

Common Charging IDs in Roaming Scenarios

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Common Charging IDs in roaming scenarios

A common Charging ID in roaming scenarios is a unique session-level identifier that

- is generated by the SMF for each PDU session,
- is used by both the Visited SMF (V-SMF) and Home SMF (H-SMF) during roaming to ensure unified charging data correlation, and
- enables the Charging Function (CHF) to accurately aggregate charging events and usage records for the same session, even across different networks.

Feature History

Feature Name	Release Information	Description
Common charging IDs in roaming scenarios	2026.03.0	When a user roams between networks, both the visited and home SMF must use the same Charging ID for the PDU session. This prevents charging data fragmentation, avoids duplicate or mismatched records, and ensures accurate billing and quota management. The Charging ID acts as a session anchor, supporting both online and offline charging in converged deployments.

How common Charging IDs work in roaming scenarios

Common Charging IDs enable accurate, session-level charging correlation between visited and home networks during roaming.

The key components involved in the process are:

- Visited SMF (V-SMF): Generates and shares its ChargingId during home routed PDU setup; receives and uses the HomeProvidedChargingId during handovers.
- Home SMF (H-SMF): Receives ChargingId from V-SMF; generates and sends HomeProvidedChargingId during EPS to 5G handovers or 5G homer to roamer insertions.
- Charging Function (CHF): Aggregates and correlates charging events for each session using the provided ChargingId(s).

Summary

The process involves the following stages:

- Home routed PDU setup: V-SMF sends its ChargingId to H-SMF via pduSessionCreateData IE on N16; H-SMF uses the same ChargingId for the session.
- EPS to 5G roaming handover: H-SMF sends HomeProvidedChargingId to V-SMF via pduSessionCreatedData IE on N16; both ChargingIds may be used during the handover, V-SMF performs V-CHF update with locally generated ChargingId and homeProvidedChargingID. Post CHF update HomeprovidedChargingid is used.
- 5G homer to roamer insertion: H-SMF sends ChargingId to V-SMF via smContextRetrievedData IE on N16; V-SMF uses the provided ChargingId for the session.
- UPF update: The common ChargingId is sent on the N4 interface to the UPF in all call flows.

Workflow

Charging events generated in both home and visited networks are reliably correlated to the same session, supporting unified billing and eliminating mismatched or duplicate records.

Requirements for common charging ID support in roaming

Following are the requirements for the common charging ID support:

- The V-SMF and H-SMF must use the same Charging ID for home-routed roaming calls.
- In 5G homer to roamer calls (V-SMF insertion), the H-SMF sends the ChargingId to the V-SMF in the smContextRetrievedData IE on N16; the V-SMF uses this ChargingId instead of its own.
- During N26 handovers, the V-SMF must support sending both (local and home-provided) ChargingIds to the V-CHF.
- The common ChargingId is sent on the N4 interface to UPF for all call flows.

Restrictions for Charging ID usage in roaming scenarios

Pay attention to the following restrictions while using this feature.

- Using a Charging ID with a UInt32 value in roaming can lead to collisions among the SMF.
- The CHF does not use only ChargingId to identify a session; instead, CHF uses the combination of ChargingId + IMSI + pduSessId for unique session identification.
- Configure the compliance profile to version 16.x or higher for the services `nsmf-pdusession` and `nchf-convergedcharging` to ensure proper functionality and adherence to standards.

Best practice for common Charging ID usage

Best practices while using common charging ID feature.

- Ensure that all SMFs in roaming deployments support the exchange and use of common Charging IDs via the relevant N16 interface Information Elements.
- Use the combination of ChargingId, IMSI, and pduSessId for session correlation in charging systems, as relying solely on ChargingId may risk collisions.
- No manual configuration is required, but confirm with your provider that the feature is present and enabled in your release.