



# GTPC Peer Record and Statistic Optimization

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## Feature Summary and Revision History

### Summary Data

Applicable Product(s) or Functional Area	<ul style="list-style-type: none"> <li>• P-GW</li> <li>• SAEGW</li> <li>• S-GW</li> </ul>
Applicable Platform(s)	<ul style="list-style-type: none"> <li>• ASR 5500</li> <li>• VPC-SI</li> <li>• VPC-DI</li> </ul>
Feature Default	Disabled - Configuration Required
Related Changes in This Release	Not Applicable
Related Documentation	<ul style="list-style-type: none"> <li>• <i>Command Line Interface Reference</i></li> <li>• <i>ECS Administration Guide</i></li> </ul>

### Revision History

Revision Details	Release
First introduced.	21.4.2

## Feature Description

When the Gateway receives the first GTPC message from a peer, the new peer record entry is added to the Session Manager and Demux. This new peer record entry is also propagated to all Session Managers. This occurs even if a particular GTPC peer does not have any active sessions. This causes accumulation of inactive peer records objects, which results in excess memory usage of the Session Manager and Demux, thereby causing memory overrun of affected procllets. To address this limitation, a new keyword, **peer-salvation** has been added to the existing **gtpc** CLI in the Context Configuration mode.

When enabled, this keyword supports the following behavior:

1. When a peer goes inactive with zero number of active sessions, the timestamp is stored at that peer record object and a peer record is inserted into the inactive peer list.
2. If any new session gets added to inactive peer, the timestamp is reset to zero and the peer record entry is removed from the inactive peer list to avoid salvation of the reactivated peer.
3. A one-hour timeout is set per egtpmgr instance level that gets disabled when the keyword is disabled at the context level.
4. Separate salvation timers run for egtpinmgr and egtpegmgr.
5. By default, (when keyword is not enabled) salvation timer does not run to minimize the memory and CPU impact.



### Important

- When the **peer-salvation** keyword is enabled at the context level, but not enabled at egtp-service level, then peer salvation does not occur.
- All the information (peer statistics/recovery counter and so on) of the particular peer is lost after it is salvaged.
- The context level configuration is applied to egtpinmgr and egtpegmgr separately.
- The **min-peers** value should be applied judiciously to ensure that the Session Manager in a fully loaded chassis does not go into warn/over state with many peer records. If the Session Manager goes into a warn/over state, then it is recommended to configure a lesser value for **min-peers** to ensure that the peers are salvaged.
- **min-peers** configuration is not considered during a new peer creation.
- Only peers with zero number of sessions are salvaged for the configured timeout value. Non-zero number of sessions is not salvaged even if there are few.

### Demux Session Recover Scenario

When Demux procllet crashes or restarts, all the information related to all the inactive peers is cleared in the procllet and is not added again during the session recovery of Demux. These inactive peer records accumulated on the Demux-serving Session Managers might not get salvaged. The peer salvation functionality reconstructs the inactive peer list a the recovered Demux. The last activity timeout for the inactive peers is set to the timestamp of Demux recovery, thereby, allowing Demux to work even after Demux recovery.

### Demux Inter-Chassis Session Recovery Scenario

The **peer-salvation** keyword can be configured on the Active and Standby chassis. When configured, it can even salvage the inactive peers accumulated on the Standby chassis.

### Session Manager Session Recovery/ICSR Scenario

Configuring the **peer-salvation** keyword does not impact the Session Manager recovery or ICSR and vice-versa.

## Configuring the Peer Salvation Functionality

The following section provides the configuration commands to enable or disable the feature.

### gtpc peer-salvation (context configuration mode)

Use this command to enable peer salvation for inactive GTPv2 peers for EGTP services in this context. The **peer-salvation** keyword is introduced in the Context Configuration mode. Minimum peers and timeout values can be provided with this CLI, which is per `egtpmgr` (separate for `egtpinmgr` and `egtpemgr`) and across all the `egtp-services` configured in that context.

To configure **peer-salvation** in the Context Configuration mode, enter the following commands:

```
configure
context context_name
  [ no ] gtpc peer-salvation min-peers value timeout value
end
```

#### NOTES:

- **no**: Disables peer salvation at the context level.
- **peer-salvation**: Enables peer salvation for inactive GTPv2 peers for EGTP services in this context.
- **min-peers value**: Configures the minimum number of accumulated GTPv2 peers across all EGTP services to start salvaging the inactive peers. The value ranges from 2000 to 12000.
- **timeout value**: Configures the peer salvation timeout. The peer that is inactive for salvation time is salvaged, specified in hours. The value ranges from 1 to 48 hours.
- This command is disabled by default.

### gtpc peer-salvation (eGTP service configuration mode)

Use this command to enable peer salvation for inactive GTPv2 peers for EGTP services in this context. The **peer-salvation** keyword is added to the existing **gtpc** command in eGTP Service Configuration mode.

When enabled, this functionality is enabled at the specific `egtp-service` level.

This functionality should be enabled at the context level if it is enabled at the `egtp-service` level. The configuration sequence is not dependent on enabling this functionality.

To configure **peer-salvation** in the eGTP Service Configuration mode, enter the following commands:

```

configure
  context context_name
    egtp-service egtp_service_name
    [ no ] gtpc peer-salvation
  end

```

**NOTES:**

- **no:** Disables peer salvation at the context level.
- **peer-salvation:** Enables peer salvation for inactive GTPv2 peers for EGTP services in this context.
- This command is disabled by default.

## Monitoring and Troubleshooting

This section provides information regarding show commands and/or their outputs in support of this feature.

### Show Commands and/or Outputs

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

#### show egtp-service all

With 21.4.2 and later releases, the output of this command has been enhanced to include the following new field in support of the Peer Salvation functionality:

GTPC Peer Salvation

#### show session subsystem debug-info

With 21.4.2 and later releases, the output of this command has been enhanced to include the following new fields in support of the Peer Salvation functionality:

- Peer Salvation Stats
  - No of peer salvation requests received on sessmgr
  - No of peer salvaged on sessmgr

#### show demux-mgr statistics egtpinmgr all

With 21.4.2 and later releases, the output of this command has been enhanced to include the following new fields in support of the Peer Salvation functionality:

- Peer Salvation Stats
  - No of peer salvation requests sent by demux
  - No of peer salvaged on demux

## show demux-mgr statistics egtpegmgr all

With 21.4.2 and later releases, the output of this command has been enhanced to include the following new fields in support of the Peer Salvation functionality:

- Peer Salvation Stats
  - No of peer salvation requests sent by demux
  - No of peer salvaged on demux

show demux-mgr statistics egtpegmgr all