UCC 5G UPF - Release Change Reference

Features and Behavior Change Quick Reference

The following table indicates the default values of features and behavior changes introduced or modified in this release.

Features/ Behavior Changes	Default	Release Introduced/ Modified
Debugging Command Support using MSID, on page 3	Disabled – Configuration Required	2023.02.0
IP Interface Separation, on page 4	Disabled – Configuration Required	2023.02.0
MPLS Support on N9 Interface, on page 5	Disabled – Configuration Required	2023.02.0
OHC IE Validation on N4 Interface, on page 6	Enabled – Always-on	2023.02.2
Password Encryption on Trusted and Non-trusted Builds, on page 6	Disabled – Configuration Required	2023.02.0

Features/ Behavior Changes	Default	Release Introduced/ Modified
Planned Switchover Timers on UPF, on page 7	Disabled – Configuration Required	2023.02.0
Source Interface Type and Roaming Status Support, on page 8	Enabled – Always-on	2023.02.0
Subscriber Tracing on UPF through SMF	Disabled – Configuration Required	2023.02.0
VRF Limit for Private APN and DNN , on page 10	Disabled – Configuration Required	2023.02.0
X-Header Anti-Spoofing Support	Disabled – Configuration Required	2023.02.0

Boot State Assignment Trap—CSCwe40744

Behavior Change Summary and Revision History

Summary Data

Table 1: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Revision Details	Release
First introduced.	2023.02.0

Behavior Change

The new *UPFStateAssigned* trap displays the boot state assignment.

Previous Behavior: RCM did not support the new trap.

New Behavior: RCM supports the new *UPFStateAssigned* trap. This trap displays the assigned state for a newly booted UPF registering with RCM (pending active/standby). This trap also displays the active/standby

state of a UPF on controller restart or when RCM becomes HA active, and if a fully active/standby state UPF re-registers.

The existing *UPFBootComplete* trap displays the final active/standby state.

Both these traps display the UPF IP address. On comparing the timestamp of these two traps, the user can estimate the config push time for UPF.

Customer Impact: The traps display additional information about UPF.

Debugging Command Support using MSID

Feature Summary and Revision History

Summary Data

Table 2: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Table 3: Revision History

Revision Details	Release
First introduced.	2023.02.0

Feature Description

The MSID and SUPI information from a session are utilized for data collection during troubleshooting.

The MSID filter is introduced to debug specific issues associated with a user. UPF supports the **show subscribers user-plane-only full msid** *msid_value* CLI command to provide specific user information at instance level and session level. This command supports the Sxa, Sxb, Sxab, and N4 interfaces.

For information on the output of the **show subscribers user-plane-only full msid** *msid_value* command, see the Statistics and Counters Reference.

For more information, refer to the UCC 5G UPF Configuration and Administration Guide > UPF Troubleshooting Information chapter.

IP Interface Separation

Feature Summary and Revision History

Summary Data

Table 4: Summary Data

Applicable Product(s) or Functional Area	5G-UPF
Applicable Platform(s)	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Table 5: Revision History

Revision Details	Release
Added support for IP separation per interface to allow separate networks for N3 and N9 interfaces.	2023.02.0
First introduced.	2020.02.0

Feature Description

The UPF supports different GTP-U ingress interfaces to allow N3, N9, S5u, and S8u interfaces.

The **associate gtpu-service** CLI command in the User Plane Service configuration mode is enhanced to support different GTP-U ingress interfaces. The N9, S5u, and S8u interfaces share the same public IP.

The supported GTP-U ingress interfaces include:

- N3—N3 is the interface between gNodeB and UPF.

- N9—The N9 interface connects two UPFs. It is the interface between intermediate I-UPF and UPF session anchor connecting different PLMN.

- S5u—S5u is similar to the N9 interface that connects two UPFs. It is the interface between intermediate I-UPF and UPF session anchor.

- S8u—S8u is an inter-PLMN variant of the S5u interface.

For more information, refer to the UCC 5G UPF Configuration and Administration Guide > UPF Ingress Interfaces chapter.

MPLS Support on N9 Interface

Feature Summary and Revision History

Summary Data

Table 6: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Revision Details	Release
Added MPLS support over the N9 interface.	2023.02.0
Added MPLS support over the N6 interface.	2023.01.0
First introduced.	2022.04.0

Feature Description

Multiprotocol Label Switching (MPLS) is a protocol that uses labels to route packets instead of using IP addresses. UPF supports MPLS to switch MPLS traffic using VPP as the data plane forwarder. VPP encapsulates and decapsulates subscriber traffic with MPLS labels.

UPF supports MPLS encapsulation over the N9 interface for 5G deployments using VPP in this release. The N9 interface connects two UPFs. It is the interface between Intermediate I-UPF (Visited) and UPF Session Anchor (Home).

For more information, refer to the UCC 5G UPF Configuration and Administration Guide > MPLS Support on UPF chapter.

OHC IE Validation on N4 Interface

Behavior Change Summary and Revision History

Summary Data

Table 7: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Revision Details	Release
First introduced.	2023.02.2

Behavior Change

Previous Behavior: For N4 calls, the Outer Header Creation (OHC) IE in an uplink FAR led to validation failure and rejection of the Sx Establishment/Modification Request.

New Behavior: If there is an OHC IE in an uplink FAR for N4 calls, UPF establishes Sx Establishment/ Modification Request without failure.

Customer Impact: The customer might have impact on the OHR and OHC functionality.

Password Encryption on Trusted and Non-trusted Builds

Feature Summary and Revision History

Summary Data

Table 8: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI

Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Revision Details	Release
First introduced.	2023.02.0

Feature Description

During upgrade or downgrade, it is recommended to use the compatible configuration files to avoid lockout. The configuration files saved from a new non-trusted build will not work on older builds (trusted or regular). The Administrator password is stored as one-way hash on non-trusted builds.

Customer Impact: If there is any saved configuration using the new build, the Admin will not be able to log on to the downgraded image.

Planned Switchover Timers on UPF

Behavior Change Summary and Revision History

Summary Data

Table 9: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Revision Details	Release
First introduced.	2023.02.0

Feature Changes

UPF supports the following switchover timers that can be configured through CLI:

- Timer for planned switchover completion on new Active (Standby) UPF

- Timer for receipt of Standby state from the start of pending Standby state on old Active UPF

Command Changes

Use the following configuration to configure the switchover timers on UPF:

```
configure
  context context_name
    redundancy-configuration-module rcm_name
      [ default ] planned-standby-timeout planned_timeout
      [ default ] pending-standby-timeout pending_timeout
      exit
    exit
```

NOTES:

- **planned-standby-timeout** *planned_timeout*: Specify the timeout for planned switchover completion, in seconds. *planned_timeout* must be an integer from 300 to 3600.

- **pending-standby-timeout** *pending_timeout*: Specify the timeout for pending Standby state. *planned_timeout* must be an integer from 300 to 3600.

Source Interface Type and Roaming Status Support

Feature Summary and Revision History

Summary Data

Table 10: Summary Data

Applicable Product(s) or Functional Area	5G-UPF
Applicable Platform(s)	VPC-SI
Feature Default Setting	Enabled – Always-on
Related Changes in this Release	Not Applicable
Related Documentation	Not Applicable

Revision History

Revision Details	Release

First Introduced	2023.02.0

Feature Description

UPF supports the following IEs as part of the roaming status functionality:

- Source Interface Type IE in PDR indicates the 3GPP Interface Type in UPF

- Selection of the GTP-U service by receiving 3GPP Interface Type received in PDI IE of create PDR

- Subscriber Params IE indicates the roaming status in UPF

For more information, refer to the UCC 5G UPF Configuration and Administration Guide > Home Routed Roaming Support chapter.

Subscriber Tracing on UPF through SMF

Feature Summary and Revision History

Summary Data

Table 11: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Revision Details	Release
Added support for subscriber tracing from SMF.	2023.02.0
In this release, enhancement related to MonSub CLI, subscriber tracing limits, packet processing throughput, PCAP success and, error code notifications are added to this feature. The CP and UP session manager functionality is also added for this release.	21.22.x
First introduced.	21.16.1

Feature Description

UPF supports enabling the subscriber tracing based on the SMF configurations through a private IE.

For more information, refer to the UCC 5G UPF Configuration and Administration Guide > Monitor Subscriber chapter.

VRF Limit for Private APN and DNN

Feature Summary and Revision History

Summary Data

Table 12: Summary Data

Applicable Product(s) or Functional Area	5G-UPF
Applicable Platform(s)	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Table 13: Revision History

Revision Details	Release
UPF supports up to 200 VRFs for private APN/DNN.	2023.02.0
UPF supports up to 129 VRFs for private APN/DNN.	2022.04.0
Support is added for the following functionality: • Overlapping IP Pools • Removal of mandatory VRF ordering between SMF and UPF	2021.01.0
First introduced.	2020.02.0

Feature Description

The Virtual Routing and Forwarding (VRF) feature allows multiple instances of a routing table to coexist within the same router at the same time. In UPF, VRF enables association of IP address pools with VRF.

In this release, UPF supports up to 200 VRFs for private APN/DNN.

For more information, refer to the UCC 5G UPF Configuration and Administration Guide > Virtual Routing and Forwarding chapter.

X-Header Anti-Spoofing Support

Feature Summary and Revision History

Summary Data

Table 14: Summary Data

Applicable Product (s) or Functional Area	5G-UPF
Applicable Platforms	VPC-SI
Feature Default Setting	Disabled – Configuration Required
Related Changes in this Release	Not Applicable
Related Documentation	*UCC 5G UPF Configuration and Administration Guide*

Revision History

Table 15: Revision History

Revision Details	Release
Added support for the anti-spoofing functionality through X-header enrichment.	2023.02.0
First introduced.	2020.02.x

Feature Description

The UPF supports spoofing detection and provides protection against such attacks, when an external portal is used for subscriber or content authorization. This feature is disabled by default and can be enabled through the CLI **delete-existing** in the mode:

Exec > Global Configuration (config) > Active Charging Service (active-charging service) *acs_service_name*

For more information, refer to the UCC 5G UPF Configuration and Administration Guide, Release 2023.02 > X-Header Insertion and Encryption chapter.