-list detail
ggsn-pgw status Gateway: SGW
preemption-list detail
```

```
Preemption List status:

FPC SLOT: 3   PIC SLOT: 0
```

		GBR	NON-GBR
Priority Level 1	:	0	0
Priority Level 2	:	0	0
Priority Level 3	:	0	0
Priority Level 4	:	0	0
Priority Level 5	:	1034	0
Priority Level 6	:	0	1000

Priority Level 7	:	0	0
Priority Level 8	:	0	0
Priority Level 9	:	1000	0
Priority Level 10	:	0	1060
Priority Level 11	:	0	0
Priority Level 12	:	0	0
Priority Level 13	:	0	0
Priority Level 14	:	0	0
Priority Level 15	:	0	0

show unified-edge sgw statistics

Syntax	show unified-edge sgw statistics <gateway gateway>
Release Information	Command introduced in Junos OS Mobility Release 11.4W.
Description	Display the statistics for one or more Serving Gateways (S-GWs). If a gateway name is not specified, then statistics for all S-GWs are displayed.
Options	none —Display statistics for all S-GWs. gateway gateway —(Optional) Display statistics for the specified gateway.
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge sgw statistics on page 81
List of Sample Output	show unified-edge sgw statistics on page 108
Output Fields	Table 11 on page 107 lists the output fields for the show unified-edge sgw statistics command. Output fields are listed in the approximate order in which they appear.

Table 11: show unified-edge sgw statistics Output Fields

Field Name	Field Description
Gateway	Name of the S-GW.
Control Plane Statistics	
Session establishment attempts	Number of attempted session establishments.
Successful session establishments	Number of session successfully established.
Dedicated bearer creation attempts	Number of times the creation of dedicated bearers was attempted.
Successful dedicated bearer creations	Number of dedicated bearers successfully created.
Session deactivation attempts	Number of attempted session deactivations.
Successful session deactivations	Number of sessions successfully deactivated.
Dedicated bearer deactivation attempts	Number of times the deactivation of dedicated bearers was attempted.
Successful dedicated bearer deactivations	Number of dedicated bearers successfully deactivated.
Inter-RAT handover attempts	Number of Inter-RAT handovers attempted.
Inter-RAT handover successful	Number of successful Inter-RAT handovers.

Table 11: show unified-edge sgw statistics Output Fields (*continued*)

Field Name	Field Description
X2 based handover attempts	Number of X2-based handovers attempted.
X2 based handover successful	Number of successful X2-based handovers.
S1 based handover attempts	Number of S1-based handovers attempted.
S1 based handover successful	Number of successful S1-based handovers.
Idle mode TAU/RAU attempts	Number of Tracking Area Updates (TAU) or Routing Area Updates (RAUs) attempted when the user equipment was in idle mode.
Idle mode TAU/RAU successful	Number of successful TAUs or RAUs when the user equipment was in idle mode.
Service request procedure attempts	Number of service request procedures attempted.
Service request procedure successful	Number of successful service request procedures.
Data Plane GTP Statistics (S5/S8)	
Input packets	Number of incoming GTP data packets on the S5, and S8 interfaces.
Input bytes	Number of octets of incoming GTP data packets on the S5, and S8 interfaces.
Output packets	Number of outgoing GTP data packets on the S5, and S8 interfaces.
Output bytes	Number of octets of outgoing GTP data packets on the S5, and S8 interfaces.
Data plane GTP statistics (S4/S12/S1-U)	
Input packets	Number of incoming GTP data packets on the S1-U, S12, and S4 interfaces.
Input bytes	Number of octets of incoming GTP data packets on the S1-U, S12, and S4 interfaces.
Output packets	Number of outgoing GTP data packets on the S1-U, S12, and S4 interfaces.
Output bytes	Number of octets of outgoing GTP data packets on the S1-U, S12, and S4 interfaces.

Sample Output

```

show unified-edge sgw statistics user@host> show unified-edge sgw statistics
Gateway: SGW
Control plane statistics:
  Session establishment attempts: 2438203
  Successful session establishments: 2069870
  Dedicated bearer creation attempts: 0
  Successful dedicated bearer creations: 0

```



```
Session deactivation attempts: 0
Successful session deactivations: 0
Dedicated bearer deactivation attempts: 0
Successful dedicated bearer deactivations: 0
Inter-RAT handover attempts: 0
Inter-RAT handover successful: 0
X2 based handover attempts: 197863
X2 based handover successful: 197863
S1 based handover attempts: 0
S1 based handover successful: 0
Idle mode TAU/RAU attempts: 0
Idle mode TAU/RAU successful: 0
Service request procedure attempts: 0
Service request procedure successful: 0
Data plane GTP statistics (S5/S8):
Input packets: 292994029
Input bytes: 37503235712
Output packets: 298519448
Output bytes: 38210489344
Data plane GTP statistics (S4/S12/S1-U):
Input packets: 298519448
Input bytes: 38210489344
Output packets: 292994029
Output bytes: 37503235712
```

show unified-edge sgw subscribers

Syntax `show unified-edge sgw subscribers`
 `<brief | extensive>`
 `<fpc-slot fpc-slot>`
 `<gateway gateway>`
 `<gtpv2-priority-level gtpv2-priority-level>`
 `<imsi imsi>`
 `<msisdn msisdn>`
 `<pdn-type (ipv4 | ipv4-v6 | ipv6)>`
 `<peer peer>`
 `<pic-slot pic-slot>`
 `<qci qci>`
 `<roaming-status (home | roamer | visitor)>`

Release Information Command introduced in Junos OS Mobility Release 11.4W.

Description Display the subscriber information for one or more Serving Gateways (S-GWs). If a gateway name is not specified, then the subscriber information for all the S-GWs is displayed.

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

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

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

gateway gateway—(Optional) Display the subscriber information for the specified gateway.

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

imsi imsi—(Optional) Display the subscriber information for the specified International Mobile Subscriber Identity (IMSI).

msisdn msisdn—(Optional) Display the subscriber information for the specified mobile station ISDN (MSISDN) number.

pdn-type (ipv4 | ipv4-v6 | ipv6)—(Optional) Display the subscriber information for the specified Packet Data Network (PDN) type or session type. You can specify the following PDN or session types:

- **ipv4**—Subscribers with only IPv4 sessions.
- **ipv4-v6**—Subscribers with both IPv4 and IPv6 sessions.
- **ipv6**—Subscribers with only IPv6 sessions.

peer peer—(Optional) Display the subscriber information for the specified peer IP address.

pic-slot *pic-slot*—(Optional) Display the subscriber 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 subscriber information for the specified QoS Class Identifier (QCI).

roaming-status (*home | roamer | visitor*)—(Optional) Display the subscriber information for the specified roaming status.

Required Privilege Level

view

Related Documentation

- [clear unified-edge sgw subscribers on page 82](#)
- [show unified-edge sgw subscribers charging on page 117](#)

List of Sample Output

[show unified-edge sgw subscribers brief on page 115](#)
[show unified-edge sgw subscribers extensive on page 116](#)

Output Fields

[Table 12 on page 111](#) lists the output fields for the **show unified-edge sgw subscribers** command. Output fields are listed in the approximate order in which they appear.

Table 12: show unified-edge sgw subscribers Output Fields

Field Name	Field Description	Level of Output
Gateway	Name of the S-GW.	All levels
IMSI	IMSI of the subscriber's user equipment.	brief
MSISDN	MSISDN number of the subscriber's user equipment.	brief
ACS Peer Ctrl Address	Control plane IP address of the access peer.	brief
S5 Peer Ctrl Address	Control plane IP address of the peer on the S5 interface.	brief
APN	Access point name (APN) to which the subscriber is attached.	brief
Subscriber Information:		
UE:		
IMSI	IMSI of the subscriber's user equipment.	extensive
IMEI	International Mobile Station Equipment Identity (IMEI) of the subscriber's user equipment.	extensive
MSISDN	MSISDN number of the subscriber's user equipment.	extensive

Table 12: show unified-edge sgw subscribers Output Fields (*continued*)

Field Name	Field Description	Level of Output
Time Zone	Time zone to which the subscriber's Mobile Station (MS) or user equipment belongs.	extensive
DST	Daylight saving time applicable within the time zone.	extensive
RAT Type	Type of Radio Access Technology (RAT) used.	extensive
User Location Info:		
MCC	Mobile country code (MCC) of the subscriber.	extensive
MNC	Mobile network code (MNC) of the subscriber.	extensive
LAC	Location area code (LAC) of the subscriber.	extensive
CI	Cell Identity (CI) of the subscriber.	extensive
SAC	Service area code (SAC) of the subscriber.	extensive
RAC	Routing area code (RAC) of the subscriber.	extensive
TAC	Tracking area code (TAC) of the subscriber.	extensive
ECI	E-UTRAN Cell identifier (ECI) of the subscriber.	extensive
SGW Control IP	Control plane IP address of the S-GW on the S11 or S4 interfaces.	
SGW Control TEID	Control plane Tunnel Endpoint Identifier (TEID) of the S-GW on the S11 or S4 interfaces.	extensive
MME Control IP	Control plane IP address of the Mobility Management Entity (MME) on the S11 interface.	extensive
MME Control TEID	Control plane TEID of the MME on the S11 interface.	extensive
ISR	Idle mode signaling reduction (enabled or disabled). If this is enabled, then both the MME and SGSN information is displayed in the command output. If it is disabled, then the either the MME or SGSN information is displayed.	extensive
Active Peer	Indicates whether the MME or the SGSN is actively sending control messages to S-GW.	extensive
State	State of the subscriber: idle, active, or suspended.	extensive
PDN Session:		
APN name	Access point name for the Packet Data Network (PDN) session.	extensive

Table 12: show unified-edge sgw subscribers Output Fields (*continued*)

Field Name	Field Description	Level of Output
IPv4 Address	IPv4 address of the subscriber.	extensive
IPv6 Address	IPv6 address of the subscriber.	extensive
SGW S5 C IP	IP address of the S5 GTP-C tunnel on the S-GW side to which the PDN Gateway (P-GW) will send control messages for the subscriber.	extensive
PGW S5 C IP	IP address of the S5 GTP-C tunnel on the P-GW side to which the S-GW will send control messages for the subscriber.	extensive
SGW S5 C TEID	TEID of the S5 GTP-C tunnel on the S-GW side. The P-GW sends this TEID in the GTP header in all control messages to the S-GW.	extensive
PGW S5 C TEID	TEID of the S5 GTP-C tunnel on the P-GW side. The S-GW sends this TEID in the GTP header in all control messages to the P-GW.	extensive
PGW CSID	Connection Set Identifier (CSID) allocated by the P-GW.	extensive
MME CSID	Connection Set Identifier (CSID) allocated by the Mobile Management Entity (MME).	extensive
Selection mode	APN selection mode provided by the SGSN or S-GW in the Create Request message.	extensive
Session PIC	FPC and PIC slots for the session PIC on which the subscriber control session is present.	extensive
PFE	FPC and PIC slots for the Packet Forwarding Engine for the PDP session.	extensive
Session State	State of the subscriber session on the signaling plane.	extensive
Session Duration	Duration of the PDP session.	detail
		extensive
Roaming Status	Roaming status of the subscriber; that is, whether the subscriber is a visitor, home subscriber, or a roamer.	detail
		extensive
Serving Network	<p>The following information about the network that is serving the subscriber (that the subscriber is attached to) is displayed:</p> <ul style="list-style-type: none"> • MCC—Mobile country code of the network. • MNC—Mobile network code of the network. 	extensive
Direct Tunnel	Status of the GTPv1 direct tunnel: enabled or disabled.	extensive

Bearer:

Table 12: show unified-edge sgw subscribers Output Fields (*continued*)

Field Name	Field Description	Level of Output
NSAPI/EBI	Network Service Access Point Identifier (NSAPI) or the Evolved Packed System Bearer ID (EBI) for the session.	extensive
SGW Access Data IP	Data plane IP address of the S-GW on the S1u, S4, or S12 interface.	
eNodeB/RNC Data IP	Remote data plane IP address of the peer on the S1u, S4, or S12 interface.	extensive
SGW Access Data TEID	Data plane TEID of the S-GW on the S1u, S4, or S12 interface.	extensive
eNodeB/RNC Data TEID	Remote data plane TEID of the peer on the S1u, S4, or S12 interface.	extensive
SGW S5/S8 Data IP	IP address of the S-GW to which the P-GW sends the data packets for the bearer.	extensive
PGW Data IP	IP address of the P-GW to which the S-GW sends the data packets for the bearer.	extensive
SGW S5/S8 Data TEID	Data TEID allocated by the S-GW that identifies the data tunneling endpoint for all data packets coming in from the data peer. This is sent in the GTP header for all the data packets sent from the S-GW to the P-GW.	extensive
PGW Data TEID	Data TEID allocated by the P-GW that identifies the data tunneling endpoint for all data packets coming in from the data peer. This is sent in the GTP header for all the data packets sent from the P-GW to the S-GW.	extensive
Bearer State	Represents the state of the subscriber in the forwarding or data plane. This parameter is used internally by the P-GW.	extensive
Idle Timeout	Idle timeout for the session, in minutes.	extensive
QoS Parameters	<p>The following parameters for the user equipment related to quality of service (QoS) are displayed:</p> <ul style="list-style-type: none"> • QCI—QoS Class Identifier. • ARP: (PL/PVI/PCI)—The following parameters related to ARP are displayed: <ul style="list-style-type: none"> • Priority level (PL). • Preemption Vulnerability Indicator (PVI) • Preemption Capability Indicator (PCI) • Fwd Class—Forwarding class • Loss Priority—Packet loss priority 	extensive

Table 12: show unified-edge sgw subscribers Output Fields (*continued*)

Field Name	Field Description	Level of Output
Charging information	<p>The following information related to charging is displayed:</p> <ul style="list-style-type: none"> • Charging ID—Charging ID for the session. The charging ID is the unique bearer identity sent in accounting messages and in Charging Data Records (CDRs). • Profile ID—ID of the charging profile associated with the bearer. • State—(extensive only) Current charging state for the bearer. • Previous State—(extensive only) Previous charging state for the bearer. • Profile selection criteria—(extensive only) Selection source (home, visitor, roamer, and default) for the charging profile for the bearer. • Offline charging information—(extensive only) The following details of offline charging information are displayed if offline charging is enabled; if not, an indication that offline charging is disabled is displayed: <ul style="list-style-type: none"> • Current service data container sequence number—Sequence number of the current local service data container. • Current partial record sequence number—Sequence number of the current partial record CDR. • Number of CDRs closed—Number of closed CDRs generated. • Number of containers closed—Number of containers closed. 	extensive
Rating group information	<p>The following information related to the rating group is displayed:</p> <ul style="list-style-type: none"> • Rating group—Default rating group associated with the bearer. • Service ID—Service identifier of the rating group. • Action ID—Action identifier of the rating group. • Trigger profile—Trigger profile number associated with the rating group. • Change condition bitmask—Rating group trigger change condition bitmask. • Action-id-bitmask—Charging action ID bitmask. • Signal bitmask—Rating group trigger signal condition bitmask. • Last signal bitmask—Previous rating group trigger signal condition bitmask. • Details—Trigger flag information. • Last statistics info—(extensive only) The following information about the last statistics collected is displayed if statistics were collected; if not, an indication that no statistics were collected is displayed: <ul style="list-style-type: none"> • Collection time—Time when the last control plane recorded statistics for the subscriber. • Uplink packets—Number of packets handled in the uplink direction. • Downlink packets—Number of packets handled in the downlink direction. • Uplink bytes—Number of bytes handled in the uplink direction. • Downlink bytes—Number of bytes handled in the downlink direction. 	extensive

Sample Output

```

show unified-edge sgw subscribers brief  user@host> show unified-edge sgw subscribers brief
Gateway: SGW
      IMSI              MSISDN      ACS PEER CTRL      S5 PEER CTRL      APN
                                     Address      Address
      11111111123457      111111112      200.7.1.2      200.7.0.2

```

jnpr-bangalore_scale

show unified-edge sgw
subscribers extensive

user@host> show unified-edge sgw subscribers extensive
Gateway: SGW

Subscriber Information:

UE:

IMSI: 123567213123256 IMEI: 1122334455667788
MSISDN: 1926737745 Time Zone: GMT DST: None
RAT Type: E-UTRAN
User Location Info:
MCC: 450 MNC: 51
LAC: 0x37 CI: 0x43 SAC: 0x0 RAC: 0x0 TAC: 0x0 ECI: 0x0
SGW Control IP: 200.1.6.1 SGW Control TEID: 0x15000800
MME Control IP: 200.1.4.2 MME Control TEID: 0xbc615c
ISR: Disabled Active Peer: MME
UE State: Active

PDN Session:

APN name: jnpr-sunnyvale.mnc012.mcc345.gprs
IPv4 Address: 20.20.44.1 IPv6 Address: None
SGW S5 C IP: 200.1.6.1 PGW S5 C IP: 200.1.5.1
SGW S5 C TEID: 0x15002c00 PGW S5 C TEID: 0x25000000
PGW CSID: 15381 MME CSID: 0
Selection mode: MS or network provided APN, subscription verified

Session PIC: 1 /0 (FPC/PIC) PFE: 2 /0 (FPC/PIC)
Session State: Established Session Duration: 4:17
Roaming Status: Roamer Serving network: MCC: 123 MNC: 567
Direct Tunnel: Disabled

Bearer:

NSAPI/EBI: 5
SGW Access Data IP: 200.1.6.1 eNodeB/RNC Data IP: 200.1.4.2
SGW Access Data TEID: 0x14150800 eNodeB/RNC Data TEID: 0xbc615f
SGW S5/S8 Data IP: 200.1.6.1 PGW Data IP: 200.1.5.1
SGW S5/S8 Data TEID: 0x14250400 PGW Data TEID: 0x3c150000

Bearer State: Established

Idle Timeout: 0

QoS Parameters :

QCI: 5 ARP: 1 /0 /0 (PL/PVI/PCI)
Fwd Class : None Loss Priority : None

Charging information:

Charging ID: 0x25000000
Profile ID: 0
State: Init Previous State: Init
Profile selection criteria: None

Offline charging information: Disabled

Rating group information:

Rating group: 0 Service id: 0
Action ID: 0x0 Trigger profile: 0
Change condition bitmask: 0x0 Action-id-bitmask: 0x0
Signal bitmask: 0x0 Last signal bitmask: 0x0
Last statistics info:
Collection time: None collected

show unified-edge sgw subscribers charging

Syntax `show unified-edge sgw subscribers charging gateway gateway`
`<brief | detail | extensive>`
`<charging-profile charging-profile>`
`<fpc-slot fpc-slot>`
`<pic-slot pic-slot>`
`<transport-profile transport-profile>`

Release Information Command introduced in Junos OS Mobility Release 11.4W.

Description Display the subscribers matching the specified charging profile or transport profile on the specified Serving Gateway (S-GW).

Options `gateway gateway`—Display the subscriber information for the specified gateway name.

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

`charging-profile charging-profile`—(Optional) Display the subscribers matching the specified charging profile name.



NOTE: You must specify either a charging profile or a transport profile to execute this command.

`fpc-slot fpc-slot`—(Optional) Display the subscriber information for the specified FPC slot number.

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

`transport-profile transport-profile`—(Optional) Display the subscribers matching the specified transport profile name.



NOTE: You must specify either a charging profile or a transport profile to execute this command.

Required Privilege Level view

Related Documentation

- [clear unified-edge sgw subscribers charging on page 84](#)
- [show unified-edge sgw subscribers on page 110](#)

List of Sample Output [show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 brief on page 118](#)

[show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 detail on page 118](#)

[show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 extensive on page 119](#)

Output Fields Refer to the output fields for the [show unified-edge sgw subscribers](#) command, which is the same as the output fields for the **show unified-edge sgw subscribers charging** command.

Sample Output

```
show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 brief
user@host> show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 brief
          IMSI          MSISDN          ACS PEER CTRL          S5 PEER CTRL          APN
          Address          Address
123213213123568          1926738057          79.1.1.3          114.11.11.2 internet123
```

```
show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 detail
user@host> show unified-edge sgw subscribers charging gateway SGW charging-profile cp1 detail
Subscriber information:
  UE:
    IMSI:          123213213123568          IMEI: 1122334455667791
    MSISDN:        1926738057          MS-Timezone: GMT          (DST): None          User
  Location info:
    MCC:          300          MNC:          400
    LAC: 0x3e8          CI: 0xc8          SAC: 0x0          RAC: 0x0          TAC: 0x0          ECI: 0x0
    RAT Type:          E-UTRAN          Status: Visitor
    SGW Control IP:    11.11.11.11          SGW Control TEID: 0xd001000
    MME Control IP:    79.1.1.3          MME Control TEID: 0x103
    ISR:              Disabled          Active Peer:          MME
    Serving network: MCC: 123          MNC :567
    State: ACTIVE
  PDN session information:
    PDN session:
      APN name:          internet123.mnc567.mcc123.gprs
      V4 Addr:          16.16.4.6          V6 Address: -
      Direct Tunnel: Disabled          Up time:          8:16:28
      SGW S5 C IP:      11.11.11.11          PGW S5 C IP:      114.11.11.2
      SGW S5 C TEID:    0xd001c00          PGW S5 C TEID:    0x3ee
      PGW CSID:          100          MME CSID:          0
      Addr scheme: None          Selection mode: MS or network provided
    APN, subscription verified
      SPIC:              5 /0 (FPC/PIC)          APFE:              1 /0 (FPC/PIC)
      State:              SgwSessionEstablished
    APN AMBR :
      AMBR-DL:          22          kbps          AMBR-UL:          88          kbps
    Bearer :
      NSAPI/EBI :5
      SGW ACS IP :11.11.11.11          ACS PEER IP :79.1.1.3
      SGW ACS TEID :0x150400          ACS PEER TEID :0x104
      SGW S5 U IP :11.11.11.11          PGW S5 U IP :114.11.11.2
      SGW S5 U TEID :0x250400          PGW S5 U TEID :0x3ef
      Charging ID :0x3ef
      State :SgwBearerEstablished
      Idle count :0
      Idle Timeout :0 min(0 -0,0)
    QoS Parameters :
```

```

QCI          :5                      ARP          :1 /0 /0   (PL/PVI/PCI)
Fwd Class    :af2                    Loss Priority :high
Charging information: Profile ID: 1   Profile name: p_juniper
State: Ready                                Previous State: Ga
Details: Offline bearer
Rating group information:
Rating group: 0 Service id: 0
Details: Bearer trigger, Offline RG

```

**show unified-edge sgw
subscribers charging
gateway SGW
charging-profile cp1
extensive**

```

user@host> show unified-edge sgw subscribers charging gateway SGW charging-profile cp1
extensive
Gateway: SGW
Subscriber information:
  UE:
    IMSI:      1112223300000001    IMEI: -
    MSISDN:    444550000001        MS-Timezone: GMT      (DST): None      User
  Location info:
    MCC:      234                  MNC:      567
    LAC: 0x0    CI: 0x0          SAC: 0x0    RAC: 0x0    TAC: 0x4321  ECI: 0x1234568
    RAT Type:      E-UTRAN                  Status: Visitor
    SGW Control IP: 11.11.11.11              SGW Control TEID: 0x5e001000
    MME Control IP: 50.50.50.1                MME Control TEID: 0x1
    ISR:           Disabled                  Active Peer:      MME
    Serving network: MCC: 123   MNC :456
    State:      ACTIVE
  PDN session information:
  PDN session:
    APN name:      internet123.mnc456.mcc123.gprs
    V4 Addr:      11.0.0.2                V6 Address:      -
    Direct Tunnel: Disabled                Up time:          1:30
    SGW S5 C IP:  11.11.11.11              PGW S5 C IP:     50.50.50.50
    SGW S5 C TEID: 0x5e001c00              PGW S5 C TEID:   0x2
    PGW CSID:      0                      MME CSID:        0
    Addr scheme: None                      Selection mode: MS or network provided
  APN, subscription verified
    SPIC:          3 /0 (FPC/PIC)          APFE:            2 /0 (FPC/PIC)
    State:          SgwSessionEstablished
  APN AMBR :
    AMBR-DL:      2000      kbps          AMBR-UL:      2000      kbps
  Bearer      :
    NSAPI/EBI     :5
    SGW ACS IP     :11.11.11.11          ACS PEER IP     :50.50.50.3
    SGW ACS TEID   :0xc8160401          ACS PEER TEID   :0x271b
    SGW S5 U IP    :11.11.11.11          PGW S5 U IP     :50.50.50.50
    SGW S5 U TEID  :0xc8260401          PGW S5 U TEID   :0x2712
    Charging ID    :0x2
    State          :SgwBearerEstablished
    Idle count     :3
    Idle Timeout   :0   min(0   -0,0)
  QoS Parameters :
    QCI          :5                      ARP          :1 /0 /0   (PL/PVI/PCI)
    Fwd Class     : None                  Loss Priority : None
    Charging information: Profile ID: 1   Profile name: CP1
    State: Ready                                Previous State: Ga

```

Profile selection criteria: Static default
Details: Offline bearer
Offline charging information:
Current service data container sequence number: -
Current partial record sequence number : 4
Number of CDRs closed : 4
Number of containers closed : 5
Rating group information:
Rating group: 0 Service id: 0
Action ID: 0xb000401 Trigger profile: 0
Change condition bitmask: 0x0 Action-id-bitmask: 0x0
Signal bitmask: 0x0 Last signal bitmask: 0x0
Details: Bearer trigger, Offline RG
Collection time: Thu Jan 1 01:41:45 1970
Uplink packets: 14 Downlink packets : 18
Uplink bytes: 1400 Downlink bytes : 1800

PART 4

Troubleshooting

- [Acquiring Troubleshooting Information on page 123](#)

CHAPTER 7

Acquiring Troubleshooting Information

- [Configuring S-GW Traceoptions on page 123](#)

Configuring S-GW Traceoptions

Serving Gateway (S-GW) tracing operations record detailed messages about the operation of high-level S-GW services on the MobileNext Broadband Gateway. You can trace various types of operations such as configuration events, connection admission control events, PFE manager events, and other information. You can specify which trace operations are logged by including specific tracing flags and levels.

[Table 13 on page 123](#) describes the flags relating to the S-GW that you can include at the `[edit unified-edge gateways sgw gateway-name traceoptions flag]` hierarchy level.

Table 13: S-GW Trace Flags

Flag	Description
all	Trace everything.
bulkjob	Trace resources.
config	Trace configuration events.
cos-cac	Trace class-of-service and connection admission control events.
ctxt	Trace user equipment, packet data network, and bearer context events.
fsm	Trace finite state machine events.
gtpu	Trace GPRS tunneling protocol, user (GTP-U) protocol events.
ha	Trace high availability events.
init	Trace initialization events.
pfem	Trace Packet Forwarding Engine manager events.
stats	Trace statistic events.

Table 13: S-GW Trace Flags (*continued*)

waitq	Trace wait queue events.
--------------	--------------------------

Table 14 on page 124 describes the levels you can include.

Table 14: S-GW Trace Levels

Level	Description
all	Match all levels.
error	Match error conditions.
info	Match informational messages.
notice	Match conditions that should be specially handled.
verbose	Match verbose messages.
warning	Match warning messages.

To configure tracing options for S-GW operations:

1. Specify that you want to configure tracing options for S-GW operations.

```
[edit unified-edge gateways sgw MBG2 ]
user@host# edit traceoptions
```



NOTE: You can use the `no-remote-trace` statement at this level to disable remote tracing capabilities.

2. Configure the filename for the trace file.

```
[edit unified-edge gateways sgw MBG2 traceoptions]
user@host# set file datapath-log
```

3. (Optional) Configure the maximum size of each trace file.

```
[edit unified-edge gateways sgw MBG2 traceoptions]
user@host# set file size 100m
```



NOTE: When a trace file (for example, `sgw-log`) reaches its maximum size, it is renamed `sgw-log.0`, then `sgw-log.1`, and so on, until the maximum number of trace files is reached. The oldest archived file is then overwritten.

4. Configure the tracing flag.

```
[edit unified-edge gateways sgw MBG2 traceoptions]
user@host# set flag all
```




NOTE: You should use care when tracing all operations on a gateway. This can have a performance impact.

5. Configure the tracing level.

```
[edit unified-edge gateways sgw MBG2 traceoptions]  
user@host# set level error
```

6. View the trace file.

```
user@host# file show /var/log/sgw-log
```

**Related
Documentation**

- Overview of Broadband Gateway System Architecture
- [Serving Gateways and the MobileNext Broadband Gateway Overview on page 5](#)
- [Overview of Standalone S-GW User Plane Packet Flow on page 8](#)
- [Overview of Collocated Gateways: Control Plane on page 9](#)
- [Overview of Collocated Gateways: User Plane on page 10](#)
- [Configuring an S-GW on a Broadband Gateway on page 15](#)
- [Configuring S-GW-Specific Profiles on page 17](#)
- Configuring S-GW Data Path Traceoptions
- Configuring S-GW GTP Traceoptions
- Configuring S-GW Charging Traceoptions
- Configuring S-GW Local Persistent Storage Traceoptions

PART 5

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