

MBR Short Circuit Optimization

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Feature Summary and Revision History

Summary Data

Applicable Product(s) or Functional Area	SMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 1: Revision History

Revision Details	Release
Introductory release.	2021.02.x

Feature Description

Generating the Modify Bearer Response message at gtpc-ep pod is called MBR short circuit. SMF now generates Modify Bearer Response messages at gtpc-ep pod to limit the impact of processing Modify Bearer

Request sending Modify Bearer Response message (Modify Bearer Response) with success cause at the smf-service pods. The Modify Bearer Response messages are generated at gtpc-ep pod.

How it Works



Important The CEPS optimization with GTPv2 CEPs works only with System mode shutdown and restart. It is not recommended to use this with Rolling Software Update as it may lead to system inconsistency.

Cache

At the udp-proxy pod, a cache is maintained. This cache contains entries corresponding to sessions that require GTP protocol for interaction with other nodes in network. Each cache entry is mapped to TEID assigned to the corresponding session by SMF. The cache entry contains details remote session TEID, EBI, TEID allocated by SMF and last sequence number.

There is a limit on the number of cache entries that can be added in the cache. The limit is around a million cache entries. Stale(cache entries that are not used for an hour) cache entries are periodically removed from the cache.

Short Circuit

On receiving an incoming UDP packet, SMF identifies if the message is a request message. It lookups the cache to see if there is corresponding cache entry present.

If the cache entry is present and the request is MBR and if it short circuited, then MBR response is generated without full processing.

The conditions for short circuiting MBR are as follows:

- MBR comprising of only Serving Network IE
- MBR comprising of Serving Network IE and Bearer Context with EBI only
- MBR comprising of Serving Network IE and Indication IE with other than HO (Handover) bit set

Limitations

MBR Short Circuit feature has the following limitations:

- For WiFi Session, SMF doesn’t create cache entry.
- For 4G to 5G HO, SMF is unable to clean up the Cache-Entry and leave a stale entry, then the entry is deleted automatically after cache-entry timeout.
- SMF supports maximum of one million entries and maximum of 60 min cache-entry timeout. Cache entry is removed if there are no access to it.

MBR Short Circuit Optimization Support

This section describes the operations, administration, and maintenance information for this feature.

Statistics

Following statistics support MBR Short Circuit feature:

- gtpc_msg_short_circuit_stats - Captures number of messages short circuited. Displays if the message is skipped or short circuited along with the condition that message was short circuited.
- gtpc_short_circuit_map_count – Captures number of entries added/deleted/updated in the cache. Displays addition entries from the deleted entries and the update entries separately.
- smf_service_gtpc_cache_stats – Captures number of cache-entries sent from Smf-Service with operations added/deleted. Displays each cache-entry with procedure-type, message-type, operation (added/deleted).