

Ratio-based Load Distribution

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Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	P-GW
Applicable Platform(s)	ASR 5500
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	• *AAA Interface Administration and Reference* • *Command Line Interface Reference*

Revision History

Revision Details	**Release**
First introduced.	21.4

Feature Description

The Ratio-based Load Distribution feature provides a CLI-controlled mechanism to enable ratio-based session binding distribution among Diameter peers in an endpoint. You can configure ratios for each peer based on their capacity of load.

How It Works

Following is a brief overview of how Ratio-based Load Distribution feature works:

- The new **load-ratio** keyword in **peer** CLI command under Diameter Endpoint Configuration Mode allows to configure Load Ratio for an individual peer. The configurable Load Ratio is in the range of 0-65535.
- Configuring 0 (zero) Load Ratio exempts the peer from having a share in binding sessions. Configuring 0 Load Ratio for all the peers in an endpoint effectively disables the usage of the endpoint, while keeping the peers open and ready. This prevents set-up of calls if the calls require Diameter authentication or authorization.
- If no peers have Load Ratio configured, Diameter binds new sessions in a round robin manner, which is the existing behavior.
- If Dynamic Peer Discovery (DPD) peers are added to the endpoint using ratio-based load balancing, then SeRVice Record (SRV) weight of DPD peers is used as Load Ratio.



Important For the feature to be active, an open peer with non-default Load Ratio value is required.

- If the application chooses the peer as per its own load balancing configuration, then ratio-based load balancing will not be active. For example:
  - If Gy selects peer with **diameter peer-select** CLI command (under Credit Control Configuration Mode), it will have precedence over the ratio-based selection.
  - The Gx interface has **diameter host-select row-precedence** and **diameter host-select-template** CLI commands (under Policy Control Configuration Mode) which will choose peers from the application. To override this behavior and to activate the ratio-based peer selection, both the host-select CLI commands should not be configured. However, the **endpoint-peer-select** CLI command (under Policy Control Configuration Mode) has to be enabled.
- If the endpoint has multiple realms, the selection will match a peer which has the same realm as the session-chosen realm.

Configuring Ratio-based Load Distribution

This section provides information about the CLI commands available in support of the feature.

Enabling Load Ratio

Use the following commands under the Diameter Endpoint Configuration Mode to enable Diameter-based peer load balancing, by defining relative Load Ratios in peer configuration.

```
configure
  context context_name
```

```
diameter endpoint endpoint_name
  peer [*] peer_name [*] [ realm realm_name ] { address { ipv4_address |
ipv6_address } [ load-ratio load_ratio_range ]
  end
```

Notes:

- **peer**: This command specifies a peer address for the Diameter endpoint.
- **[*]** *peer_name* **[*]** : Specifies the peer's name as an alphanumeric string of 1 through 63 characters that allows punctuation characters. The Diameter server endpoint can be a wildcarded peer name (with * as a valid wildcard character). Client peers which satisfy the wild-carded pattern are treated as valid peers and the connection will be accepted. The wildcarded token indicates that the peer name is wildcarded and any '*' in the preceding string is treated as a wildcard.
- **realm** *realm_name*: Specifies the realm of this peer as an alphanumeric string of 1 through 127 characters. The realm name can be a company or service name.
- **address {** *ipv4_address* **|** *ipv6_address* **}**: Specifies the Diameter peer IP address in IPv4 dotted-decimal or IPv6 colon-separated-hexadecimal notation. This address must be the IP address of the device with which the chassis is communicating.
- **load-ratio** *load_ratio_range*: Specifies the Load Ratio for the peer. The Load Ratio can be configured in the range of 0 through 65535.
- As a default behavior, the CLI command is not enabled for a peer and the default Load Ratio is 1, which will be used in load balancing only when at least one peer has non-default Load Ratio configured.
- Not specifying the **load-ratio** *load_ratio_range* keyword from peer configuration will put the peer in default Load Ratio, and when all the peers have default Load Ratio, Diameter load balancing will be round robin.
- The CLI takes effect when Diameter application starts using an endpoint for sending messages.

Monitoring and Troubleshooting the Ratio-based Load Distribution

This section describes the CLI commands available to monitor and/or troubleshoot the feature.

Show Commands and/or Outputs

The output of the following CLI commands has been enhanced in support of the feature.

show configuration

The output of this command has been modified to display the following:

```
show configuration
config
  context ingress
    diameter endpoint st16.starentnetworks.com
      peer gx1 realm starentnetworks.com address 192.10.2.1 load-ratio 2
      peer gx2 realm starentnetworks.com address 192.10.2.2 load-ratio 10
```

```
      peer gx3 realm starentnetworks.com address 192.10.2.3 load-ratio 0
         peer gx4 realm starentnetworks.com address 192.10.2.3
```

show configuration verbose

The output of this command has been modified to display the following:

```
show configuration verbose
config
  context ingress
    diameter endpoint st16.starentnetworks.com
      peer gx1 realm starentnetworks.com address 192.10.2.1 load-ratio 2
      peer gx2 realm starentnetworks.com address 192.10.2.2 load-ratio 10
      peer gx3 realm starentnetworks.com address 192.10.2.3 load-ratio 0
         peer gx4 realm starentnetworks.com address 192.10.2.3 load-ratio 1
```