



# SaMOG Inter-Chassis Session Recovery

This chapter describes the license-enabled inter-chassis session recovery feature on the SaMOG gateway.

- [Feature Description, on page 1](#)
- [How It Works, on page 2](#)

## Feature Description

SaMOG is capable of providing chassis-level and geographic-level redundancy and can recover fully created sessions in the event of a chassis failure.

The Cisco ASR 5x00 and virtualized platforms provide industry leading carrier class redundancy. The systems protects against all single points of failure (hardware and software) and attempts to recover to an operational state when multiple simultaneous failures occur.

The system provides several levels of system redundancy:

- Under normal N+1 packet processing card hardware redundancy, if a catastrophic packet processing card failure occurs all affected calls are migrated to the standby packet processing card if possible. Calls which cannot be migrated are gracefully terminated with proper call-termination signaling and accounting records are generated with statistics accurate to the last internal checkpoint.
- If the Session Recovery feature is enabled, any total packet processing card failure will cause a packet processing card switchover and all established sessions for supported call-types are recovered without any loss of session.

Even though Cisco provides excellent intra-chassis redundancy with these two schemes, certain catastrophic failures which can cause total chassis outages, such as IP routing failures, line-cuts, loss of power, or physical destruction of the chassis, cannot be protected by this scheme. In such cases, the SaMOG Inter-Chassis Session Recovery (ICSR) feature provides geographic redundancy between sites. This has the benefit of not only providing enhanced subscriber experience even during catastrophic outages, but can also protect other systems such as the RAN from subscriber reactivation storms.

ICSR allows for continuous call processing without interrupting subscriber services. This is accomplished through the use of redundant chassis. The chassis are configured as primary and backup with one being active and one in recovery mode. A checkpoint duration timer is used to control when subscriber data is sent from the active chassis to the inactive chassis. If the active chassis handling the call traffic goes out of service, the inactive chassis transitions to the active state and continues processing the call traffic without interrupting the subscriber session. The chassis determines which is active through a proprietary TCP-based connection called a redundancy link. This link is used to exchange Hello messages between the primary and backup chassis and must be maintained for proper system operation.

# How It Works

## Inter-chassis Communication

Chassis configured to support ICSR communicate using periodic Hello messages. These messages are sent by each chassis to notify the peer of its current state. The Hello message contains information about the chassis such as its configuration and priority. A dead interval is used to set a time limit for a Hello message to be received from the chassis' peer. If the standby chassis does not receive a Hello message from the active chassis within the dead interval, the standby chassis transitions to the active state. In situations where the redundancy link goes out of service, a priority scheme is used to determine which chassis processes the session. The following priority scheme is used:

- route modifier
- chassis priority
- SPIO MAC address

## Checkpoint Messages

Checkpoint messages are sent from the active chassis to the inactive chassis at specific intervals and contain all the information needed to recreate the sessions on the standby chassis, if that chassis were to become active. Once a session exceeds the checkpoint duration, checkpoint data is collected on the session. The checkpoint parameter determines the amount of time a session must be active before it is included in the checkpoint message.



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**Important**

For more information on inter-chassis session recovery support, refer to the *Interchassis Session Recovery* chapter in the *System Administration Guide*.

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## Limitations

This section identifies limitations, restrictions, and dependencies for the SaMOG ICSR feature:

- In this release, ICSR support is available only for the following sessions types:
  - PMIPv6 access-type and GTPv2 network type sessions with DIAMETER-based authentication.
  - EoGRE access-type and GTPv2 network type sessions with DIAMETER-based authentication.
- ICSR support is not available for recovering CDR information and SaMOG Local Breakout (LBO) sessions (flow-based and LBO Basic).
- ICSR support is not available for multiple SaMOG services configuration.