



# 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	<ul style="list-style-type: none"><li>• <i>AAA Interface Administration and Reference</i></li><li>• <i>Command Line Interface Reference</i></li></ul>

### 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.




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

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- 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
```