# UE Context Transfer Support



# Feature Summary and Revision History

## Summary Data

***Table 1: 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 2: Revision History***

| Revision Details | Release |
|---|---|
| First introduced. | 2022.01.0 |

# Feature Description

AMF supports the UE Context Transfer message at source and target AMF. The following CLI configurations are added:

- `allow-interplmn-supi-transfer`
- `horizontal-key-derivation`
- `use-source-key`
- `use-source-pcf`

**UE Context Transfer at Source AMF:**

- Sends UE Context with SUPI value to target AMF as per the CLI configuration, when source AMF and target AMF are in different PLMN
- Uses either existing keys or generates new keys, and sends the keys to target AMF during context transfer as per the CLI configuration
- Starts context-transfer-guard timer (configured with greater than zero (0)), when UeRegStatusUpdateReqData contains transfer status as TRANSFERRED

  On expiry of the context-transfer-guard timer, source AMF performs the following:

  - Triggers the UDM Deregistration internally to clear the local ueContext
  - When the UE Context Transfer reason is INIT_REG, it updates the SMF to release the PDU context

- It releases PDU sessions in the toReleaseSessionList
- The UE-validation reason is handled as follows:
  - Without registration request
  - By omitting integrity check
  - Responding with appropriate data to target AMF
- Clears PCF association, when target AMF sends pcfReselectedInd in transfer update
- Handles reject indication received from target AMF
- Performs horizontal key derivation as per the CLI configuration
- Transfers URI with SUPI as ueContextId to target AMF
- Sends DRX, GMM capability IEs to target AMF
- Increments transfer failure counters including NOT_TRANSFERRED counters
- Doesn't send SeafData in transfer response in MOBI_REG_UE_VALIDATED when the Individual ueContext is identified with SUPI

**UE Context Transfer handling at Target AMF:**

- Sends Reject Indication to source AMF through StatusUpdate message when authentication or security fails

  The security algorithm mismatch is handled as follows:

  - Authenticates when integrity check fails
  - Recomputes the keys as per the algorithm received from AUSF

    - Regenerates all the keys and ignores the keys received from source AMF.

- Sends failure to source AMF when authentication or security check fails
- The SUPI as UeContextID is handled as follows:
    - Sends Identity request to UE when message integrity check fails
    - Performs UE authentication with obtained SUPI from UE
    - Sends SUPI as UeContextId, and UE-validated in UeContextTansferReq to source AMF
- Ignores the PCF information obtained from the source AMF and selects the new PCF based on the CLI configuration. Informs the selection of new PCF using pcfReselectedInd to source AMF in UeRegStatusUpdateReq.

# How It Works

This section describes how this feature works.

## Call Flows

This section describes the key call flow for this feature.

### UE Context Transfer Call Flow

This section describes the UE Context Transfer call flow.

*Figure 1: UE Context Transfer Call Flow*

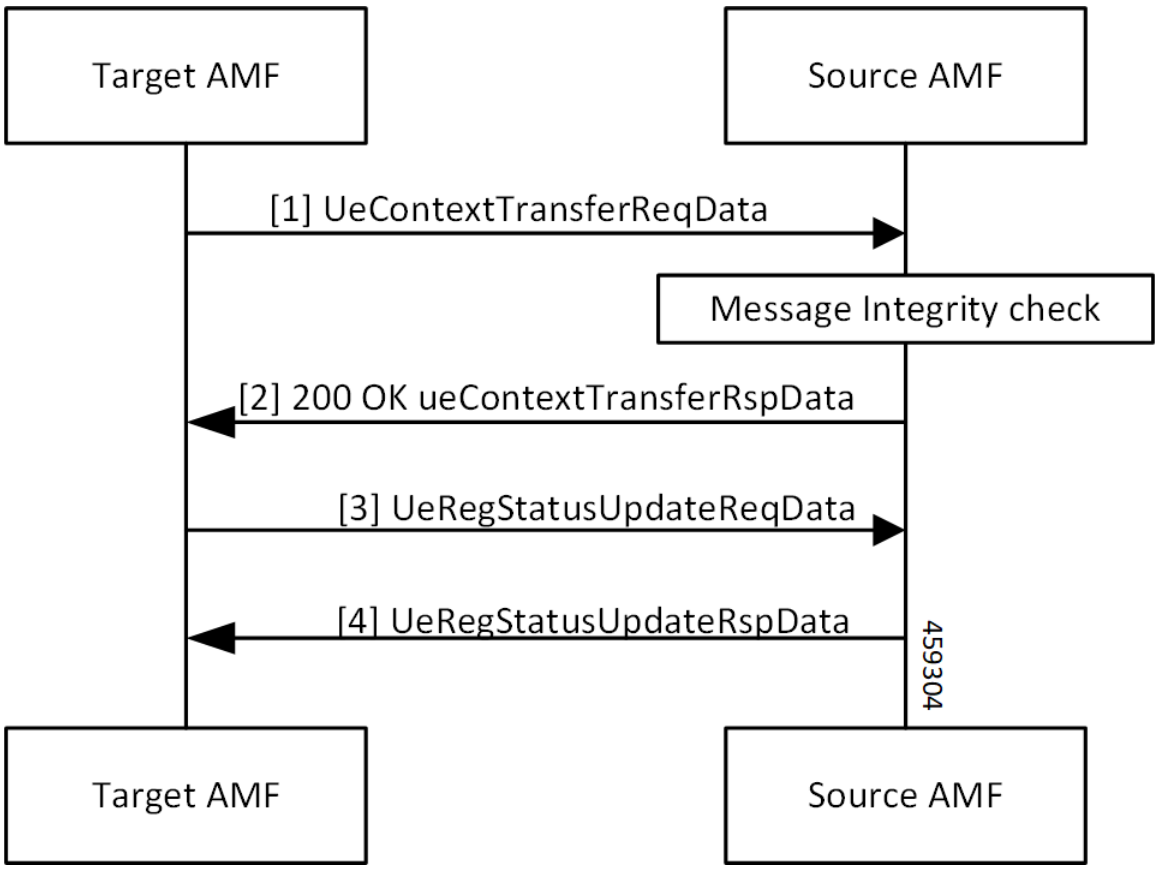


*Table 3: UE Context Transfer Call Flow Description*

| Step | Description |
|---|---|
| 1 | The target AMF sends the UeContextTransferReqData to the source AMF. |
| 2 | The source AMF performs message integrity check. It responds with 200 OK UeContextTransferRspData to the target AMF. |
| 3, 4 | The target AMF sends UeRegStatusUpdateReqData to the source AMF and receives a response. |

# Limitations

This feature has the following limitations in this release:

- Non-3GPP access, trace requirements and event subscriptions are not supported.
- In this release, source and target AMF (T-AMF) are expected to have same S-NSSAI configured. As a result, any PDU sessions that belong to S-NSSAIs not supported on T-AMF are not validated are not dropped.

- Target AMF selects new PCF and sends PcfReselectedInd as true even if CLI is configured to use PCF provided by source AMF.

# Feature Configuration

To configure this feature, use the following configuration:

```
config
   amf-global
      call-control-policy policy_name
         policy ue-ctx-transfer
            allow-interplmn-supi-transfer { true | false }
            horizontal-key-derivation { true | false }
            use-source-key { true | false }
            use-source-pcf { true | false }
            exit
         timers
            context-transfer-guard value guard_time_value
            end
```

**NOTES**:

- **allow-interplmn-supi-transfer { true | false }**—Specify true or false. If configured true, the source AMF sends UE context with SUPI. The default value is **false**.
- **horizontal-key-derivation { true | false }**—If configured true, the source AMF generates a new key every time. The default value is **false**
- **use-source-key { true | false }**—If configured true, the target AMF uses a key received from the source AMF. The default value is **true**
- **use-source-pcf { true | false }**—If configured false, the target AMF sends **pcfReselectedInd** as true in TransferUpdate and the source AMF clears the PCF association. The default value is **true**
- **context-transfer-guard** *guard_time_value*—Specify the context transfer guard timer value in seconds. The AMF starts this timer on receiving the TransferUpdate. On expiry, AMF clears the PDUs locally.

  **context-transfer-guard** value must be an integer in the range of 0—35712000. The default value is zero (0).

# Configuration Example

The following is an example configuration.

```
config
   amf-global
      call-control-policy CCP1
         policy ue-ctx-transfer
            allow-interplmn-supi-transfer true
            horizontal-key-derivation true
            use-source-key true
            use-source-pcf true
            exit
         timers
```

```
context-transfer-guard value 50
end
```