

UDPC2 Support for MME/SGSN

This chapter includes the following topics:

- Feature Description, on page 1
- How It Works, on page 2
- Configuring MME/SGSN Support on UDPC2, on page 4

Feature Description

The MME and SGSN support the UDPC2 hardware. The maximum number of MME managers supported per chassis on Cisco ASR 5500 with DPC is 24, to support UDPC2 on ASR 5500 the maximum number of MME managers have been increased to 36.

The CLI command **task facility mmemgr per-sesscard-density { high | normal }** under the Global Configuration mode is used to configure the density (number of MME managers) of MME managers per session card. The disadvantage of this command is that it does not allow configuration of specific number of MME managers per card, but allows the operator to configure only high or normal density. This CLI is deprecated and new CLI commands are introduced to provide the operator with more flexibility to configure number of MME managers per active session cards (or per active session VM in case of VPC) and the total number of MME managers. The MME managers are now moved to Non-Demux card, therefore the number of managers depends on the number of session cards per chassis. The new CLI command enables the operator to spawn the maximum or desired number of MME managers even when the chassis is not fully loaded on the ASR 5500 platform. For VPC DI the operator can restrict max number of MME managers per chassis, if operator desires to scale with more session VMs without requiring additional MME managers.

In UDPC2, the number of Session Managers in ASR 5500 is increased from 336 to 1008.

Note The StarOS does not support ASR 5500 deployment with mixed usage of DPC and DPC2 cards. All session cards in one ASR 5500 have to be of the same type.

Note All product specific limits, capacity and performance, will remain same as compared to ASR 5500 with DPC.

MME Scaling on DPC2 to 2xDPC

This feature enhancement provides improved CEPS (Call Events Per Second) and session capacity utilization for MME/SGSN on the ASR 5500 DPC2 platform. It is observed that the current MME/SGSN deployments limit the maximum session/subscriber capacity utilization as the CPU reaches its maximum threshold for some proclets though sufficient memory is available in the system and in the proclet for additional sessions/subscribers. With this enhancement, the session utilization capacity is doubled (2X) on the ASR 5500 DPC2 platform for a specific call model.

This feature has increased the limits for the following MME/SGSN specific proclets on ASR 5500 DPC2 platform:

- The maximum number of MME managers per chassis has been increased to "48" on ASR 5500 DPC2 platform.
- The maximum number of MME managers per Non-Demux card has been increased to "8" on ASR 5500 DPC2 platform.
- The maximum number of IMSI managers per Demux card has been increased to "8" on ASR 5500 DPC2 platform.

MMEMGR Scaling on DPC

In this feature enhancement, the load on the MME managers are distributed widely with the increase in the number of MME managers. This enhancement is most likely seen in a standalone MME deployment, where the difference in the usage of MME manager CPU and Session Manager CPU is apparent.

This feature has increased the limits of the following MME/SGSN proclets on the ASR 5500 DPC Platform:

- The maximum number of MME managers per chassis has been increased to "36" on the ASR 5500 DPC platform.

How It Works

The number of MME managers for a platform is predefined and not configurable. The operator can now configure the desired number of MME managers defined for each platform. The **task facility mmemgr max** *value* CLI command is introduced to configure the number of MME managers. If the operator does not configure the desired number of MME managers, a default number of predefined MME managers will be configured on the chassis.



Note After you configure the **task facility mmemgr max** command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

The table below depicts the default and maximum number of MME managers per chassis for each platform:

Platform	Default number of MME Managers per chassis	Maximum number of MME Managers per chassis
ASR 5500 with DPC	24	36 For releases prior to 21.1: 24
ASR 5500 with DPC2	48 For releases prior to 21.0: 36	48 For releases prior to 21.0: 36
SSI MEDIUM/LARGE	2	2
SSI SMALL	1	1
SCALE MEDIUM/LARGE	24	48 For releases prior to 20.0: 24

The number of MME managers for a session card could be configured based only on the density per session card/VM. With the introduction of the **task facility mmemgr per-sesscard-count** *number* CLI command, the operator can now configure the number of MME managers per session card. If the operator does not configure the desired number of MME managers per session card, a default number of MME managers will be spawned on the session card.



Note After you configure the **task facility mmemgr per-sesscard-count** command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

The table below depicts the default and maximum number of MME managers configurable per session card for different platforms/cards:

Platform	Default number of MME Managers per session card	Maximum number of MME Managers per session card
ASR 5500 with DPC	4	6
ASR 5500 with DPC2	8 For releases prior to 21.0: 6	8 For releases prior to 21.0: 6
SSI MEDIUM/LARGE	2	2
SSI SMALL	1	1
SCALE MEDIUM/LARGE	1	2

Configuring the number of MME managers helps to scale the number of eNodeB connections.The maximum number of eNodeB connections supported by MME is 128K per ASR 5500 chassis. Having more number of MME managers ensures better CPU utilization, load balancing across MME managers and improved message communication between session managers and MME managers.

Configuring MME/SGSN Support on UDPC2

This section describes how to configure the required number of MME managers per session card and the desired number of MME managers per chassis.

Configuring MME Managers per Session Card

When an operator using this configuration command this CLI is mapped to a new CLI command **task facility mmemgr per-sesscard-count** *count*.

This CLI command is deprecated as it does not allow the operator to configure the required number of MME managers per session card. This command only allows two predefined modes of either "high" or "normal" density.

```
configure
   task facility mmemgr per-sesscard-density { high | normal }
   end
```

The following CLI command is introduced to configure the desired number of MME managers per session card:

```
configure
   task facility mmemgr per-sesscard-count count
   default task facility mmemgr per-sesscard-count
   end
```



Note After you configure the **task facility mmemgr per-sesscard-count** command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

NOTES:

- The maximum number of MME managers that can be configured per session card varies based on the platform/VM and card type.
- This command is not specific to any platform or card type. It is applicable and available to all platforms and card types.
- The **default** keyword resets the number MME managers per session card to the default number of MME managers per session card/VM. By default this CLI is not configured. When this CLI is not configured, the default number of MME managers per session card will be selected based on platform and card type. The default values are listed below:

Platform/VM and card type	Default number of MME managers per session card
ASR 5500 DPC	4

Platform/VM and card type	Default number of MME managers per session card
ASR 5500 DPC2	8 **Note** Releases prior to 21.0, the default number of MME managers per session card supported was only "6".
SSI MEDIUM/LARGE	2
SSI SMALL	1
SCALE LARGE/MEDIUM	1

- The **per-sesscard-count** *count* keyword is used to set the maximum number of MME managers per session card. *count* must be an integer ranging from 1 to 6.

  The maximum number of MME managers allowed per session card based on the platform/VM and card type is listed below:

Platform/VM and card type	Maximum number of MME managers per session card
ASR 5500 DPC	6
ASR 5500 DPC2	8 For releases prior to 21.0: 6
SSI MEDIUM/LARGE	2
SSI SMALL	1
SCALE LARGE/MEDIUM	2

Usage Example

Listed below is an example where 3 MME managers are configured per session card on an ASR 5500 platform with DPC2 card:

task facility mmemgr per-sesscard-count 3

Listed below is an example where default number of MME managers configured per session card on an ASR 5500 platform with DPC card:

default task facility mmemgr per-sesscard-count

Configuring MME Managers per Chassis

The following CLI command is introduced to configure the desired number of MME managers per chassis:

```
configure
   task facility mmemgr max value
   default task facility mmemgr max
   end
```



Note After you configure the **task facility mmemgr max** command, you must save the configuration and then reload the chassis for the command to take effect. For information on saving the configuration file and reloading the chassis, refer to the *System Administration Guide* for your deployment.

NOTES:

- The maximum number of MME managers that can be configured per chassis varies based on the platform. However, the upper limit of MME managers per chassis is set to 48.
- This CLI is not configured by default. The **default** keyword resets the number of MME managers per chassis to the default values. The default values are listed below:

Platform/VM and card type	Default number of MME managers per chassis
ASR 5500 DPC	24
ASR 5500 DPC2	48 **Note** For releases prior to 21.0 the default number of MME managers per chassis was “36”.
SSI MEDIUM/LARGE	1
SSI SMALL	1
VPC-DI or SCALE LARGE/MEDIUM	24

- The keyword **max** *value* keyword is used to set the maximum number of MME managers per chassis. *value* must be an integer ranging from 1 to 48.

  The maximum number of MME managers allowed per chassis based on the platform/VM and card type is listed below:

Platform/VM and card type	Maximum number of MME managers per chassis
ASR 5500 DPC	36 For releases prior to 21.1: 24
ASR 5500 DPC2	48 For releases prior to 21.0: 36
SSI MEDIUM/LARGE	2
SSI SMALL	1
VPC-DI or SCALE LARGE/MEDIUM	48

Usage Example

Listed below is an example where 5 MME managers are configured per chassis on an ASR 5500 platform with DPC2 card:

task facility mmemgr max 5

Listed below is an example where default number of MME managers configured per chassis on an ASR 5500 platform with DPC card:

default task facility mmemgr max

Verifying the Configuration

The **show configuration** command is used to verify the configuration of this feature. The output displays the configured values of number of MME managers per chassis or number of MME managers per session card.

If "5" MME managers are configured per chassis the following output is displayed on issuing the **show configuration** command:

task facility mmemgr max 5

If "2" MME managers are configured per session card the following output is displayed on issuing the show configuration command:

task facility mmemgr per-sesscard-count 2