Ultra Cloud Core 5G Access and Mobility Management Function, Release 2022.02 - Release Change Reference

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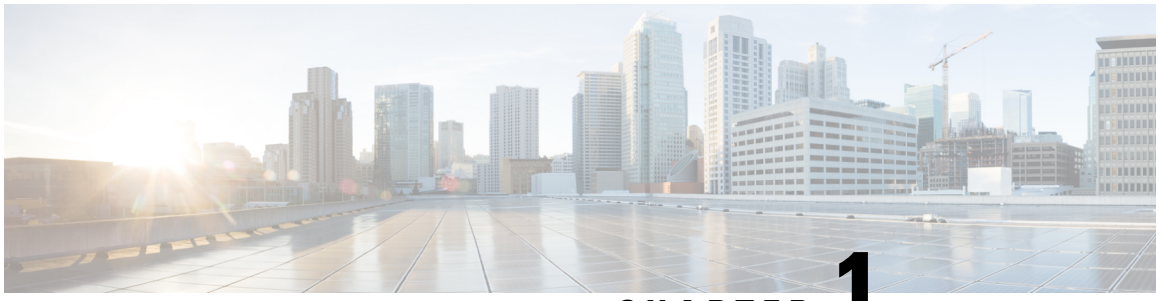

CHAPTER 1

UCC 5G AMF - Release Change Reference

- Feature Defaults Quick Reference, on page 1
- Features and Behavior Change Quick Reference, on page 1
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Feature Defaults Quick Reference

The following table indicates what features are enabled or disabled by default.

Feature	Default
AMF Performance Analysis	Enabled – Always-on
Inter-Release Upgrade Support	Enabled – Always-on
Retrieving IMEI from the UE	Enabled – Always-on
Security Algorithm Support	Enabled – Always-on
Steering of Roaming, Roaming Restrictions, and Operator Policy Support	Enabled – Always-on
Support for IMS VoPS Local Cause Code Mapping	Enabled – Always-on

Features and Behavior Change Quick Reference

Features / Behavior Changes	Release Introduced / Modified
AMF Performance Analysis, on page 2	2022.02.0
Inter-Release Upgrade Support, on page 4	2022.02.0

Features / Behavior Changes	Release Introduced / Modified
Retrieving IMEI from the UE, on page 5	2022.02.0
Security Algorithm Support, on page 3	2022.02.0
Steering of Roaming, Roaming Restrictions, and Operator Policy Support, on page 6	2022.02.0
Support for IMS VoPS Local Cause Code Mapping, on page 8	2022.02.0

AMF Performance Analysis

Feature Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Products or Functional Area	AMF
Applicable Platforms	SMI
Feature Default Setting	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 2: Revision History

Revision Details	Release
First introduced.	2022.02.0

Feature Description

With the security algorithm, the AMF is improved to optimise the UE performance.

For more information, contact your Cisco Representative.

Security Algorithm Support

Feature Summary and Revision History

Summary Data

Table 3: Summary Data

Applicable Products or Functional Area	AMF
Applicable Platforms	SMI
Feature Default Setting	Enabled – Always-on
Related Documentation	Not Applicable

Revision History

Table 4: Revision History

Revision Details	Release
First introduced.	2022.02.0

Feature Description

The security algorithms are implemented to strengthen the integrity and confidentiality of the NAS messages in AMF.

The following statistics are added to record the NAS messages processing after the security algorithm is implemented:

- amf_nas_security_algos_total: Captures the integrity and confidentiality algorithms that are used in AMF for processing the NAS messages and failure or errors that are associated with the security algorithms.
- amf_nas_security_algos_seconds_total: Captures the time spent processing the security algorithms.

For information on statistics, see *Ultra Cloud Core 5G Access and Mobility Management Function Statistics Reference*.

Inter-Release Upgrade Support

Feature Summary and Revision History

Summary Data

Table 5: Summary Data

Applicable Products or Functional Area	AMF
Applicable Platforms	SMI
Feature Default Setting	Not Applicable
Related Documentation	Not Applicable

Revision History

Table 6: Revision History

Revision Details	Release
First introduced.	2022.02.0

Feature Description

AMF supports inter-release upgrade from the release 2022.01.0 to 2022.02.0. Before upgrading the AMF release, perform the following precautionary steps:

- Upgrade the CDL version.
- Avoid parallel namespace upgrade.

Note A rolling downgrade is not supported from the release 2022.02.0 to 2022.01.0. To downgrade from the release 2022.02.0 to 2022.01.0, use the following command before proceeding with the downgrade procedure:

system mode shutdown

Retrieving IMEI from the UE

Feature Summary and Revision History

Summary Data

Table 7: Summary Data

Applicable Product(s) or Functional Area	AMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Documentation	Not Applicable

Revision History

Table 8: Revision History

Revision Details	Release
First introduced.	2022.02.0

Feature Description

Completion of the registration procedure includes retrieving the International Mobile Equipment Identity (IMEI) or International Mobile Equipment Identity – Software Version (IMEI-SV) from the UE. The AMF retrieves the IMEI or IMEI-SV from the UE by sending the Identity Request or Security Mode Command message. The AMF communicates the retrieved IMEI or IMEI-SV to its peer NFs.

For more information, refer to the UCC 5G AMF Configuration and Administration Guide > Retrieving IMEI from the UE chapter.

Steering of Roaming, Roaming Restrictions, and Operator Policy Support

Feature Summary and Revision History

Summary Data

Table 9: Summary Data

Applicable Product(s) or Functional Area	AMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Documentation	Roaming Support

Revision History

Table 10: Revision History

Revision Details	Release
First introduced.	2022.02.0

Feature Description

The AMF supports the following functionalities:

- Steering of Roaming, on page 7
- Roaming Restriction and Operator Support
- Operator Policy

The following are associated with this feature:

- Initial, mobility registration, and periodic registration
- PDU establishment
- N26
- N2HO with or without AMF change
- Service request

Steering of Roaming

Steering of Roaming (SOR) is a technique where an HPLMN indicates a roaming UE to roam to a preferred roamed-to-network.

Roaming Restriction and Operator Support

The AMF provides the mobility restriction functionality handling, enforcement, and management. It provides mobility roaming restrictions along with operator support. The mobility restriction consists of RAT restriction and core network type restriction. The UDM provides RAT and core network type restrictions in the subscription data as provided in **am-data** during and after the registration process.

The following subfeatures are associated with this feature:

- **UDM Subscription:** The AMF validates the RAT Restrictions, Core Network Type Restrictions, and Local Cause Code Mapping parameters. The following subfeatures are associated with this feature:
  - **RAT Restrictions:** In a restricted RAT, the UE can't access the network for that PLMN.
  - **Core Network Type Restrictions:** The AMF supports the Core Network Type restrictions to restrict the core network access to the subscriber.
  - **Local Cause Code Mapping:** Local Cause Code Mapping provides the operator with a flexibility to configure the preferred GMM cause code, which is then sent to the UE in response to various failures. The following subfeatures are associated with this feature:
    - **Core Network Type Restriction:** The local cause code mapping enables the operator to configure a preferred 5GS Mobility Management cause code, by ignoring the default cause code values.
    - **RAT Type Restriction:** The local cause code-mapping configuration for the registration is rejected due to the Core Network Type restrictions configured in the AMF. The 5GMM cause code is used for both UDM-based and local configuration restrictions.

- **Restrictions Enforcement at AMF:** The 5G Core AMF receives all connection and session-related information in the UE. The following subfeatures are associated with this feature:
  - **Enforcement During or After the Registration:** The various 5GMM procedures are used for tracing and pursuing about the address, locality, and the vicinity of the UE. It is also used for authenticating the UE, to control the integrity protection, and encoding.
  - **Enforcement During Mobility:** The following options are associated with this subfeature and they have their associated actions.
    - N2HO
    - N26HO
  - **Enforcement at AMF for Emergency PDU:** During the process of enforcement trigger for RAT or CORE restriction type, if the UE has emergency PDU established before, the AMF starts the deregistration process toward the PCF or the UDM.
  - **Enforcement at N26 Call Flow:** The enforcement restrictions at N26 call flow are also referred as 5G to 4G handover process.

- **Enforcement at Idle Mode Handling from UDM Side:** During the process of UE is in an idle mode and the AMF receives the UDM data change notification in the UDM for restriction to be imposed.

- **Mobility Restriction IEs:** Mobility Restrictions are included when they are applicable to a UE and the registration type isn't Emergency Registration. The AMF encodes the following mobility restrictions IEs:
  - Downlink NAS Transport
  - Handover Request
  - Initial Context Setup Request (ICSR)

Operator Policy

Operator policy supports various configurations concerning Operator Policy Infrastructure and Subscriber Map, Regional Area Code restrictions, Local Cause Code mapping, and UE Access (Core Network type) restrictions. The AMF operator center supports configurations for operator policies, under Call Control Policy and paging-profile. The following subfeatures are associated with this feature:

- **Subscriber Maps:** The AMF subscriber map configuration mode used to create and manage subscriber maps.
- **Operator Policy Selection:** The AMF selects or reselects the operator policy on a subscriber-map using the available criteria, which is based on the configuration.

For more information, see the UCC 5G AMF Configuration and Administration Guide > Steering of Roaming, Roaming Restrictions, and Operator Policy Support chapter.

Support for IMS VoPS Local Cause Code Mapping

Feature Summary and Revision History

Summary Data

Table 11: Summary Data

Applicable Product(s) or Functional Area	AMF
Applicable Platform(s)	SMI
Feature Default Setting	Enabled – Always-on
Related Documentation	Not Applicable

Revision History

Table 12: Revision History

Revision Details	Release
Introduced local cause code support for the ims-vops-failure condition.	2022.02.0
First introduced.	2022.01.0

Feature Description

The Local Cause Code Mapping technique allows the operator to configure a preferred GMM cause code to be sent to the UE in response to various failures, such as IMS voice-centric UE registration failures.

The AMF sets the 5GMM cause values when responding to any UE-Initiated Messages or AMF-Initiated Requested messages on the failure of procedures.

For more information, refer to the UCC 5G AMF Configuration and Administration Guide > Failure and Error Handling Support chapter.