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# MobileNext Broadband Gateway

## Maintenance Mode



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*MobileNext Broadband Gateway Maintenance Mode*

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# Table of Contents

	About the Documentation . . . . .	vii
	Documentation and Release Notes . . . . .	vii
	Supported Platforms . . . . .	vii
	Documentation Conventions . . . . .	vii
	Documentation Feedback . . . . .	ix
	Requesting Technical Support . . . . .	ix
	Self-Help Online Tools and Resources . . . . .	x
	Opening a Case with JTAC . . . . .	x
<b>Part 1</b>	<b>Overview</b>	
<b>Chapter 1</b>	<b>Maintenance Mode . . . . .</b>	<b>3</b>
	Mobility Maintenance Mode Overview . . . . .	3
<b>Part 2</b>	<b>Configuration</b>	
<b>Chapter 2</b>	<b>Maintenance Tasks . . . . .</b>	<b>7</b>
	Changing a GTP Interface . . . . .	7
	Deleting a GTP Interface . . . . .	9
	Modifying an Access Point Name . . . . .	10
	Configuring the Mobile Interface of an Access Point Name . . . . .	12
	Deleting an Access Point Name . . . . .	13
	Changing a Charging Profile . . . . .	15
	Deleting a Charging Profile . . . . .	17
	Changing a Transport Profile . . . . .	18
	Deleting a Transport Profile . . . . .	20
	Changing a PCEF Profile . . . . .	21
	Changing a PCEF Profile with the APN in Maintenance Mode . . . . .	22
	Changing a PCEF Profile with the Gateway in Maintenance Mode . . . . .	23
	Deleting a PCEF Profile . . . . .	24
	Deleting a PCEF Profile with the APN in Maintenance Mode . . . . .	24
	Deleting a PCEF Profile with the Gateway in Maintenance Mode . . . . .	25
	Changing Address Attributes in the Mobile Address Pool . . . . .	26
	Deleting a Mobile Address Pool . . . . .	28
	Deleting a Session PIC . . . . .	29
	Deleting a Services PIC . . . . .	31
	Changing AMS Interface Parameters . . . . .	33
	Changing Gateway Parameters with Maintenance Mode . . . . .	36
<b>Chapter 3</b>	<b>Maintenance Examples . . . . .</b>	<b>39</b>
	Example: Changing Access Point Name Values . . . . .	39
	Example: Changing a Charging Profile . . . . .	40

	Example: Deleting an APN . . . . .	42
	Example: Changing a Transport Profile . . . . .	44
	Example: Changing a PCEF Profile . . . . .	46
	Example: Changing Mobility Pool Attributes . . . . .	47
	Example: Deleting a Mobility Address Pool . . . . .	53
	Example: Modifying Mobile Interface Parameters . . . . .	55
	Example: Deleting a Session PIC . . . . .	58
	Example: Deleting a Services PIC . . . . .	62
	Example: Changing an AMS Interface . . . . .	65
<b>Chapter 4</b>	<b>Configuration Statements . . . . .</b>	<b>71</b>
	[edit unified-edge gateways] Hierarchy Level . . . . .	71
	service-mode (GGSN or P-GW) . . . . .	71
	service-mode (Serving Gateway) . . . . .	72
	service-mode (APN) . . . . .	73
	service-mode (Charging Profiles) . . . . .	74
	service-mode (Transport Profiles) . . . . .	76
<b>Part 3</b>	<b>Administration</b>	
<b>Chapter 5</b>	<b>Operational Commands . . . . .</b>	<b>81</b>
	show unified-edge ggsn-pgw apn service-mode . . . . .	82
	show unified-edge ggsn-pgw charging service-mode . . . . .	84
	show unified-edge ggsn-pgw service-mode . . . . .	87
	show unified-edge ggsn-pgw system interfaces service-mode . . . . .	89
	show unified-edge sgw charging service-mode . . . . .	91
	show unified-edge sgw service-mode . . . . .	94
	show unified-edge sgw system interfaces service-mode . . . . .	96
<b>Part 4</b>	<b>Index</b>	
	Index . . . . .	101

# List of Tables

	<b>About the Documentation . . . . .</b>	<b>vii</b>
	Table 1: Notice Icons . . . . .	viii
	Table 2: Text and Syntax Conventions . . . . .	viii
<b>Part 3</b>	<b>Administration</b>	
<b>Chapter 5</b>	<b>Operational Commands . . . . .</b>	<b>81</b>
	Table 3: show unified-edge ggsn-pgw apn service-mode Output Fields . . . . .	82
	Table 4: show unified-edge ggsn-pgw charging service-mode Output Fields . . .	84
	Table 5: show unified-edge ggsn-pgw service-mode Output Fields . . . . .	87
	Table 6: show unified-edge ggsn-pgw system interfaces service-mode . . . . .	89
	Table 7: show unified-edge sgw charging service-mode Output Fields . . . . .	91
	Table 8: show unified-edge sgw service-mode Output Fields . . . . .	94
	Table 9: show unified-edge sgw system interfaces service-mode . . . . .	96



# About the Documentation

- Documentation and Release Notes on page vii
- Supported Platforms on page vii
- Documentation Conventions on page vii
- Documentation Feedback on page ix
- Requesting Technical Support on page ix

## Documentation and Release Notes

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## Supported Platforms

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

- MX240 Routers
- MX960 Routers
- MX480 Routers

## Documentation Conventions

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Table 1 on page viii 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 viii defines the text and syntax conventions used in this guide.

Table 2: Text and Syntax Conventions

Convention	Description	Examples
<b>Bold text like this</b>	Represents text that you type.	To enter configuration mode, type the <b>configure</b> command:  <code>user@host&gt; configure</code>
Fixed-width text like this	Represents output that appears on the terminal screen.	<code>user@host&gt; show chassis alarms</code> <code>No alarms currently active</code>
<i>Italic text like this</i>	<ul style="list-style-type: none"> <li>Introduces or emphasizes important new terms.</li> <li>Identifies book names.</li> <li>Identifies RFC and Internet draft titles.</li> </ul>	<ul style="list-style-type: none"> <li>A policy <i>term</i> is a named structure that defines match conditions and actions.</li> <li><i>Junos OS System Basics Configuration Guide</i></li> <li>RFC 1997, <i>BGP Communities Attribute</i></li> </ul>
<i>Italic text like this</i>	Represents variables (options for which you substitute a value) in commands or configuration statements.	Configure the machine's domain name:  <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; configuration hierarchy levels; or labels on routing platform components.	<ul style="list-style-type: none"> <li>To configure a stub area, include the <b>stub</b> statement at the <code>[edit protocols ospf area area-id]</code> hierarchy level.</li> <li>The console port is labeled <b>CONSOLE</b>.</li> </ul>
< > (angle brackets)	Enclose optional keywords or variables.	<code>stub &lt;default-metric <i>metric</i>&gt;;</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.	<b>broadcast   multicast</b>  <i>(string1   string2   string3)</i>
# (pound sign)	Indicates a comment specified on the same line as the configuration statement to which it applies.	<b>rsvp { # Required for dynamic MPLS only</b>
[ ] (square brackets)	Enclose a variable for which you can substitute one or more values.	<b>community name members [ community-ids ]</b>
Indentation and braces ( { } )	Identify a level in the configuration hierarchy.	<b>[edit]</b> routing-options { static { route default { nexthop <i>address</i> ; retain; } } }
;(semicolon)	Identifies a leaf statement at a configuration hierarchy level.	
<b>J-Web GUI Conventions</b>		
<b>Bold text like this</b>	Represents J-Web graphical user interface (GUI) items you click or select.	<ul style="list-style-type: none"> <li>In the Logical Interfaces box, select <b>All Interfaces</b>.</li> <li>To cancel the configuration, click <b>Cancel</b>.</li> </ul>
> (bold right angle bracket)	Separates levels in a hierarchy of J-Web selections.	In the configuration editor hierarchy, select <b>Protocols&gt;Ospf</b> .

## Documentation Feedback

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

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

## Requesting Technical Support

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

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

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

## Self-Help Online Tools and Resources

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

- Find CSC offerings: <http://www.juniper.net/customers/support/>
- 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

- [Maintenance Mode on page 3](#)



## CHAPTER 1

# Maintenance Mode

- [Mobility Maintenance Mode Overview on page 3](#)

### Mobility Maintenance Mode Overview

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Junos OS maintenance mode for the MobileNext Broadband Gateway allows you to take certain network functionality offline to perform specific maintenance tasks without disrupting service. When access point names, gateways, subscribers, and the like need maintenance, entering maintenance mode prevents these mobility elements from accepting new requests. You have the option of allowing all existing services to complete, or clear them. When ready, proceed with critical maintenance functions with a minimum of service disruption. Subscribers who attempt to access a gateway that is active in maintenance mode are prompted with a notice that the service is not supported.

You must make the following changes in maintenance mode:

- Delete or modify the addresses of certain GPRS tunneling protocol (GTP) interfaces.
- Delete or change the type of an access point name (APN).
- Change mobile interface configuration parameters.
- Change a mobile interface for an APN.
- Delete or modify a charging profile.
- Delete or modify a policy and charging enforcement function (PCEF) profile.
- Delete or modify a transport profile.
- Delete a mobile pool or modify its parameters.

These maintenance tasks are discussed in this topic. You can perform all other maintenance tasks outside of maintenance mode.

Notice that the maintenance mode procedures listed do not include adding elements. New gateways, APNs, and such carry no traffic and thus do not need to be gracefully halted. However, you can create new mobility network elements in maintenance mode as an environment in which to test configurations before deploying them.

#### Related Documentation

- [Changing a GTP Interface on page 7](#)
- [Deleting a GTP Interface on page 9](#)

- [Modifying an Access Point Name on page 10](#)
- [Configuring the Mobile Interface of an Access Point Name on page 12](#)
- [Deleting an Access Point Name on page 13](#)
- [Changing a Charging Profile on page 15](#)
- [Deleting a Charging Profile on page 17](#)
- [Changing a Transport Profile on page 18](#)
- [Deleting a Transport Profile on page 20](#)
- [Deleting a Session PIC on page 29](#)
- [Deleting a Services PIC on page 31](#)
- [Changing AMS Interface Parameters on page 33](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## PART 2

# Configuration

- [Maintenance Tasks on page 7](#)
- [Maintenance Examples on page 39](#)
- [Configuration Statements on page 71](#)





## CHAPTER 2

# Maintenance Tasks

- [Changing a GTP Interface on page 7](#)
- [Deleting a GTP Interface on page 9](#)
- [Modifying an Access Point Name on page 10](#)
- [Configuring the Mobile Interface of an Access Point Name on page 12](#)
- [Deleting an Access Point Name on page 13](#)
- [Changing a Charging Profile on page 15](#)
- [Deleting a Charging Profile on page 17](#)
- [Changing a Transport Profile on page 18](#)
- [Deleting a Transport Profile on page 20](#)
- [Changing a PCEF Profile on page 21](#)
- [Deleting a PCEF Profile on page 24](#)
- [Changing Address Attributes in the Mobile Address Pool on page 26](#)
- [Deleting a Mobile Address Pool on page 28](#)
- [Deleting a Session PIC on page 29](#)
- [Deleting a Services PIC on page 31](#)
- [Changing AMS Interface Parameters on page 33](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## Changing a GTP Interface

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This procedure describes how to use maintenance mode to halt new sessions from being started and to verify that there are no active sessions remaining before making changes to a GPRS tunneling protocol (GTP) interface address.

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for a gateway.

```
user@host# set unified-edge gateways ggsn-pgw gw-name service-mode  
maintenance"
```

3. Verify that the mobility gateway is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```



**NOTE:** From the gateway hierarchy, the service mode for the gateway shows Maintenance – Active Phase if all the sessions using this pool are cleared. The service mode for the gateway shows Maintenance – In Phase if there are some sessions actively using this pool.

4. Verify that there are no subscribers active on this gateway.

```
user@host# run show unified-edge ggsn-pgw subscribers gateway gw-name
```



**NOTE:** If a large number of subscribers will use this gateway, the preceding command will be process intensive, in which case, you can use the following command:

```
user@host# run show unified-edge ggsn-pgw status
```

This command shows the active contexts across all of the gateway instances.

5. Verify that there are no outstanding CDRs for the gateway.

```
user@host# show unified-edge ggsn-pgw charging transfer status
```

6. (Optional) Terminate sessions that are using the gateway and clear CDRs using the following **clear** commands:

```
user@host# run clear unified-edge ggsn-pgw subscribers gateway gw-name
```

```
user@host# run clear unified-edge ggsn-pgw subscribers charging gateway gw-name
```



**CAUTION:** These clear commands clear all of the existing subscribers on the gateway. Only issue these commands if you intend to disconnect service to all these subscribers.

7. When the subscriber count is zero, all sessions have ended, and the charging data records (CDRs) are flushed, modify the GTP interface in active maintenance mode.

```
user@host# set unified-edge gateways ggsn-pgw gw-name gtp interface
interface-name
user@host# commit
```



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

8. Verify that changes were properly committed.

```
user@host# run show configuration unified-edge ggsn-pgw gateway gw-name
```

9. Exit maintenance mode and commit.

```

user@host# delete unified-edge gateways ggsn-pgw gw-name gateway gw-name
service-mode
user@host# commit

```

10. Return the gateway to operational state.

```

user@host# run show unified-edge ggsn-pgw gateway service-mode

```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a GTP Interface on page 9](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## Deleting a GTP Interface

This procedure describes how to use maintenance mode to delete a GPRS tunneling protocol (GTP) interface. You must first halt new sessions from being started and verify that there are no active sessions remaining.

You can use maintenance mode to remove any of the following GTP interfaces:

- Gn
- Gp
- S5
- S8

You can also enter maintenance mode to delete control and data portions of these interface configurations.

1. Enter configuration mode in the CLI.

```

user@host> configure

```

2. Activate maintenance mode for a gateway.

3. Verify that the mobility gateway is in maintenance mode.

```

user@host# run show unified-edge ggsn-pgw gateway service-mode

```



**NOTE:** From the gateway hierarchy, the service mode for the gateway shows Maintenance – Active Phase if all the sessions using this pool are cleared. The service mode for the gateway shows Maintenance – In Phase if there are some sessions actively using this pool. The service mode for the gateway shows Maintenance – Out Phase if maintenance mode is not configured (that is, the gateway is in operational mode).

Verify that there are no subscribers active on this gateway.

```

user@host# run show unified-edge ggsn-pgw subscriber gateway gw-name

```

4. Verify that there are no outstanding CDRs for the gateway.

```
user@host# show unified-edge ggsn-pgw charging transfer status
```

5. (Optional) Terminate sessions that are using the gateway and clear CDRs using the following **clear** commands:

```
user@host# run clear unified-edge ggsn-pgw subscribers gateway gw-name
```

```
user@host# run clear unified-edge ggsn-pgw subscribers charging gateway gw-name
```

6. When the subscriber count is zero, all sessions have ended, and the charging data records (CDRs) are flushed, delete the GTP interface in active maintenance mode.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

7. Delete the GTP interface.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name gtp interface  
interface-name
```

```
user@host# commit
```

8. Exit maintenance mode and commit.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name gateway gw-name  
service-mode
```

```
user@host# commit
```

9. Verify that changes were properly committed.

```
user@host# run show configuration unified-edge ggsn-pgw gateway gw-name
```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Changing a GTP Interface on page 7](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

---

## Modifying an Access Point Name

This procedure describes how to use maintenance mode to modify an access point name (APN). Options include modifying such parameters as *apn-type*, *mobile-interface*, *charging*, and *maximum-bearers*. You must first halt new sessions from being started and verify that there are no active sessions remaining.

To change an access point name:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for an APN.

```
user@host# set unified-edge gateways ggsn-pgw gw-name apn-services apns  
apn-name service-mode maintenance
```

3. Commit the command.

```
user@host# commit
```

4. Verify that the APN is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```

This command displays the service-mode status for all the APNs. You can verify the status for the specific APN and take action accordingly.



**NOTE:** The service mode for the APN shows Maintenance – Active Phase if all the sessions using this APN are cleared. The service mode for the APN shows Maintenance - In Phase if there are some sessions actively using this APN.

5. Verify that there are no subscribers active on the APN.

```
user@host# run show unified-edge ggsn-pgw subscribers | match apn-name
```

6. (Optional) Terminate sessions on an APN using the **clear** command

```
user@host# run clear unified-edge ggsn-pgw subscribers apn apn-name gateway gw-name
```

7. When the subscriber count is zero and all sessions have ended, make and commit changes to the APN in active maintenance mode.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

8. Modify the APN and commit the changes.

9. Exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name apn-services apns apn-name service--mode
user@host# commit
```

10. Verify that changes were properly committed.

```
user@host# run show configuration unified-edge gateways ggsn-pgw gw-name apn-services apns apn-name
```

The APN edits should appear in the show command output.

11. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```



**NOTE:** Although maintenance mode does not explicitly include AAA options, certain AAA changes require you to place affected APNs in maintenance mode first. These changes include: changing an AAA profile name and changing authorization or accounting elements. If you attempt to make AAA changes that affect an APN that is not in maintenance mode, you are prompted to place the appropriate APN into maintenance mode before proceeding with AAA profile name or element changes.

**Related  
Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Configuring the Mobile Interface of an Access Point Name on page 12](#)
- [Deleting an Access Point Name on page 13](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

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## Configuring the Mobile Interface of an Access Point Name

This procedure describes how to use maintenance mode to modify attributes of the mobile interface for an access point name (APN). You must first halt new sessions from being started and verify that there are no active sessions remaining.

To configure the mobile interface of an access point name:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the APN using the mobile interface to be modified.

```
user@host# set unified-edge gateways ggsn-pgw gw-name apn-services apns  
apn-name service-mode maintenance  
user@host# commit
```

3. Verify that the APN of this mobile interface is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```



**NOTE:** From the gateway hierarchy, the service mode for the gateway shows Maintenance – Active Phase if all the sessions using this APN are cleared. The service mode for the gateway shows Maintenance – In Phase if there are some sessions actively using this APN. The service mode for the APN shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).



**NOTE:** You cannot make and commit changes to a mobile interface unless the APN to which it is attached is in maintenance mode.

4. Verify that there are no subscribers active on the APN.

```
user@host# run show unified-edge ggsn-pgw subscribers | match apn-name
```

5. (Optional) Terminate sessions that are using a mobile pool using the **clear** command.

```
user@host# run clear unified-edge ggsn-pgw subscribers apn apn-name gateway gw-name
```

6. When the subscriber count is zero and all sessions have ended, make and commit changes to the APN mobile interface in active maintenance mode.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

7. Modify the interface and commit the changes.

8. Exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name apn-services apns apn-name service-mode
user@host# commit
```

9. Verify that changes were properly committed.

```
user@host# run show configuration unified-edge gateways ggsn-pgw gw-name apn-services apns apn-name
```

10. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Example: Changing Access Point Name Values on page 39](#)
- [Deleting an Access Point Name on page 13](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## Deleting an Access Point Name

This procedure describes how to use maintenance mode to delete an access point name (APN). You must first halt new sessions from being started and verify that there are no active sessions remaining.

To delete an access point name:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for an APN.

```
user@host# set unified-edge gateways ggsn-pgw gw-name apn-services apn apn-name service-mode maintenance
user@host# commit
```

3. Verify that the APN is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```



**NOTE:** The service mode for the APN shows Maintenance – Active Phase if all the sessions using this APN are cleared. The service mode for the APN shows Maintenance – In Phase if there are some sessions actively using this APN. The service mode for the APN shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. Verify that there are no subscribers active on the APN.

```
user@host# run show unified-edge ggsn-pgw apn apn-name gateway gw-name
```

5. (Optional) Terminate sessions that are using an APN using the **clear** command.

```
user@host# run clear unified-edge ggsn-pgw subscribers apn apn-name gateway  
gw-name
```

6. When the subscriber count is zero and all sessions have ended, delete the APN in active maintenance mode.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

7. Delete the APN and commit the changes.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name apn-services apns  
apn-name
```

8. Verify that changes were properly committed by showing the configuration for the entire unified edge to make sure the APN is deleted.

9. Return the gateway to the operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Configuring the Mobile Interface of an Access Point Name on page 12](#)
- [Example: Changing Access Point Name Values on page 39](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)



## Changing a Charging Profile

This procedure describes how to use maintenance mode to change a charging profile. You must first prevent new sessions from being started and verify that there are no active sessions remaining.

You can modify the following attributes of a charging profile only when the charging profile is in maintenance mode:

- CDR profile
- Charging profile identifier (ID)
- Transport profile
- Trigger profile

To change the charging profile:



**NOTE:** The following configuration steps are applicable at both the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] and the [edit unified-edge gateways sgw *gateway-name* charging] hierarchy levels. However, for clarity, they are presented only at the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] hierarchy level. Unless explicitly stated otherwise, the configuration steps can be used with exactly the same syntax at both hierarchy levels.

For clear and show commands, obtain the S-GW command by replacing **ggsn-pgw** with **sgw** in the clear or show command.

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the charging profile.

```
user@host# set unified-edge gateways ggsn-pgw gw-name charging charging-profiles
  profile-name service-mode maintenance
user@host# commit
```

3. Verify that the charging profile is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw charging service-mode gateway
  gateway-name charging-profile profile-name
```



**NOTE:** The service mode for the charging profile shows Maintenance – Active Phase if all the sessions using this profile are cleared. The service mode for the charging profile shows Maintenance – In Phase if some sessions are actively using this profile. The service mode for the profile shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. Verify that there are no active subscribers for the charging profile.

```
user@host# run show unified-edge ggsn-pgw subscribers charging gateway gw-name
charging-profile profile-name
```

5. (Optional) Use the **clear** command to terminate subscribers using the charging profile.

```
user@host# run clear unified-edge ggsn-pgw subscribers charging gateway gw-name
charging-profile profile-name
```

When the subscriber count is zero and all sessions have ended, you can make and commit changes to the charging profile in active maintenance mode.

6. Modify the charging profile as required.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

7. Commit the changes and verify that they are properly committed.

```
user@host# commit
user@host# show unified-edge ggsn-pgw gw-name charging charging-profile
profile-name
```

8. Exit maintenance mode and commit to return to normal operations.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name charging
charging-profile profile-name service-mode
user@host# commit
```

#### Related Documentation

- [Changing a Transport Profile on page 18](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)
- [Deleting a Charging Profile on page 17](#)
- [Example: Changing a Charging Profile on page 40](#)
- [Mobility Maintenance Mode Overview on page 3](#)

## Deleting a Charging Profile

This procedure describes how to use maintenance mode to delete a charging profile. You must first prevent new sessions from being started and verify that there are no active sessions remaining.

To delete a charging profile:



**NOTE:** The following configuration steps are applicable at both the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] and the [edit unified-edge gateways sgw *gateway-name* charging] hierarchy levels. However, for clarity, they are presented only at the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] hierarchy level. Unless explicitly stated otherwise, the configuration steps can be used with exactly the same syntax at both hierarchy levels.

For clear and show commands, obtain the S-GW command by replacing ggsn-pgw with sgw in the clear or show command.

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for a charging profile.

```
user@host# set unified-edge gateways ggsn-pgw gw-name charging charging-profiles
  profile-name service-mode maintenance
commit
```

3. Verify that the charging profile is in maintenance mode.

```
user@host#run show unified-edge ggsn-pgw charging service-mode gateway gw-name
charging-profile profile-name
```



**NOTE:** The service mode for the charging profile shows Maintenance – Active Phase if all the sessions using this pool are cleared. The service mode for the charging profile shows Maintenance – In Phase if some sessions are actively using this profile. The service mode for the charging profile shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. Verify that there are no active subscribers for the charging profile.

```
user@host#run show unified-edge ggsn-pgw subscribers charging gateway gw-name
charging-profile profile-name
```

5. (Optional) Use the clear command to terminate subscribers using the charging profile.

```
user@host# run clear unified-edge ggsn-pgw subscribers charging charging-profile
  profile-name gateway gw-name
```

When the subscriber count is zero and all sessions have ended, you can make and commit changes to the charging profile in active maintenance mode.

6. Delete the charging profile and commit the changes.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name charging
charging-profile profile-name
user@host# commit
```

7. Verify that the changes are properly committed.

```
user@host# show unified-edge ggsn-pgw gw-name charging
```

#### Related Documentation

- [Changing a Charging Profile on page 15](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)
- [Changing a Transport Profile on page 18](#)
- [Example: Changing a Charging Profile on page 40](#)
- [Mobility Maintenance Mode Overview on page 3](#)

---

## Changing a Transport Profile

This procedure describes how to use maintenance mode to change a transport profile. You must first prevent new sessions from being started and verify that there are no active sessions remaining.

You can modify the following attribute of a transport profile only when the transport profile is in maintenance mode:

- **cdr-release**

To change a transport profile:



**NOTE:** The following configuration steps are applicable at both the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] and the [edit unified-edge gateways sgw *gateway-name* charging] hierarchy levels. However, for clarity, they are presented only at the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] hierarchy level. Unless explicitly stated otherwise, the configuration steps can be used with exactly the same syntax at both hierarchy levels.

For clear and show commands, obtain the S-GW command by replacing ggsn-pgw with sgw in the clear or show command.

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the transport profile.

```
user@host# set unified-edge gateways ggsn-pgw gw-name charging transport-profiles
profile-name service-mode maintenance
user@host# commit
```

3. Verify that the transport profile is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw charging service-mode gateway gw-name
transport-profile profile-name
```



**NOTE:** The service mode for the transport profile shows Maintenance – Active Phase if all the sessions using this profile are cleared. The service mode for a transport profile shows Maintenance – In Phase if some sessions are actively using this profile. The service mode for the profile shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. Verify that there are no active subscribers on this transport profile.

```
user@host# run show unified-edge ggsn-pgw subscribers charging gateway gw-name
transport-profile profile-name
```

5. (Optional) Use the **clear** command to terminate subscribers using the transport profile.

```
user@host# run clear unified-edge ggsn-pgw subscribers charging transport-profile
profile-name gateway gw-name
```

When the subscriber count is zero and all sessions have ended, you can make and commit changes to the transport profile in active maintenance mode.

6. Modify the transport profile as required.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

7. Commit the changes and verify that they are properly committed.

```
user@host# commit
user@host# show unified-edge ggsn-pgw gw-name charging transport-profile
profile-name
```

8. Exit maintenance mode and commit.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name charging
transport-profile profile-name service-mode
user@host# commit
```

#### Related Documentation

- [Changing a Charging Profile on page 15](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)
- [Deleting a Transport Profile on page 20](#)
- [Example: Changing a Transport Profile on page 44](#)
- [Mobility Maintenance Mode Overview on page 3](#)

## Deleting a Transport Profile

---

This procedure describes how to use maintenance mode to delete a transport profile. You must first prevent new sessions from being started and verify that there are no active sessions remaining.

To delete a transport profile:



**NOTE:** The following configuration steps are applicable at both the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] and the [edit unified-edge gateways sgw *gateway-name* charging] hierarchy levels. However, for clarity, they are presented only at the [edit unified-edge gateways ggsn-pgw *gateway-name* charging] hierarchy level. Unless explicitly stated otherwise, the configuration steps can be used with exactly the same syntax at both hierarchy levels.

For clear and show commands, obtain the S-GW command by replacing ggsn-pgw with sgw in the clear or show command.

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the transport profile.

```
user@host# set unified-edge gateways ggsn-pgw gw-name charging transport-profiles  
profile-name service-mode maintenance  
commit
```

3. Verify that the transport profile is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw charging service-mode gateway gw-name  
transport-profile profile-name
```



**NOTE:** The service mode for the transport profile shows Maintenance – Active Phase if all the sessions using this pool are cleared. The service mode for the transport profile shows Maintenance – In Phase if some sessions are actively using this profile. The service mode for the transport profile shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. Verify that there are no active subscribers on the transport profile.

```
user@host# run show unified-edge ggsn-pgw subscribers charging gateway gw-name  
transport-profile profile-name
```

5. (Optional) Use the clear command to terminate subscribers using the transport profile.

```
user@host# run clear unified-edge ggsn-pgw subscribers charging transport-profile  
profile-name gateway gw-name
```

When the subscriber count is zero and all sessions have ended, you can make and commit changes to the transport profile in active maintenance mode.

6. Delete the transport profile and commit the changes.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name charging
transport-profile profile-name
user@host# commit
```

7. Verify that the changes are properly committed.

```
user@host# show unified-edge ggsn-pgw gw-name charging
```

#### Related Documentation

- [Changing a Charging Profile on page 15](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)
- [Changing a Transport Profile on page 18](#)
- [Example: Changing a Transport Profile on page 44](#)
- [Mobility Maintenance Mode Overview on page 3](#)

## Changing a PCEF Profile

These procedures show how to enter maintenance mode to halt new sessions from being started and verify that there are no sessions remaining on either the gateway or APN before making changes to a policy and charging enforcement function (PCEF) profile.

You can make the following changes to a PCEF profile in maintenance mode:

- Specify different PCC rules, PCC rulebases, rule precedence, or Diameter profile in the PCEF profile configuration.
- Make changes to the PCC rules, PCC rulebases, or Diameter profile that the PCEF profile references.
- Make changes to the flow description or PCC action profile that an associated PCC rule references.



**NOTE:** You do not need to activate maintenance for the APN or gateway to modify or delete the following configurations within a PCEF profile:

- `unified-edge pcef profiles profile-name static-policy-control activate-dedicated-bearers qci-list`
- `unified-edge pcef profiles profile-name dynamic-policy-control event-trigger-profile trigger-profile-name`

- [Changing a PCEF Profile with the APN in Maintenance Mode on page 22](#)
- [Changing a PCEF Profile with the Gateway in Maintenance Mode on page 23](#)

## Changing a PCEF Profile with the APN in Maintenance Mode

This procedure shows operators how to enter Maintenance Mode to halt new sessions from being started and to verify that there are no sessions remaining on the APN before making changes to a PCEF profile for an APN.

To activate maintenance mode for the APN and make changes to a PCEF profile:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the APN on which the PCEF profile is applied.

```
user@host# set unified-edge gateways ggsn-pgw gw-name apn-services apns  
apn-name service-mode maintenance
```

3. Commit maintenance mode.

```
user@host# commit
```

4. Verify that the APN is in maintenance mode:

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```



**NOTE:** The service mode for the APN shows Maintenance–Active Phase if all the sessions using this APN are cleared. The service mode for the APN shows Maintenance - In Phase if there are some sessions actively using this APN.

5. Verify that there are no subscribers active on the APN.

```
user@host# run show unified-edge ggsn-pgw subscribers | match apn-name
```

6. (Optional) Terminate any remaining sessions on the APN by using the clear command.

```
user@host# run clear unified-edge ggsn-pgw subscribers | match apn-name
```

7. Verify that the APN is in Active Phase.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```

8. Modify the PCEF profile and commit the changes. You can modify the PCEF profile by making changes to one or more PCC rules, PCC rulebases, or flow identifiers that the PCEF profile references or by specifying a different PCC rule, rule precedence, PCC rulebase, or Diameter profile in the PCEF profile.

9. Exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name apn-services apns  
apn-name service-mode  
user@host# commit
```

10. Verify that changes were properly committed.

- To view a PCEF profile configuration:

```
user@host# run show configuration unified-edge pcef profiles profile-name
```



- To view a PCC rulebase configuration:

```
user@host# run show configuration unified-edge pcef pcc-rulebases rulebase-name
```

- To view a PCC rules configuration:

```
user@host# run show configuration unified-edge pcef pcc-rules rule-name
```

- To view a flow description configuration:

```
user@host# run show configuration unified-edge pcef flow-description flow-identifier
```

- To view a PCC action profile configuration:

```
user@host# run show configuration unified-edge pcef pcc-action-profiles  
profile-name
```

The PCEF configuration edits will appear in the show command output.

11. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

## Changing a PCEF Profile with the Gateway in Maintenance Mode

This procedure shows how to enter maintenance mode to halt new sessions from being started and to verify that there are no sessions remaining on the Packet Data Network Gateway (P-GW) before making changes to one or more PCEF profiles across multiple APNs on a P-GW.

To activate maintenance mode for the P-GW and make changes to a PCEF profile:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the gateway.

```
user@host# set unified-edge gateways ggsn-pgw gw-name service-mode maintenance
```

3. Commit maintenance mode.

```
user@host# commit
```

4. Verify that the mobility gateway is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw service-mode
```



**NOTE:** From the gateway hierarchy, the service mode shows Maintenance—Active Phase if all the sessions are cleared. The service mode shows Maintenance—In Phase if some sessions are active. The service mode shows Maintenance—Out Phase if maintenance mode is not configured, and the gateway is in operational mode.

5. Modify the PCEF profile and commit the changes. You can modify a PCEF profile by making changes to the PCC rules, PCC rulebases, or flow identifiers that the PCEF profile references or by specifying a different PCC rule, rule precedence, PCC rulebase, or Diameter profile in the PCEF profile.

6. Exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name service-mode
user@host# commit
```

7. Verify that changes were properly committed.

- To view a PCEF profile configuration:

```
user@host# run show configuration unified-edge pcef profiles profile-name
```

- To view a PCC rulebase configuration:

```
user@host# run show configuration unified-edge pcef pcc-rulebases rulebase-name
```

- To view a PCC rules configuration:

```
user@host# run show configuration unified-edge pcef pcc-rules rule-name
```

- To view a flow description configuration:

```
user@host# run show configuration unified-edge pcef flow-description flow-identifier
```

- To view a PCC action profile configuration:

```
user@host# run show configuration unified-edge pcef pcc-action-profiles
profile-name
```

The PCEF configuration edits will appear in the show command output.

8. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

---

## Deleting a PCEF Profile

These procedures show how to enter maintenance mode to halt new sessions from being started and verify that there are no sessions remaining on the Access Point Name (APN) or gateway before removing a policy and charging enforcement function (PCEF) profile from APN or service-selection profile configurations.

- [Deleting a PCEF Profile with the APN in Maintenance Mode on page 24](#)
- [Deleting a PCEF Profile with the Gateway in Maintenance Mode on page 25](#)

### Deleting a PCEF Profile with the APN in Maintenance Mode

This procedure shows how to enter maintenance mode to halt new sessions from being started and to verify that there are no sessions remaining on the APN before removing a PCEF profile configuration that an APN or service-selection profile references.

To activate maintenance mode for the APN and make changes to a PCEF profile:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the APN that references the PCEF profile.

```
user@host# set unified-edge gateways ggsn-pgw gw-name apn-services apns
apn-name service-mode maintenance
```

3. Commit maintenance mode.

```
user@host# commit
```

4. Verify that the APN is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```



**NOTE:** The service mode for the APN shows Maintenance—Active Phase if all the sessions using this APN are cleared. The service mode for the APN shows Maintenance—In Phase if some sessions are actively using this APN.

5. Verify that no subscribers are active on the APN.

```
user@host# run show unified-edge ggsn-pgw subscribers | match apn-name
```

6. (Optional) Terminate any remaining sessions on the APN.

```
user@host# run clear unified-edge ggsn-pgw subscribers apn apn-name
```

7. Verify that the APN is in active phase.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```

8. In the APN or service-selection profile configuration, remove the referenced PCEF profile and commit the changes.

9. Verify that the changes were properly committed by showing the configuration for the entire APN or service-selection profile to make sure the PCEF profile is deleted.

10. (Optional) If the PCEF profile is not used in other APN or service-selection profile configurations, you can delete the PCEF profile configuration and commit the changes.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name apn-services apns
apn-name service-mode
user@host# commit
```

11. Exit maintenance mode.

12. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

## Deleting a PCEF Profile with the Gateway in Maintenance Mode

This procedure shows how to enter maintenance mode to halt new sessions from being started and to verify that there are no sessions remaining on the Packet Data Network Gateway (P-GW) before deleting PCEF profiles that are referenced by one or more APNs on a P-GW.

To activate maintenance mode for the P-GW and make changes to a PCEF profile:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for the gateway.

```
user@host# set unified-edge gateways ggsn-pgw gw-name service-mode maintenance
```

3. Commit maintenance mode.

```
user@host# commit
```

4. Verify that the mobility gateway is in maintenance mode.

```
user@host# run show unified-edge ggsn-pgw service-mode
```



**NOTE:** From the gateway hierarchy, the service mode shows Maintenance—Active Phase if all the sessions are cleared. The service mode shows Maintenance—In Phase if there are some sessions active. The service mode shows Maintenance—Out Phase if maintenance mode is not configured, and the gateway is in operational mode.

5. Verify that no subscribers are active on the P-GW.

```
user@host# run show unified-edge ggsn-pgw subscribers gateway gateway-name
```

6. (Optional) Terminate any remaining sessions on the P-GW.

```
user@host# run clear unified-edge ggsn-pgw subscribers gateway gateway-name
```

7. Verify that the P-GW is in active phase.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

8. For each applicable APN, delete the PCEF profile from the APN configuration and commit the changes.

9. Verify that the changes were properly committed by showing the configuration for each APN to make sure the PCEF profile is deleted.

10. Exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw gw-name service-mode  
user@host# commit
```

11. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

---

## Changing Address Attributes in the Mobile Address Pool

This procedure describes how to place a mobile pool of a virtual routing and forwarding (VRF) instance in maintenance mode, allow all existing sessions using this pool to gracefully terminate, and then delete or modify pool attributes (for example, change address ranges in a pool).

To change address attributes in the mobile address pool:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for a mobile pool.

```
user@host# configure
```

```
user@host# set routing-instance vrf-name access address-assignment mobile pools
juniper-pool service-mode maintenance
user@host# commit
```

3. Verify that all subscriber sessions have ended.

```
user@host# run show unified-edge ggsn-pgw address-assignment pool brief
```



**NOTE:** The service mode shows Maintenance – Active Phase if all the sessions are cleared. The service mode shows Maintenance – In Phase if there are some sessions active. The service mode shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. (Optional) Terminate existing sessions using the **clear** command.

```
user@host# configure
user@host# run clear unified-edge ggsn-pgw subscribers routing-instance juniper-vrf
```



**NOTE:** When the subscriber count is zero and all sessions have terminated, the service mode status indicates Maintenance – Active phase. In this state, you can modify mobile pool attributes and commit changes.

5. Make changes to the pool and commit.
6. Verify that changes were properly committed.

```
user@host# run show configuration routing-instance access address-assignment
mobile-pools pool-name detail
```



**NOTE:** These modifications, if made outside of active maintenance mode, will fail.

7. Exit maintenance mode to return to normal operational mode.

```
user@host# delete routing-instance juniper-vrf access address-assignment
mobile-pools pool-name service-mode
user@host# commit
```

8. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Mobile Address Pool on page 28](#)

## Deleting a Mobile Address Pool

This procedure describes how to delete a mobile pool. You must first halt new sessions from being started and verify that there are no active sessions remaining. The steps are similar to those described in [“Changing Address Attributes in the Mobile Address Pool” on page 26](#)

To delete an address from an address pool:

1. Enter configuration mode in the CLI.

```
user@host> configure
```

2. Activate maintenance mode for a mobile pool.

```
user@host# set routing-instance juniper-vrf access address-assignment mobile-pools
pool-name service-mode maintenance
commit
```

3. Verify that all subscriber sessions have ended.

```
user@host# run show unified-edge ggsn-pgw address-assignment pool brief
```



**NOTE:** The service mode shows Maintenance – Active Phase if all the sessions are cleared. The service mode shows Maintenance – In Phase if there are some sessions active. The service mode shows Maintenance – Out Phase if maintenance mode is not configured (that is, it is in operational mode).

4. (Optional) Terminate sessions that are using a mobile pool using the **clear** command.

```
user@host# configure
user@host# run clear unified-edge ggsn-pgw subscribers routing-instance juniper-vrf
```



**NOTE:** When the subscriber count is zero and all sessions have terminated, the service mode status will indicate “Maintenance – Active phase.” In this state, you can modify pool attributes and commit changes.

5. For this pool, when the subscriber count is zero and all sessions have ended, the service mode status indicates “Maintenance – Active Phase.” In this state, you can modify mobile pool attributes and commit changes.



**NOTE:** These modifications, if made outside of active maintenance mode, will fail.

6. Delete the address pool and commit the change.

```
user@host# delete routing-instance juniper-vrf access address-assignment
mobile-pools juniper-pool
commit
```

- Verify that the address pool has been deleted (that is, it is not listed in the output).

```
user@host# run show configuration routing-instance juniper-vrf access
address-assignment mobile-pools juniper-pool
user@host# commit
```

**Related  
Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Changing Address Attributes in the Mobile Address Pool on page 26](#)

## Deleting a Session PIC

This procedure shows how to delete a session PIC using maintenance mode at the **[edit unified-edge gateways ggsn-pgw *ggsn-pgw-name* system session-pics interface]** or **[edit unified-edge gateways sgw *sgw-name* system session-pics interface]** hierarchy level. The session PIC can be an aggregated multiservices interface (AMS). Session PICs process control plane messages on a broadband gateway.

Before you delete a session PIC using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users.

To configure maintenance mode and session PIC deletion:

- Verify the current status of maintenance mode for this session PIC.

```
user@host> show unified-edge ggsn-pgw gateway-name system interfaces
service-mode
user@host> show unified-edge sgw gateway-name system interfaces service-mode
```



**NOTE:** The **service-mode** option displays the information details about maintenance mode as well as status.

### 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.

### Interface Name Gateway Name Service Mode

```
ms-1/0/0 MBG1 Operational
ms-1/1/0 MBG1 Operational
ms-2/0/0 MBG1 Operational
ms-2/1/0 MBG1 Operational
pfe-0/0/0 MBG1 Operational
pfe-0/1/0 MBG1 Operational
pfe-0/2/0 MBG1 Operational
pfe-0/3/0 MBG1 Operational
ams1 MBG1 Operational
```

- Place the broadband gateway in configuration mode.

```
user@host# configure
```

3. On the Gateway GPRS Support Node (GGSN). Packet Data Network Gateway (P-GW), or Serving Gateway (S-GW), place the interface in maintenance mode.

```
user@host# set unified-edge gateways ggsn-pgw gateway-name system session-pics  
interface interface-name service-mode maintenance
```

```
user@host# set unified-edge gateways sgw gateway-name system session-pics  
interface interface-name service-mode maintenance
```

4. Commit maintenance mode.

```
user@host# commit
```

5. Verify that the session PIC is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@MBG1> show unified-edge ggsn-pgw gateway-name system interfaces  
service-mode
```

```
user@MBG1> show unified-edge sgw gateway-name system interfaces service-mode
```

#### 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.

Interface Name	Gateway Name	Service Mode
ms-1/0/0	MBG1	Operational
ms-1/1/0	MBG1	Maintenance - Active Phase
ms-2/0/0	MBG1	Operational
ms-2/1/0	MBG1	Operational
pfe-0/0/0	MBG1	Operational
pfe-0/1/0	MBG1	Operational
pfe-0/2/0	MBG1	Operational
pfe-0/3/0	MBG1	Operational
ams1	MBG1	Operational



**NOTE:** All subscribers serviced by the session PIC must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the clear command for the interface (or gateway) to force these conditions.

6. Delete the session PIC.

```
user@host# delete unified-edge gateways ggsn-pgw gateway-name system interface  
interface-name
```

```
user@host# delete unified-edge gateways sgw gateway-name system interface  
interface-name
```

7. Exit with commit.





**NOTE:** Deletion of a session PIC automatically exits maintenance mode for the deleted PIC.

```
user@host# commit
```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Services PIC on page 31](#)
- [Changing AMS Interface Parameters on page 33](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## Deleting a Services PIC

This procedure shows how to delete a services PIC using maintenance mode at the **[edit unified-edge gateways ggsn-pgw *ggsn-pgw-name* system session-pics interface]** or **[edit unified-edge gateways sgw *sgw-name* system session-pics interface]** hierarchy level. The services PIC can be an aggregated multiservices interface (AMS). Services PICs perform packet-related services on a broadband gateway.

Before you delete a services PIC using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users.

To configure maintenance mode and services PIC deletion:

1. Verify the current status of maintenance mode for this services PIC.

```
user@host> show unified-edge ggsn-pgw gateway-name system interfaces
service-mode
user@host> show unified-edge sgw gateway-name system interfaces service-mode
```



**NOTE:** The **service-mode** option displays the information details about maintenance mode as well as status.

#### 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.

Interface Name	Gateway Name	Service Mode
ms-1/0/0	MBG1	Operational
ms-1/1/0	MBG1	Operational
ms-2/0/0	MBG1	Operational
ms-2/1/0	MBG1	Operational
pfe-0/0/0	MBG1	Operational
pfe-0/1/0	MBG1	Operational

```
pfe-0/2/0 MBG1 Operational
pfe-0/3/0 MBG1 Operational
ams1 MBG1 Operational
```

2. Place the broadband gateway in configuration mode.

```
user@host# configure
```

3. On the Gateway GPRS Support Node (GGSN), Packet Data Network Gateway (P-GW), or Serving Gateway (S-GW), place the interface in maintenance mode.

```
user@host# set unified-edge gateways ggsn-pgw gateway-name system session-pics
interface interface-name service-mode maintenance
user@host# set unified-edge gateways sgw gateway-name system session-pics
interface interface-name service-mode maintenance
```

4. Commit maintenance mode.

```
user@host# commit
```

5. Verify that the services PIC is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@MGB1> show unified-edge ggsn-pgw gateway-name system interfaces
service-mode
user@MGB1> show unified-edge sgw gateway-name system interfaces service-mode
```

#### 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.

```
Interface Name Gateway Name Service Mode
ms-1/0/0 MBG1 Operational
ms-1/1/0 MBG1 Operational
ms-2/0/0 MBG1 Maintenance - Active Phase
ms-2/1/0 MBG1 Operational
pfe-0/0/0 MBG1 Operational
pfe-0/1/0 MBG1 Operational
pfe-0/2/0 MBG1 Operational
pfe-0/3/0 MBG1 Operational
ams1 MBG1 Operational
```



**NOTE:** All subscribers serviced by the services PIC must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the clear command for the interface (or gateway) to force these conditions.

6. Delete the services PIC.

```
user@host# delete unified-edge gateways ggsn-pgw gateway-name system interface
interface-name
user@host# delete unified-edge gateways sgw gateway-name system interface
interface-name
```

- Exit maintenance mode and commit.



**NOTE:** Deletion of a services PIC automatically exits maintenance mode for the deleted PIC.

```
user@host# commit
```

#### Related Documentation

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Session PIC on page 29](#)
- [Changing AMS Interface Parameters on page 33](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## Changing AMS Interface Parameters

This procedure shows how to change the parameters for an aggregated multiservices (AMS) interface on a MobileNext Broadband Gateway using maintenance mode at the **[edit interfaces]** hierarchy level. If an AMS interface is configured under a gateway's session PICs or services PICs, and there is a change to any load-balancing options such as membership of AMS interfaces (**mams-**), then the AMS interface must be in maintenance mode.

Before you change AMS parameters using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users.

To configure maintenance mode and AMS parameter change:

- Verify the current status of maintenance mode for the AMS.

```
user@MGB1> show unified-edge ggsn-pgw gateway-name system interfaces
service-mode
```



**NOTE:** The **service-mode** option displays the information details about maintenance mode as well as status.

#### 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.

#### Interface Name Gateway Name Service Mode

```
ms-1/0/0 MBG1 Operational
ms-1/1/0 MBG1 Operational
ms-2/0/0 MBG1 Operational
ms-2/1/0 MBG1 Operational
```

```
pfe-0/0/0 MBG1 Operational
pfe-0/1/0 MBG1 Operational
pfe-0/2/0 MBG1 Operational
pfe-0/3/0 MBG1 Operational
ams1 MBG1 Operational
```

2. Place the broadband gateway in configuration mode.

```
user@host# configure
```

3. Show the current configuration for the AMS interface

```
user@host# show interfaces interface-name
load-balancing-options {
  member-interface mams-4/1/0;
  member-interface mams-5/1/0;
  member-failure-options {
    redistribute-all-traffic {
      enable-rejoin;
    }
  }
  high-availability-options {
    many-to-one {
      preferred-backup mams-5/1/0;
    }
  }
}
unit 1 {
  family inet;
}
unit 2 {
  family inet;
}
```

4. On the gateway, place the interface in maintenance mode.

```
user@host# set unified-edge ggsn-pgw gateway-name system interface interface-name
service-mode maintenance
```



**NOTE:** This is done at the [edit unified-edge] hierarchy level.

5. Commit maintenance mode.

```
user@host# commit
```

6. Verify that the AMS interface is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@MGB1> show unified-edge ggsn-pgw gateway-name system interfaces
service-mode
```

#### 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.

Interface Name	Gateway Name	Service Mode
ms-1/0/0	MBG1	Operational
ms-1/1/0	MBG1	Operational
ms-2/0/0	MBG1	Operational
ms-2/1/0	MBG1	Operational
pfe-0/0/0	MBG1	Operational
pfe-0/1/0	MBG1	Operational
pfe-0/2/0	MBG1	Operational
pfe-0/3/0	MBG1	Operational
ams1	MBG1	Maintenance - Active Phase



**NOTE:** All subscribers serviced by the AMS interface must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the clear command for the interface (or gateway) to force these conditions.

7. Delete or change AMS member interfaces and parameters.

```

user@MGB1> show unified-edge ggsn-pgw gateway-name system interfaces
service-mode
user@host# delete unified-edge ggsn-pgw gateway-name system interface
interface-name load-balancing-options member-interface mams-interface-name
user@host# set interfaces interface-name load-balancing-options member-interface
mams-interface-name
user@host# delete interfaces interface-name load-balancing-options
high-availability-options many-to-one preferred-backup mams-interface-name
user@host# set interfaces interface-name load-balancing-options
high-availability-options many-to-one preferred-backup mams-interface-name

```



**NOTE:** This procedure requires operations at the [edit unified-edge] and [edit interfaces] hierarchy level. Be careful!

8. Exit maintenance mode and commit.

```

user@host# delete unified-edge ggsn-pgw gateway-name system interface
interface-name service-mode maintenance
user@host# commit

```

**Related  
Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Session PIC on page 29](#)
- [Deleting a Services PIC on page 31](#)
- [Changing Gateway Parameters with Maintenance Mode on page 36](#)

## Changing Gateway Parameters with Maintenance Mode

---

This procedure shows how to change the parameters for a General GPRS Support Node (GGSN), Packet Data Network Gateway (P-GW), or Service Gateway (S-GW) configured on a MobileNext Broadband Gateway using maintenance mode at the **[edit unified-edge gateways ggsn-pgw gateway-name]** (GGSN or P-GW) or **[edit unified-edge gateways sgw gateway-name]** (S-GW) hierarchy level.

The gateway must be in maintenance mode to change:

- Maximum number of bearers (GGSN, P-GW, or S-GW)
- Maximum number of network-behind-the-mobile (NBM) IPv4 prefixes for an anchor Packet Forwarding Engine (GGSN or P-GW)
- Maximum number of network-behind-the-mobile (NBM) IPv6 prefixes for an anchor Packet Forwarding Engine (GGSN or P-GW)
- Guaranteed bandwidth for each anchor Packet Forwarding Engine (S-GW)
- Maximum number of default bearers allowed (as a percentage of total bearers) on each anchor Packet Forwarding Engine (S-GW)
- Maximum number of bearers allowed on each anchor Packet Forwarding Engine (S-GW)

Before you change these gateway parameters using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users.
- Make sure that this change will be applied to the correct gateway type and name.

To configure maintenance mode for a gateway parameter change:

1. Verify the current status of maintenance mode for the gateway. Under normal operating conditions, the service mode is **Operational** (that is, not in maintenance mode).

```
user@host> show unified-edge ggsn-pgw gateway-name service-mode
user@host> show unified-edge sgw gateway-name service-mode
```



**NOTE:** The **service-mode** option displays the information details about maintenance mode as well as status.

### 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

<gateway-name> Operational

2. Place the broadband gateway in configuration mode.

```
user@host# configure
```

3. Place the gateway in maintenance mode.

```
user@host# set unified-edge ggsn-pgw gateway-name service-mode maintenance
user@host# set unified-edge sgw gateway-name service-mode maintenance
```

4. Commit maintenance mode.

```
user@host# commit
```

5. Verify that the gateway is in active maintenance mode where configuration changes will be accepted for this object.

```
user@host> show unified-edge ggsn-pgw gateway-name service-mode
user@host> show unified-edge sgw gateway-name service-mode
```



**NOTE:** The service-mode option displays the information details about maintenance mode as well as status.

#### 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

<gateway-name> Maintenance - Active Phase



**NOTE:** All subscribers serviced by the gateway must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the clear command for the gateway to force these conditions.

6. Set the new parameter values.

```
user@host# set unified-edge ggsn-pgw gateway-name maximum-bearers
maximum-bearers-value
```

```
user@host# set unified-edge sgw gateway-name maximum-bearers
maximum-bearers-value
```

```
user@host# set unified-edge ggsn-pgw gateway-name anchor-pfe-ipv4-nbm-prefixes
maximum-ipv4-prefixes
```

```
user@host# set unified-edge ggsn-pgw gateway-name anchor-pfe-ipv6-nbm-prefixes
maximum-ipv6-prefixes
```

```
user@host# set unified-edge sgw gateway-name anchor-pfe-guaranteed-bandwidth  
                        anchor-pfe-guaranteed-bandwidth-value
```

```
user@host# set unified-edge sgw gateway-name  
                        anchor-pfe-default-bandwidth-percentage  
                        anchor-pfe-default-bandwidth-percentage-value
```

```
user@host# set unified-edge sgw gateway-name anchor-pfe-maximum-bearers  
                        maximum-bearers-value
```

7. Exit maintenance mode and commit.

```
user@host# delete unified-edge ggsn-pgw gateway-name service-mode maintenance  
user@host# delete unified-edge sgw gateway-name service-mode maintenance  
user@host# commit
```

**Related  
Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Session PIC on page 29](#)
- [Deleting a Services PIC on page 31](#)
- [Changing AMS Interface Parameters on page 33](#)



## CHAPTER 3

# Maintenance Examples

- [Example: Changing Access Point Name Values on page 39](#)
- [Example: Changing a Charging Profile on page 40](#)
- [Example: Deleting an APN on page 42](#)
- [Example: Changing a Transport Profile on page 44](#)
- [Example: Changing a PCEF Profile on page 46](#)
- [Example: Changing Mobility Pool Attributes on page 47](#)
- [Example: Deleting a Mobility Address Pool on page 53](#)
- [Example: Modifying Mobile Interface Parameters on page 55](#)
- [Example: Deleting a Session PIC on page 58](#)
- [Example: Deleting a Services PIC on page 62](#)
- [Example: Changing an AMS Interface on page 65](#)

### Example: Changing Access Point Name Values

---

- [Requirements on page 39](#)
- [Overview on page 39](#)
- [Configuration on page 39](#)

#### Requirements

This example uses the following hardware and software components:

- An operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

#### Overview

The following configuration example shows how to change an access point name (APN).

#### Configuration

##### Step-by-Step Procedure

To change an APN configuration:

1. Verify the current status of maintenance mode for this APN profile.

```
user@host# run show unified-edge ggsn-pgw MBG1 apn-services apn Central
service-mode
```

```
Profile Name : Central
Service Mode : Operational
```

2. Place the MX Series router in configuration mode.

```
user@host# configure
```

3. On the MBG1 gateway, place the APN named Central in maintenance mode.

```
user@host# set unified-edge gateways ggsn-pgw MBG1 apn-services apns Central
service-mode maintenance
```

4. Commit maintenance mode.

```
user@host# commit
```

5. Verify that the APN profile is in active maintenance mode where configuration changes are accepted for this object and all of its subhierarchies.

```
user@host# run show unified-edge ggsn-pgw MBG1 apn-services apns Central
service-mode
```

```
Gateway Name : MBG1
```

```
...
```

```
Profile Name : Service Mode
Central      : Maintenance - Active Phase
```

6. Commit your changes and exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw MBG1 apn-service apns Central
service-mode
user@host# commit
```

7. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

**Results** The APN profile is placed in active maintenance mode. You can change profile attributes and commit them.

**Related Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Modifying an Access Point Name on page 10](#)

---

## Example: Changing a Charging Profile

This example shows how to change a charging profile using maintenance mode.

- [Requirements on page 41](#)
- [Overview on page 41](#)
- [Configuration on page 41](#)

## Requirements

This example uses the following hardware and software components:

- An installed and operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

## Overview

This configuration example shows how to place the charging profile named *juniper* in maintenance mode. Once in maintenance mode, you can make changes to the charging profile attributes without affecting mobility subscribers using other charging profiles.

You can modify the following attributes of a charging profile only when the charging profile is in maintenance mode:

- CDR profile
- Charging profile identifier (ID)
- Transport profile
- Trigger profile

## Configuration

### Step-by-Step Procedure

To change a charging profile:

1. Verify the current status of maintenance mode for this charging profile.
 

```
user@host> show unified-edge ggsn-pgw charging service-mode gateway MBG1
charging-profile juniper detail
```

```
Gateway Name   : MBG1
...
Profile Name   : juniper
Service Mode   : Operational
```
2. Place the broadband gateway in configuration mode.
 

```
user@host# configure
```
3. On the gateway MBG1, place the charging profile named juniper in maintenance mode.
 

```
user@host# set unified-edge gateways ggsn-pgw MBG1 charging charging-profiles
juniper service-mode maintenance
```
4. Commit maintenance mode.
 

```
user@host# commit
```
5. Verify that the charging profile is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.
 

```
user@host# run show unified-edge ggsn-pgw charging service-mode gateway MBG1
charging-profile juniper detail
```

Gateway Name : MBG1

...

Profile Name : Service Mode

juniper : Maintenance - Active Phase

6. Verify that there are no active subscribers using the charging profile.

```
user@host# run show unified-edge ggsn-pgw subscribers charging gateway MBG1
charging-profile juniper
```

7. (Optional) Use the **clear** command to terminate subscribers using the charging profile.

```
user@host# run clear unified-edge ggsn-pgw subscribers charging gateway MBG1
charging-profile juniper
```

When the subscriber count is zero and all sessions have ended, you can make and commit changes to the charging profile in active maintenance mode.

8. Modify the charging profile as required.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

9. Commit the changes and verify that they are properly committed.

```
user@host# commit
user@host# show unified-edge ggsn-pgw MBG1 charging charging-profile juniper
```

10. Exit maintenance mode and commit.

```
user@host# delete unified-edge gateways ggsn-pgw charging service-mode gateway
MBG1 charging-profile juniper service-mode
user@host# commit
```

**Results** The modified charging profile is effective for all subscribers who connect the gateway and who are linked to the charging profile.

**Related  
Documentation**

- [Changing a Charging Profile on page 15](#)
- [Deleting a Charging Profile on page 17](#)
- [Mobility Maintenance Mode Overview on page 3](#)

---

## Example: Deleting an APN

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

## Requirements

This example uses the following hardware and software components:

- An operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

## Overview

This configuration example shows how to delete an access point name (APN).

## Configuration

### Step-by-Step Procedure

To delete an APN:

1. Enter configuration mode and place the APN named Central in maintenance mode.

```
user@host# configure
user@host# set unified-edge gateways ggsn-pgw MBG1 apn-service apns Central
service-mode maintenance
user@host# commit
```

2. Wait for all sessions using Central to terminate. Do this by monitoring the service-mode status using the following show command. When sessions become zero, the service-mode status displays Maintenance – Active Phase.

```
user@host# run show unified-edge ggsn-pgw subscribers | match apn-name
```



**NOTE:** When maintenance mode shows Maintenance – Active Phase, the system is ready to accept configuration changes for all attributes of this object and its subhierarchies. When maintenance mode shows In/Out Phase, the system is ready to accept configuration changes only for non-maintenance mode attributes of this object and its subhierarchies.

3. Delete the APN named Central and commit the changes.

```
user@host# delete unified-edge ggsn-pgw MBG1 apn-services apnsCentral
user@host# commit
```

4. Exit maintenance mode and commit.

```
user@host# delete unified-edge ggsn-pgw MBG1 apn-services apns Central
service-mode
user@host# commit
```

5. Verify that the APN has been deleted.

```
user@host# run show configuration unified-edge gateways ggsn-pgw MBG1
apn-services apns
```

The APN named Central should not be displayed in the show command output.

6. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

- Related Documentation**
- [Mobility Maintenance Mode Overview on page 3](#)
  - [Deleting an Access Point Name on page 13](#)

## Example: Changing a Transport Profile

---

This example shows how to change a transport profile using maintenance mode.

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

### Requirements

This example uses the following hardware and software components:

- An installed and operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

### Overview

This configuration example shows how to put the transport profile “trans\_p” in maintenance mode. Once in maintenance mode, you can make changes to the transport profile attributes without affecting mobility subscribers using other transport profiles. You can modify the following attribute of a transport profile only when the transport profile is in maintenance mode:

- **cdr-release**

### Configuration

#### Step-by-Step Procedure

To modify a transport profile:

1. Verify the current status of maintenance mode for this transport profile.

```
user@host> show unified-edge ggsn-pgw charging service-mode gateway MBG1
transport-profile trans_p detail
```

```
Gateway Name  : MBG1
...
Profile Name   : trans_p
Service Mode   : Operational
```

2. Set the broadband gateway in configuration mode.

```
user@host# configure
```

3. On the gateway MBG1, place the transport profile “trans\_p” in maintenance mode.

```
user@host# set unified-edge gateways ggsn-pgw MBG1 charging transport-profiles
trans_p service-mode maintenance
```

4. Commit maintenance mode.

```
user@host# commit
```

5. Verify that the transport profile is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@host# run show unified-edge ggsn-pgw charging service-mode gateway MBG1
transport-profile trans_p brief
```

```
Gateway Name   : MBG1
...
Profile Name    : Service Mode
trans_p         : Maintenance - Active Phase
```

6. Verify that there are no active subscribers using the transport profile.

```
user@host# run show unified-edge ggsn-pgw subscribers charging gateway MBG1
transport-profile trans_p
```

7. (Optional) Use the **clear** command to terminate subscribers using the transport profile.

```
user@host# run clear unified-edge ggsn-pgw subscribers charging gateway MBG1
transport-profile trans_p
```

When the subscriber count is zero and all sessions have ended, you can make and commit changes to the transport profile in active maintenance mode.

8. Modify the transport profile as required.



**NOTE:** These modifications must be made in active maintenance mode or they will fail.

9. Commit the changes and verify that they are properly committed.

```
user@host# commit
user@host# show unified-edge ggsn-pgw MBG1 charging transport-profile trans_p
```

10. Exit maintenance mode and commit.

```
user@host# delete unified-edge gateways ggsn-pgw charging service-mode gateway
MBG1 transport-profile trans_p service-mode
user@host# commit
```

**Results** The modified transport profile is effective for all subscribers who connect the gateway and who are linked to the transport profile.

#### Related Documentation

- [Changing a Transport Profile on page 18](#)
- [Deleting a Transport Profile on page 20](#)
- [Mobility Maintenance Mode Overview on page 3](#)

## Example: Changing a PCEF Profile

---

This example shows how to make changes to a policy and charging enforcement function (PCEF) profile using maintenance mode.

- [Requirements on page 46](#)
- [Overview on page 46](#)
- [Configuration on page 46](#)

### Requirements

This example uses the following hardware and software components:

- An operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

### Overview

This configuration example shows how to place the PCEF profile named *juniper-pcef* in maintenance mode. Once in maintenance mode, you can make changes to a PCEF profile without affecting mobility subscribers that are using other PCEF profiles.

### Configuration

#### Step-by-Step Procedure

To change a PCEF profile:

1. Place the MX Series router in configuration mode.  
**user@host# configure**
2. On the gateway PGW1, place the APN on which the PCEF profile is applied, in maintenance mode.  
**user@host# set unified-edge gateways ggsn-pgw PGW1 apn-services apns casper.com service-mode maintenance**
3. Commit maintenance mode.  
**user@host# commit**
4. Verify that the APN is in active maintenance mode where configuration changes are accepted for this object and all of its subhierarchies.  
**user@host# run show unified-edge ggsn-pgw PGW1 apn service-mode**  
  
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.

APN Name	Gateway Name	Service Mode
casper.com	PGW1	Maintenance - Active Phase



jnpr-gxgy	PGW1	Operational
jnpr-gy	PGW1	Operational



**NOTE:** When maintenance mode shows Maintenance — Active Phase, the system is ready to accept configuration changes for all attributes of this object and its subhierarchies.

5. Modify the PCEF profile as required.
6. Exit maintenance mode and commit your changes.
 

```
user@host# delete unified-edge gateways ggsn-pgw PGW1 apn-service apns
casper.com service-mode
user@host# commit
```
7. Verify that the PCEF profile changes were properly committed.
 

```
user@host# run show configuration unified-edge ggsn-pgw gateway
```
8. Return the gateway to operational state.
 

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

APN Name	Gateway Name	Service Mode
casper.com	PGW1	Operational
jnpr-gxgy	PGW1	Operational
jnpr-gy	PGW1	Operational

- Related Documentation**
- [Mobility Maintenance Mode Overview on page 3](#)
  - [Changing a PCEF Profile on page 21](#)
  - [Deleting a PCEF Profile on page 24](#)

## Example: Changing Mobility Pool Attributes

- [Requirements on page 47](#)
- [Overview on page 47](#)
- [Configuration on page 48](#)

### Requirements

This example uses the following hardware and software components:

- An operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

### Overview

This example shows how to change mobility pool attributes for a mobile pool named “juniper-pool” in a routing instance named “default.”

## Configuration

### Step-by-Step Procedure

To change the address range for a mobility pool.

1. Verify the current configuration of the mobility pool.

```
user@host# run show configuration access address-assignment mobile-pools
juniper-pool {
  family inet {
    network {
      30.30.0.0/16 {
        range {
          range1 {
            low 30.30.1.1;
            high 30.30.255.254;
          }
        }
      }
    }
  }
  default-pool;
}
```

2. Enter configuration mode and then maintenance mode.

```
user@host# configure
user@host# set access address-assignment mobile-pools juniper-pool service-mode
maintenance
user@host# commit
```

3. Wait for all sessions using juniper-pool to terminate. Do this by monitoring the service-mode status using the following show command. When the number of sessions becomes zero, the service-mode status displays "Maintenance – Active Phase."

```
user@host# show access address-assignment mobile-pools pool-name
service-mode
```



**NOTE:** "Maintenance - Active Phase" means system is ready to accept configuration changes for all attributes of this object and its subhierarchies. "Maintenance mode - In/Out Phase" means that the system is ready to accept configuration changes only for non-maintenance mode attributes of this object and its subhierarchies.

4. Change the address range from 30.30.x.x to 30.31.x.x.

```
user@host# configure
user@host# set access address-assignment mobile-pools juniper-pool family inet
network 30.31.0.0/16 range range1 low 30.31.1.1 high 30.31.255.254
user@host# configure
user@host# delete access address-assignment mobile-pools juniper-pool family
inet network 30.30.0.0/16
user@host# configure
user@host# commit
```

5. Check the state of this pool.

```
user@host# run show unified-edge ggsn-pgw address-assignment pool name
juniper-pool detail
```

6. Change the pool service mode to operational. Do this by deleting service-mode maintenance for juniper-pool.

```
user@host# configure
user@host# delete access address-assignment mobile-pools juniper-pool
service-mode maintenance
user@host# commit
```

7. Check the state of juniper-pool.

```
user@host# run show unified-edge ggsn-pgw address-assignment pool juniper-pool
details
```

8. Check the new configuration for juniper-pool.

```
user@host# run show configuration access address-assignment mobile-pools
juniper-pool
juniper-pool {
  family inet {
    network {
      30.31.0.0/16 {
        range {
          range1 {
            low 30.31.1.1;
            high 30.31.255.254;
          }
        }
      }
    }
  }
}
default-pool;
```

#### Step-by-Step Procedure

The following examples illustrate how to make changes to mobile pools.

1. Verify the current configuration of “Gi-vrf”.

```
user@host# run show routing-instances Gi-vrf access
```

```
address-assignment {
  mobile-pools {
    v4-vrf-1 {
      family inet {
        network {
          30.30.0.0/16 {
            range {
              range1 {
                low 30.30.1.1;
                high 30.30.254.254;
              }
            }
          }
        }
      }
    }
  }
}
```

```

    }
    v6-vrf-1 {
        family inet6 {
            network {
                2000:1:2::0/48 {
                    range {
                        range6-1 {
                            low 2000:1:2:5::0/64;
                            high 2000:1:2:ffff::0/64;
                        }
                    }
                }
            }
        }
    }
}

```

2. Enter maintenance mode to make changes to *v4-vrf-1*. In this example, you are changing the range for the pool.

```

user@host# set routing-instances Gi-vrf access address-assignment mobile-pools
v4-vrf-1 service-mode maintenance
user@host# commit
user@host# set routing-instances Gi-vrf access address-assignment mobile-pools
v4-vrf-1 family inet network 30.30.0.0/16 range range1 low 30.30.2.1
user@host# commit
user@host# delete routing-instances Gi-vrf access address-assignment mobile-pools
v4-vrf-1 service-mode
user@host# commit

```

3. Verify your changes.

```

user@host# show routing-instances Gi-vrf access

```

```

address-assignment {
  mobile-pools {
    v4-vrf-1 {
      family inet {
        network {
          30.30.0.0/16 {
            range {
              range1 {
                low 30.30.2.1;
                high 30.30.254.254;
              }
            }
          }
        }
      }
    }
  }
}
v6-vrf-1 {
  family inet6 {
    network {
      2000:1:2::0/48 {
        range {
          range6-1 {

```

```

        low 2000:1:2:5::0/64;
        high 2000:1:2:ffff::0/64;
    }
}
}
}
}
}
}
}

[edit]
user@host#

```

**Step-by-Step Procedure** This procedure describes how to add a network to a mobile pool.

1. Verify the current address assignment for the mobile pool “jnpr”.

```
user@host# run show access address-assignment mobile-pools jnpr
```

```

family inet {
  network {
    30.30.0.0/16 {
      range {
        r1 {
          low 30.30.1.1;
          high 30.30.1.254;
        }
      }
    }
  }
}
}
default-pool;

```

2. Place the mobile pool in maintenance mode.

```

user@host# set access address-assignment mobile-pools jnpr service-mode
maintenance
user@host# commit

```

3. Verify that the pool is in maintenance mode.

```
user@host# show access address-assignment mobile-pools jnpr
```

```

service-mode maintenance;
family inet {
  network {
    30.30.0.0/16 {
      range {
        r1 {
          low 30.30.1.1;
          high 30.30.1.254;
        }
      }
    }
  }
}
}

```

```
}  
default-pool;
```

4. Add the network "10.10.0.0/16".

```
user@host# set access address-assignment mobile-pools jnpr family inet network  
40.40.0.0/16  
user@host# commit
```

5. Verify that the network was added to the pool.

```
user@host# run show access address-assignment mobile-pools jnpr
```

```
service-mode maintenance;  
family inet {  
  network {  
    30.30.0.0/16 {  
      range {  
        r1 {  
          low 30.30.1.1;  
          high 30.30.1.254;  
        }  
      }  
    }  
    10.10.0.0/16; <----  
  }  
}  
default-pool;
```

6. Exit maintenance mode and commit.

```
user@host# delete access address-assignment mobile-pools jnpr service-mode  
user@host# commit
```

7. Verify that the pool is no longer in maintenance mode.

```
user@host# run show access address-assignment mobile-pools jnpr
```

```
family inet {  
  network {  
    30.30.0.0/16 {  
      range {  
        r1 {  
          low 30.30.1.1;  
          high 30.30.1.254;  
        }  
      }  
    }  
    10.10.0.0/16; <----  
  }  
}  
default-pool;
```

8. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

- Related Documentation**
- [Mobility Maintenance Mode Overview on page 3](#)
  - [Changing Address Attributes in the Mobile Address Pool on page 26](#)

## Example: Deleting a Mobility Address Pool

- [Requirements on page 53](#)
- [Example of Deleting a Mobility Address Pool on page 53](#)
- [Configuration on page 53](#)

### Requirements

This example uses the following hardware and software components:

- An operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

### Example of Deleting a Mobility Address Pool

In this example, a pool “juniper-pool” in routing-instance “default” exists with the following configuration:

```
juniper-pool {
  family inet {
    network {
      30.30.0.0/16 {
        range {
          range1 {
            low 30.30.1.1;
            high 30.30.255.254;
          }
        }
      }
    }
  }
  default-pool;
}
```

In this example, you delete this pool.

### Configuration

- Step-by-Step Procedure**
- To delete the pool, execute the following steps.
1. Enter configuration mode and place the pool in maintenance mode.
 

```
user@host# configure
user@host# set access address-assignment mobile-pools juniper-pool service-mode
maintenance
user@host# commit
```

2. Wait for all sessions using "juniper-pool" to terminate. Do this by monitoring the service-mode status using the show command. When sessions become zero, the service-mode status will display Maintenance – Active Phase.

```
user@host# run show unified-edge ggsn-pgw address-assignment service-mode
pool juniper-pool
```



**NOTE:** When maintenance mode shows "Maintenance – Active Phase," the system is ready to accept configuration changes for all attributes of this object and its subhierarchies. When maintenance mode shows "In/Out Phase," the system is ready to accept configuration changes only for non-maintenance mode attributes of this object and its subhierarchies.

3. Remove all references to the pool from all APNs, if any.

```
user@host# delete unified-edge gateways ggsn-pgw MBG1 apn-services apn internet
address-assignment inet-pool pool juniper-pool
user@host# commit
```

4. Remove all references to the pool from any pool group, if any.

```
user@host# delete access address-assignment mobile-pool-groups pool-group-xyz
juniper-pool
user@host# commit
```

5. If the pool is marked default pool, many APNs could be referencing this pool. In this case, delete the default pool attribute for the "juniper-pool."

```
user@host# delete access address-assignment mobile-pools juniper-pool
default-pool
user@host# commit
```

6. Delete the pool "juniper-pool."

```
user@host# delete access address-assignment mobile-pools juniper-pool
routing-instance juniper-vrf
user@host# commit
```

7. Verify that the address pool is deleted.

```
user@host# run show unified-edge ggsn-pgw address-assignment pool details
```

The address pool "juniper-pool" should not be displayed in the show command output.

**Related  
Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Mobile Address Pool on page 28](#)



## Example: Modifying Mobile Interface Parameters

- [Requirements on page 55](#)
- [Overview on page 55](#)
- [Configuration on page 55](#)

### Requirements

This example uses the following hardware and software components:

- An operational MX Series chassis
- Junos OS MobileNext Broadband Gateway package

### Overview

The following examples show how to make changes to a mobile interface.

### Configuration

Use the following examples to change to a mobile interface:

- [Modifying the IPv4 Maximum Transmission Unit \(MTU\) on page 55](#)
- [Changing the Mobile Interface for an Access Point Name \(APN\) on page 56](#)

#### Modifying the IPv4 Maximum Transmission Unit (MTU)

##### Step-by-Step Procedure

The following procedure shows how to modify the IPv4 maximum transmission unit (MTU).

1. Set the MX Series router in configuration mode.  

```
user@host# configure
```
2. On the *MBG1* gateway, place the APN *alice1* in maintenance mode.  

```
user@host# set unified-edge gateways ggsn-pgw MBG1 apn-services apn alice1
service-mode maintenance
```
3. Commit maintenance mode.  

```
user@host# commit
```
4. Verify that the APN is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.  

```
user@host# run show unified-edge ggsn-pgw apn service-mode apn alice1
maintenance mode
```

```
APN Name      : Service Mode
alice1        : Maintenance - Active Phase
```
5. Change and commit the MTU to 1550.  

```
user@host# set interfaces mif unit 2 family inet mtu 1550
user@host# commit
```

6. Commit your changes and exit maintenance mode.

```
user@host# delete unified-edge gateways ggsn-pgw MBG1 apn-services apn alice1
service-mode
user@host# commit
```

7. Verify that the change has been made.

```
user@host# show interfaces mif.2

Logical interface mif.2 (Index 719) (SNMP ifIndex 771)
Flags: SNMP-Traps Encapsulation: GTP-over-MIF
Bandwidth: 1000mbps
Input packets : 0
Output packets: 0
Protocol inet, MTU: 1550
  Flags: Sendbroadcast-pkt-to-re, User-MTU
Protocol inet6, MTU: 1600
  Addresses, Flags: Is-Preferred
    Destination: fe80::/64, Local: fe80::2a0:a5ff:fc67:587b
```

8. Return the gateway to operational state.

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

---

### Changing the Mobile Interface for an Access Point Name (APN)

---

**Step-by-Step Procedure** This procedure describes how to change the mobile interface for the APN casper from .0 to 222.

1. Verify the state of *casper*.

```
user@host# run show unified-edge ggsn-pgw apn service-mode
```

#### 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.

APN Name	Service Mode
apn-vrf1.juniper.net	Operational
apn-vrf2.juniper.net	Operational
apn-vrf3.juniper.net	Operational
casper.com	Operational
fuzz-gtp	Operational
new-ipv4	Operational
new-ipv6	Operational
radius1	Operational
realapn1	Operational
static-assign	Operational
virtual-apn3.juniper.net	Operational
virtualapn.juniper.net	Operational
virtualapn2.juniper.net	Operational

- ```
[edit]
user@host#
```
2. Place the APN *casper.com* in maintenance mode.
 

```
user@host# set unified-edge gateways ggsn-pgw PGW apn-services apn casper.com
service-mode maintenance
user@host# commit
```
  3. Change the mobile interface.
 

```
user@host# set unified-edge gateways ggsn-pgw PGW apn-services apn casper.com
mobile-interface mif.222
user@host# commit
```
  4. Verify the change.
 

```
user@host# run show unified-edge gateways ggsn-pgw PGW apn-services apn
casper.com

apn-type real;
apn-data-type ipv4v6;
mobile-interface mif.222;
address-assignment {
    local;
}
user-options {
    use-apnname;
}
dns-server {
    primary-v4 4.4.4.1;
}
p-cscf {
    2001:1:4:3::;
}
selection-mode {
    from-ms;
    from-ggsn;
}
service-mode maintenance; <---- mode

[edit]
user@host#
```
  5. Return the APN “casper” to normal operation (exit maintenance mode and commit your changes).
 

```
user@host# delete unified-edge gateways ggsn-pgw PGW apn-services apn
casper.com service-mode
user@host# commit
```
  6. Return the gateway to operational state.
 

```
user@host# run show unified-edge ggsn-pgw gateway service-mode
```

**Related Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Mobile Address Pool on page 28](#)

## Example: Deleting a Session PIC

---

This example shows how to delete a session PIC using maintenance mode at the **[edit unified-edge gateways ggsn-pgw *ggsn-pgw-name* system session-pics interface]** or **[edit unified-edge gateways sgw *sgw-name* system session-pics interface]** hierarchy level. The session PIC can be an aggregated multiservices interface (AMS). Session PICs process control plane messages on a broadband gateway.

- [Requirements on page 58](#)
- [Overview on page 58](#)
- [Configuration on page 58](#)
- [Verification on page 61](#)
- [Troubleshooting Session PIC Deletion on page 61](#)

### Requirements

This example uses the following hardware and software components:

- An installed and operational MobileNext Broadband Gateway chassis
- Properly installed and operational Junos OS MobileNext Broadband Gateway software packages

Before you delete a session PIC using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users.

### Overview

This configuration example shows how to put the session PIC interface in maintenance mode. Once in maintenance mode, you can delete the session PIC without affecting mobility subscribers using other session PICs.

### Topology

---

This procedure is independent of other network devices.

### Configuration

To configure session PIC maintenance mode and deletion, perform this tasks:

- [Configuring Maintenance Mode for Session PIC Deletion on page 59](#)
- [Results on page 60](#)

#### CLI Quick Configuration

Delete session PIC **ms-1/1/0** from gateway **MBG1**:

```
[edit]
set unified-edge gateways ggsn-pgw MBG1 system session-pics interface ms-1/1/0
  service-mode maintenance
commit
delete unified-edge gateways ggsn-pgw MBG1 system interface ms-1/1/0
commit
```

### Configuring Maintenance Mode for Session PIC Deletion

#### Step-by-Step Procedure

To configure maintenance mode and session PIC deletion:

1. Verify the current status of maintenance mode for this session PIC.

```
user@MBG1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```



**NOTE:** The service-mode option displays the information details about maintenance mode as well as status.

#### 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.

| Interface Name | Gateway Name | Service Mode |
|----------------|--------------|--------------|
| ms-1/0/0       | MBG1         | Operational  |
| ms-1/1/0       | MBG1         | Operational  |
| ms-2/0/0       | MBG1         | Operational  |
| ms-2/1/0       | MBG1         | Operational  |
| pfe-0/0/0      | MBG1         | Operational  |
| pfe-0/1/0      | MBG1         | Operational  |
| pfe-0/2/0      | MBG1         | Operational  |
| pfe-0/3/0      | MBG1         | Operational  |
| ams1           | MBG1         | Operational  |

2. Place the broadband gateway in configuration mode.

```
user@MBG1# configure
```

3. On the gateway MBG1, place the interface **ms-1/1/0** in maintenance mode.

```
user@MBG1# set unified-edge gateways ggsn-pgw MBG1 system session-pics
interface ms-1/1/0 service-mode maintenance
```

4. Commit maintenance mode.

```
user@MBG1# commit
```

5. Verify that the session PIC is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@MBG1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```

#### 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.

| Interface Name | Gateway Name | Service Mode               |
|----------------|--------------|----------------------------|
| ms-1/0/0       | MBG1         | Operational                |
| ms-1/1/0       | MBG1         | Maintenance - Active Phase |
| ms-2/0/0       | MBG1         | Operational                |
| ms-2/1/0       | MBG1         | Operational                |
| pfe-0/0/0      | MBG1         | Operational                |
| pfe-0/1/0      | MBG1         | Operational                |
| pfe-0/2/0      | MBG1         | Operational                |
| pfe-0/3/0      | MBG1         | Operational                |
| ams1           | MBG1         | Operational                |



**NOTE:** All subscribers serviced by the session PIC must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the clear command for the interface (or gateway) to force these conditions.

6. Delete the session PIC.

```
user@MBG1# delete unified-edge gateways ggsn-pgw MBG1 system interface
ms-1/1/0
```

7. Exit maintenance mode and commit.



**NOTE:** Deletion of a session PIC automatically exits maintenance mode for the deleted PIC.

```
user@MBG1# commit
```

---

## Results

The session PIC **ms-1/1/0** is removed from the gateway interface list.

```
user@MBG1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```

### 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.

| Interface Name | Gateway Name | Service Mode |
|----------------|--------------|--------------|
| ms-1/0/0       | MBG1         | Operational  |
| ms-2/0/0       | MBG1         | Operational  |
| ms-2/1/0       | MBG1         | Operational  |
| pfe-0/0/0      | MBG1         | Operational  |
| pfe-0/1/0      | MBG1         | Operational  |
| pfe-0/2/0      | MBG1         | Operational  |

```
pfe-0/3/0 MBG1      Operational
ams1 MBG1 Operational
```

## Verification

- [Verifying Session PIC Deletion on page 61](#)

### Verifying Session PIC Deletion

**Purpose** To verify that the session PIC is no longer part of the gateway configuration.

**Action** Display the interfaces configured for the gateway.

```
user@MBG1> show unified-edge ggsn-pgw system interfaces
Gateway: MBG1
Interfaces  Members  Operational  Redundancy
           State    Role
ms-1/0/0    Active   Standalone
ms-2/0/0    Active   Standalone
ms-2/1/0    Active   Standalone
pfe-0/0/0   Active   Standalone
pfe-0/1/0   Active   Standalone
pfe-0/2/0   Active   Standalone
pfe-0/3/0   Active   Standalone
ams1        Active   Standalone
```



**NOTE:** The session PIC `ms-1/1/0` no longer appears on the list of gateway interfaces.

**Meaning** Deletion of session PIC successful.

## Troubleshooting Session PIC Deletion

To troubleshoot session PIC deletion with maintenance mode, perform this task:

- [Troubleshooting a Commit Fail on page 61](#)

### Troubleshooting a Commit Fail

**Problem** The final commit after deletion of the session PIC fails.

**Solution** The `ms-1/1/0` interface (FPC 1 and PIC 1) can still have the mobility package configured at the `[edit chassis]` hierarchy level. You must remove the `jservices-mobile` package from the session PIC configuration, then perform the commit.

**Related Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Session PIC on page 29](#)

## Example: Deleting a Services PIC

---

This example shows how to delete a services PIC using maintenance mode at the **[edit unified-edge gateways ggsn-pgw *ggsn-pgw-name* system service-pics interface]** or **[edit unified-edge gateways sgw *sgw-name* system service-pics interface]** hierarchy level. The services PIC can be an aggregated multiservices interface (AMS). Services PICs perform packet-related services on a broadband gateway.

- [Requirements on page 62](#)
- [Overview on page 62](#)
- [Configuration on page 62](#)
- [Verification on page 65](#)

### Requirements

This example uses the following hardware and software components:

- An installed and operational MobileNext Broadband Gateway chassis
- Properly installed and operational Junos OS MobileNext Broadband Gateway software packages

Before you delete a services PIC using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users

### Overview

This configuration example shows how to put the services PIC interface in maintenance mode. Once in maintenance mode, you can delete the services PIC without affecting mobility subscribers using other services PICs.

### Topology

---

This procedure is independent of other network devices.

### Configuration

To configure services PIC maintenance mode and deletion, perform this task:

- [Configuring Maintenance Mode for Services PIC Deletion on page 63](#)
- [Results on page 64](#)

#### CLI Quick Configuration

Delete services PIC **ms-2/0/0** from gateway **MBG1**:

```
[edit]
set unified-edge gateways ggsn-pgw MBG1 system service-pics interface ms-2/0/0
  service-mode maintenance
commit
delete unified-edge gateways ggsn-pgw MBG1 system interface ms-2/0/0
commit
```



### Configuring Maintenance Mode for Services PIC Deletion

#### Step-by-Step Procedure

To configure maintenance mode for services PIC deletion:

1. Verify the current status of maintenance mode for this services PIC.

```
user@MGB1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```



**NOTE:** The service-mode option displays the information details about maintenance mode as well as status.

#### 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.

| Interface Name | Gateway Name | Service Mode |
|----------------|--------------|--------------|
| ms-1/0/0       | MBG1         | Operational  |
| ms-1/1/0       | MBG1         | Operational  |
| ms-2/0/0       | MBG1         | Operational  |
| ms-2/1/0       | MBG1         | Operational  |
| pfe-0/0/0      | MBG1         | Operational  |
| pfe-0/1/0      | MBG1         | Operational  |
| pfe-0/2/0      | MBG1         | Operational  |
| pfe-0/3/0      | MBG1         | Operational  |
| ams1           | MBG1         | Operational  |

2. Place the broadband gateway in configuration mode.

```
user@MBG1# configure
```

3. On the gateway MBG1, place the interface **ms-2/0/0** in maintenance mode.

```
user@MBG1# set unified-edge gateways ggsn-pgw MBG1 system service-pics
interface ms-2/0/0 service-mode maintenance
```

4. Commit maintenance mode.

```
user@MBG1# commit
```

5. Verify that the services PIC is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@MGB1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```

#### 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.

| Interface Name | Gateway Name | Service Mode               |
|----------------|--------------|----------------------------|
| ms-1/0/0       | MBG1         | Operational                |
| ms-1/1/0       | MBG1         | Operational                |
| ms-2/0/0       | MBG1         | Maintenance - Active Phase |
| ms-2/1/0       | MBG1         | Operational                |
| pfe-0/0/0      | MBG1         | Operational                |
| pfe-0/1/0      | MBG1         | Operational                |
| pfe-0/2/0      | MBG1         | Operational                |
| pfe-0/3/0      | MBG1         | Operational                |
| ams1           | MBG1         | Operational                |



**NOTE:** All subscribers serviced by the services PIC must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the clear command for the interface (or gateway) to force these conditions.

6. Delete the services PIC.

```
user@MBG1# delete unified-edge gateways ggsn-pgw MBG1 system interface
ms-2/0/0
```

7. Exit maintenance mode and commit.



**NOTE:** Deletion of a services PIC automatically exits maintenance mode for the deleted PIC.

```
user@MBG1# commit
```

---

## Results

The services PIC **ms-2/0/0** is removed from the gateway interface list.

```
user@MBG1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```

### 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.

| Interface Name | Gateway Name | Service Mode |
|----------------|--------------|--------------|
| ms-1/0/0       | MBG1         | Operational  |
| ms-1/1/0       | MBG1         | Operational  |
| ms-2/1/0       | MBG1         | Operational  |
| pfe-0/0/0      | MBG1         | Operational  |
| pfe-0/1/0      | MBG1         | Operational  |
| pfe-0/2/0      | MBG1         | Operational  |

```
pfe-0/3/0 MBG1      Operational
ams1 MBG1 Operational
```

## Verification

- [Verifying Services PIC Deletion on page 65](#)

### Verifying Services PIC Deletion

**Purpose** To verify that the services PIC is no longer part of the gateway configuration.

**Action** Display the interfaces configured for the gateway.

```
user@MBG1> show unified-edge ggsn-pgw system interfaces
Gateway: MBG1
Interfaces  Members  Operational  Redundancy
           State    Role
ms-1/0/0    Active   Standalone
ms-2/0/0    Active   Standalone
ms-2/1/0    Active   Standalone
pfe-0/0/0   Active   Standalone
pfe-0/1/0   Active   Standalone
pfe-0/2/0   Active   Standalone
pfe-0/3/0   Active   Standalone
ams1        Active   Standalone
```



**NOTE:** The services PIC ms-2/0/0 no longer appears on the list of gateway interfaces.

**Meaning** Deletion of services PIC successful.

**Related Documentation**

- [Mobility Maintenance Mode Overview on page 3](#)
- [Deleting a Services PIC on page 31](#)

## Example: Changing an AMS Interface

This example shows how to change the parameters for an aggregated multiservices (AMS) interface on a MobileNext Broadband Gateway using maintenance mode at the **[edit interfaces]** hierarchy level. If an AMS interface is configured under a gateway's session PICs or services PICs, and there is a change to any load-balancing options such as membership of AMS interfaces (**mams-**), then the AMS interface must be in maintenance mode.

- [Requirements on page 66](#)
- [Overview on page 66](#)
- [Configuration on page 66](#)
- [Verification on page 69](#)

## Requirements

This example uses the following hardware and software components:

- An installed and operational MobileNext Broadband Gateway chassis
- Properly installed and operational Junos OS MobileNext Broadband Gateway software packages

Before you change AMS parameters using maintenance mode:

- Make sure that this change has been coordinated with affected groups and users.

## Overview

This configuration example shows how to put the AMS interface in maintenance mode. Once in maintenance mode, you can delete a member (mams-) of the AMS group, add another member, and change the preferred backup, all without affecting mobility subscribers.

---

### Topology

This procedure is independent of other network devices.

## Configuration

To configure AMS maintenance mode and parameter changes, perform this task:

- [Configuring Maintenance Mode for AMS Parameter Change on page 67](#)
- [Results on page 69](#)

### CLI Quick Configuration

Delete **mams-5/1/0** from **ams1**, add **mams-3/1/0** to **ams1**, and configure **mams-3/1/0** as the new preferred backup for **ams1**:

```
[edit]
set unified-edge ggsn-pgw gateway-name system interface ams1 service-mode
  maintenance
commit
delete unified-edge ggsn-pgw gateway-name system interface ams1 load-balancing-options
  member-interface mams-5/1/0
set interfaces ams1 load-balancing-options member-interface mams-3/1/0
delete interfaces ams1 load-balancing-options high-availability-options many-to-one
  preferred-backup mams-5/1/0
set interfaces ams1 load-balancing-options high-availability-options many-to-one
  preferred-backup mams-3/1/0
delete unified-edge ggsn-pgw gateway-name system interface ams1 service-mode
  maintenance
commit
```



**NOTE:** This example requires changes at both the [edit unified-edge] and [edit interfaces] hierarchy levels. In this example, the interface **ams1** is set as **anchor-services-pics** at the [edit unified-edge gateways ggsn-pgw MBG1 system] hierarchy level.

---

### Configuring Maintenance Mode for AMS Parameter Change

#### Step-by-Step Procedure

To configure maintenance mode and AMS parameter change:

1. Verify the current status of maintenance mode for this AMS (**ams1**).

```
user@MGB1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```



**NOTE:** The **service-mode** option displays the information details about maintenance mode as well as status.

#### 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.

| Interface Name | Gateway Name | Service Mode |
|----------------|--------------|--------------|
| ms-1/0/0       | MBG1         | Operational  |
| ms-1/1/0       | MBG1         | Operational  |
| ms-2/0/0       | MBG1         | Operational  |
| ms-2/1/0       | MBG1         | Operational  |
| pfe-0/0/0      | MBG1         | Operational  |
| pfe-0/1/0      | MBG1         | Operational  |
| pfe-0/2/0      | MBG1         | Operational  |
| pfe-0/3/0      | MBG1         | Operational  |
| ams1           | MBG1         | Operational  |

2. Place the broadband gateway in configuration mode.

```
user@MBG1# configure
```

3. Show the current configuration for **ams1**

```
user@MBG1# show unified-edge ggsn-pgw gateway-name system interface ams1
load-balancing-options {
  member-interface mams-4/1/0;
  member-interface mams-5/1/0;
  member-failure-options {
    redistribute-all-traffic {
      enable-rejoin;
    }
  }
  high-availability-options {
    many-to-one {
      preferred-backup mams-5/1/0;
    }
  }
}
unit 1 {
  family inet;
}
```

```
unit 2 {
  family inet;
}
```

4. On the gateway MBG1, place the interface **ams1** in maintenance mode.

```
user@MBG1# set unified-edge ggsn-pgw gateway-name system interface ams1
service-mode maintenance
```

5. Commit maintenance mode.

```
user@MBG1# commit
```

6. Verify that the **ams1** interface is in active maintenance mode where configuration changes will be accepted for this object and all of its subhierarchies.

```
user@MGB1> show unified-edge ggsn-pgw MBG1 system interfaces service-mode
```

#### 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.

#### Interface Name Gateway Name Service Mode

```
ms-1/0/0 MBG1 Operational
ms-1/1/0 MBG1 Operational
ms-2/0/0 MBG1 Operational
ms-2/1/0 MBG1 Operational
pfe-0/0/0 MBG1 Operational
pfe-0/1/0 MBG1 Operational
pfe-0/2/0 MBG1 Operational
pfe-0/3/0 MBG1 Operational
ams1 MBG1 Maintenance - Active Phase
```



**NOTE:** All subscribers serviced by **ams1** must go to zero. All Charging Data Records (CDRs) for these subscribers must be flushed out. You can wait for these conditions to be met, or use the **clear** command for the interface (or gateway) to force these conditions.

7. Delete the **mams-5/1/0** member interface for **ams1**.

```
user@MBG1# delete unified-edge ggsn-pgw gateway-name system interface ams1
load-balancing-options member-interface mams-5/1/0
```

8. Add the **mams-3/1/0** member interface for **ams1** at the **[edit interfaces]** hierarchy level.

```
user@MBG1# set interfaces ams1 load-balancing-options member-interface
mams-3/1/0
```

9. Delete the **mams-5/1/0** member interface as the preferred backup for **ams1** at the **[edit interfaces]** hierarchy level.

```
user@MBG1# delete interfaces ams1 load-balancing-options high-availability-options
many-to-one preferred-backup mams-5/1/0
```

10. Add the **mams-3/1/0** member interface as the preferred backup for **ams1** at the **[edit interfaces]** hierarchy level.

```
user@MBG1# set interfaces ams1 load-balancing-options high-availability-options
many-to-one preferred-backup mams-3/1/0
```

11. Exit maintenance mode and commit.

```
user@MBG1# delete unified-edge ggsn-pgw gateway-name system interface ams1
service-mode maintenance
user@MBG1# commit
```

## Results

The parameters for **ams1** are changed, so that **mams-3/1/0** has replaced **mams-5/1/0** as a member interface and preferred backup.

```
user@MBG1# show unified-edge ggsn-pgw gateway-name system interfaces ams1
load-balancing-options {
  member-interface mams-3/1/0;
  member-interface mams-4/1/0;
  member-failure-options {
    redistribute-all-traffic {
      enable-rejoin;
    }
  }
  high-availability-options {
    many-to-one {
      preferred-backup mams-3/1/0;
    }
  }
}
unit 1 {
  family inet;
}
unit 2 {
  family inet;
}
```

## Verification

- [Verifying AMS parameter change on page 69](#)

### Verifying AMS parameter change

**Purpose** To verify that the members of **ams1** have changed.

**Action** Display the interfaces configured for **ams1**.

```
user@MBG1> show unified-edge ggsn-pgw gateway-name system interfaces load-balancing ams1
```

```
Load-balancing interfaces detail
```

```
Interface   : ams1
```

```
State       : Up
```

```
Last change  : 00:11:28
```

```
Member count : 2
```

```
HA Model     : Many-to-One
```

```
Members      :
```

```
  Interface  Weight State
```

```
  mams-4/1/0  10  Active
```

```
  mams-3/1/0  10  Backup
```

```
Sync-state   :
```

```
  Interface  Status
```

```
  mams-3/1/0  Unknown
```

```
  mams-4/1/0  Unknown
```

**Meaning** The parameters for **ams1** have successfully changed.

- Related Documentation**
- [Mobility Maintenance Mode Overview on page 3](#)
  - [Changing AMS Interface Parameters on page 33](#)
  - [Changing Gateway Parameters with Maintenance Mode on page 36](#)



## CHAPTER 4

# Configuration Statements

- [\[edit unified-edge gateways\] Hierarchy Level on page 71](#)

### [\[edit unified-edge gateways\] Hierarchy Level](#)

---

Each of the following topics lists the statements at a sub-hierarchy of the **[edit unified-edge gateways]** hierarchy.

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

#### Related Documentation

- [\[edit unified-edge\] Hierarchy Level](#)
- [Notational Conventions Used in Junos OS Configuration Hierarchies](#)

### [service-mode \(GGSN or P-GW\)](#)

---

|                          |                                                                                                                                                                                                                                                                                                                                                                                                                 |
|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Syntax                   | service-mode maintenance;                                                                                                                                                                                                                                                                                                                                                                                       |
| Hierarchy Level          | <code>[edit unified-edge gateways ggsn-pgw gateway-name]</code>                                                                                                                                                                                                                                                                                                                                                 |
| Release Information      | Statement introduced in Junos OS Mobility Release 11.2W.                                                                                                                                                                                                                                                                                                                                                        |
| Description              | <p>This statement puts the respective gateway under maintenance mode.</p> <p>When you have to make the following changes to the existing gateway configuration, you must put that gateway under maintenance mode:</p> <ul style="list-style-type: none"><li>• Deleting certain GTP interfaces, such as Gn, Gp, S5, and S8</li><li>• Changing the GTP interface address</li><li>• Deleting the gateway</li></ul> |
| 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"><li>• <code>ggsn-pgw</code></li><li>• <a href="#">Mobility Maintenance Mode Overview on page 3</a></li></ul>                                                                                                                                                                                                                                                                  |

## service-mode (Serving Gateway)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>service-mode service-mode-options;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Hierarchy Level</b>          | [edit unified-edge gateways sgw gateway-name]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>      | Statement introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | <p>Specify that the Serving Gateway (S-GW) should be in <b>maintenance</b> 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 <b>Maintenance Mode Active Phase</b>, you can modify all valid attributes on the object. In all other cases, you can modify only the non-maintenance mode attributes.</p> |
| <b>Options</b>                  | <b>service-mode-options</b> —Specify the service mode. Currently, only the <b>maintenance</b> mode is option supported.                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Required Privilege Level</b> | unified-edge—To view this statement in the configuration.<br>unified-edge-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"><li>sgw</li><li><a href="#">show unified-edge sgw service-mode on page 94</a></li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |

## service-mode (APN)

---

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>service-mode <i>service-mode-options</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Hierarchy Level</b>          | [edit unified-edge gateways ggsn-pgw <i>gateway-name</i> apn-services apns <i>name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Release Information</b>      | Statement introduced in Junos OS Mobility Release 11.2W.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | <p>Specify that the access point name (APN) should be in <b>maintenance</b> mode. You do this if you want to carry out maintenance tasks like deleting an APN or changing the APN type and so on. See the <i>Maintenance Mode</i> chapter in the <i>MobileNext Broadband Gateway Configuration Guide</i> for a list of the maintenance tasks that can be carried out when the APN is in maintenance mode.</p> <p>When in the <b>Maintenance Mode Active Phase</b>, all the valid attributes on the object can be modified. In other cases, only the non-maintenance mode attributes can be modified.</p> |
| <b>Options</b>                  | <b><i>service-mode-options</i></b> —Specify the service mode. Currently, <b>maintenance</b> mode is the only option supported.                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Required Privilege Level</b> | unified-edge—To view this statement in the configuration.<br>unified-edge-control—To add this statement to the configuration.                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• apns</li> <li>• <a href="#">Configuring the Mobile Interface of an Access Point Name on page 12</a></li> <li>• <a href="#">Deleting an Access Point Name on page 13</a></li> <li>• <a href="#">Example: Changing Access Point Name Values on page 39</a></li> <li>• <a href="#">Modifying an Access Point Name on page 10</a></li> </ul>                                                                                                                                                                                                                        |

## service-mode (Charging Profiles)

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|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>service-mode <i>service-mode-options</i>;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Hierarchy Level</b>     | [edit unified-edge gateways ggsn-pgw <i>gateway-name</i> charging charging-profiles <i>profile-name</i> ],<br>[edit unified-edge gateways sgw <i>gateway-name</i> charging charging-profiles <i>profile-name</i> ]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Release Information</b> | Statement introduced in Junos OS Mobility Release 11.2W.<br>Support at the [edit unified-edge gateways sgw <i>gateway-name</i> charging charging-profiles <i>profile-name</i> ] hierarchy level introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>         | <p>Place the charging profile under maintenance mode.</p> <p>You must put the charging profile in maintenance mode when you have to make any of the following changes to the existing charging profile configuration:</p> <ul style="list-style-type: none"><li>• Change the CDR profile, transport profile, or the trigger profile associated with this charging profile</li><li>• Change the profile ID configuration</li><li>• Delete the charging profile</li></ul> <p>When a charging profile is in maintenance mode, no new subscribers are accepted for that charging profile. However, maintenance mode does not become active until no existing subscriber sessions are using that charging profile and all the corresponding CDRs have been flushed out. Unless the maintenance mode becomes active, you cannot modify the charging profile attributes or delete the charging profile.</p> <p>Use the following commands to help you with maintenance mode tasks:</p> <ul style="list-style-type: none"><li>• To verify that the charging profile has entered active maintenance mode, use one of the following commands, as applicable:<ul style="list-style-type: none"><li>• For the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW)—<code>show unified-edge ggsn-pgw charging service-mode gateway <i>gateway-name</i> charging-profile <i>profile-name</i></code></li><li>• For the Serving Gateway (S-GW)—<code>show unified-edge sgw charging service-mode gateway <i>gateway-name</i> charging-profile <i>profile-name</i></code></li></ul></li><li>• To verify that the subscriber count has reached zero, use one of the following commands, as applicable:<ul style="list-style-type: none"><li>• For the GGSN or P-GW—<code>show unified-edge ggsn-pgw subscribers charging charging-profile <i>profile-name</i> gateway <i>gateway-name</i></code></li><li>• For the S-GW—<code>show unified-edge sgw subscribers charging charging-profile <i>profile-name</i> gateway <i>gateway-name</i></code></li></ul></li><li>• To verify that all CDRs for the transport profile referred to by this charging profile have been flushed out, use one of the following commands, as applicable:</li></ul> |

- For the GGSN or P-GW—**show unified-edge ggsn-pgw charging transfer status transport-profile-name *profile-name***
- For the S-GW—**show unified-edge sgw charging transfer status transport-profile-name *profile-name***
- To explicitly end any subscriber sessions, use one of the following commands, as applicable:
  - For the GGSN or P-GW—**clear unified-edge ggsn-pgw subscribers charging charging-profile *profile-name* gateway *gateway-name***
  - For the S-GW—**clear unified-edge sgw subscribers charging charging-profile *profile-name* gateway *gateway-name***
- To explicitly flush all the CDRs for the transport profile referred to by this charging profile, use the one of the following commands, as applicable:
  - For the GGSN or P-GW—**clear unified-edge ggsn-pgw charging cdr transport-profile-name *profile-name* gateway *name***
  - For the S-GW—**clear unified-edge sgw charging cdr transport-profile-name *profile-name* gateway *name***

**Options**    ***service-mode-options***—Specify the service mode. Currently, **maintenance** mode is the only 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**

- charging-profiles
- [Changing a Charging Profile on page 15](#)
- [Mobility Maintenance Mode Overview on page 3](#)

## service-mode (Transport Profiles)

---

|                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>              | <code>service-mode maintenance;</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Hierarchy Level</b>     | <code>[edit unified-edge gateways ggsn-pgw gateway-name charging transport-profiles profile-name],</code><br><code>[edit unified-edge gateways sgw gateway-name charging transport-profiles profile-name]</code>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Release Information</b> | Statement introduced in Junos OS Mobility Release 11.2W.<br>Support at the <code>[edit unified-edge gateways sgw gateway-name charging transport-profiles profile-name]</code> hierarchy level introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Description</b>         | <p>Place the respective transport profile under maintenance mode.</p> <p>To make the following changes to the existing transport profile configuration, you must put that transport profile in maintenance mode:</p> <ul style="list-style-type: none"><li>• Change the CDR encoding format to comply with a different 3GPP technical specification release (that is, changing the <code>cdr-release</code> configuration)</li><li>• Delete the transport profile</li></ul> <p>In maintenance mode, no new subscribers are accepted for that transport profile. However, the maintenance mode does not become active until no existing subscriber sessions are using that transport profile and all corresponding CDRs have been flushed out. Unless the maintenance mode becomes active, you cannot modify the above-mentioned transport profile attributes or delete the transport profile. Use the following commands to help you with the maintenance mode tasks:</p> <ul style="list-style-type: none"><li>• To verify that the transport profile has entered active maintenance mode, use one of the following commands, as applicable:<ul style="list-style-type: none"><li>• For the gateway GPRS support node (GGSN) or Packet Data Network Gateway (P-GW)—<code>show unified-edge ggsn-pgw charging service-mode gateway gateway-name transport-profile profile-name</code></li><li>• For the Serving Gateway (S-GW)—<code>show unified-edge sgw charging service-mode gateway gateway-name transport-profile profile-name</code></li></ul></li><li>• To verify that the subscriber count has reached zero, use one of the following commands, as applicable:<ul style="list-style-type: none"><li>• For the GGSN or P-GW—<code>show unified-edge ggsn-pgw subscribers charging transport-profile profile-name gateway gateway-name</code></li><li>• For the S-GW—<code>show unified-edge sgw subscribers charging transport-profile profile-name gateway gateway-name</code></li></ul></li><li>• To verify that all CDRs for the transport profile have been flushed out, use one of the following commands, as applicable:<ul style="list-style-type: none"><li>• For the GGSN or P-GW—<code>show unified-edge ggsn-pgw charging transfer status transport-profile-name profile-name</code></li></ul></li></ul> |

- For the S-GW—**show unified-edge sgw charging transfer status transport-profile-name *profile-name***
- To explicitly end any subscriber sessions, use one of the following commands, as applicable:
  - For the GGSN or P-GW—**clear unified-edge ggsn-pgw subscribers charging transport-profile *profile-name* gateway *gateway-name***
  - For the S-GW—**clear unified-edge sgw subscribers charging transport-profile *profile-name* gateway *gateway-name***
- To explicitly flush all the CDRs for the transport profile, use one of the following commands, as applicable:
  - For the GGSN or P-GW—**clear unified-edge ggsn-pgw charging cdr transport-profile-name *profile-name***
  - For the S-GW—**clear unified-edge sgw charging cdr transport-profile-name *profile-name***

|                           |                                                                  |
|---------------------------|------------------------------------------------------------------|
| <b>Required Privilege</b> | unified-edge—To view this statement in the configuration.        |
| <b>Level</b>              | unified-edge-control—To add this statement to the configuration. |

|                              |                                                                                                                                                                                                               |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Related Documentation</b> | <ul style="list-style-type: none"><li>• transport-profiles</li><li>• <a href="#">Changing a Transport Profile on page 18</a></li><li>• <a href="#">Mobility Maintenance Mode Overview on page 3</a></li></ul> |
|------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|





## PART 3

# Administration

- [Operational Commands on page 81](#)



## CHAPTER 5

# Operational Commands

## show unified-edge ggsn-pgw apn service-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show unified-edge ggsn-pgw apn service-mode<br><apn-name <i>apn-name</i> ><br><brief   detail><br><gateway <i>gateway</i> >                                                                                                                                                                                                                                                                             |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.2W.                                                                                                                                                                                                                                                                                                                                                  |
| <b>Description</b>              | Display the service mode information for an access point name (APN) for one or more gateway GPRS support nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If an APN is not specified, then the information for all APNs for one or more GGSNs or P-GWs is displayed.                                                                                                                              |
| <b>Options</b>                  | <p><b>none</b>—(Same as brief) Display the APN service mode information in brief.</p> <p><b>apn-name <i>apn-name</i></b>—(Optional) Display the service mode information for the specified APN.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>gateway <i>gateway</i></b>—(Optional) Display the service mode information for the specified GGSN or P-GW.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">show unified-edge ggsn-pgw service-mode on page 87</a></li> </ul>                                                                                                                                                                                                                                                                                    |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge ggsn-pgw apn service-mode brief on page 83</a><br><a href="#">show unified-edge ggsn-pgw apn service-mode detail on page 83</a>                                                                                                                                                                                                                                           |
| <b>Output Fields</b>            | <a href="#">Table 3 on page 82</a> lists the output fields for the <b>show unified-edge ggsn-pgw apn service-mode</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                  |

**Table 3: show unified-edge ggsn-pgw apn service-mode Output Fields**

| Field Name   | Field Description                                                                                                                                                                  |
|--------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| APN Name     | Name of the APN.                                                                                                                                                                   |
| Service Mode | Service mode for the APN: <ul style="list-style-type: none"> <li><b>Operational</b>—APN is in operational mode.</li> <li><b>Maintenance</b>—APN is in maintenance mode.</li> </ul> |

## Sample Output

**show unified-edge  
ggsn-pgw apn  
service-mode brief**

```
user@host> show unified-edge ggsn-pgw apn 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.
```

| APN Name       | Gateway Name | Service Mode  |
|----------------|--------------|---------------|
| jnpr-sunnyvale | PGW          | Operational   |
| jnpr-toxin     | PGW          | Operational   |
| zoo            | PGW1         | Maintenance - |
| Active Phase   |              |               |

**show unified-edge  
ggsn-pgw apn  
service-mode detail**

```
user@host> show unified-edge ggsn-pgw apn service-mode detail
Gateway: PGW
APN Name      : jnpr-sunnyvale
Service Mode  : Operational

APN Name      : jnpr-toxin
Service Mode  : Operational
Gateway: PGW1

APN Name      : zoo
Service Mode  : Maintenance - Active Phase
```

## show unified-edge ggsn-pgw charging service-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show unified-edge ggsn-pgw charging service-mode gateway <i>gateway</i><br><brief   detail><br><charging-profile <i>profile-name</i> ><br><transport-profile <i>profile-name</i> >                                                                                                                                                                                                                                                                                                     |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.2W.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Display the charging service mode information for the specified Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW).                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>                  | <p><b>gateway <i>gateway-name</i></b>—Display the charging service mode information for the specified GGSN or P-GW.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>charging-profile <i>profile-name</i></b>—(Optional) Display the service mode information for the specified charging profile.</p> <p><b>transport-profile <i>profile-name</i></b>—(Optional) Display the service mode information for the specified transport profile.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">service-mode (Charging Profiles) on page 74</a></li> <li><a href="#">service-mode (Transport Profiles) on page 76</a></li> </ul>                                                                                                                                                                                                                                                                                                    |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge ggsn-pgw charging service-mode gateway PGW brief on page 85</a><br><a href="#">show unified-edge ggsn-pgw charging service-mode gateway PGW detail on page 86</a>                                                                                                                                                                                                                                                                                        |
| <b>Output Fields</b>            | <a href="#">Table 4 on page 84</a> lists the output fields for the <b>show unified-edge ggsn-pgw charging service-mode</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                            |

Table 4: show unified-edge ggsn-pgw charging service-mode Output Fields

| Field Name   | Field Description         | Level of Output |
|--------------|---------------------------|-----------------|
| Gateway Name | Name of the GGSN or P-GW. | All levels      |

Table 4: show unified-edge ggsn-pgw charging service-mode Output Fields (*continued*)

| Field Name                                       | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | Level of Output |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Service Mode</b>                              | <p>Service mode for the gateway. The following service modes are possible:</p> <ul style="list-style-type: none"> <li>• <b>Maintenance</b>—Gateway is in maintenance mode.</li> <li>• <b>MM Active Phase</b>—In this mode, you can make changes to any of the configuration options under the <code>[edit unified-edge gateways ggsn-pgw gateway-name charging charging-profiles]</code> or the <code>[edit unified-edge gateways ggsn-pgw gateway-name charging transport-profiles]</code> hierarchy levels.</li> <li>• <b>MM In/Out Phase</b>—In this mode, you cannot make changes to the configuration options under the <code>[edit unified-edge gateways ggsn-pgw gateway-name charging charging-profiles]</code> or the <code>[edit unified-edge gateways ggsn-pgw gateway-name charging transport-profiles]</code> hierarchy levels.</li> <li>• <b>Operational</b>—Gateway is still in operational mode and not in maintenance mode. You can use the following commands to put the charging profile or transport profile in maintenance mode: <ul style="list-style-type: none"> <li>• <code>set unified-edge gateways ggsn-pgw gateway-name charging charging-profiles profile-name service-mode maintenance</code></li> <li>• <code>set unified-edge gateways ggsn-pgw gateway-name charging transport-profiles profile-name service-mode maintenance</code></li> </ul> </li> </ul> | All levels      |
| <b>Charging Profile(s) or Charging Profile</b>   | Name of the charging profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | All levels      |
| <b>Service Mode</b>                              | Service mode for the charging profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | All levels      |
| <b>Transport Profile(s) or Transport Profile</b> | Name of the transport profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | All levels      |
| <b>Service Mode</b>                              | Service mode for the transport profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | All levels      |
| <b>Pending Maintenance Mode Ready Ack</b>        | Lists the components or modules that are not yet ready to accept the configuration changes. Maintenance mode becomes active only after all the components or modules are ready to accept these changes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <b>detail</b>   |

## Sample Output

**show unified-edge  
ggsn-pgw charging**

```
user@host> show unified-edge ggsn-pgw charging service-mode gateway PGW brief
Maintenance Mode
    MM Active Phase - System is ready to accept configuration changes for all
```

**service-mode gateway  
PGW brief**

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 | : PGW         |
| Service Mode | : Operational |

|                      |              |
|----------------------|--------------|
| Charging Profile(s)  | Service Mode |
| p_juniper            | Operational  |
| Transport Profile(s) | Service Mode |
| p_tsp                | Operational  |

**show unified-edge  
ggsn-pgw charging  
service-mode gateway  
PGW detail**

user@host> show unified-edge ggsn-pgw charging service-mode gateway PGW detail

|              |               |
|--------------|---------------|
| Gateway Name | : PGW         |
| Service Mode | : Operational |

|                    |               |
|--------------------|---------------|
| Charging Profile:  | p_juniper     |
| Service Mode       | : Operational |
| Transport Profile: | p_tsp         |
| Service Mode       | : Operational |



## show unified-edge ggsn-pgw service-mode

|                                 |                                                                                                                                                                                                                                                                                  |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>show unified-edge ggsn-pgw service-mode</code><br><code>&lt;brief   detail&gt;</code><br><code>&lt;gateway gateway-name&gt;</code>                                                                                                                                         |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.2W.                                                                                                                                                                                                                           |
| <b>Description</b>              | Display the service mode information for one or more gateway GPRS support nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then the service mode information for all the GGSNs and P-GWs is displayed.                                 |
| <b>Options</b>                  | <p><b>none</b>—(Same as brief) Display the service mode information in brief.</p> <p><b>brief   detail</b> —(Optional) Display the specified level of output.</p> <p><b>gateway gateway-name</b>—(Optional) Display service mode information for the specified GGSN or P-GW.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                             |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">show unified-edge ggsn-pgw apn service-mode on page 82</a></li> </ul>                                                                                                                                                       |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge ggsn-pgw service-mode brief on page 88</a><br><a href="#">show unified-edge ggsn-pgw service-mode detail on page 88</a>                                                                                                                            |
| <b>Output Fields</b>            | <a href="#">Table 5 on page 87</a> lists the output fields for the <code>show unified-edge ggsn-pgw service-mode</code> command. Output fields are listed in the approximate order in which they appear.                                                                         |

**Table 5: show unified-edge ggsn-pgw service-mode Output Fields**

| Field Name          | Field Description                                                                                                                                                                                  |
|---------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Gateway Name</b> | Name of the GGSN or P-GW.                                                                                                                                                                          |
| <b>Service Mode</b> | Service mode for the gateway: <ul style="list-style-type: none"> <li>• <b>Operational</b>—Gateway is in operational mode.</li> <li>• <b>Maintenance</b>—Gateway is in maintenance mode.</li> </ul> |

## Sample Output

**show unified-edge  
ggsn-pgw  
service-mode brief**

```
user@host> show unified-edge ggsn-pgw 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
-----
PGW               Operational
PGW2              Operational
```

**show unified-edge  
ggsn-pgw  
service-mode detail**

```
user@host> show unified-edge ggsn-pgw service-mode detail
Service Mode Status
Gateway Name      : PGW
Service Mode      : Operational
Service Mode Status
Gateway Name      : PGW2
Service Mode      : Operational
```

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

|                                 |                                                                                                                                                                                                                                                                                                           |
|---------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show unified-edge ggsn-pgw system interfaces service-mode<br><brief   detail><br><gateway <i>gateway-name</i> >                                                                                                                                                                                           |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                                                    |
| <b>Description</b>              | Display the service mode information for the interfaces on one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then information for all GGSNs and P-GWs is displayed.                                                             |
| <b>Options</b>                  | <p><b>none</b>—(Same as brief) Display service mode information for one or more GGSNs and P-GWs.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>gateway-name <i>gateway-name</i></b>—(Optional) Display service mode information for the specified gateway.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                      |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>show unified-edge ggsn-pgw system interfaces</li> </ul>                                                                                                                                                                                                            |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge ggsn-pgw system interfaces service-mode brief on page 90</a><br><a href="#">show unified-edge ggsn-pgw system interfaces service-mode detail on page 90</a>                                                                                                                 |
| <b>Output Fields</b>            | Table 6 on page 89 lists the output fields for the <b>show unified-edge ggsn-pgw system interfaces service-mode</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                      |

Table 6: show unified-edge ggsn-pgw system interfaces service-mode

| Field Name            | Field Description                                                                                                                                                                                                                                                                                            |
|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interface Name</b> | Name of the interface for which the service mode information is displayed: <ul style="list-style-type: none"> <li>Aggregated multiservices; for example, <b>ams0</b></li> <li>Aggregated Packet Forwarding Engine; for example, <b>apfe1</b></li> <li>Multiservices; for example, <b>ms-1/0/0</b></li> </ul> |
| <b>Gateway</b>        | Name of the GGSN or P-GW.                                                                                                                                                                                                                                                                                    |

Table 6: show unified-edge ggsn-pgw system interfaces service-mode (*continued*)

| Field Name   | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Service Mode | <p>Service mode for the gateway. The following service modes are possible:</p> <ul style="list-style-type: none"> <li>Operational—Gateway is in operational mode.</li> <li>Maintenance—Gateway is in maintenance mode.</li> <li><b>MM Active Phase</b>—In this mode, you can make changes to all of the configuration options.</li> <li><b>MM In/Out Phase</b>—In this mode, you can only make changes to the configuration options for the non-maintenance-mode attributes.</li> </ul> |

## Sample Output

show unified-edge  
ggsn-pgw system  
interfaces  
service-mode brief

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

| Interface Name | Gateway | Service Mode |
|----------------|---------|--------------|
| pfe-2/1/0      | PGW     | Operational  |
| ams1           | PGW     | Operational  |

show unified-edge  
ggsn-pgw system  
interfaces  
service-mode detail

```
user@host> show unified-edge ggsn-pgw system interfaces service-mode detail
Service Mode Status
Interface Name : pfe-2/1/0
Gateway Name   : PGW
Service Mode   : Operational
Service Mode Status
Interface Name : ams1
Gateway Name   : PGW
Service Mode   : Operational
```

## show unified-edge sgw charging service-mode

|                                 |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|---------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show unified-edge sgw charging service-mode gateway-name <i>gateway-name</i><br><brief   detail><br><charging-profile <i>profile-name</i> ><br><transport-profile <i>profile-name</i> >                                                                                                                                                                                                                                                                                                |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Description</b>              | Display the charging service mode information for the specified Serving Gateway (S-GW).                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Options</b>                  | <p><b>gateway-name <i>gateway-name</i></b>—Display the charging service mode information for the specified gateway.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>charging-profile <i>profile-name</i></b>—(Optional) Display the service mode information for the specified charging profile.</p> <p><b>transport-profile <i>profile-name</i></b>—(Optional) Display the service mode information for the specified transport profile.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>• <a href="#">service-mode (Charging Profiles) on page 74</a></li> <li>• <a href="#">service-mode (Transport Profiles) on page 76</a></li> </ul>                                                                                                                                                                                                                                                                                                |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge sgw charging service-mode gateway SGW brief on page 93</a><br><a href="#">show unified-edge sgw charging service-mode gateway SGW detail on page 93</a>                                                                                                                                                                                                                                                                                                  |
| <b>Output Fields</b>            | <a href="#">Table 7 on page 91</a> lists the output fields for the <b>show unified-edge sgw charging service-mode</b> command. Output fields are listed in the approximate order in which they appear.                                                                                                                                                                                                                                                                                 |

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

| Field Name   | Field Description | Level of Output |
|--------------|-------------------|-----------------|
| Gateway Name | Name of the S-GW. | All levels      |

Table 7: show unified-edge sgw charging service-mode Output Fields (*continued*)

| Field Name                                       | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Level of Output |
|--------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| <b>Service Mode</b>                              | <p>Service mode for the gateway. The following service modes are possible:</p> <ul style="list-style-type: none"> <li>Operational—Gateway is in operational mode.</li> <li>Maintenance—Gateway is in maintenance mode.</li> <li><b>MM Active Phase</b>—In this mode, you can make changes to any of the configuration options under the <code>[edit unified-edge gateways sgw gateway-name charging charging-profiles]</code> or the <code>[edit unified-edge gateways sgw gateway-name charging transport-profiles]</code> hierarchy levels.</li> <li><b>MM In/Out Phase</b>—In this mode, you cannot make changes to the configuration options under the <code>[edit unified-edge gateways sgw gateway-name charging charging-profiles]</code> or the <code>[edit unified-edge gateways sgw gateway-name charging transport-profiles]</code> hierarchy levels.</li> </ul> | All levels      |
| <b>Charging Profile(s) or Charging Profile</b>   | Name of the charging profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | All levels      |
| <b>Service Mode</b>                              | Service mode for the charging profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | All levels      |
| <b>Transport Profile(s) or Transport Profile</b> | Name of the transport profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | All levels      |
| <b>Service Mode</b>                              | Service mode for the transport profile.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | All levels      |
| <b>Pending Maintenance Mode Ready Ack</b>        | Lists the components or modules that are not yet ready to accept the configuration changes. Maintenance mode becomes active only after all the components or modules are ready to accept these changes.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <b>detail</b>   |

## Sample Output

**show unified-edge sgw  
charging service-mode  
gateway SGW brief**

```
user@host> show unified-edge sgw charging service-mode gateway SGW 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       : SGW
Service Mode       : Operational

Charging Profile(s)      Service Mode
p_juniper              Operational
Transport Profile(s)     Service Mode
p_tsp                  Operational
```

**show unified-edge sgw  
charging service-mode  
gateway SGW detail**

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

Charging Profile: p_juniper
Service Mode      : Operational
Transport Profile: p_tsp
Service Mode      : Operational
```

## show unified-edge sgw service-mode

|                                 |                                                                                                                                                                                                                                                                                |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | <code>show unified-edge sgw service-mode</code><br><code>&lt;brief   detail&gt;</code><br><code>&lt;gateway gateway-name&gt;</code>                                                                                                                                            |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                         |
| <b>Description</b>              | 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.                                                                                                                     |
| <b>Options</b>                  | <p><b>none</b>—(Same as brief) Display the service mode information in brief.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>gateway gateway-name</b>—(Optional) Display the service mode information for the specified gateway.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                           |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li><a href="#">service-mode (Serving Gateway) on page 72</a></li> </ul>                                                                                                                                                                    |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge sgw service-mode brief on page 95</a><br><a href="#">show unified-edge sgw service-mode detail on page 95</a>                                                                                                                                    |
| <b>Output Fields</b>            | <a href="#">Table 8 on page 94</a> lists the output fields for the <b>show unified-edge sgw service-mode</b> command. Output fields are listed in the approximate order in which they appear.                                                                                  |

**Table 8: show unified-edge sgw service-mode Output Fields**

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



## Sample Output

```

show unified-edge sgw service-mode brief
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 system interfaces service-mode

|                                 |                                                                                                                                                                                                                                                                                            |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Syntax</b>                   | show unified-edge sgw system interfaces service-mode<br><brief   detail><br><gateway <i>gateway-name</i> >                                                                                                                                                                                 |
| <b>Release Information</b>      | Command introduced in Junos OS Mobility Release 11.4W.                                                                                                                                                                                                                                     |
| <b>Description</b>              | Display the service mode information for the interfaces on one or more Serving Gateways (S-GWs). If an S-GW is not specified, then information for all S-GWs is displayed.                                                                                                                 |
| <b>Options</b>                  | <p><b>none</b>—(Same as brief) Display service mode information for one or more S-GWs.</p> <p><b>brief   detail</b>—(Optional) Display the specified level of output.</p> <p><b>gateway <i>gateway-name</i></b>—(Optional) Display service mode information for the specified gateway.</p> |
| <b>Required Privilege Level</b> | view                                                                                                                                                                                                                                                                                       |
| <b>Related Documentation</b>    | <ul style="list-style-type: none"> <li>show unified-edge sgw system interfaces</li> </ul>                                                                                                                                                                                                  |
| <b>List of Sample Output</b>    | <a href="#">show unified-edge sgw system interfaces service-mode brief on page 97</a><br><a href="#">show unified-edge sgw system interfaces service-mode detail on page 97</a>                                                                                                            |
| <b>Output Fields</b>            | Table 9 on page 96 lists the output fields for the <b>show unified-edge sgw system interfaces service-mode</b> command. Output fields are listed in the approximate order in which they appear.                                                                                            |

Table 9: show unified-edge sgw system interfaces service-mode

| Field Name            | Field Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|-----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interface Name</b> | Name of the interface for which the service mode information is displayed: <ul style="list-style-type: none"> <li>Aggregated multiservices; for example, <b>ams0</b></li> <li>Aggregated Packet Forwarding Engine; for example, <b>apfe1</b></li> <li>Multiservices; for example, <b>ms-1/0/0</b></li> </ul>                                                                                                                                                                     |
| <b>Gateway</b>        | Name of the S-GW.                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Service Mode</b>   | Service mode for the gateway. The following service modes are possible: <ul style="list-style-type: none"> <li>Operational—Gateway is in operational mode.</li> <li>Maintenance—Gateway is in maintenance mode.</li> <li><b>MM Active Phase</b>—In this mode, you can make changes to all of the configuration options.</li> <li><b>MM In/Out Phase</b>—In this mode, you can only make changes to the configuration options for the non-maintenance-mode attributes.</li> </ul> |

## Sample Output

show unified-edge sgw  
system interfaces  
service-mode brief

```
user@host> show unified-edge sgw system interfaces 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.
```

| Interface Name | Gateway Name | Service Mode |
|----------------|--------------|--------------|
| pfe-2/2/0      | SGW          | Operational  |
| ams0           | SGW          | Operational  |

show unified-edge sgw  
system interfaces  
service-mode detail

```
user@host> show unified-edge sgw system interfaces service-mode detail
Service Mode Status
Interface Name : pfe-2/2/0
Gateway Name   : SGW
Service Mode   : Operational
Service Mode Status
Interface Name : ams0
Gateway Name   : SGW
Service Mode   : Operational
```



## PART 4

# Index

- [Index on page 101](#)



# Index

## Symbols

|                                              |      |
|----------------------------------------------|------|
| #, comments in configuration statements..... | ix   |
| ( ), in syntax descriptions.....             | ix   |
| < >, in syntax descriptions.....             | viii |
| [ ], in configuration statements.....        | ix   |
| { }, in configuration statements.....        | ix   |
| (pipe), in syntax descriptions.....          | ix   |

## A

|                                |        |
|--------------------------------|--------|
| access point name.....         | 43, 46 |
| access point name delete ..... | 43, 46 |
| access point name modify.....  | 10     |
| activate maintenance mode..... | 12     |
| ams                            |        |
| changing .....                 | 33     |
| AMS interface                  |        |
| changing example.....          | 65     |

## B

|                                          |      |
|------------------------------------------|------|
| braces, in configuration statements..... | ix   |
| brackets                                 |      |
| angle, in syntax descriptions.....       | viii |
| square, in configuration statements..... | ix   |

## C

|                                                |      |
|------------------------------------------------|------|
| charging profiles                              |      |
| changing.....                                  | 15   |
| deleting.....                                  | 17   |
| modifying.....                                 | 15   |
| comments, in configuration statements.....     | ix   |
| conventions                                    |      |
| text and syntax.....                           | viii |
| curly braces, in configuration statements..... | ix   |
| customer support.....                          | ix   |
| contacting JTAC.....                           | ix   |

## D

|                               |    |
|-------------------------------|----|
| delete access point name..... | 13 |
| documentation                 |    |
| comments on.....              | ix |

## E

|                                      |    |
|--------------------------------------|----|
| edit unified-edge gateways statement |    |
| hierarchy.....                       | 71 |
| example                              |    |
| changing AMS interface.....          | 65 |
| changing charging profile.....       | 40 |
| changing transport profile.....      | 44 |
| deleting services PIC.....           | 62 |
| deleting session PIC.....            | 58 |
| exit maintenance mode.....           | 13 |

## F

|                       |      |
|-----------------------|------|
| font conventions..... | viii |
|-----------------------|------|

## G

|                                   |    |
|-----------------------------------|----|
| gateway                           |    |
| changing parameters.....          | 36 |
| GPRS Tunneling Protocol.....      | 9  |
| GTP interface address change..... | 7  |
| GTP interface delete.....         | 9  |

## M

|                                    |    |
|------------------------------------|----|
| maintenance mode.....              | 3  |
| changing AMS example.....          | 65 |
| changing ams parameters.....       | 33 |
| changing gateway parameters.....   | 36 |
| deleting services PIC .....        | 31 |
| deleting services PIC example..... | 62 |
| deleting session PIC .....         | 29 |
| deleting session PIC example.....  | 58 |
| manuals                            |    |
| comments on.....                   | ix |
| mobile address pool change.....    | 26 |
| mobile address pool delete.....    | 28 |
| mobile interface change.....       | 55 |
| mobility address pool delete.....  | 53 |
| mobility pool change.....          | 47 |

## P

|                                          |    |
|------------------------------------------|----|
| parentheses, in syntax descriptions..... | ix |
|------------------------------------------|----|

## S

|                         |    |
|-------------------------|----|
| service-mode statement  |    |
| APN.....                | 73 |
| charging profiles.....  | 74 |
| gateway.....            | 71 |
| Serving Gateway.....    | 72 |
| transport profiles..... | 76 |

|                                                  |      |
|--------------------------------------------------|------|
| services PIC                                     |      |
| deleting .....                                   | 31   |
| deleting example.....                            | 62   |
| session PIC                                      |      |
| deleting .....                                   | 29   |
| deleting example.....                            | 58   |
| show unified-edge ggsn-pgw apn service-mode      |      |
| command.....                                     | 82   |
| show unified-edge ggsn-pgw charging service-mode |      |
| command.....                                     | 84   |
| show unified-edge ggsn-pgw service-mode          |      |
| command.....                                     | 87   |
| show unified-edge ggsn-pgw system interfaces     |      |
| service-mode command.....                        | 89   |
| show unified-edge sgw charging service-mode      |      |
| command.....                                     | 91   |
| show unified-edge sgw service-mode               |      |
| command.....                                     | 94   |
| show unified-edge sgw system interfaces          |      |
| service-mode command.....                        | 96   |
| support, technical See technical support         |      |
| syntax conventions.....                          | viii |

## T

|                      |    |
|----------------------|----|
| technical support    |    |
| contacting JTAC..... | ix |
| transport profiles   |    |
| changing.....        | 18 |
| deleting.....        | 20 |
| modifying.....       | 18 |