

MobileNext Broadband Gateway

Diameter for GGSN/PDN Gateway



Published: 2013-07-15

Juniper Networks, Inc.
1194 North Mathilda Avenue
Sunnyvale, California 94089
USA
408-745-2000
www.juniper.net

Copyright © 2013, Juniper Networks, Inc. All rights reserved.

Juniper Networks, Junos, Steel-Belted Radius, NetScreen, and ScreenOS are registered trademarks of Juniper Networks, Inc. in the United States and other countries. The Juniper Networks Logo, the Junos logo, and JunosE are trademarks of Juniper Networks, Inc. All other trademarks, service marks, registered trademarks, or registered service marks are the property of their respective owners.

Juniper Networks assumes no responsibility for any inaccuracies in this document. Juniper Networks reserves the right to change, modify, transfer, or otherwise revise this publication without notice.

Products made or sold by Juniper Networks or components thereof might be covered by one or more of the following patents that are owned by or licensed to Juniper Networks: U.S. Patent Nos. 5,473,599, 5,905,725, 5,909,440, 6,192,051, 6,333,650, 6,359,479, 6,406,312, 6,429,706, 6,459,579, 6,493,347, 6,538,518, 6,538,899, 6,552,918, 6,567,902, 6,578,186, and 6,590,785.

MobileNext Broadband Gateway Diameter for GGSN/PDN Gateway

Copyright © 2013, Juniper Networks, Inc.

All rights reserved.

The information in this document is current as of the date on the title page.

YEAR 2000 NOTICE

Juniper Networks hardware and software products are Year 2000 compliant. Junos OS has no known time-related limitations through the year 2038. However, the NTP application is known to have some difficulty in the year 2036.

END USER LICENSE AGREEMENT

The Juniper Networks product that is the subject of this technical documentation consists of (or is intended for use with) Juniper Networks software. Use of such software is subject to the terms and conditions of the End User License Agreement ("EULA") posted at <http://www.juniper.net/support/eula.html>. By downloading, installing or using such software, you agree to the terms and conditions of that EULA.

Table of Contents

	About the Documentation	ix
	Documentation and Release Notes	ix
	Supported Platforms	ix
	Documentation Conventions	ix
	Documentation Feedback	xi
	Requesting Technical Support	xi
	Self-Help Online Tools and Resources	xii
	Opening a Case with JTAC	xii
Part 1	Overview	
Chapter 1	Diameter Overview	3
	Diameter Base Protocol Overview	3
	Overview of Diameter Profiles	4
Part 2	Configuration	
Chapter 2	Configuration Overview	9
	Configuring Diameter	9
Chapter 3	Configuration Tasks	11
	Configuring the Origin Attributes of the Diameter Instance	11
	Configuring the Diameter Transport	12
	Configuring Diameter Peers	12
	Configuring Diameter Network Elements	14
	Configuring Advertisements in Diameter Messages	15
	Configuring Parameters for Diameter Applications	15
	Configuring Diameter Profiles	16
	Configuring Diameter AVPs for Gy Applications	17
	Configuring Diameter AVPs for Gx Applications	19
	Configuring Diameter Bindings	21
Chapter 4	Configuration Examples	23
	Example: Configuring Diameter	23
	Example: Configuring Diameter for Load Balancing	31
Chapter 5	Configuration Statements	37
	[edit access diameter] Hierarchy Level	37
	[edit unified-edge diameter-profiles] Hierarchy Level	38
	address (Diameter Peer)	40
	address (Diameter Transport)	40
	applications (Diameter)	41

attributes (Diameter Gx Profiles)	42
attributes (Diameter Gy Profiles)	43
connect-actively	44
diameter (GGSN or P-GW)	45
diameter (MobileNext Broadband Gateway)	46
diameter-profiles	48
disconnect-peer-timeout	50
exclude (Diameter Gx Profiles)	51
exclude (Diameter Gy Profiles)	52
firmware-revision	53
function (Diameter Network Element)	54
gx-profile	55
gy-profile	56
host (Diameter Origin)	57
include (Diameter Gx Profiles)	57
include (Diameter Gy Profiles)	58
incoming-queue	59
maximum-pending-requests (Diameter)	59
network-element (Diameter Base Protocol)	60
network-element (GGSN or P-GW)	61
origin (Diameter Base Protocol)	62
outgoing-queue	63
peer (Diameter Base Protocol)	64
peer (Diameter Network Element)	65
priority (Diameter Network Element)	66
product-name	66
realm (Diameter Origin)	67
request-timeout	67
routing-instance (Diameter Transport)	68
session-pics (Diameter)	69
targets	70
timeout (Diameter Network Element)	71
traceoptions (Diameter Base Protocol)	72
transport (Diameter Base Protocol)	73
vendor-id	74
watchdog-timeout	74

Part 3

Chapter 6

Administration

Operational Commands 77

clear unified-edge ggsn-pgw diameter dcca-gy statistics	78
clear unified-edge ggsn-pgw diameter network-element statistics	79
clear unified-edge ggsn-pgw diameter pcc-gx statistics	80
clear unified-edge ggsn-pgw diameter peer statistics	81
show unified-edge ggsn-pgw diameter dcca-gy statistics	82
show unified-edge ggsn-pgw diameter network-element statistics	87
show unified-edge ggsn-pgw diameter network-element status	90
show unified-edge ggsn-pgw diameter pcc-gx statistics	92
show unified-edge ggsn-pgw diameter peer statistics	97

	show unified-edge ggsn-pgw diameter peer status	102
Part 4	Troubleshooting	
Chapter 7	Acquiring Troubleshooting Information	107
	Tracing Diameter Operations	107
	Configuring the Trace Log Filename	108
	Configuring the Tracing Flags	108
	Configuring Tracing for a Diameter Peer	108
Part 5	Index	
	Index	113

List of Tables

	About the Documentation	ix
	Table 1: Notice Icons	x
	Table 2: Text and Syntax Conventions	x
Part 2	Configuration	
Chapter 3	Configuration Tasks	11
	Table 3: Diameter AVP Exclusions for Gy Applications	17
	Table 4: Diameter AVP Inclusions for Gy Applications	18
	Table 5: Diameter AVP Exclusions for Gx Applications	20
	Table 6: Diameter AVP Inclusions for Gx Applications	20
Chapter 5	Configuration Statements	37
	Table 7: Configuration Scenarios for all-3gpp-avps and ps-information attributes	53
Part 3	Administration	
Chapter 6	Operational Commands	77
	Table 8: show unified-edge ggsn-pgw diameter dcca-gy statistics Output Fields	82
	Table 9: show unified-edge ggsn-pgw diameter network-element statistics Output Fields	87
	Table 10: show unified-edge ggsn-pgw diameter network-element status Output Fields	90
	Table 11: show unified-edge ggsn-pgw diameter pcc-gx statistics Output Fields	92
	Table 12: show unified-edge ggsn-pgw diameter peer statistics Output Fields	97
	Table 13: show unified-edge ggsn-pgw diameter peer status Output Fields	102
Part 4	Troubleshooting	
Chapter 7	Acquiring Troubleshooting Information	107
	Table 14: Diameter Tracing Flags	108

About the Documentation

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

Documentation and Release Notes

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

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

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

Supported Platforms

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

- MX240
- MX960
- MX480

Documentation Conventions

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

Table 1: Notice Icons

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

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

Table 2: Text and Syntax Conventions

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

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

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

Documentation Feedback

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

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

Requesting Technical Support

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

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

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

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

- [Diameter Overview on page 3](#)

CHAPTER 1

Diameter Overview

- [Diameter Base Protocol Overview on page 3](#)
- [Overview of Diameter Profiles on page 4](#)

Diameter Base Protocol Overview

The Diameter protocol is defined in *RFC 3588, Diameter Base Protocol*, and provides an alternative to RADIUS that is more flexible and extensible. The Diameter base protocol provides basic services to one or more applications (also called functions), each running in a different Diameter instance. The individual application provides the extended authentication, authorization, and accounting (AAA) functionality. Applications that use Diameter include Gx applications such as the Policy Charging and Control application, and Gy applications such as the Diameter Credit-Control Application.

Diameter peers communicate over a reliable TCP transport layer connection by exchanging Diameter messages that convey status, requests, and acknowledgements by means of standard Diameter attribute-value pairs (AVPs) and application-specific AVPs.

Each Diameter network element can be associated with one or more functions and consists of a prioritized list of peers. Applications typically send requests to a network element rather than to a single peer. The requests are handled by the appropriate peer based on priority. A lower number has a higher priority. For load balancing, peers have the same priority.

From the prioritized list of peers, the peer is selected as follows:

- The available peer with the highest priority (lowest number) is selected. A peer is available when it is in the Open state and does not have an overloaded outgoing queue.
- In the event of a tie, where the priority is the same, peer selection alternates among available peers with the same priority.

If a peer disconnects, all of its outstanding requests are resubmitted to another peer within the same Diameter network element as part of the failover procedure.

Diameter requires you to configure information about the origin node. Every Diameter node requires Origin-Host and Origin-Realm AVP information that is included in all messages originated from this Diameter node. To configure the Diameter Origin-Host prefix and Origin-Realm, include the **host** and **realm** statements at the **[edit access diameter origin]** hierarchy level.

You can configure one or more transports to specify the source address of the transport layer connection. To configure a Diameter transport, include the **transport** statement at the **[edit access diameter]** hierarchy level. Then include the **address** statement at the **[edit access diameter transport transport-name]** hierarchy level.

Each Diameter peer is specified by a name. Peer attributes include the address and the destination TCP port used by active connections to this peer. To configure a Diameter peer, include the **peer** statement at the **[edit access diameter]** hierarchy level, and then include the **address** and **connect-actively** statements at the **[edit access diameter peer peer-name]** hierarchy level. To configure the active connection, include the **port** and **transport** statements at the **[edit access diameter peer peer-name connect-actively]** hierarchy level. The assigned transport identifies the transport layer source address used to establish active connections to the peers.

To configure a Diameter network element, include the **network-element** statement at the **[edit access diameter]** hierarchy level. Include the **function** statement at the **[edit diameter network-element element-name]** hierarchy level. Specify the Diameter peers associated with the Diameter network element by including one or more **peer** statements at the **[edit access diameter network-element element-name]** hierarchy level. Set the priority for each peer with the **priority** statement at the **[edit access diameter network-element element-name peer peer-name]** hierarchy level.

Related Documentation

- [Configuring Diameter on page 9](#)

Overview of Diameter Profiles

The Diameter profile provides network access information for the Diameter application. The Diameter profile specifies prioritized targets, or endpoints, for particular applications. The target specifies the destination realm, network element, and priority associated with the target.

Target selection is based on priority. A lower number has a higher priority. For load balancing, targets have the same priority.

From the prioritized list of targets for a Diameter profile, the target is selected as follows:

- The target with the highest priority (lowest number) is selected.
- In the event of a tie, where the priority is the same, target selection alternates among the peers with the same priority.



NOTE: Failover handling depends on what is allowed by the policy for the application. Switching between targets based on priority, such as failing over between primary and secondary online charging servers, only occurs if the failover handling policy allows it.

Once configured, the Diameter profiles can be referenced by the Diameter applications. For example, when configuring transport profiles for online charging, you can associate

the configured Diameter profile with the transport profile to interact with the online charging server. Similarly, when configuring profiles for provisioning Policy Charging and Control application rules, you can associate the configured Diameter profile with the policy and charging enforcement function (PCEF) profile to interact with the policy and charging rules function (PCRF).

Related Documentation

- [Configuring Diameter Profiles on page 16](#)

PART 2

Configuration

- [Configuration Overview on page 9](#)
- [Configuration Tasks on page 11](#)
- [Configuration Examples on page 23](#)
- [Configuration Statements on page 37](#)

CHAPTER 2

Configuration Overview

- [Configuring Diameter on page 9](#)

Configuring Diameter

You configure Diameter by specifying the Diameter base protocol and Diameter profiles. The Diameter base protocol configuration includes configuration of the endpoint origin, the transport layer connection, the remote peers, and the network elements. The Diameter profiles are used by the applications to connect to particular endpoints.

To configure Diameter base protocol:

1. Configure the origin realm and origin host of the Diameter instance.
See [“Configuring the Origin Attributes of the Diameter Instance” on page 11.](#)
2. Configure the Diameter transport layer.
See [“Configuring the Diameter Transport” on page 12.](#)
3. Configure the Diameter peers.
See [“Configuring Diameter Peers” on page 12.](#)
4. Configure the Diameter network elements.
See [“Configuring Diameter Network Elements” on page 14.](#)
5. (Optional) Configure trace options for troubleshooting the configuration.
See [“Tracing Diameter Operations” on page 107.](#)

Related Documentation

- [Configuring Diameter Profiles on page 16](#)
- [Diameter Base Protocol Overview on page 3](#)

CHAPTER 3

Configuration Tasks

- [Configuring the Origin Attributes of the Diameter Instance on page 11](#)
- [Configuring the Diameter Transport on page 12](#)
- [Configuring Diameter Peers on page 12](#)
- [Configuring Diameter Network Elements on page 14](#)
- [Configuring Advertisements in Diameter Messages on page 15](#)
- [Configuring Parameters for Diameter Applications on page 15](#)
- [Configuring Diameter Profiles on page 16](#)
- [Configuring Diameter AVPs for Gy Applications on page 17](#)
- [Configuring Diameter AVPs for Gx Applications on page 19](#)
- [Configuring Diameter Bindings on page 21](#)

Configuring the Origin Attributes of the Diameter Instance

You can configure the identifying characteristics of the endpoint node that originates Diameter messages for the Diameter instance. The hostname is supplied as the value for the Origin-Host prefix. The realm is supplied as the value for the Origin-Realm attribute-value pair (AVP).

To configure the origin attributes:

1. Specify the Origin-Host prefix that originates the Diameter message.

```
[edit access diameter origin]  
user@host# set host host14
```

2. Specify the realm of the host that originates the Diameter message.

```
[edit access diameter origin]  
user@host# set realm juniper.net
```

Related Documentation

- [Configuring Diameter on page 9](#)
- [Diameter Base Protocol Overview on page 3](#)

Configuring the Diameter Transport

You can configure one or more transports for a Diameter instance to set the source IP address for the local connection, and optionally configure a routing instance context. The routing instance for the transport connection must match that for the peer, or a configuration error is reported. Multiple peers can share the same transport.

To configure a transport for a Diameter instance:

1. Configure the transport name.

```
[edit access diameter]
user@host# set transport t1
```

2. Configure the source IP address for the Diameter local transport connection.

```
[edit access diameter transport t1]
user@host# set address 10.9.20.0
```

3. (Optional) Configure a routing instance, to which the address is bound, for the transport.

```
[edit access diameter transport t1]
user@host# set routing-instance ri10
```

Related Documentation

- [Configuring Diameter on page 9](#)
- [Configuring Diameter Peers on page 12](#)
- [Diameter Base Protocol Overview on page 3](#)

Configuring Diameter Peers

You can configure the remote peers to which Diameter sends messages. Port 3868 is used for active connections to peers by default.

To configure a remote peer for a Diameter instance:

1. Specify the name of the Diameter peer.

```
[edit access diameter]
user@host# set peer p3
```

2. Specify the address of the Diameter peer.

```
[edit access diameter peer p3]
user@host# set address 192.168.23.10
```

3. Specify the transport that Diameter uses for active connections to the peer.

```
[edit access diameter peer p3]
user@host# set connect-actively transport t6
```

4. (Optional) Specify the port that Diameter uses for active connections to the peer. The default is port 3868.

```
[edit access diameter peer p3]
```



```
user@host# set connect-actively port 3868
```

5. (Optional) Specify the time to wait for connection acknowledgment from the peer. The default is 10 seconds.

```
[edit access diameter peer p3]
user@host# set connect-actively timeout 20
```

6. (Optional) Specify the time to wait before trying to reconnect to a peer after receiving a Disconnect-Peer-Request message with the DO_NOT_WANT_TO_TALK_TO_YOU value for the Disconnect-Cause AVP. If you do not set a value, no reconnection attempt is made.

```
[edit access diameter peer p3]
user@host# set connect-actively repeat-timeout 20
```

7. (Optional) Specify the time to wait for a Capabilities-Exchange-Answer message from the peer. The default is 10 seconds.

```
[edit access diameter peer p3]
user@host# set connect-actively capabilities-exchange-timeout 20
```

8. (Optional) Specify the time to wait between connection attempts for this peer. The default is 30 seconds.

```
[edit access diameter peer p3]
user@host# set connect-actively retry-timeout 20
```

9. (Optional) Specify the time to wait for a Device-Watchdog-Answer message from the peer. The default is 30 seconds.

```
[edit access diameter peer p3]
user@host# set watchdog-timeout 20
```

10. (Optional) Specify the time to wait in Closing state while disconnecting this peer. The default is 10 seconds.

```
[edit access diameter peer p3]
user@host# set disconnect-peer-timeout 20
```

11. (Optional) Specify the size of the incoming queue for the peer. The default is 16000. You can specify a smaller value if you want to throttle the peer.

```
[edit access diameter peer p3]
user@host# set incoming-queue size 17500
```

12. (Optional) Specify the size of the outgoing queue for the peer. The default is 16000. You can specify a smaller value if you want to throttle the peer.

```
[edit access diameter peer p3]
user@host# set outgoing-queue size 17500
```

13. (Optional) Specify the low watermark of the outgoing queue for the peer. The default is 60 percent. If the queue size descends to the low watermark after reaching the high watermark, the peer becomes available.

```
[edit access diameter peer p3]
user@host# set outgoing-queue low-watermark 65
```

14. (Optional) Specify the high watermark of the outgoing queue for the peer. The default is 80 percent. If the queue size reaches the high watermark, the peer is marked

unavailable and any new messages to the Diameter network element will not be sent to this peer.

```
[edit access diameter peer p3]  
user@host# set outgoing-queue high-watermark 85
```

**Related
Documentation**

- [Configuring Diameter on page 9](#)
- [Configuring the Diameter Transport on page 12](#)
- [Configuring Diameter Network Elements on page 14](#)
- [Diameter Base Protocol Overview on page 3](#)

Configuring Diameter Network Elements

A Diameter network element (DNE) consists of associated functions and a list of prioritized peers. The functions associate a Diameter application with the network element. The prioritization determines failover or load-balancing behavior for peer selection.

Before you configure Diameter network elements, perform the following task:

- Define the Diameter peers. See [“Configuring Diameter Peers” on page 12](#).

To configure a Diameter network element:

1. Specify the name of the network element.

```
[edit access diameter]  
user@host# set network-element dne25
```

2. Associate one or more functions with the network element. All functions are associated by default.

```
[edit access diameter network-element dne25]  
user@host# set function dcca-gy
```

3. Associate a Diameter peer with the network element and set the priority for the peer. Peers with the lower priority number have the higher priority for peer selection. Peers with the same priority are load-balancing peers so the peer selection alternates between the two peers.

```
[edit access diameter network-element dne25]  
user@host# set peer peer1 priority 1
```

4. (Optional) Associate a Diameter peer with the network element and set the amount of time to wait for a response from this peer before retransmitting the request to another peer. The default is 4 seconds.

```
[edit access diameter network-element dne25]  
user@host# set peer peer1 timeout 5
```

**Related
Documentation**

- [Configuring Diameter on page 9](#)
- [Configuring Diameter Peers on page 12](#)
- [Diameter Base Protocol Overview on page 3](#)

Configuring Advertisements in Diameter Messages

You can configure information advertised in the Capabilities-Exchange-Request or Capabilities-Exchange-Answer messages. This information includes firmware revision, product name, and vendor identification.

To configure the advertisements:

1. (Optional) Specify the value for the Firmware-Revision AVP that is advertised. 0 is the default.

```
[edit access diameter]
user@host# set firmware-revision 5
```

2. (Optional) Specify the value of the Product-Name AVP that is advertised. Juniper Diameter Client is the default.

```
[edit access diameter]
user@host# set product-name Juniper Client
```

3. (Optional) Specify the value of the Vendor-Id AVP that is advertised. 2636 is the default.

```
[edit access diameter]
user@host# set vendor-id 2636
```

Related Documentation

- [Configuring Diameter on page 9](#)
- [firmware-revision on page 53](#)
- [product-name on page 66](#)
- [vendor-id on page 74](#)

Configuring Parameters for Diameter Applications

You can configure parameters for Diameter applications, including the maximum number of pending requests.

To configure the parameters for the Diameter application:

1. (Optional) Specify the Diameter application, the Gy application (**dcca-gy**) or the Gx application (**pcc-gx**), for which you want to configure parameters.

```
[edit access diameter]
user@host# set applications dcca-gy
```

2. (Optional) Specify the maximum number of pending requests for the Diameter application. The default is 20000.

```
[edit access diameter applications dcca-gy]
user@host# set maximum-pending-requests 25000
```

Related Documentation

- [applications \(Diameter\) on page 41](#)

- [Example: Configuring Diameter on page 23](#)

Configuring Diameter Profiles

The Diameter profile provides network access information for the Diameter application.

To configure the Diameter profile:

1. Create the Diameter profile for the Gy application (**gy-profile**) or for the Gx application (**gx-profile**).

```
[edit]
user@host# set unified-edge diameter-profiles gy-profile gy1
```

2. Set up the target for the profile.

```
[edit unified-edge diameter-profiles gy-profile gy1]
user@host# set targets ocs-dne-primary
```

3. Specify the destination realm associated with the target.

```
[edit unified-edge diameter-profiles gy-profile gy1 targets ocs-dne-primary]
user@host# set destination-realm juniper.net
```

4. Specify the priority associated with the target. The prioritization determines failover or load-balancing behavior. For load balancing, configure the targets with the same priority.

```
[edit unified-edge diameter-profiles gy-profile gy1 targets ocs-dne-primary]
user@host# set priority 1
```

5. Specify the network element associated with the target.

```
[edit unified-edge diameter-profiles gy-profile gy1 targets ocs-dne-primary]
user@host# set network-element ocs-dne1
```

6. (Optional) Specify the destination host associated with the target.

```
[edit unified-edge diameter-profiles gy-profile gy1 targets ocs-dne-primary]
user@host# set destination-host host25
```

Related Documentation

- [Configuring Diameter on page 9](#)
- [Configuring Diameter AVPs for Gy Applications on page 17](#)
- [Configuring Diameter AVPs for Gx Applications on page 19](#)
- [Overview of Diameter Profiles on page 4](#)

Configuring Diameter AVPs for Gy Applications

Diameter attribute-value pairs (AVPs) can be excluded from or included in the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Online Charging System (OCS).



NOTE: The configuration of the Diameter AVPs for online charging is optional.

To configure Diameter AVPs for online charging:

1. Specify the name of the Diameter Gy profile for which you are configuring the Diameter AVPs.

[edit]

```
user@host# edit unified-edge diameter-profiles gy-profile profile-name
```

The Diameter profile name can contain letters, numbers, and hyphens (-) and can be up to 128 characters long.

2. Specify the optional AVPs to be excluded from the CCR messages between the GGSN or P-GW and the OCS. By default, all AVPs are included in the CCR messages.

[edit unified-edge diameter-profiles gy-profile *profile-name*]

```
user@host# set attributes exclude [attribute]
```

You can specify more than one AVP in a single line. For example, to exclude all 3GPP AVPs and the PS-Information AVP from the CCR messages:

[edit unified-edge diameter-profiles gy-profile *profile-name*]

```
user@host# set attributes exclude all-3gpp-avps ps-information
```

[Table 3 on page 17](#) describes the AVPs that can be excluded from CCR messages.

Table 3: Diameter AVP Exclusions for Gy Applications

AVP	Information in AVP
all-3gpp-avps	All 3GPP AVPs under the PS-Information AVP (where PS stands for packet switched).
cc-selection-mode	Charging-Characteristics-Selection-Mode AVP.
dynamic-address-flag	Dynamic-Address-Flag-Extension AVP.
pdn-connection-id	PDN-Connection-ID AVP.
ps-information	PS-Information AVP, which is normally sent in the Service-Information AVP (as mentioned in 3GPP TS 32.299).
qos-information	QoS-Information AVP.
serving-node-type	Serving-Node-Type AVP.

Table 3: Diameter AVP Exclusions for Gy Applications (*continued*)

AVP	Information in AVP
start-time	Start-Time AVP.
stop-time	Stop-Time AVP.
user-equipment-info	User-Equipment-Info AVP.
user-location-information	User-Location-Info AVP.
username	User-Name AVP.



NOTE:

- If only `all-3gpp-avps` is configured, then all 3GPP AVPs under the PS-Information AVP are excluded from the PS-Information AVP; however, the PS-Information AVP (excluding the 3GPP AVPs) is still sent in the Service-Information AVP.
- If only `ps-information` is configured, then all the 3GPP AVPs inside the PS-Information AVP are sent in the Diameter Credit Control Request (CCR) message at the command level; however, the PS-Information AVP is not sent.
- If both `all-3gpp-avps` and `ps-information` are configured, then neither the 3GPP AVPs (inside the PS-Information AVP) nor the PS-Information AVP is sent.

3. Specify the optional AVPs to be included in the CCR messages between the GGSN or P-GW and the OCS. By default, all AVPs are included in the CCR messages.

```
[edit unified-edge diameter-profiles gy-profile profile-name]
user@host# set attributes include [attribute]
```

You can specify more than one AVP in a single line. For example, to include the Framed-IP-Address and QoS-Information AVPs in the CCR messages:

```
[edit unified-edge diameter-profiles gy-profile profile-name]
user@host# set attributes include framed-ip-address mscc-qos-information
```

Table 4 on page 18 describes the AVPs that can be included in CCR messages.

Table 4: Diameter AVP Inclusions for Gy Applications

AVP	Information in AVP
credit-instance-id	Credit-instance-id AVP.
cumulative-used-service-unit	Used-Service-Unit AVP.
framed-ip-address	Framed-IP-Address AVP, which contains the IPv4 address of the PDP context. If this AVP is excluded, then the PDP Address AVP is used instead.

Table 4: Diameter AVP Inclusions for Gy Applications (*continued*)

AVP	Information in AVP
framed-ipv6-prefix	Framed-IPv6-Prefix AVP.
gprs-negotiated-qos	GPRS Negotiated QoS AVP, which contains the negotiated QoS parameters. If this AVP is excluded, then the QoS-Information AVP is used instead.
mscc-qos-information	QoS-Information AVP of the Multiple-Services-Credit-Control AVP.
service-start-timestamp	Service-start-timestamp AVP.

Related Documentation • [attributes \(Diameter Gy Profiles\) on page 43](#)

Configuring Diameter AVPs for Gx Applications

Diameter attribute-value pairs (AVPs) can be excluded from or included in the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Policy and Charging Enforcement Function (PCEF).



NOTE: The configuration of the Diameter AVPs for dynamic PCEF policies is optional.

To configure Diameter AVPs for Gx applications:

1. Specify the name of the Diameter Gx profile for which you are configuring the Diameter AVPs.

[edit]

```
user@host# edit unified-edge diameter-profiles gx-profile profile-name
```

The Diameter profile name can contain letters, numbers, and hyphens (-) and can be up to 128 characters long.

2. Specify the optional AVPs to be excluded from the CCR messages between the GGSN or P-GW and the PCEF. By default, all AVPs are included in the CCR messages.

[edit unified-edge diameter-profiles gx-profile *profile-name*]

```
user@host# set attributes exclude [attribute]
```

You can specify more than one AVP in a single line.

[Table 5 on page 20](#) describes the AVPs that can be excluded from CCR messages.

Table 5: Diameter AVP Exclusions for Gx Applications

AVP	Information in AVP
an-gw-address	AN-GW-Address AVP, which contains the IP addresses of the access node gateway.
default-eps-bearer-qos	Default-EPS-Bearer-QoS AVP.
packet-filter-information	Packet-Filter-Information AVP.
packet-filter-operation	Packet-Filter-Operation AVP.
rat-type	RAT-Type AVP.

- Specify the optional AVPs to be included in the CCR messages between the GGSN or P-GW and the PCEF. By default, all AVPs are included in the CCR messages.

[edit unified-edge diameter-profiles gx-profile *profile-name*]
 user@host# **set attributes include** [*attribute*]

You can specify more than one AVP in a single line.

[Table 6 on page 20](#) describes the AVPs that can be included in CCR messages.

Table 6: Diameter AVP Inclusions for Gx Applications

AVP	Information in AVP
gx-capability-list	Gx-capability-list AVP.
rule-suggestion	Rule-suggestion AVP.

Related Documentation • [attributes \(Diameter Gx Profiles\) on page 42](#)

Configuring Diameter Bindings

A Diameter network element can be configured to run on a specific session PIC. Other session PICs can be organized in a group around the selected session PIC on which the configured network element runs. When organized in a group, the selected session PIC can send and receive messages for other session PICs in the group. By default, every Diameter network element runs on every session PIC.



NOTE: If you want to set up Diameter bindings for session PICs on the broadband gateway, contact Juniper Networks Professional Services for assistance.

To configure the Diameter binding for network elements:

1. Configure the network element used for the Diameter binding on the broadband gateway.

[edit]

```
user@host# set unified-edge ggsn-pgw gateway MBG1 diameter network-element
ocs-dne1
```

2. Specify the session PICs group that serves the network element.

[edit unified-edge ggsn-pgw gateway MBG1 diameter network-element ocs-dne1]

```
user@host# set session-pics group bg1
```

3. Specify the session PIC interfaces in this group that serve the network element. The interface must be a multiservices interface.

[edit unified-edge ggsn-pgw gateway MBG1 diameter network-element ocs-dne1
session-pics group bg1]

```
user@host# set session-pic ams0
```

```
user@host# set session-pic ms-1/1/0
```

Related Documentation

- [diameter \(GGSN or P-GW\) on page 45](#)

CHAPTER 4

Configuration Examples

- [Example: Configuring Diameter on page 23](#)
- [Example: Configuring Diameter for Load Balancing on page 31](#)

Example: Configuring Diameter

This example shows how to configure Diameter on the MobileNext Broadband Gateway.

- [Requirements on page 23](#)
- [Overview on page 23](#)
- [Configuration on page 24](#)
- [Verification on page 28](#)

Requirements

This example uses the following hardware and software components:

- Junos OS Release 12.1W
- Juniper Networks MobileNext Broadband Gateway

Before you configure Diameter, make sure you have the following information:

- IP addresses for the Diameter peers
- Source IP address

Overview

This example describes how to configure Diameter for the broadband gateway, which includes configuring the Diameter Base protocol and the Diameter profiles. You specify the transport and the peers for the Diameter network elements in order to configure the Diameter Base protocol. The Diameter profiles are used to connect network nodes to support functions such as a Gy application. The Diameter profiles reference targets which reference Diameter network elements which reference Diameter peers.

This example configures a Diameter profile for use by a Gy application that supports online charging: the Diameter Credit-Control Application (DCCA).

Configuration

To configure Diameter, perform these tasks:

- [Configuring Diameter on page 24](#)
- [Configuring Diameter Profiles on page 26](#)

Configuring Diameter

CLI Quick Configuration

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

```
[edit]
set access diameter traceoptions file diameter
set access diameter traceoptions file size 4m
set access diameter traceoptions level all
set access diameter traceoptions flag all
set access diameter origin realm juniper.net
set access diameter origin host host1
set access diameter transport trans1 address 99.1.1.1
set access diameter peer ocs1-primary address 10.1.1.1
set access diameter peer ocs1-primary connect-actively transport trans1
set access diameter peer ocs1-primary watchdog-timeout 20
set access diameter peer ocs2-primary address 10.1.1.2
set access diameter peer ocs2-primary connect-actively transport trans1
set access diameter peer ocs2-primary watchdog-timeout 20
set access diameter peer ocs-secondary address 10.1.1.3
set access diameter peer ocs-secondary connect-actively transport trans1
set access diameter peer ocs-secondary watchdog-timeout 20
set access diameter network-element ocs-dne-primary function dcca-gy
set access diameter network-element ocs-dne-primary peer ocs1-primary priority 1
set access diameter network-element ocs-dne-primary peer ocs-secondary priority 2
set access diameter network-element ocs-dne-secondary function dcca-gy
set access diameter network-element ocs-dne-secondary peer ocs2-primary priority 1
set access diameter network-element ocs-dne-secondary peer ocs-secondary priority 2
```

Step-by-Step Procedure

To configure Diameter, you specify the origin, remote peers, transport, and network elements:

1. Set up the Origin-Host prefix and Origin-Realm attribute for the endpoint that originates Diameter messages.

```
[edit]
user@mbg1# set access diameter origin realm juniper.net
user@mbg1# set access diameter origin host host1
```

2. Specify the local transport name and the source IP address.

```
[edit]
user@mbg1# set access diameter transport trans1 address 99.1.1.1
```

3. Set up the remote peers to which Diameter sends messages.

```
[edit ]
user@mbg1# set access diameter peer ocs1-primary address 10.1.1.1
```

```

user@mbg1# set access diameter peer ocs1-primary connect-actively transport
trans1
user@mbg1# set access diameter peer ocs1-primary watchdog-timeout 20
user@mbg1# set access diameter peer ocs2-primary address 10.1.1.2
user@mbg1# set access diameter peer ocs2-primary connect-actively transport
trans1
user@mbg1# set access diameter peer ocs2-primary watchdog-timeout 20
user@mbg1# set access diameter peer ocs-secondary address 10.1.1.3
user@mbg1# set access diameter peer ocs-secondary connect-actively transport
trans1
user@mbg1# set access diameter peer ocs-secondary watchdog-timeout 20

```

4. Specify the network elements with their associated functions and prioritized peers.

```

[edit]
user@mbg1# set access diameter network-element ocs-dne-primary function
dcca-gy
user@mbg1# set access diameter network-element ocs-dne-primary peer
ocs1-primary priority 1
user@mbg1# set access diameter network-element ocs-dne-primary peer
ocs-secondary priority 2
user@mbg1# set access diameter network-element ocs-dne-secondary function
dcca-gy
user@mbg1# set access diameter network-element ocs-dne-secondary peer
ocs2-primary priority 1
user@mbg1# set access diameter network-element ocs-dne-secondary peer
ocs-secondary priority 2

```

5. Specify Diameter tracing operations.

```

[edit]
user@mbg1# set access diameter traceoptions file diameter
user@mbg1# set access diameter traceoptions file size 4m
user@mbg1# set access diameter traceoptions level all
user@mbg1# set access diameter traceoptions flag all

```

```
Results user@mbg1# show access diameter
traceoptions {
  file diameter size 4m;
  level all;
  flag all;
}
origin {
  realm juniper.net;
  host host1;
}
network-element ocs-dne-primary {
  function dcca-gy;
  peer ocs1-primary {
    priority 1;
  }
  peer ocs-secondary {
    priority 2;
  }
}
network-element ocs-dne-secondary {
  function dcca-gy;
  peer ocs2-primary {
    priority 1;
  }
  peer ocs-secondary {
    priority 2;
  }
}
transport trans1 {
  address 99.1.1.1;
}
peer ocs1-primary {
  address 10.1.1.1;
  connect-actively {
    transport trans1;
  }
  watchdog-timeout 20;
}
peer ocs2-primary {
  address 10.1.1.2;
  connect-actively {
    transport trans1;
  }
  watchdog-timeout 20;
}
peer ocs-secondary {
  address 10.1.1.3;
  connect-actively {
    transport trans1;
  }
  watchdog-timeout 20;
}
```

Configuring Diameter Profiles

CLI Quick Configuration

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

[edit]

```

set unified-edge diameter-profiles gy-profile gy targets ocs-dne-primary destination-realm
juniper.net
set unified-edge diameter-profiles gy-profile gy targets ocs-dne-primary priority 1
set unified-edge diameter-profiles gy-profile gy targets ocs-dne-primary network-element
ocs-dne-primary
set unified-edge diameter-profiles gy-profile gy targets ocs-dne-secondary
destination-realm juniper.net
set unified-edge diameter-profiles gy-profile gy targets ocs-dne-secondary priority 2
set unified-edge diameter-profiles gy-profile gy targets ocs-dne-secondary
network-element ocs-dne-secondary

```

Step-by-Step Procedure

To configure the Diameter profile:

1. Create the Diameter profile called gy for the Gy application.

```

[edit]
user@mbg1# set unified-edge diameter-profiles gy-profile gy

```
2. Set up the target called ocs-dne-primary for the profile and specify its destination realm, priority, and network element.

```

[edit unified-edge diameter-profiles gy-profile gy]
user@mbg1# set targets ocs-dne-primary destination-realm juniper.net
user@mbg1# set targets ocs-dne-primary priority 1
user@mbg1# set targets ocs-dne-primary network-element ocs-dne-primary

```
3. Set up the target called ocs-dne-secondary for the profile and specify its destination realm, priority, and network element.

```

[edit unified-edge diameter-profiles gy-profile gy]
user@mbg1# set targets ocs-dne-secondary destination-realm juniper.net
user@mbg1# set targets ocs-dne-secondary priority 2
user@mbg1# set targets ocs-dne-secondary network-element ocs-dne-secondary

```

```

Results user@mbg1# show unified-edge diameter-profiles
gy-profile {
  gy {
    targets {
      ocs-dne-primary {
        destination-realm juniper.net;
        priority 1;
        network-element ocs-dne-primary;
      }
      ocs-dne-secondary {
        destination-realm juniper.net;
        priority 2;
        network-element ocs-dne-secondary;
      }
    }
  }
}

```

Verification

- [Verifying Diameter Application Status on page 28](#)
- [Verifying Network Elements on page 28](#)
- [Verifying Peers on page 29](#)

Verifying Diameter Application Status

Purpose Verify the Diameter statistics on the broadband gateway for the application.

Action user@mbg1> show unified-edge ggsn-pgw diameter dcca-gy statistics

```

Gateway: PGW
Total Sessions:          0
Requests                Answers
-----
Total                    0          0
Credit Control Initial  0          0
Credit Control Update   0          0
Credit Control Terminate 0          0
Re-Auth                  0          0
Abort Session            0          0
Dropped                  0          0

```

Meaning The `show unified-edge ggsn-pgw diameter dcca-gy statistics` command displays the Diameter statistics for the Gy application.

Verifying Network Elements

Purpose Verify the status and statistics on the broadband gateway for the network elements.

Action user@mbg1> show unified-edge ggsn-pgw diameter network-element status

```

DNE : ocs-dne-primary
  PEER : ocs
    FPC/PIC      PEER STATE      WATCHDOG STATE
    0/0          I-Open          okay
    0/1          I-Open          okay

DNE : ocs-dne-secondary
  PEER : ocs
    FPC/PIC      PEER STATE      WATCHDOG STATE
    0/0          Closed          initial
    0/1          Closed          initial

user@mbg1> show unified-edge ggsn-pgw diameter network-element statistics
Name:  ocs-dne-primary
  Packets In :                0
  Packets Out :                0
  Request Timeouts :          0
  Request Cancellations :      0
  Credit Control Request Out : 0
  Credit Control Answer In :   0

Name:  ocs-dne-secondary
  Packets In :                0
  Packets Out :                0
  Request Timeouts :          0
  Request Cancellations :      0
  Credit Control Request Out : 0
  Credit Control Answer In :   0

```

Meaning The `show unified-edge ggsn-pgw diameter network-element status` command displays the status of the network elements, including the state of the peer and the watchdog timer. The `show unified-edge ggsn-pgw diameter network-element statistics` command displays the statistics for the network elements.

Verifying Peers

Purpose Verify the status and statistics on the broadband gateway for the peers.

Action user@mbg1> show unified-edge ggsn-pgw diameter peer status

Diameter Peer Status

Name : ocs1-primary

FPC/PIC : 0/0
 State : Closed
 State Duration : 00:00:00
 Watchdog State : initial
 Peer Address : 10.1.1.2
 Peer port : 3868
 Source Address : 12.4.1.1
 Source Port : 0

Name : ocs1-primary

FPC/PIC : 0/1
 State : Closed
 State Duration : 00:00:00
 Watchdog State : initial
 Peer Address : 10.1.1.2
 Peer port : 3868
 Source Address : 12.4.1.1
 Source Port : 0

user@mbg1> show unified-edge ggsn-pgw diameter peer statistics

Peer: ocs1-primary

Request Timeouts:	0	
Request Retransmissions:	0	
Messages	Transmitted	Received

Total Messages	3979	3979
Credit Control Requests	0	0
Credit Control Answers	0	0
Re-Auth Requests	0	0
Re-Auth Answers	0	0
Abort Session Requests	0	0
Abort Session Answers	0	0
Capability Exchange Requests	2	0
Capability Exchange Answers	0	2
Device Watchdog Requests	0	3977
Device Watchdog Answers	3977	0
Disconnect Peer Requests	0	0
Disconnect Peer Answers	0	0

Peer: ocs-secondary

Request Timeouts:	0	
Request Retransmissions:	0	
Messages	Transmitted	Received

Total Messages	0	0
Credit Control Requests	0	0
Credit Control Answers	0	0
Re-Auth Requests	0	0
Re-Auth Answers	0	0
Abort Session Requests	0	0
Abort Session Answers	0	0
Capability Exchange Requests	0	0
Capability Exchange Answers	0	0
Device Watchdog Requests	0	0
Device Watchdog Answers	0	0
Disconnect Peer Requests	0	0
Disconnect Peer Answers	0	0

Meaning	The show unified-edge ggsn-pgw diameter peer status command displays the status of the peers, including the state of the peer, the peer address and port, and the source address and port. The show unified-edge ggsn-pgw diameter peer statistics command displays the statistics for the peers.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter on page 9• diameter (MobileNext Broadband Gateway) on page 46• diameter-profiles on page 48• Example: Configuring Diameter for Load Balancing on page 31

Example: Configuring Diameter for Load Balancing

This example shows how to configure Diameter on the MobileNext Broadband Gateway to provide load balancing for Diameter peers.

- [Requirements on page 31](#)
- [Overview on page 31](#)
- [Configuration on page 32](#)

Requirements

This example uses the following hardware and software components:

- Junos OS Release 12.1W
- Juniper Networks MobileNext Broadband Gateway

Before you configure Diameter, make sure you have the following information:

- IP addresses for the Diameter peers
- Source IP address

Overview

This example describes how to configure Diameter peers for load balancing on the broadband gateway.

This example configures Diameter profiles for use by Gx and Gy applications that support load balancing for the peers referenced by the Diameter network element for the lower-priority target in the Diameter profiles. You configure the Diameter peers with the same priority so that the Diameter network element uses load balancing for peer selection. The targets for the Gx and Gy profiles reference this Diameter network element so that when the target is selected, the peer selection alternates between these peers.

Configuration

To configure Diameter, perform these tasks:

- [Configuring Diameter for the Primary Network Elements on page 32](#)
- [Configuring Diameter Profiles on page 35](#)

Configuring Diameter for the Primary Network Elements

CLI Quick Configuration

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

```
[edit]
set access diameter origin realm juniper.net
set access diameter origin host host1
set access diameter transport trans1 address 99.1.1.1
set access diameter peer ocs-primary address 10.1.1.1
set access diameter peer ocs-primary connect-actively transport trans1
set access diameter peer backup1 address 10.1.1.2
set access diameter peer backup1 connect-actively transport trans1
set access diameter network-element ocs-dne1 function dcca-gy
set access diameter network-element ocs-dne1 peer ocs-primary priority 1
set access diameter network-element ocs-dne1 peer backup1 priority 2
set access diameter peer pcrf1 address 40.1.1.1
set access diameter peer pcrf1 connect-actively transport trans1
set access diameter peer backup2 address 40.1.1.2
set access diameter peer backup2 connect-actively transport trans1
set access diameter network-element pcrf-dne1 function pcc-gx
set access diameter network-element pcrf-dne1 peer pcrf1 priority 1
set access diameter network-element pcrf-dne1 peer backup2 priority 2
set access diameter network-element backup-dne function [ dcca-gy pcc-gx ]
set access diameter network-element backup-dne peer backup1 priority 1
set access diameter network-element backup-dne peer backup2 priority 1
```

Step-by-Step Procedure

To configure Diameter, specify the origin, remote peers, transport, and network elements:

1. Set up the Origin-Host prefix and Origin-Realm attribute for the endpoint that originates Diameter messages.

```
[edit]
user@mbg1# set access diameter origin realm juniper.net
user@mbg1# set access diameter origin host host1
```

2. Specify the local transport name and the source IP address.

```
[edit]
user@mbg1# set access diameter transport trans1 address 99.1.1.1
```

3. Set up the remote peers to which Diameter sends messages for the Gy application.

```
[edit ]
user@mbg1# set access diameter peer ocs-primary address 10.1.1.1
user@mbg1# set access diameter peer ocs-primary connect-actively transport trans1
user@mbg1# set access diameter peer backup1 address 10.1.1.2
user@mbg1# set access diameter peer backup1 connect-actively transport trans1
```

4. Set up the remote peers to which Diameter sends messages for the Gx application.

```
[edit ]
user@mbg1# set access diameter peer pcrf1 address 40.1.1.1
user@mbg1# set access diameter peer pcrf1 connect-actively transport trans1
user@mbg1# set access diameter peer backup2 address 40.1.1.2
user@mbg1# set access diameter peer backup2 connect-actively transport trans1
```

5. Specify the primary network elements with their associated functions and prioritized peers.

```
[edit]
user@mbg1# set access diameter network-element ocs-dne1 function dcca-gy
user@mbg1# set access diameter network-element ocs-dne1 peer ocs-primary
priority 1
user@mbg1# set access diameter network-element ocs-dne1 peer backup1 priority
2
user@mbg1# set access diameter network-element pcrf-dne1 function pcc-gx
user@mbg1# set access diameter network-element pcrf-dne1 peer pcrf1 priority 1
user@mbg1# set access diameter network-element pcrf-dne1 peer backup2 priority
2
```

6. Specify the backup network element with their associated functions and prioritized peers.

```
[edit]
user@mbg1# set access diameter network-element backup-dne function [ dcca-gy
pcc-gx ]
user@mbg1# set access diameter network-element backup-dne peer backup1 priority
1
user@mbg1# set access diameter network-element backup-dne peer backup2
priority 1
```

```
Results user@mbg1# show access diameter
origin {
    realm juniper.net;
    host host1;
}
network-element backup-dne {
    function dcca-gy;
    function pcc-gx;
    peer backup1 {
        priority 1;
    }
    peer backup2 {
        priority 1;
    }
}
network-element ocs-dne1 {
    function dcca-gy;
    peer ocs-primary {
        priority 1;
    }
    peer backup1 {
        priority 2;
    }
}
network-element pcrf-dne1 {
    function pcc-gx;
    peer pcrf1 {
        priority 1;
    }
    peer backup2 {
        priority 2;
    }
}
transport trans1 {
    address 99.1.1.1;
}
peer backup1 {
    address 10.1.1.2;
    connect-actively {
        transport trans1;
    }
}
peer backup2 {
    address 40.1.1.2;
    connect-actively {
        transport trans1;
    }
}
peer ocs-primary {
    address 10.1.1.1;
    connect-actively {
        transport trans1;
    }
}
peer pcrf1 {
    address 40.1.1.1;
    connect-actively {
        transport trans1;
    }
}
```

Configuring Diameter Profiles

CLI Quick Configuration	To quickly configure this example, copy the following commands and paste them into the router terminal window:
	<pre>[edit] set unified-edge diameter-profiles gy-profile gy-profile-1 targets ocs destination-realm juniper.net set unified-edge diameter-profiles gy-profile gy-profile-1 targets ocs priority 1 set unified-edge diameter-profiles gy-profile gy-profile-1 targets ocs network-element ocs-dne1 set unified-edge diameter-profiles gy-profile gy-profile-1 targets ocs-backup destination-realm juniper.net set unified-edge diameter-profiles gy-profile gy-profile-1 targets ocs-backup priority 2 set unified-edge diameter-profiles gy-profile gy-profile-1 targets ocs-backup network-element backup-dne set unified-edge diameter-profiles gx-profile gx1 targets pcrf destination-realm juniper.net set unified-edge diameter-profiles gx-profile gx1 targets pcrf priority 1 set unified-edge diameter-profiles gx-profile gx1 targets pcrf network-element pcrf-dne1 set unified-edge diameter-profiles gx-profile gx1 targets pcrf-backup destination-realm juniper.net set unified-edge diameter-profiles gx-profile gx1 targets pcrf-backup priority 2 set unified-edge diameter-profiles gx-profile gx1 targets pcrf-backup network-element backup-dne</pre>
Step-by-Step Procedure	<p>To configure the Diameter profile:</p> <ol style="list-style-type: none"> 1. Create the Diameter profile called gy-profile-1 for the Gy application. <pre>[edit] user@mbg1# set unified-edge diameter-profiles gy-profile gy-profile-1</pre> 2. Set up the primary target for the profile used by the Gy application and specify its destination realm, priority, and network element. <pre>[edit unified-edge diameter-profiles gy-profile gy-profile-1] user@mbg1# set targets ocs destination-realm juniper.net user@mbg1# set targets ocs priority 1 user@mbg1# set targets ocs network-element ocs-dne1</pre> 3. Set up the secondary target called ocs-backup for the profile used by the Gy application and specify its destination realm, priority, and network element. <pre>[edit unified-edge diameter-profiles gy-profile gy-profile-1] user@mbg1# set targets ocs-backup destination-realm juniper.net user@mbg1# set targets ocs-backup priority 2 user@mbg1# set targets ocs-backup network-element backup-dne</pre> 4. Create the Diameter profile called gx1 for the Gx application. <pre>[edit] user@mbg1# set unified-edge diameter-profiles gx-profile gx1</pre> 5. Set up the primary target for the profile used by the Gx application and specify its destination realm, priority, and network element. <pre>[edit unified-edge diameter-profiles gx-profile gx1] user@mbg1# set targets pcrf destination-realm juniper.net</pre>

```
user@mbg1# set targets pcrf priority 1
user@mbg1# set targets pcrf network-element pcrf-dne1
```

6. Set up the secondary target called pcrf-backup for the profile used by the Gy application and specify its destination realm, priority, and network element.

```
[edit unified-edge diameter-profiles gx-profile gx1]
user@mbg1# set targets pcrf-backup destination-realm juniper.net
user@mbg1# set targets pcrf-backup priority 2
user@mbg1# set targets pcrf-backup network-element backup-dne
```

Results

```
user@mbg1# show unified-edge diameter-profiles
gy-profile {
  gy-profile-1 {
    targets {
      ocs {
        destination-realm juniper.net;
        priority 1;
        network-element ocs-dne1;
      }
      ocs-backup {
        destination-realm juniper.net;
        priority 2;
        network-element backup-dne;
      }
    }
  }
}
gx-profile {
  gx1 {
    targets {
      pcrf {
        destination-realm juniper.net;
        priority 1;
        network-element pcrf-dne1;
      }
      pcrf-backup {
        destination-realm juniper.net;
        priority 1;
        network-element backup-dne;
      }
    }
  }
}
```

- Related Documentation**
- [Configuring Diameter on page 9](#)
 - [diameter \(MobileNext Broadband Gateway\) on page 46](#)
 - [diameter-profiles on page 48](#)
 - [Example: Configuring Diameter on page 23](#)

CHAPTER 5

Configuration Statements

- [\[edit access diameter\] Hierarchy Level on page 37](#)
- [\[edit unified-edge diameter-profiles\] Hierarchy Level on page 38](#)

[\[edit access diameter\] Hierarchy Level](#)

```
diameter {
  applications {
    dcca-gy {
      <maximum-pending-requests requests>;
    }
    pcc-gx {
      <maximum-pending-requests requests>;
    }
  }
  <firmware-version version>;
  network-element element-name {
    function (pcc-gx | dcca-gy);
    peer peer-name {
      priority priority-number;
      <timeout timeout>;
    }
  }
  origin {
    host hostname;
    realm realm-name;
  }
  peer peer-name {
    address address;
    connect-actively {
      <capabilities-exchange-timeout timeout>;
      <port port-number>;
      <repeat-timeout seconds>;
      <retry-timeout timeout>;
      <timeout timeout>;
      transport transport-name;
    }
    <disconnect-peer-timeout timeout>;
    incoming-queue {
      size size;
    }
    outgoing-queue {
```

```
        <high-watermark watermark>;
        <low-watermark watermark>;
        size size;
    }
    <watchdog-timeout timeout>;
}
<product-name product-name>;
traceoptions {
    file filename;
    flag flag;
    level all;
    peer {
        peer-name;
    }
}
transport transport-name {
    address address;
    <routing-instance routing-instance-name>;
}
<vendor-id vendor-id>;
}
```

Related • [Notational Conventions Used in Junos OS Configuration Hierarchies](#)
Documentation

[edit unified-edge diameter-profiles] Hierarchy Level

```
diameter-profiles {
  gx-profile profile-name {
    <attributes> {
      exclude {
        an-gw-address;
        default-eps-bearer-qos;
        packet-filter-information;
        packet-filter-operation;
        rat-type;
      }
      include {
        gx-capability-list;
        rule-suggestion;
      }
    }
    <request-timeout seconds>;
    targets {
      target-name {
        <destination-host hostname>;
        destination-realm realm-name;
        network-element element-name;
        priority priority-value;
      }
    }
  }
  gy-profile profile-name {
    <attributes> {
      exclude {
```

```

all-3gpp-avps;
cc-selection-mode;
dynamic-address-flag;
pdn-connection-id;
ps-information;
qos-information;
serving-node-type;
start-time;
stop-time;
user-equipment-info;
user-location-information;
username;
}
include {
  credit-instance-id;
  cumulative-used-service-unit;
  framed-ip-address;
  framed-ipv6-prefix;
  gprs-negotiated-qos;
  mscc-qos-information;
  service-start-timestamp;
}
}
<request-timeout seconds>;
targets {
  target-name {
    <destination-host hostname>;
    destination-realm realm-name;
    network-element element-name;
    priority priority-value;
  }
}
}
}

```

Related Documentation

- [Notational Conventions Used in Junos OS Configuration Hierarchies](#)

address (Diameter Peer)

Syntax	<code>address <i>address</i>;</code>
Hierarchy Level	[edit access diameter peer <i>peer-name</i>]
Release Information	Statement introduced in Junos OS Release 12.1W.
Description	Configure the IP address for the Diameter remote peer.
Options	<i>address</i> —IP address for the Diameter peer.
Required Privilege Level	admin—To view this statement in the configuration. admin-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Peers on page 12• peer (Diameter Base Protocol) on page 64

address (Diameter Transport)

Syntax	<code>address <i>address</i>;</code>
Hierarchy Level	[edit access diameter transport <i>transport-name</i>]
Release Information	Statement introduced in Junos OS Release 12.1W.
Description	Configure the source (local) IP address for the Diameter local transport connection.
Options	<i>address</i> —Source IP address for the connection to the Diameter peer.
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the Diameter Transport on page 12• transport (Diameter Base Protocol) on page 73

applications (Diameter)

Syntax	<pre> applications { dcca-gy { maximum-pending-requests requests; } pcc-gx { maximum-pending-requests requests; } } </pre>
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the parameters for Diameter applications. Specify the Diameter application for which you are configuring the parameters. The Gx application (pcc-gx) and the Gy application (dcca-gy) are currently supported.
Options	<p>dcca-gy—Parameters for the Gy application.</p> <p>pcc-gx—Parameters for the Gx application.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>access—To view this statement in the configuration.</p> <p>access-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Parameters for Diameter Applications on page 15 • diameter (MobileNext Broadband Gateway) on page 46

attributes (Diameter Gx Profiles)

Syntax

```
attributes {  
  exclude {  
    an-gw-address;  
    default-eps-bearer-qos;  
    packet-filter-information;  
    packet-filter-operation;  
    rat-type;  
  }  
  include {  
    gx-capability-list;  
    rule-suggestion;  
  }  
}
```

Hierarchy Level [edit unified-edge diameter-profiles gx-profile *profile-name*]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure attribute-value pairs (AVPs) that are excluded from or included in the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Policy and Charging Enforcement Function (PCEF).

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter AVPs for Gx Applications on page 19](#)
- [gx-profile on page 55](#)

attributes (Diameter Gy Profiles)

```
Syntax  attributes {
        exclude {
            all-3gpp-avps;
            cc-selection-mode;
            dynamic-address-flag;
            pdn-connection-id;
            ps-information;
            qos-information;
            serving-node-type;
            start-time;
            stop-time;
            user-equipment-info;
            user-location-information;
            username;
        }
        include {
            credit-instance-id;
            cumulative-used-service-unit;
            framed-ip-address;
            framed-ipv6-prefix;
            gprs-negotiated-qos;
            mscc-qos-information;
            service-start-timestamp;
        }
    }
```

Hierarchy Level [edit unified-edge diameter-profiles gy-profile *profile-name*]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure attribute-value pairs (AVPs) that are excluded from or included in the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Online Charging System (OCS).

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter AVPs for Gy Applications on page 17](#)
- [gy-profile on page 56](#)

connect-actively

Syntax connect-actively {
 <capabilities-exchange-timeout *seconds*>;
 <port *port-number*>;
 <repeat-timeout *seconds*>;
 <retry-timeout *seconds*>;
 <timeout *seconds*>;
 transport *transport-name*;
 }

Hierarchy Level [edit access diameter peer *peer-name*]

Release Information Statement introduced in Junos OS Release 12.1W.

Description Define the destination port and transport connection used to establish active connections to the Diameter peer.

Options **capabilities-exchange-timeout *seconds***—(Optional) Amount of time to wait for a Capabilities-Exchange-Answer message.

Range: 1 through 65535 seconds

Default: 10 seconds

port *port-number*—(Optional) Number of the destination TCP port.

Default: 3868

repeat-timeout *seconds*—(Optional) Amount of time to wait before attempting to reconnect to this peer after receiving the DO_NOT_WANT_TO_TALK_TO_YOU value for the Disconnect-Cause AVP in the Disconnect-Peer-Request message. A value of zero means that there is no attempt to reconnect to the peer.

Range: 0 through 65535 seconds

Default: 0

retry-timeout *seconds*—(Optional) Amount of time to wait between connection attempts for this peer.

Range: 1 through 65535 seconds

Default: 30 seconds

timeout *seconds*—(Optional) Amount of time to wait for connection acknowledgement for this peer.

Range: 1 through 65535 seconds

Default: 10 seconds

transport *transport-name*—Name of the transport layer connection.



NOTE: The specified transport must already be configured at the [edit access diameter transport] hierarchy level.

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

Related Documentation

- [Configuring Diameter Peers on page 12](#)
- [peer \(Diameter Base Protocol\) on page 64](#)

diameter (GGSN or P-GW)

Syntax

```
diameter {
  network-element {
    element-name {
      session-pics {
        group {
          group-name {
            [session-pic interface-name];
          }
        }
      }
    }
  }
}
```

Hierarchy Level [edit unified-edge gateways ggsn-pgw gateway-name]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the Diameter protocol parameters associated with Diameter bindings for this broadband gateway.



NOTE: If you want to set up Diameter bindings for session PICs on the broadband gateway, contact Juniper Networks Professional Services for assistance.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter Bindings on page 21](#)
- [\[edit unified-edge gateways ggsn-pgw <gateway-name>\] Hierarchy Level](#)

diameter (MobileNext Broadband Gateway)

```
Syntax diameter {
    applications {
        dcca-gy {
            maximum-pending-requests requests;
        }
        pcc-gx {
            maximum-pending-requests requests;
        }
    }
    <firmware-revision version>;
    network-element element-name {
        function function-name;
        peer peer-name {
            priority priority-value;
            <timeout seconds>;
        }
    }
    origin {
        host hostname;
        realm realm-name;
    }
    peer peer-name {
        address ip-address;
        connect-actively {
            <capabilities-exchange-timeout seconds>;
            <port port-number>;
            <repeat-timeout seconds>;
            <retry-timeout seconds>;
            <timeout seconds>;
            transport transport-name;
        }
        <disconnect-peer-timeout seconds>;
        <incoming-queue> {
            size size;
        }
        <outgoing-queue> {
            <high-watermark watermark>;
            <low-watermark watermark>;
            size size;
        }
        <watchdog-timeout seconds>;
    }
    <product-name product-name>;
    traceoptions {
        file diameter;
        flag flag;
        level all;
        peer {
            peer-name;
        }
    }
    transport transport-name {
```

```
    address address;  
    <routing-instance routing-instance-name>;  
  }  
  <vendor-id vendor-id>;  
}
```

Hierarchy Level [edit access]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the Diameter base protocol parameters for the broadband gateway to allow Diameter applications to connect to remote peers. The Diameter base protocol configuration includes configuration of the endpoint origin, the transport layer connection, the remote peers, and the network elements.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter on page 9](#)
- [Example: Configuring Diameter on page 23](#)
- [Example: Configuring Diameter for Load Balancing on page 31](#)

diameter-profiles

```

Syntax  diameter-profiles {
        gx-profile profile-name {
            <attributes> {
                exclude {
                    an-gw-address;
                    default-eps-bearer-qos;
                    packet-filter-information;
                    packet-filter-operation;
                    rat-type;
                }
                include {
                    gx-capability-list;
                    rule-suggestion;
                }
            }
            <request-timeout seconds>;
            targets {
                target-name {
                    <destination-host hostname>;
                    destination-realm realm-name;
                    network-element element-name;
                    priority priority-value;
                }
            }
        }
        gy-profile profile-name {
            <attributes> {
                exclude {
                    all-3gpp-avps;
                    cc-selection-mode;
                    dynamic-address-flag;
                    pdn-connection-id;
                    ps-information;
                    qos-information;
                    serving-node-type;
                    start-time;
                    stop-time;
                    user-equipment-info;
                    user-location-information;
                    username;
                }
                include {
                    credit-instance-id;
                    cumulative-used-service-unit;
                    framed-ip-address;
                    framed-ipv6-prefix;
                    gprs-negotiated-qos;
                    msc-qos-information;
                    service-start-timestamp;
                }
            }
            <request-timeout seconds>;

```

```

targets {
  target-name {
    <destination-host hostname>;
    destination-realm realm-name;
    network-element element-name;
    priority priority-value;
  }
}

```

Hierarchy Level [edit unified-edge]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the Diameter profile used for Diameter applications. The Diameter profile specifies prioritized targets, or endpoints, for particular applications. Specify the Diameter application for which you are creating the profile. Profiles for Gx applications (**gx-profile**) and Gy applications (**gy-profile**) are currently supported.

You can also specify that attribute-value pairs (AVPs) be excluded from or included in the Credit Control Request (CCR) messages.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter Profiles on page 16](#)
- [\[edit unified-edge diameter-profiles\] Hierarchy Level on page 38](#)
- [Overview of Diameter Profiles on page 4](#)

disconnect-peer-timeout

Syntax	<code>disconnect-peer-timeout <i>seconds</i>;</code>
Hierarchy Level	[edit access diameter peer <i>peer-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the amount of time to wait in Closing state while disconnecting this peer.
Options	<i>seconds</i> —Amount of time to wait. Range: 1 through 65535 seconds Default: 10 seconds
Required Privilege Level	access —To view this statement in the configuration. access-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Peers on page 12• peer (Diameter Base Protocol) on page 64

exclude (Diameter Gx Profiles)

Syntax	<pre>exclude { an-gw-address; default-eps-bearer-qos; packet-filter-information; packet-filter-operation; rat-type; }</pre>
Hierarchy Level	[edit unified-edge diameter-profiles gx-profile <i>profile-name</i> attributes]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the attribute-value pairs (AVPs) to be excluded from the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Policy and Charging Enforcement Function (PCEF).
Options	<ul style="list-style-type: none"> • an-gw-address—Exclude the AN-GW-Address AVP. • default-eps-bearer-qos—Exclude the Default-EPS-Bearer-QoS AVP. • packet-filter-information—Exclude the Packet-Filter-Information AVP. • packet-filter-operation—Exclude the Packet-Filter-Operation AVP. • rat-type—Exclude the RAT-Type AVP.
Required Privilege Level	unified-edge—To view this statement in the configuration. unified-edge-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • attributes (Diameter Gx Profiles) on page 42 • include (Diameter Gx Profiles) on page 57 • Configuring Diameter AVPs for Gx Applications on page 19

exclude (Diameter Gy Profiles)

Syntax

```
exclude {
    all-3gpp-avps;
    cc-selection-mode;
    dynamic-address-flag;
    pdn-connection-id;
    ps-information;
    qos-information;
    serving-node-type;
    start-time;
    stop-time;
    user-equipment-info;
    user-location-information;
    username;
}
```

Hierarchy Level [edit unified-edge diameter-profiles gy-profile *profile-name* attributes]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the attribute-value pairs (AVPs) to be excluded from the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Online Charging System (OCS).

- Options**
- **all-3gpp-avps**—Exclude all 3GPP AVPs under the PS-Information AVP (where PS stands for packet switched).
 - **cc-selection-mode**—Exclude the Charging-Characteristics-Selection-Mode AVP.
 - **dynamic-address-flag**—Exclude the Dynamic-Address-Flag-Extension AVP.
 - **pdn-connection-id**—Exclude the PDN-Connection-ID AVP.
 - **ps-information**—Exclude the PS-Information AVP.



NOTE: The PS-Information AVP is normally sent in the Service-Information AVP (as mentioned in 3GPP TS 32.299).

Table 7 on page 53 lists the different scenarios for the configuration of the **all-3gpp-avps** and **ps-information** attributes.

- **qos-information**—Exclude the QoS-Information AVP.
- **serving-node-type**—Exclude the Serving-Node-Type AVP.
- **start-time**—Exclude the Start-Time AVP.
- **stop-time**—Exclude the Stop-Time AVP.
- **user-equip-info**—Exclude the User-Equipment-Info AVP.
- **user-location-information**—Exclude the User-Location-Info AVP.

- **username**—Exclude the User-Name AVP.

Table 7: Configuration Scenarios for all-3gpp-avps and ps-information attributes

Configuration	Behavior
Only all-3gpp-avps configured	All 3GPP AVPs under the PS-Information AVP are excluded from the PS-Information AVP; however, the PS-Information AVP (excluding the 3GPP AVPs) is still sent in the Service-Information AVP.
Only ps-information configured	All the 3GPP AVPs inside the PS-Information AVP are sent in the Diameter Credit Control Request (CCR) message at the command level; however, the PS-Information AVP is not sent.
Both all-3gpp-avps and ps-information configured	Neither the 3GPP AVPs (inside the PS-Information AVP) nor the PS-Information AVP is sent.

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

Related Documentation

- [attributes \(Diameter Gy Profiles\) on page 43](#)
- [include \(Diameter Gy Profiles\) on page 58](#)
- [Configuring Diameter AVPs for Gy Applications on page 17](#)

firmware-revision

Syntax	<code>firmware-revision <i>firmware-revision</i>;</code>
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the firmware revision that is advertised in the Capabilities-Exchange-Request or Capabilities-Exchange-Answer message.
Options	<p><i>firmware-revision</i>—Number of the firmware revision that is the advertised value of the Firmware-Revision AVP.</p> <p>Default: 0</p> <p>Range: 0 through 4294967295</p>
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Advertisements in Diameter Messages on page 15 • Configuring Diameter on page 9 • diameter (MobileNext Broadband Gateway) on page 46

function (Diameter Network Element)

Syntax	<code>function <i>function-name</i>;</code>
Hierarchy Level	[edit access diameter network-element <i>element-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Specify the application (function) associated with a Diameter network element.
Options	<i>function-name</i> —Application (function) associated with the network element. Policy Charging and Control application (pcc-gx) and Diameter Credit-Control Application (dcca-gy) are the applications currently supported.
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Network Elements on page 14• network-element (Diameter Base Protocol) on page 60

gx-profile

```

Syntax  gx-profile profile-name {
        <attributes> {
            exclude {
                an-gw-address;
                default-eps-bearer-qos;
                packet-filter-information;
                packet-filter-operation;
                rat-type;
            }
            include {
                gx-capability-list;
                rule-suggestion;
            }
        }
        <request-timeout seconds>;
        targets {
            target-name {
                <destination-host hostname>;
                destination-realm realm-name;
                network-element element-name;
                priority priority-value;
            }
        }
    }

```

Hierarchy Level [edit unified-edge diameter-profiles]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the Diameter profile used for Gx applications.

Options *profile-name*—Name of the Diameter profile.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter AVPs for Gx Applications on page 19](#)
- [diameter-profiles on page 48](#)

gy-profile

```

Syntax  gy-profile profile-name {
        <attributes> {
            exclude {
                all-3gpp-avps;
                cc-selection-mode;
                dynamic-address-flag;
                pdn-connection-id;
                ps-information;
                qos-information;
                serving-node-type;
                start-time;
                stop-time;
                user-equipment-info;
                user-location-information;
                username;
            }
            include {
                credit-instance-id;
                cumulative-used-service-unit;
                framed-ip-address;
                framed-ipv6-prefix;
                gprs-negotiated-qos;
                mscc-qos-information;
                service-start-timestamp;
            }
        }
        <request-timeout seconds>;
        targets {
            target-name {
                <destination-host hostname>;
                destination-realm realm-name;
                network-element element-name;
                priority priority-value;
            }
        }
    }

```

Hierarchy Level [edit unified-edge diameter-profiles]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the Diameter profile used for Gy applications.

Options *profile-name*—Name of the Diameter profile.

The remaining statements are explained separately.

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

- Related Documentation**
- [Configuring Diameter AVPs for Gy Applications on page 17](#)
 - [diameter-profiles on page 48](#)

host (Diameter Origin)

Syntax	<code>host <i>hostname</i>;</code>
Hierarchy Level	[edit access diameter origin]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Specify the name of the host that originates the Diameter message.
Options	<i>hostname</i> —Name of the message origin host. Supplied as the value of the Origin-Host AVP for all messages sent by the Diameter instance.
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the Origin Attributes of the Diameter Instance on page 11 • origin (Diameter Base Protocol) on page 62

include (Diameter Gx Profiles)

Syntax	<code>include { gx-capability-list; rule-suggestion; }</code>
Hierarchy Level	[edit unified-edge diameter-profiles gx-profile <i>profile-name</i> attributes]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the attribute-value pairs (AVPs) to be included in the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Policy and Charging Enforcement Function (PCEF).
Options	<ul style="list-style-type: none"> • gx-capability-list—Include the Gx Capability list AVP. • rule-suggestion—Include the Rule-suggestion AVP.
Required Privilege Level	unified-edge—To view this statement in the configuration. unified-edge-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • attributes (Diameter Gx Profiles) on page 42 • exclude (Diameter Gx Profiles) on page 51 • Configuring Diameter AVPs for Gx Applications on page 19

include (Diameter Gy Profiles)

Syntax	<pre>include { credit-instance-id; cumulative-used-service-unit; framed-ip-address; framed-ipv6-prefix; gprs-negotiated-qos; mscc-qos-information; service-start-timestamp; }</pre>
Hierarchy Level	[edit unified-edge diameter-profiles gy-profile <i>profile-name</i> attributes]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the attribute-value pairs (AVPs) to be included in the Credit Control Request (CCR) messages between the Gateway GPRS Support Node (GGSN) or Packet Data Network Gateway (P-GW) and the Online Charging System (OCS).
Options	<ul style="list-style-type: none">• credit-instance-id—Include the credit-instance-id AVP.• cumulative-used-service-unit—Include the Used-Service-Unit AVP.• framed-ip-address—Include the Framed-IP-Address AVP.• framed-ipv6-prefix—Include the Framed-IPv6-Prefix AVP.• gprs-negotiated-qos—Include the QoS-Negotiation AVP for the 3GPP-GPRS access type.• mscc-qos-information—Include the QoS-Information AVP of the Multiple-Services-Credit-Control AVP.• service-start-timestamp—Include the service-start-timestamp AVP.
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">• attributes (Diameter Gy Profiles) on page 43• exclude (Diameter Gy Profiles) on page 52• Configuring Diameter AVPs for Gy Applications on page 17

incoming-queue

Syntax	<code>incoming-queue { size <i>size</i>; }</code>
Hierarchy Level	<code>[edit access diameter peer <i>peer-name</i>]</code>
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the incoming queue properties of this peer.
Options	<p>size <i>size</i>—Size of the queue.</p> <p>Range: 1 through 65535</p>
Required Privilege Level	<p>access—To view this statement in the configuration.</p> <p>access-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Diameter Peers on page 12 • peer (Diameter Base Protocol) on page 64

maximum-pending-requests (Diameter)

Syntax	<code>maximum-pending-requests <i>requests</i>;</code>
Hierarchy Level	<code>[edit access diameter applications dcca-gy], [edit access diameter applications pcc-gx]</code>
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the maximum number of pending requests parameter for the Diameter application.
Options	<p><i>requests</i>—Maximum number of pending requests.</p> <p>Range: 1000 through 65535</p> <p>Default: 20000</p>
Required Privilege Level	<p>access—To view this statement in the configuration.</p> <p>access-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • applications (Diameter) on page 41 • Configuring Parameters for Diameter Applications on page 15

network-element (Diameter Base Protocol)

Syntax	<pre>network-element <i>element-name</i> { <i>function</i> <i>function-name</i>; <i>peer</i> <i>peer-name</i> { <i>priority</i> <i>priority-value</i>; <<i>timeout</i> <i>seconds</i>>; } }</pre>
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the Diameter network element, which is similar to a peer group that provides function-specific features including failover and load balancing. Specify the associated function that the network element supports. You can prioritize the peers to support failover or load balancing.
Default	By default, all network elements are available on every session PIC unless Diameter bindings are configured.
Options	<p><i>element-name</i>—Name of the network element.</p> <p>Range: Up to 32 characters</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>access—To view this statement in the configuration.</p> <p>access-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Network Elements on page 14• diameter (MobileNext Broadband Gateway) on page 46

network-element (GGSN or P-GW)

```
Syntax  network-element {
        element-name {
            session-pics {
                group {
                    group-name {
                        [session-pic interface-name];
                    }
                }
            }
        }
    }
```

Hierarchy Level [edit unified-edge gateways ggsn-pgw *gateway-name* diameter]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure the Diameter network element associated with Diameter bindings for this broadband gateway.



NOTE: If you want to set up Diameter bindings for session PICs on the broadband gateway, contact Juniper Networks Professional Services for assistance.

Options *element-name*—Name of the network element.

Range: Up to 32 characters



NOTE: The specified network element must already be configured on the broadband gateway at the [edit access diameter network-element] hierarchy level.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter Bindings on page 21](#)
- [diameter \(GGSN or P-GW\) on page 45](#)
- [network-element \(Diameter Base Protocol\) on page 60](#)

origin (Diameter Base Protocol)

Syntax	origin { host <i>hostname</i> ; realm <i>realm-name</i> ; }
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	<p>Specify values of the Origin-Realm AVP and the Origin-Host AVP used in all messages sent by the Diameter instance. These values must be unique for each session PIC.</p> <p>The remaining statements are explained separately.</p>
Required Privilege Level	<p>access—To view this statement in the configuration.</p> <p>access-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none">• Configuring the Origin Attributes of the Diameter Instance on page 11• diameter (MobileNext Broadband Gateway) on page 46

outgoing-queue

Syntax	<pre> outgoing-queue { <high-watermark <i>watermark</i>>; <low-watermark <i>watermark</i>>; size <i>size</i>; } </pre>
Hierarchy Level	[edit access diameter peer <i>peer-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the outgoing queue properties for this peer. When the queue size reaches the high watermark, the peer is marked unavailable and any new messages to the Diameter network element are not sent to this peer. When the queue size descends below the low watermark after reaching the high watermark, the peer becomes available.
Options	<p>high-watermark <i>watermark</i>—(Optional) High watermark for this peer. Range: 1 through 100 percent Default: 80</p> <p>low-watermark <i>watermark</i>—(Optional) Low watermark for this peer. Range: 1 through 100 percent Default: 60</p> <p>size <i>size</i>—Size of the queue. Range: 1 through 65535</p>
Required Privilege Level	<p>access—To view this statement in the configuration.</p> <p>access-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Diameter Peers on page 12 • peer (Diameter Base Protocol) on page 64

peer (Diameter Base Protocol)

Syntax `peer peer-name {
 address ip-address;
 connect-actively {
 <capabilities-exchange-timeout seconds>;
 <port port-number>;
 <repeat-timeout seconds>;
 <retry-timeout seconds>;
 <timeout seconds>;
 transport transport-name;
 }
 <disconnect-peer-timeout seconds>;
 <incoming-queue> {
 size size;
 }
 <outgoing-queue> {
 <high-watermark watermark>;
 <low-watermark watermark>;
 size size;
 }
 <watchdog-timeout seconds>;
 }`

Hierarchy Level [edit access diameter]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Configure a remote peer for the Diameter instance. You can configure up to 31 peers.

Options *peer-name*—Name of the peer.

Range: Up to 32 characters

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter on page 9](#)
- [Configuring Diameter Peers on page 12](#)
- [diameter \(MobileNext Broadband Gateway\) on page 46](#)

peer (Diameter Network Element)

Syntax `peer peer-name {
 priority priority-value;
 <timeout seconds>;
}`

Hierarchy Level [edit access diameter network-element *element-name*]

Release Information Statement introduced in Junos OS Mobility Release 12.1W.

Description Define and prioritize a peer associated with a Diameter network element. You must prioritize the associated peer by including the **priority** statement.

Options *peer-name*—Name of the peer.
Range: Up to 32 characters



NOTE: The specified peer must already be configured at the [edit access diameter peer] hierarchy level.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring Diameter Network Elements on page 14](#)
- [network-element \(Diameter Base Protocol\) on page 60](#)

priority (Diameter Network Element)

Syntax	<code>priority <i>priority-value</i>;</code>
Hierarchy Level	[edit access diameter network-element <i>element-name</i> peer <i>peer-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Set the priority for a peer within a Diameter network element. A peer with a lower number has a higher priority. For load balancing, configure the peers with the same priority.
Options	<i>priority-value</i> —Priority for the peer within the network element. Range: 1 through 65535
Required Privilege Level	access —To view this statement in the configuration. access-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Network Elements on page 14• peer (Diameter Network Element) on page 65

product-name

Syntax	<code>product-name <i>name</i>;</code>
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the product name that is advertised in the Capabilities-Exchange-Request or Capabilities-Exchange-Answer message.
Options	<i>name</i> —Name of product that is the advertised value of the Product-Name AVP. Default: Juniper Diameter Client
Required Privilege Level	access —To view this statement in the configuration. access-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Advertisements in Diameter Messages on page 15• Configuring Diameter on page 9• diameter (MobileNext Broadband Gateway) on page 46

realm (Diameter Origin)

Syntax	<code>realm <i>realm-name</i>;</code>
Hierarchy Level	[edit access diameter origin]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Specify the realm of the host that originates the Diameter message.
Options	<i>realm-name</i> —Name of the message origin realm. Supplied as the value of Origin-Realm AVP for all messages sent by the Diameter instance.
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring the Origin Attributes of the Diameter Instance on page 11 • origin (Diameter Base Protocol) on page 62

request-timeout

Syntax	<code>request-timeout <i>seconds</i>;</code>
Hierarchy Level	[edit unified-edge diameter-profiles <i>gx-profile profile-name</i>], [edit unified-edge diameter-profiles <i>gy-profile profile-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the amount of time to wait for a response.
Options	<i>seconds</i> —Amount of time to wait. Range: 0 through 65535 seconds. 0 seconds indicates that the request timeout will not be enabled.
Required Privilege Level	unified-edge—To view this statement in the configuration. unified-edge-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none"> • Configuring Diameter AVPs for Gx Applications on page 19 • Configuring Diameter AVPs for Gy Applications on page 17 • gx-profile on page 55 • gy-profile on page 56

routing-instance (Diameter Transport)



Syntax	<code>routing-instance <i>routing-instance-name</i>;</code>
Hierarchy Level	[edit access diameter transport <i>transport-name</i>]
Release Information	Statement introduced in Junos OS Release 12.1W.
Description	Configure the routing instance for the Diameter transport layer connection.
Options	<i>routing-instance-name</i> —Name of the routing instance.





NOTE: The specified routing instance must already be defined.

Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring the Diameter Transport on page 12• transport (Diameter Base Protocol) on page 73

session-pics (Diameter)

Syntax	<pre> session-pics { group { group-name { [session-pic interface-name]; } } } </pre>
Hierarchy Level	[edit unified-edge gateways ggsn-pgw gateway-name diameter network-element element-name]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the session PICs that are serving this Diameter network element for Diameter bindings on this broadband gateway.
	<div>  <p>NOTE: If you want to set up Diameter bindings for session PICs on the broadband gateway, contact Juniper Networks Professional Services for assistance.</p> </div>
Options	<p>group group-name—Name of the session PIC group that is serving the Diameter network element.</p> <p>session-pic interface-name—Name of interface representing session PIC.</p> <p>Syntax: The interface must be a valid multiservices interface (ams or ms-a/b/O, where a is the Flexible PIC Concentrator [FPC] slot number and b is the PIC slot number); for example, ams0, ams1, or ms-1/O/O.</p>
	<div>  <p>NOTE: The specified interface for the session PIC must already be configured for this broadband gateway.</p> </div>
Required Privilege Level	<p>unified-edge—To view this statement in the configuration.</p> <p>unified-edge-control—To add this statement to the configuration.</p>
Related Documentation	<ul style="list-style-type: none"> • Configuring Diameter Bindings on page 21 • network-element (GGSN or P-GW) on page 61

targets

Syntax	<pre>targets { target-name { <destination-host <i>hostname</i>>; destination-realm <i>realm-name</i>; network-element <i>element-name</i>; priority <i>priority-value</i>; } }</pre>
Hierarchy Level	[edit unified-edge diameter-profiles gx-profile <i>profile-name</i>], [edit unified-edge diameter-profiles gy-profile <i>profile-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the targets for this Diameter profile.
Options	<p><i>name</i>—Name of target.</p> <p><i>destination-host hostname</i>—(Optional) Name of the destination host associated with this target.</p> <p><i>destination-realm realm-name</i>—Name of the destination realm associated with this target.</p> <p><i>network-element element-name</i>—Name of the network element.</p> <div style="margin-top: 20px;">  <p>NOTE: The Diameter network element must be previously configured at the [edit access diameter network-element] hierarchy level.</p> </div> <p>Range: Up to 32 characters</p> <p><i>priority priority-value</i>—Priority for the target within the Diameter profile. A value with a lower number has a higher priority. For load balancing, configure the targets with the same priority.</p> <div style="margin-top: 20px;">  <p>NOTE: Failover handling depends on what is allowed by the policy for the application. For example, switching between the primary and secondary online charging servers set with the appropriate priority would only occur if the failover handling policy allows it.</p> </div> <p>Range: 1 through 65535</p>
Required Privilege Level	<p>unified-edge—To view this statement in the configuration.</p> <p>unified-edge-control—To add this statement to the configuration.</p>

- Related Documentation**
- [Configuring Diameter AVPs for Gx Applications on page 19](#)
 - [Configuring Diameter AVPs for Gy Applications on page 17](#)
 - [gx-profile on page 55](#)
 - [gy-profile on page 56](#)

timeout (Diameter Network Element)

Syntax	<code>timeout <i>seconds</i>;</code>
Hierarchy Level	[edit access diameter network-element <i>element-name</i> peer <i>peer-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the amount of time to wait for a response from this peer before retransmitting the request to another peer.
Options	<i>seconds</i> —Amount of time to wait. Range: 1 through 100 seconds Default: 4 seconds
Required Privilege Level	access —To view this statement in the configuration. access-control —To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Network Elements on page 14• peer (Diameter Network Element) on page 65

traceoptions (Diameter Base Protocol)

Syntax	<pre>traceoptions { file <i>filename</i> <files <i>number</i>> <match <i>regular-expression</i> > <size <i>maximum-file-size</i>> <world-readable no-world-readable>; flag <i>flag</i>; level (all error info notice verbose warning); no-remote-trace; <peer <i>peer-name</i>>; }</pre>
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Release 12.1W.
Description	Define tracing options for Diameter peers.
Options	<p>file <i>filename</i>—Name of the file to receive the output of the tracing operation. Enclose the filename within quotation marks. All files are placed in the directory <code>/var/log</code>.</p> <p>files <i>number</i>—(Optional) Maximum number of trace files to create before overwriting the oldest one. If you specify a maximum number of files, you also must specify a maximum file size with the size option.</p> <p>Range: 2 through 1000</p> <p>Default: 3 files</p> <p>flag <i>flag</i>—Tracing operation to perform. To specify more than one tracing operation, include multiple flag statements. You can include the following flags:</p> <ul style="list-style-type: none">• all—Trace all operations.• receive—Trace received packets.• receive-detail—Trace received packets in detail.• send—Trace transmitted packets.• send-detail—Trace transmitted packets in detail.• state—Trace Diameter peer state changes.• timeout—Trace timeout events. <p>level—Level of tracing to perform. You can specify any of the following levels:</p> <ul style="list-style-type: none">• all—Match all levels.• error—Match error conditions.• info—Match informational messages.• notice—Match notice messages about conditions requiring special handling.• verbose—Match verbose messages.• warning—Match warning messages.

match *regular-expression*—(Optional) Refine the output to include lines that contain the regular expression.

no-remote-trace—Disable remote tracing.

no-world-readable—(Optional) Disable unrestricted file access.

peer *peer-name*—(Optional) Trace packets sent to or received from the specified peer. The specified peer must be defined at the **[edit access diameter peer]** hierarchy level.

size *maximum-file-size*—(Optional) Maximum size of each trace file. By default, the number entered is treated as bytes. Alternatively, you can include a suffix to the number to indicate kilobytes (KB), megabytes (MB), or gigabytes (GB). If you specify a maximum file size, you also must specify a maximum number of trace files with the **files** option.

Syntax: *sizek* to specify KB, *sizem* to specify MB, or *sizeg* to specify GB

Range: 10240 through 1073741824

Default: 128 KB

world-readable—(Optional) Enable unrestricted file access.

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

Related Documentation

- [diameter \(MobileNext Broadband Gateway\) on page 46](#)
- [Tracing Diameter Operations on page 107](#)

transport (Diameter Base Protocol)

Syntax

```
transport transport-name {
    address address;
    <routing-instance routing-instance-name>;
}
```

Hierarchy Level [edit access diameter]

Release Information Statement introduced in Junos OS Release 12.1W.

Description Configure the Diameter local transport layer connection, which includes the source IP address and routing instance. You can configure up to 31 transport connections.

Options ***transport-name***—Name of the transport.

The remaining statements are explained separately.

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

Related Documentation

- [Configuring the Diameter Transport on page 12](#)
- [diameter \(MobileNext Broadband Gateway\) on page 46](#)

vendor-id

Syntax	<code>vendor-id vendor-id;</code>
Hierarchy Level	[edit access diameter]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the vendor identification that is advertised in the Capabilities-Exchange-Request or Capabilities-Exchange-Answer message.
Options	vendor-id —Vendor identification number that is the advertised value of the Vendor-Id AVP. Default: 2636 Range: 0 through 4294967295
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Advertisements in Diameter Messages on page 15• Configuring Diameter on page 9• diameter (MobileNext Broadband Gateway) on page 46

watchdog-timeout

Syntax	<code>watchdog-timeout seconds;</code>
Hierarchy Level	[edit access diameter peer <i>peer-name</i>]
Release Information	Statement introduced in Junos OS Mobility Release 12.1W.
Description	Configure the amount of time to wait for a Device-Watchdog-Answer message.
Options	seconds —Amount of time to wait. Range: 1 through 65535 seconds Default: 30 seconds
Required Privilege Level	access—To view this statement in the configuration. access-control—To add this statement to the configuration.
Related Documentation	<ul style="list-style-type: none">• Configuring Diameter Peers on page 12• peer (Diameter Base Protocol) on page 64

PART 3

Administration

- [Operational Commands on page 77](#)

CHAPTER 6

Operational Commands

clear unified-edge ggsn-pgw diameter dcca-gy statistics

Syntax	clear unified-edge ggsn-pgw diameter dcca-gy statistics <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Clear all statistics for the Gy application for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then statistics for all GGSNs and P-GWs are cleared.
Options	fpc-slot <i>fpc-slot</i> —(Optional) Clear the statistics for the specified Flexible PIC Concentrator (FPC). gateway <i>gateway-name</i> —(Optional) Clear the statistics for the specified GGSN or P-GW. pic-slot <i>pic-slot</i> —(Optional) Clear the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none">• clear unified-edge ggsn-pgw diameter pcc-gx statistics on page 80• show unified-edge ggsn-pgw diameter dcca-gy statistics on page 82
List of Sample Output	clear unified-edge ggsn-pgw diameter dcca-gy statistics on page 78
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

clear unified-edge
ggsn-pgw diameter
dcca-gy statistics

```
user@host> clear unified-edge ggsn-pgw diameter dcca-gy statistics
```

clear unified-edge ggsn-pgw diameter network-element statistics

Syntax	clear unified-edge ggsn-pgw diameter network-element statistics <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <network-element-name <i>network-element-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Clear the statistics for network elements for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a network element is not specified, then statistics for all network elements are cleared. If a GGSN or P-GW is not specified, then statistics for all GGSNs and P-GWs are cleared.
Options	<p>fpc-slot <i>fpc-slot</i>—(Optional) Clear the statistics for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Clear the statistics for the specified GGSN or P-GW.</p> <p>network-element-name <i>network-element-name</i>—(Optional) Clear the statistics for the specified network element.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Clear the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none"> • show unified-edge ggsn-pgw diameter network-element statistics on page 87
List of Sample Output	clear unified-edge ggsn-pgw diameter network-element statistics on page 79
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

```
clear unified-edge
 ggsn-pgw diameter
 network-element
 statistics
```

```
user@host> clear unified-edge ggsn-pgw diameter network-element statistics
```

clear unified-edge ggsn-pgw diameter pcc-gx statistics

Syntax	clear unified-edge ggsn-pgw diameter pcc-gx statistics <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Clear all statistics for the Gx application for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a GGSN or P-GW is not specified, then statistics for all GGSNs and P-GWs are cleared.
Options	fpc-slot <i>fpc-slot</i> —(Optional) Clear the statistics for the specified Flexible PIC Concentrator (FPC). gateway <i>gateway-name</i> —(Optional) Clear the statistics for the specified GGSN or P-GW. pic-slot <i>pic-slot</i> —(Optional) Clear the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none">• clear unified-edge ggsn-pgw diameter dcca-gy statistics on page 78• show unified-edge ggsn-pgw diameter pcc-gx statistics on page 92
List of Sample Output	clear unified-edge ggsn-pgw diameter pcc-gx statistics on page 80
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

clear unified-edge
ggsn-pgw diameter
pcc-gx statistics

```
user@host> clear unified-edge ggsn-pgw diameter pcc-gx statistics
```

clear unified-edge ggsn-pgw diameter peer statistics

Syntax	clear unified-edge ggsn-pgw diameter peer statistics <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <peer-name <i>peer-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Clear the statistics for Diameter peers for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a peer is not specified, then statistics for all peers are cleared. If a GGSN or P-GW is not specified, then statistics for all GGSNs and P-GWs are cleared.
Options	<p>fpc-slot <i>fpc-slot</i>—(Optional) Clear the statistics for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Clear the statistics for the specified GGSN or P-GW.</p> <p>peer-name <i>peer-name</i>—(Optional) Clear the statistics for the specified peer.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Clear the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	clear, unified-edge
Related Documentation	<ul style="list-style-type: none"> • show unified-edge ggsn-pgw diameter peer statistics on page 97
List of Sample Output	clear unified-edge ggsn-pgw diameter peer statistics on page 81
Output Fields	No message is displayed on successful execution of this command; otherwise an error message is displayed.

Sample Output

```
clear unified-edge
ggsn-pgw diameter
peer statistics
```

```
user@host> clear unified-edge ggsn-pgw diameter peer statistics
```

show unified-edge ggsn-pgw diameter dcca-gy statistics

Syntax	show unified-edge ggsn-pgw diameter dcca-gy statistics <brief detail> <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Display the statistics for the Gy application for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a gateway is not specified, then statistics for all gateways are displayed.
Options	<p>brief detail—(Optional) Display the specified level of output. The brief output is displayed by default.</p> <p>fpc-slot <i>fpc-slot</i>—(Optional) Display the statistics for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Display the statistics for the specified gateway.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Display the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge ggsn-pgw diameter dcca-gy statistics on page 78 • show unified-edge ggsn-pgw diameter pcc-gx statistics on page 92
List of Sample Output	show unified-edge ggsn-pgw diameter dcca-gy statistics on page 85 show unified-edge ggsn-pgw diameter dcca-gy statistics detail on page 85
Output Fields	Table 8 on page 82 lists the output fields for the show unified-edge ggsn-pgw diameter dcca-gy statistics command. Output fields are listed in the approximate order in which they appear.

Table 8: show unified-edge ggsn-pgw diameter dcca-gy statistics Output Fields

Field Name	Field Description	Level of Output
Gateway	Name of the GGSN or P-GW.	All levels
FPC/PIC	FPC and PIC slots for which the statistics are displayed.	detail
Total Sessions	Total number of active sessions.	All levels
Total Sessions Terminated	Total number of terminated sessions.	detail

Table 8: show unified-edge ggsn-pgw diameter dcca-gy statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Internal Errors	Number of internal errors.	detail
Total	<ul style="list-style-type: none"> Requests—Total number of request messages. Answers—Total number of answer messages. 	brief
Credit Control Initial	<ul style="list-style-type: none"> Requests—Number of initial transfer type Credit-Control-Request (CCR) messages. Answers—Number of initial transfer type Credit-Control-Answer (CCA) messages. 	brief
Credit Control Update	<ul style="list-style-type: none"> Requests—Number of update transfer type CCR messages. Answers—Number of update transfer type CCA messages. 	brief
Credit Control Terminate	<ul style="list-style-type: none"> Requests—Number of terminate transfer type CCR messages. Answers—Number of terminate transfer type CCA messages. 	brief
Re-Auth	<ul style="list-style-type: none"> Requests—Number of Re-Auth-Request (RAR) messages. Answers—Number of Re-Auth-Answer (RAA) messages. 	brief
Abort Session	<ul style="list-style-type: none"> Requests—Number of Abort-Session-Request (ASR) messages. Answers—Number of Abort-Session-Answer (ASA) messages. 	brief
Dropped	<ul style="list-style-type: none"> Requests—Number of dropped request messages. Answers—Number of dropped answer messages. 	brief
Requests Transmitted	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCR messages sent. Update—Number of update transfer type CCR messages sent. Terminate—Number of terminate transfer type CCR messages sent. Total—Number of CCR messages sent. 	detail
Request Timeouts	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCR messages that timed out. Update—Number of update transfer type CCR messages that timed out. Terminate—Number of terminate transfer type CCR messages that timed out. Total—Number of CCR messages that timed out. 	detail
Request Discarded	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCR messages sent that were discarded. Update—Number of update transfer type CCR messages sent that were discarded. Terminate—Number of terminate transfer type CCR messages sent that were discarded. Total—Number of CCR messages sent that were discarded. 	detail
Request Tx Timeouts	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCR messages sent that timed out. Update—Number of update transfer type CCR messages sent that timed out. Terminate—Number of terminate transfer type CCR messages sent that timed out. Total—Number of CCR messages sent that timed out. 	detail

Table 8: show unified-edge ggsn-pgw diameter dcca-gy statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Answers Received	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages received. Update—Number of update transfer type CCA messages received. Terminate—Number of terminate transfer type CCA messages received. Total—Number of CCA messages received. 	detail
Answers Dropped	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages dropped. Update—Number of update transfer type CCA messages dropped. Terminate—Number of terminate transfer type CCA messages dropped. Total—Number of CCA messages dropped. 	detail
Answers Parse Errors	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages with parse errors. Update—Number of update transfer type CCA messages with parse errors. Terminate—Number of terminate transfer type CCA messages with parse errors. Total—Number of CCA messages with parse errors. 	detail
Answers with Invalid AVP(s)	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages with invalid AVPs. Update—Number of update transfer type CCA messages with invalid AVPs. Terminate—Number of terminate transfer type CCA messages with invalid AVPs. Total—Number of CCA messages with invalid AVPs. 	detail
Requests Received	<ul style="list-style-type: none"> Re-Auth—Number of RAR messages received. Abort Session—Number of ASR messages received. Total—Number of RAR and ASR messages received. 	detail
Requests Dropped	<ul style="list-style-type: none"> Re-Auth—Number of RAR messages dropped. Abort Session—Number of ASR messages dropped. Total—Number of RAR and ASR messages dropped. 	detail
Requests Parse Errors	<ul style="list-style-type: none"> Re-Auth—Number of RAR messages with parse errors. Abort Session—Number of ASR messages with parse errors. Total—Number of RAR and ASR messages with parse errors. 	detail
Requests with Invalid AVP(s)	<ul style="list-style-type: none"> Re-Auth—Number of RAR messages with invalid AVPs. Abort Session—Number of ASR messages with invalid AVPs. Total—Number of RAR and ASR messages with invalid AVPs. 	detail
Answers Transmitted	<ul style="list-style-type: none"> Re-Auth—Number of RAR messages sent. Abort Session—Number of ASR messages sent. Total—Number of RAR and ASR messages sent. 	detail

Sample Output

`show unified-edge
ggsn-pgw diameter
dcca-gy statistics`

```
user@host> show unified-edge ggsn-pgw diameter dcca-gy statistics
Gateway: PGW
Total Sessions:          0
                        Requests      Answers
-----
Total                    3            2
Credit Control Initial  1            1
Credit Control Update   1            0
Credit Control Terminate 1            1
Re-Auth                  0            0
Abort Session            0            0
Dropped                  0            0
```

`show unified-edge
ggsn-pgw diameter`

```
user@host> show unified-edge ggsn-pgw diameter dcca-gy statistics detail
Gateway: PGW
FPC/PIC: 0/0
```

dcca-gy statistics
detail

Total Sessions: 0
 Total Sessions Terminated: 0
 Internal Errors: 0

Credit Control	Initial	Update	Terminate	Total
----------------	---------	--------	-----------	-------

Requests Transmitted	0	0	0	0
Request Timeouts	0	0	0	0
Request Tx Timeouts	0	0	0	0
Request Discarded	0	0	0	0
Answers Received	0	0	0	0
Answers Dropped	0	0	0	0
Answers Parse Errors	0	0	0	0
Answers with Invalid AVP(s)	0	0	0	0

Server Requests	Re-Auth	Abort Session	Total
-----------------	---------	---------------	-------

Requests Received	0	0	0
Requests Dropped	0	0	0
Requests Parse Errors	0	0	0
Requests with Invalid AVP(s)	0	0	0
Answers Transmitted	0	0	0

Gateway: PGW

FPC/PIC: 0/1

Total Sessions: 1
 Total Sessions Terminated: 1
 Internal Errors: 0

Credit Control	Initial	Update	Terminate	Total
----------------	---------	--------	-----------	-------

Requests Transmitted	1	1	1	3
Request Timeouts	0	1	0	1
Request Tx Timeouts	0	0	0	0
Request Discarded	0	0	0	0
Answers Received	1	0	1	2
Answers Dropped	0	0	0	0
Answers Parse Errors	0	0	0	0
Answers with Invalid AVP(s)	0	0	0	0

Server Requests	Re-Auth	Abort Session	Total
-----------------	---------	---------------	-------

Requests Received	0	0	0
Requests Dropped	0	0	0
Requests Parse Errors	0	0	0
Requests with Invalid AVP(s)	0	0	0
Answers Transmitted	0	0	0

show unified-edge ggsn-pgw diameter network-element statistics

Syntax	show unified-edge ggsn-pgw diameter network-element statistics <brief detail> <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <network-element-name <i>network-element-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Display the statistics for network elements for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a network element is not specified, then statistics for all network elements are displayed. If a gateway is not specified, then statistics for all gateways are displayed.
Options	<p>brief detail—(Optional) Display the specified level of output. The brief output is displayed by default.</p> <p>fpc-slot <i>fpc-slot</i>—(Optional) Display the statistics for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Display the statistics for the specified gateway.</p> <p>network-element-name <i>network-element-name</i>—(Optional) Display the statistics for the specified network element.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Display the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge ggsn-pgw diameter network-element statistics on page 79 • show unified-edge ggsn-pgw diameter network-element status on page 90
List of Sample Output	show unified-edge ggsn-pgw diameter network-element statistics on page 88 show unified-edge ggsn-pgw diameter network-element statistics detail on page 88
Output Fields	Table 9 on page 87 lists the output fields for the show unified-edge ggsn-pgw diameter network-element statistics command. Output fields are listed in the approximate order in which they appear.

Table 9: show unified-edge ggsn-pgw diameter network-element statistics Output Fields

Field Name	Field Description	Level of Output
Name	Name of the network element.	All levels
FPC/PIC	FPC and PIC slot numbers through which the network element was reached.	detail

Table 9: show unified-edge ggsn-pgw diameter network-element statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Packets Received	Number of incoming packets.	All levels
Packets Transmitted	Number of outgoing packets.	All levels
Request Timeouts	Number of request timeouts.	All levels
Credit Control Request Transmitted	Number of outgoing Credit-Control-Request messages.	All levels
Credit Control Answer Received	Number of incoming Credit-Control-Answer messages.	All levels

Sample Output

show unified-edge
ggsn-pgw diameter
network-element
statistics

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

```
Name:   pcrf-dne
Packets Received :      0
Packets Transmitted :    0
Request Timeouts :      0
Credit Control Request Transmitted : 0
Credit Control Answer Received :    0
```

```
Name:   ocs-dne
Packets Received :      3
Packets Transmitted :    4
Request Timeouts :      1
Credit Control Request Transmitted : 4
Credit Control Answer Received :    3
```

show unified-edge
ggsn-pgw diameter

```
user@host> show unified-edge ggsn-pgw diameter network-element statistics detail
```

```
Name :                               pcrf-dne
```

**network-element
statistics detail**

```
FPC/PIC : 0/0
Packets Received : 0
Packets Transmitted : 0
Request Timeouts : 0
Credit Control Request Transmitted : 0
Credit Control Answer Received : 0

FPC/PIC : 0/1
Packets Received : 0
Packets Transmitted : 0
Request Timeouts : 0
Credit Control Request Transmitted : 0
Credit Control Answer Received : 0

Name : ocs-dne
FPC/PIC : 0/0
Packets Received : 0
Packets Transmitted : 0
Request Timeouts : 0
Credit Control Request Transmitted : 0
Credit Control Answer Received : 0

FPC/PIC : 0/1
Packets Received : 3
Packets Transmitted : 4
Request Timeouts : 1
Credit Control Request Transmitted : 4
Credit Control Answer Received : 3
```

show unified-edge ggsn-pgw diameter network-element status

Syntax	show unified-edge ggsn-pgw diameter network-element status <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <network-element-name <i>network-element-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Display the status for one or more Diameter network elements. If a network element is not specified, then status for all network elements is displayed. If a gateway is not specified, then status for all gateways is displayed.
Options	<p>fpc-slot <i>fpc-slot</i>—(Optional) Display the status for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Display the status for the specified gateway.</p> <p>network-element-name <i>network-element-name</i>—(Optional) Display the status for the specified network element.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Display the status for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • show unified-edge ggsn-pgw diameter network-element statistics on page 87
List of Sample Output	show unified-edge ggsn-pgw diameter network-element status on page 91
Output Fields	Table 10 on page 90 lists the output fields for the show unified-edge ggsn-pgw diameter network-element status command. Output fields are listed in the approximate order in which they appear.

Table 10: show unified-edge ggsn-pgw diameter network-element status Output Fields

Field Name	Field Description
DNE	Name of the network element.
Peer	Name of the peer.
FPC/PIC	FPC and PIC slot numbers through which the network element was reached.
Peer State	Current state of the peer. Possible states are: Closed , Closing , I-Open , R-Open , Wait-Conn-Ack , Wait-Conn-Ack/Elect , Wait-I-CEA , and Wait>Returns .
Watchdog State	Peer watchdog status.

Sample Output

`show unified-edge
ggsn-pgw diameter
network-element
status`

```
user@host> show unified-edge ggsn-pgw diameter network-element status
DNE : pcrf-dne
  PEER : pcrf
    FPC/PIC      PEER STATE      WATCHDOG STATE
      0/0        Closed        initial
      0/1        Closed        initial
DNE : ocs-dne
  PEER : ocs
    FPC/PIC      PEER STATE      WATCHDOG STATE
      0/0        I-Open        okay
      0/1        I-Open        okay
```

show unified-edge ggsn-pgw diameter pcc-gx statistics

Syntax	show unified-edge ggsn-pgw diameter pcc-gx statistics <brief detail> <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Display the statistics for the Gx application for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a gateway is not specified, then statistics for all gateways are displayed.
Options	<p>brief detail—(Optional) Display the specified level of output. The brief output is displayed by default.</p> <p>fpc-slot <i>fpc-slot</i>—(Optional) Display the statistics for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Display the statistics for the specified gateway.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Display the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge ggsn-pgw diameter pcc-gx statistics on page 80 • show unified-edge ggsn-pgw diameter dcca-gy statistics on page 82
List of Sample Output	show unified-edge ggsn-pgw diameter pcc-gx statistics on page 95 show unified-edge ggsn-pgw diameter pcc-gx statistics detail on page 95
Output Fields	Table 11 on page 92 lists the output fields for the show unified-edge ggsn-pgw diameter pcc-gx statistics command. Output fields are listed in the approximate order in which they appear.

Table 11: show unified-edge ggsn-pgw diameter pcc-gx statistics Output Fields

Field Name	Field Description	Level of Output
Gateway	Name of the GGSN or P-GW.	All levels
FPC/PIC	FPC and PIC slots for which the statistics are displayed.	detail
Total Sessions	Total number of active sessions.	All levels
Total Sessions Terminated	Total number of terminated sessions.	detail

Table 11: show unified-edge ggsn-pgw diameter pcc-gx statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Internal Errors	Number of internal errors.	detail
Total	<ul style="list-style-type: none"> • Requests—Total number of request messages. • Answers—Total number of answer messages. 	brief
Credit Control Initial	<ul style="list-style-type: none"> • Requests—Number of initial transfer type Credit-Control-Request (CCR) messages. • Answers—Number of initial transfer type Credit-Control-Answer (CCA) messages. 	brief
Credit Control Update	<ul style="list-style-type: none"> • Requests—Number of update transfer type CCR messages. • Answers—Number of update transfer type CCA messages. 	brief
Credit Control Terminate	<ul style="list-style-type: none"> • Requests—Number of terminate transfer type CCR messages. • Answers—Number of terminate transfer type CCA messages. 	brief
Re-Auth	<ul style="list-style-type: none"> • Requests—Number of Re-Auth-Request (RAR) messages. • Answers—Number of Re-Auth-Answer (RAA) messages. 	brief
Dropped	<ul style="list-style-type: none"> • Requests—Number of dropped request messages. • Answers—Number of dropped answer messages. 	brief
Requests Transmitted	<ul style="list-style-type: none"> • Initial—Number of initial transfer type CCR messages sent. • Update—Number of update transfer type CCR messages sent. • Terminate—Number of terminate transfer type CCR messages sent. • Total—Number of CCR messages sent. 	detail
Request Timeouts	<ul style="list-style-type: none"> • Initial—Number of initial transfer type CCR messages that timed out. • Update—Number of update transfer type CCR messages that timed out. • Terminate—Number of terminate transfer type CCR messages that timed out. • Total—Number of CCR messages that timed out. 	detail
Request Tx Timeouts	<ul style="list-style-type: none"> • Initial—Number of initial transfer type CCR messages sent that timed out. • Update—Number of update transfer type CCR messages sent that timed out. • Terminate—Number of terminate transfer type CCR messages sent that timed out. • Total—Number of CCR messages sent that timed out. 	detail
Request Discarded	<ul style="list-style-type: none"> • Initial—Number of initial transfer type CCR messages sent that were discarded. • Update—Number of update transfer type CCR messages sent that were discarded. • Terminate—Number of terminate transfer type CCR messages sent that were discarded. • Total—Number of CCR messages sent that were discarded. 	detail

Table 11: show unified-edge ggsn-pgw diameter pcc-gx statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Answers Received	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages received. Update—Number of update transfer type CCA messages received. Terminate—Number of terminate transfer type CCA messages received. Total—Number of CCA messages received. 	detail
Answers Dropped	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages dropped. Update—Number of update transfer type CCA messages dropped. Terminate—Number of terminate transfer type CCA messages dropped. Total—Number of CCA messages dropped. 	detail
Answers Parse Errors	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages with parse errors. Update—Number of update transfer type CCA messages with parse errors. Terminate—Number of terminate transfer type CCA messages with parse errors. Total—Number of CCA messages with parse errors. 	detail
Answers with Invalid AVP(s)	<ul style="list-style-type: none"> Initial—Number of initial transfer type CCA messages with invalid AVPs. Update—Number of update transfer type CCA messages with invalid AVPs. Terminate—Number of terminate transfer type CCA messages with invalid AVPs. Total—Number of CCA messages with invalid AVPs. 	detail
Requests Received	Number of RAR messages received.	detail
Requests Dropped	Number of RAR messages dropped.	detail
Requests Parse Errors	Number of RAR messages with parse errors.	detail
Requests with Invalid AVP(s)	Number of RAR messages with invalid AVPs.	detail
Answers Transmitted	Number of RAA messages sent.	detail

Sample Output

show unified-edge
ggsn-pgw diameter
pcc-gx statistics

```
user@host> show unified-edge ggsn-pgw diameter pcc-gx statistics
Gateway: PGW
Total Sessions:          0
                        Requests      Answers
-----
Total                    0            0
Credit Control Initial  0            0
Credit Control Update   0            0
Credit Control Terminate 0            0
Re-Auth                  0            0
Dropped                  0            0
```

show unified-edge
ggsn-pgw diameter
pcc-gx statistics detail

```
user@host> show unified-edge ggsn-pgw diameter pcc-gx statistics detail
Gateway: PGW
FPC/PIC: 0/0
Total Sessions:          0
Total Sessions Terminated: 0
Internal Errors:         0

Credit Control          Initial    Update    Terminate    Total
-----
Requests Transmitted    0        0        0            0
Request Timeouts        0        0        0            0
Request Tx Timeouts     0        0        0            0
Request Discarded       0        0        0            0
Answers Received        0        0        0            0
Answers Dropped         0        0        0            0
Answers Parse Errors    0        0        0            0
Answers with Invalid AVP(s) 0        0        0            0

Server Requests          Re-Auth
-----
Requests Received       0
Requests Dropped        0
Requests Parse Errors   0
Requests with Invalid AVP(s) 0
Answers Transmitted     0

Gateway: PGW
FPC/PIC: 0/1
Total Sessions:          0
Total Sessions Terminated: 0
Internal Errors:         0

Credit Control          Initial    Update    Terminate    Total
-----
Requests Transmitted    0        0        0            0
Request Timeouts        0        0        0            0
Request Tx Timeouts     0        0        0            0
Request Discarded       0        0        0            0
Answers Received        0        0        0            0
Answers Dropped         0        0        0            0
Answers Parse Errors    0        0        0            0
```

Answers with Invalid AVP(s)	0	0	0	0
-----------------------------	---	---	---	---

Server Requests	Re-Auth
-----------------	---------

-----	-----
Requests Received	0
Requests Dropped	0
Requests Parse Errors	0
Requests with Invalid AVP(s)	0
Answers Transmitted	0

show unified-edge ggsn-pgw diameter peer statistics

Syntax	show unified-edge ggsn-pgw diameter peer statistics <brief detail> <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <peer-name <i>peer-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Display the statistics for Diameter peers for one or more Gateway GPRS Support Nodes (GGSNs) or Packet Data Network Gateways (P-GWs). If a peer is not specified, then statistics for all Diameter peers are displayed. If a gateway is not specified, then statistics for all gateways are displayed.
Options	<p>brief detail—(Optional) Display the specified level of output. The brief output is displayed by default.</p> <p>fpc-slot <i>fpc-slot</i>—(Optional) Display the statistics for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Display the statistics for the specified gateway.</p> <p>peer-name <i>peer-name</i>—(Optional) Display the statistics for the specified peer.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Display the statistics for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> • clear unified-edge ggsn-pgw diameter peer statistics on page 81 • show unified-edge ggsn-pgw diameter peer status on page 102
List of Sample Output	show unified-edge ggsn-pgw diameter peer statistics on page 100 show unified-edge ggsn-pgw diameter peer statistics detail on page 100
Output Fields	Table 12 on page 97 lists the output fields for the show unified-edge ggsn-pgw diameter peer statistics command. Output fields are listed in the approximate order in which they appear.

Table 12: show unified-edge ggsn-pgw diameter peer statistics Output Fields

Field Name	Field Description	Level of Output
Peer	Name of the peer.	All levels
FPC/PIC	FPC and PIC slot numbers through which the peer was reached.	detail
Request Timeouts	Number of request timeouts.	All levels

Table 12: show unified-edge ggsn-pgw diameter peer statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Request Retransmissions	Number of request retransmissions.	All levels
Redirect Events	Number of redirect events.	detail
Connect Failures	Number of connection failures.	detail
Duplicate Requests	Number of duplicate requests.	detail
Malformed Messages	Number of malformed requests.	detail
Dropped Responses	Number of dropped responses.	detail
Dropped Requests	Number of dropped requests.	detail
Last Disconnect Cause	Number of last disconnect cause messages.	detail
Transport Failures	Number of transport failures.	detail
Unknown Messages	Number of unknown type errors.	detail
High Watermark Hits	Number of times the high watermark is reached.	detail
Low Watermark Hits	Number of times the low watermark is reached.	detail
Device Watchdog Failed	Number of device watchdog failures.	detail
Capabilities Exchange Failures	Number of capabilities exchange failures.	detail
Total Messages	Total number of messages transmitted and received.	All levels
Credit Control Requests	Number of Credit-Control-Request messages transmitted and received.	All levels
Credit Control Answers	Number of Credit-Control-Answer messages transmitted and received.	All levels
Re-Auth Requests	Number of Re-Auth-Request messages transmitted and received.	All levels
Re-Auth Answers	Number of Re-Auth-Answer messages transmitted and received.	All levels
Abort Session Requests	Number of Abort-Session-Request messages transmitted and received.	All levels
Abort Session Answers	Number of Abort-Session-Answer messages transmitted and received.	All levels

Table 12: show unified-edge ggsn-pgw diameter peer statistics Output Fields (*continued*)

Field Name	Field Description	Level of Output
Capability Exchange Requests	Number of Capabilities-Exchange-Request messages transmitted and received.	All levels
Capability Exchange Answers	Number of Capabilities-Exchange-Answer messages transmitted and received.	All levels
Device Watchdog Requests	Number of Device-Watchdog-Request messages transmitted and received.	All levels
Device Watchdog Answers	Number of Device-Watchdog-Answer messages transmitted and received.	All levels
Disconnect Peer Requests	Number of Disconnect-Peer-Request messages transmitted and received.	All levels
Disconnect Peer Answers	Number of Disconnect-Peer-Answer messages transmitted and received.	All levels
Permanent Failures	Number of permanent failure result codes transmitted and received.	detail
Protocol Errors	Number of protocol error result codes transmitted and received.	detail
Transient Failures	Number of transient failure result codes transmitted and received.	detail

Sample Output

show unified-edge
ggsn-pgw diameter
peer statistics

```
user@host> show unified-edge ggsn-pgw diameter peer statistics
Peer: ocs
Request Timeouts:          1
Request Retransmissions:   0
Messages                   Transmitted    Received
-----
Total Messages             6              5
Credit Control Requests   4              0
Credit Control Answers    0              3
Re-Auth Requests          0              0
Re-Auth Answers           0              0
Abort Session Requests     0              0
Abort Session Answers      0              0
Capability Exchange Requests 2              0
Capability Exchange Answers 0              2
Device Watchdog Requests   0              0
Device Watchdog Answers    0              0
Disconnect Peer Requests   0              0
Disconnect Peer Answers    0              0
```

show unified-edge
ggsn-pgw diameter
peer statistics detail

```
user@host> show unified-edge ggsn-pgw diameter peer statistics detail
Peer: ocs
FPC/PIC: 0/0
Request Timeouts:          0
Request Retransmissions:   0
Connect Failures:          0
Duplicate Requests:        0
Malformed Messages:        0
Dropped Responses:         0
Dropped Requests:          0
Last Disconnect Cause:     0
Transport Failures:        0
Unknown Messages:          0
High Watermark Hits:       0
Low Watermark Hits:        0
Device Watchdog Failed:    0
Capabilities Exchange Failures: 0

Messages                   Transmitted    Received
-----
Total Messages             1              1
Credit Control Requests   0              0
Credit Control Answers    0              0
Re-Auth Requests          0              0
Re-Auth Answers           0              0
Abort Session Requests     0              0
Abort Session Answers      0              0
Capability Exchange Requests 1              0
Capability Exchange Answers 0              1
Device Watchdog Requests   0              0
Device Watchdog Answers    0              0
Disconnect Peer Requests   0              0
Disconnect Peer Answers    0              0

Result-Code                Transmitted    Received
-----
Permanent Failures         0              0
```


Protocol Errors	0	0
Transient Failures	0	0

FPC/PIC: 0/1

Request Timeouts:	1
Request Retransmissions:	0
Connect Failures:	0
Duplicate Requests:	0
Malformed Messages:	0
Dropped Responses:	0
Dropped Requests:	0
Last Disconnect Cause:	0
Transport Failures:	0
Unknown Messages:	0
High Watermark Hits:	0
Low Watermark Hits:	0
Device Watchdog Failed:	0
Capabilities Exchange Failures:	0

Messages	Transmitted	Received
Total Messages	5	4
Credit Control Requests	4	0
Credit Control Answers	0	3
Re-Auth Requests	0	0
Re-Auth Answers	0	0
Abort Session Requests	0	0
Abort Session Answers	0	0
Capability Exchange Requests	1	0
Capability Exchange Answers	0	1
Device Watchdog Requests	0	0
Device Watchdog Answers	0	0
Disconnect Peer Requests	0	0
Disconnect Peer Answers	0	0

Result-Code	Transmitted	Received
Permanent Failures	0	0
Protocol Errors	0	0
Transient Failures	0	0

show unified-edge ggsn-pgw diameter peer status

Syntax	show unified-edge ggsn-pgw diameter peer status <brief detail> <fpc-slot <i>fpc-slot</i> > <gateway <i>gateway-name</i> > <peer-name <i>peer-name</i> > <pic-slot <i>pic-slot</i> >
Release Information	Command introduced in Junos OS Mobility Release 12.1W.
Description	Display the status for one or more Diameter peers. If a peer is not specified, then status for all Diameter peers is displayed. If a gateway is not specified, then status for all gateways is displayed.
Options	<p>brief detail—(Optional) Display the specified level of output. The brief output is displayed by default.</p> <p>fpc-slot <i>fpc-slot</i>—(Optional) Display the status for the specified Flexible PIC Concentrator (FPC).</p> <p>gateway <i>gateway-name</i>—(Optional) Display the status for the specified gateway.</p> <p>peer-name <i>peer-name</i>—(Optional) Display the status for the specified peer.</p> <p>pic-slot <i>pic-slot</i>—(Optional) Display the status for the specified PIC slot number. You must first specify an FPC slot number before specifying the PIC slot number.</p>
Required Privilege Level	view
Related Documentation	<ul style="list-style-type: none"> show unified-edge ggsn-pgw diameter peer statistics on page 97
List of Sample Output	show unified-edge ggsn-pgw diameter peer status on page 104 show unified-edge ggsn-pgw diameter peer status detail on page 104
Output Fields	Table 13 on page 102 lists the output fields for the show unified-edge ggsn-pgw diameter peer status command. Output fields are listed in the approximate order in which they appear.

Table 13: show unified-edge ggsn-pgw diameter peer status Output Fields

Field Name	Field Description	Level of Output
Name	Name of the peer. For the brief output, the name is truncated if it exceeds 11 characters.	All levels
FPC/PIC	FPC and PIC slot numbers through which the peer was reached.	All levels
Address	IP address of the Diameter peer.	brief

Table 13: show unified-edge ggsn-pgw diameter peer status Output Fields (*continued*)

Field Name	Field Description	Level of Output
Port	Port number of the Diameter peer.	brief
State	Current state of the Diameter peer. Possible states are: Closed , Closing , I-Open , R-Open , Wait-Conn-Ack , Wait-Conn-Ack/Elect , Wait-I-CEA , and Wait>Returns . For the brief output, the state is truncated if it exceeds 11 characters.	All levels
Duration State Duration	Duration for which the Diameter peer has been in the current state.	brief detail
Watchdog Watchdog State	Peer watchdog status.	brief detail
Origin Host	Diameter Origin-Host.	detail
Origin Realm	Diameter Origin-Realm.	detail
Peer Address	IP address of the Diameter peer.	detail
Peer port	Port number of the Diameter peer.	detail
Source Address	Local source IP address used to connect to the peer.	detail
Source Port	Local source port number used to connect to the peer.	detail

Sample Output

show unified-edge
ggsn-pgw diameter
peer status

```
user@host> show unified-edge ggsn-pgw diameter peer status
Name      FPC/PIC  Address    Port    State      Duration  Watchdog
p_jpkt1   4/0      123.3.3.2  3868    Closed     00:00:00  initial
p_jpkt1   4/1      123.3.3.2  3868    Closed     00:00:00  initial
p_jpkt1   5/0      123.3.3.2  3868    Wait-Conn-A 00:00:00  initial
abcbcabcab 4/0      123.3.3.2  3868    Closed     00:00:00  initial
abcbcabcab 4/1      123.3.3.2  3868    Closed     00:00:00  initial
abcbcabcab 5/0      123.3.3.2  3868    Wait-Conn-A 00:00:00  initial
```

show unified-edge
ggsn-pgw diameter
peer status detail

```
user@host> show unified-edge ggsn-pgw diameter peer status detail
Diameter Peer Status
Name : ocs
  FPC/PIC      : 0/0
  State        : I-Open
  State Duration : 00:00:00
  Watchdog State : okay
  Origin Host   : host5
  Origin Realm  : juniper.net
  Peer Address  : 55.1.1.2
  Peer port     : 3868
  Source Address : 4.1.1.1
  Source Port   : 30965
Name : ocs
  FPC/PIC      : 0/1
  State        : I-Open
  State Duration : 00:00:00
  Watchdog State : okay
  Origin Host   : host5
  Origin Realm  : juniper.net
  Peer Address  : 55.1.1.2
  Peer port     : 3868
  Source Address : 4.1.1.1
  Source Port   : 30709
Name : pcrf
  FPC/PIC      : 0/0
  State        : Closed
  State Duration : 00:00:00
  Watchdog State : initial
  Peer Address  : 56.1.1.2
  Peer port     : 3868
  Source Address : 4.1.1.1
  Source Port   : 0
Name : pcrf
  FPC/PIC      : 0/1
  State        : Closed
  State Duration : 00:00:00
  Watchdog State : initial
  Peer Address  : 56.1.1.2
  Peer port     : 3868
  Source Address : 4.1.1.1
  Source Port   : 0
```

PART 4

Troubleshooting

- [Acquiring Troubleshooting Information on page 107](#)

CHAPTER 7

Acquiring Troubleshooting Information

- [Tracing Diameter Operations on page 107](#)

Tracing Diameter Operations

Tracing operations track Diameter operations and record them in a log file. The error descriptions captured in the log file provide detailed information to help you solve problems.

All log files are located in the `/var/log` directory. You cannot change the directory in which trace files are located. When the trace file reaches its maximum size, a `.0` is appended to the filename, then a new file is created with a `.1`, and finally a `.2`. When the maximum number of trace files is reached, the oldest trace file is overwritten.



NOTE: You should use care when tracing Diameter operations because it can have a performance impact.

To configure tracing operations:

1. Specify that you want to configure tracing options for Diameter operations.

[edit]

user@host# **edit access diameter traceoptions**

2. (Optional) Configure the name for the file used for the trace output.
3. (Optional) Configure flags to filter the operations to be logged.
4. (Optional) Configure the peer for which you want to trace packets.

The Diameter traceoptions configuration tasks are described in the following topics:

- [Configuring the Trace Log Filename on page 108](#)
- [Configuring the Tracing Flags on page 108](#)
- [Configuring Tracing for a Diameter Peer on page 108](#)

Configuring the Trace Log Filename

By default, the name of the file that records trace output for Diameter operations is **diameter**. You can specify a different name with the **file** option to distinguish trace output for different session Dense Port Concentrators (DPCs).

To configure the filename for Diameter tracing operations:

- Specify the name of the file used for the trace output.

```
[edit access diameter traceoptions]  
user@host# set file filename
```

Configuring the Tracing Flags

To configure the flags for the events to be logged:

- Configure the flags.

```
[edit access diameter traceoptions]  
user@host# set flag flag
```

By default, only important events are logged. You can specify which trace operations are logged by including specific tracing flags. [Table 14 on page 108](#) describes the flags that you can include.

Table 14: Diameter Tracing Flags

Flag	Description
all	Trace all operations
receive	Trace received packets
receive-detail	Trace received packets in detail
send	Trace transmitted packets
send-detail	Trace transmitted packets in detail
state	Trace Diameter peer state changes
timeout	Trace timeout events

Configuring Tracing for a Diameter Peer

To configure the peer for which packets are traced:

- Configure the peer.

```
[edit access diameter traceoptions]  
user@host# set peer peer-name
```


Related Documentation • [Configuring Diameter on page 9](#)

PART 5

Index

- [Index on page 113](#)

Index

Symbols

#, comments in configuration statements.....	xi
(), in syntax descriptions.....	xi
< >, in syntax descriptions.....	x
[], in configuration statements.....	xi
{ }, in configuration statements.....	xi
(pipe), in syntax descriptions.....	xi

A

AAA	
with Diameter base protocol.....	3
address statement	
Diameter base protocol	
peer.....	40
transport.....	40
applications statement	
Diameter.....	41
attributes statement	
Diameter Gx profiles.....	42
Diameter Gy profiles.....	43

B

binding	
configuring Diameter.....	21
braces, in configuration statements.....	xi
brackets	
angle, in syntax descriptions.....	x
square, in configuration statements.....	xi

C

clear unified-edge ggsn-pgw diameter dcca-gy	
statistics command.....	78
clear unified-edge ggsn-pgw diameter	
network-element statistics command.....	79
clear unified-edge ggsn-pgw diameter pcc-gx	
statistics command.....	80
clear unified-edge ggsn-pgw diameter peer	
statistics command.....	81
comments, in configuration statements.....	xi
connect-actively statement	
Diameter base protocol.....	44

conventions	
text and syntax.....	x
curly braces, in configuration statements.....	xi
customer support.....	xi
contacting JTAC.....	xi

D

Diameter applications	
Diameter AVPs, configuring.....	17, 19
parameter configuration.....	15
Diameter AVPs	
for Gx applications, configuring.....	19
for Gy applications, configuring.....	17
Diameter base protocol.....	3
binding configuration.....	21
event logging.....	107
flags for tracing operations.....	108
log filenames for tracing operations.....	108
network element configuration.....	14
origin attribute configuration.....	11
peer configuration.....	12
peers for tracing operations.....	108
tracing operations.....	107
transport configuration.....	12
Diameter base protocol statements	
address	
peer.....	40
transport.....	40
connect-actively.....	44
disconnect-peer-timeout.....	50
firmware-revision.....	53
function	
network element.....	54
host.....	57
incoming-queue.....	59
network-element.....	60
origin.....	62
outgoing-queue.....	63
peer	
network element.....	65
remote.....	64
priority.....	66
product-name.....	66
realm.....	67
routing-instance	
transport.....	68
timeout.....	71
traceoptions.....	72

transport	
local.....	73
vendor-id.....	74
watchdog-timeout.....	74
Diameter profile statements	
diameter-profiles.....	48
gx-profile.....	55
gy-profile.....	56
request-timeout.....	67
targets.....	70
Diameter profiles	
configuring.....	16
Diameter AVPs, configuring.....	17, 19
overview.....	4
diameter statement.....	45
diameter-profiles statement	
Diameter profile.....	48
disconnect-peer-timeout statement	
Diameter base protocol.....	50
documentation	
comments on.....	xi
dynamic policies	
Diameter AVPs, configuring.....	19
E	
edit access diameter statement hierarchy.....	37
edit unified-edge diameter-profiles statement	
hierarchy.....	38
example	
Diameter configuration.....	23, 31
exclude statement	
Diameter Gx profiles.....	51
Diameter Gy profiles.....	52
F	
firmware-revision statement	
Diameter base protocol.....	53
font conventions.....	x
function statement	
Diameter base protocol	
network element.....	54
G	
gx-profile statement	
Diameter profile.....	55
gy-profile statement	
Diameter profile.....	56

H	
host statement	
Diameter base protocol.....	57
I	
include statement	
Diameter Gx profiles.....	57
Diameter Gy profiles.....	58
incoming-queue statement	
Diameter base protocol.....	59
L	
log files	
configuring Diameter base protocol trace.....	107
M	
manuals	
comments on.....	xi
maximum-pending-requests statement	
Diameter.....	59
N	
network element	
configuring Diameter.....	14
network-element statement	
Diameter.....	61
Diameter base protocol.....	60
O	
online charging	
Diameter AVPs, configuring.....	17
origin attributes	
configuring Diameter endpoint.....	11
origin statement	
Diameter base protocol.....	62
outgoing-queue statement	
Diameter base protocol.....	63
P	
parentheses, in syntax descriptions.....	xi
PCEF profile for dynamic policies	
Diameter AVPs, configuring.....	19
peer	
configuring Diameter.....	12
peer statement	
Diameter base protocol	
network element.....	65
remote peer.....	64

priority statement
 Diameter base protocol
 network element.....66

product-name statement
 Diameter base protocol.....66

R

realm statement
 Diameter base protocol.....67

request-timeout statement
 Diameter profile.....67

routing-instance statement
 Diameter base protocol
 transport.....68

S

session-pics statement
 Diameter.....69

show unified-edge ggsn-pgw diameter dcca-gy
 statistics command.....82

show unified-edge ggsn-pgw diameter
 network-element statistics command.....87

show unified-edge ggsn-pgw diameter
 network-element status command.....90

show unified-edge ggsn-pgw diameter pcc-gx
 statistics command.....92

show unified-edge ggsn-pgw diameter peer
 statistics command.....97

show unified-edge ggsn-pgw diameter peer status
 command.....102

support, technical See technical support

syntax conventions.....x

T

targets statement
 Diameter profile.....70

technical support
 contacting JTAC.....xi

timeout statement
 Diameter base protocol.....71

traceoptions statement
 Diameter base protocol.....72

tracing operations
 Diameter base protocol.....107

transport
 configuring Diameter.....12

transport statement
 Diameter base protocol
 local.....73

V

vendor-id statement
 Diameter base protocol.....74

W

watchdog-timeout statement
 Diameter base protocol.....74

