



## **Ultra Cloud Core 5G User Plane Function, Release 2023.03 - Release Change Reference**

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## About this Guide



**Note** Control and User Plane Separation (CUPS) represents a significant architectural change in the way StarOS-based products are deployed in the 3G, 4G, and 5G networks. This document provides information on the features and functionality specifically supported by this 5G UPF product deployed in a 5G network. It should not be assumed that features and functionality that have been previously supported in legacy or non-CUPS products are supported by this product. References to any legacy or non-CUPS products or features are for informational purposes only. Furthermore, it should not be assumed that any constructs (including, but not limited to, commands, statistics, attributes, MIB objects, alarms, logs, services) referenced in this document imply functional parity with legacy or non-CUPS products. Please contact your Cisco Account or Support representative for any questions about parity between this product and any legacy or non-CUPS products.



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This preface describes the *5G User Plane Function Guide*, how it is organized and its document conventions.

This guide describes the Cisco User Plane Function (UPF) and includes infrastructure and interfaces, feature descriptions, specification compliance, session flows, configuration instructions, and CLI commands for monitoring and troubleshooting the system.

- [Conventions Used, on page iii](#)

## Conventions Used

The following tables describe the conventions used throughout this documentation.

Notice Type	Description
Information Note	Provides information about important features or instructions.

Notice Type	Description
Caution	Alerts you of potential damage to a program, device, or system.
Warning	Alerts you of potential personal injury or fatality. May also alert you of potential electrical hazards.

Typeface Conventions	Description
Text represented as a <code>screen display</code>	This typeface represents displays that appear on your terminal screen, for example:  <code>Login:</code>
Text represented as <b>commands</b>	This typeface represents commands that you enter, for example:  <b>show ip access-list</b>  This document always gives the full form of a command in lowercase letters. Commands are not case sensitive.
Text represented as a <b>command variable</b>	This typeface represents a variable that is part of a command, for example:  <b>show card <i>slot_number</i></b>  <i>slot_number</i> is a variable representing the desired chassis slot number.
Text represented as menu or sub-menu names	This typeface represents menus and sub-menus that you access within a software application, for example:  Click the <b>File</b> menu, then click <b>New</b>



# CHAPTER 1

## UCC 5G UPF - Release Change Reference

- [Features and Behavior Change Quick Reference, on page 1](#)
- [Inter-PLMN Mobility Support, on page 2](#)
- [IP Interface Separation, on page 3](#)
- [Security Group Tag Support, on page 4](#)
- [Subscriber Tracing on UPF through SMF, on page 5](#)
- [User Credentials for UPF Deployment, on page 6](#)
- [X-Header Anti-Spoofing Support, on page 6](#)

### 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
<a href="#">Inter-PLMN Mobility Support, on page 2</a>	Disabled – Configuration Required	2023.03.0
<a href="#">IP Interface Separation, on page 3</a>	Disabled – Configuration Required	2023.03.0 2023.02.0
<a href="#">Security Group Tag Support, on page 4</a>	Enabled – Always-on	2023.03.0
<a href="#">Subscriber Tracing on UPF through SMF</a>	Disabled – Configuration Required	2023.03.0 2023.02.0
<a href="#">User Credentials for UPF Deployment, on page 6</a>	Disabled – Configuration Required	2023.03.0
<a href="#">X-Header Anti-Spoofing Support, on page 6</a>	Disabled – Configuration Required	2023.03.0 2023.02.0

# Inter-PLMN Mobility Support

## Feature Summary

### Summary Data

**Table 1: 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	<i>UCC 5G UPF Configuration and Administration Guide</i>

### Revision History

**Table 2: Revision History**

Revision Details	Release
UPF supports inter-PLMN roaming mobility and secondary PDR for 5G sessions.	2023.03.0
UPF supports the following roaming functionalities: <ul style="list-style-type: none"> <li>• Source Interface Type IE indicates the 3GPP Interface Type</li> <li>• Subscriber Params IE indicates the roaming status</li> </ul>	2023.02.0
First introduced.	2021.02.0

## Feature Description

The Inter-Public Land Mobile Network (Inter-PLMN) mobility feature allows the PLMN to change from home-PLMN to visited-PLMN when a UE moves from its home network to a visited network and vice-versa. This feature provides support for various types of inter-PLMN mobility scenarios.

For more information, refer to the [UCC 5G UPF Configuration and Administration Guide > Roaming Support](#) chapter.

# IP Interface Separation

## Feature Summary and Revision History

### Summary Data

**Table 3: Summary Data**

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

### Revision History

**Table 4: Revision History**

Revision Details	Release
Added support for IP separation per interface to allow separate networks for N3 and N9 interfaces.	2023.03.0 2023.02.0
First introduced.	2020.02.0

## Feature Description

UPF supports IP separation per interface to allow separate networks for N3 and N9 interfaces.

With this release, UPF supports different GTP-U ingress interfaces to allow N3, N9, S5u, and S8u interfaces. These interfaces share the same public IP. The **associate gtpu-service** CLI command in the User Plane Service configuration mode is enhanced to support multiple GTP-U ingress interfaces.

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 PLMNs.
- 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.

# Security Group Tag Support

## Feature Summary and Revision History

### Summary Data

*Table 5: 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	<i>UCC 5G UPF Configuration and Administration Guide</i>

### Revision History

Revision Details	Release
First introduced.	2023.03.0 2023.02.0

## Feature Description

UPF supports the Security Group Tag (SGT) to specify the privileges of a traffic source within a trusted network. Security Group Access (a feature of both Cisco TrustSec and Cisco ISE) automatically generates the SGT when a user adds a security group in TrustSec or ISE.



**Note** Security Group Tag (SGT) is also referred to as Scalable Group Tag.

The Identity Services Engine (ISE) sends SGT values over the RADIUS interface that are propagated over the N6 interface. The SGT value must be checkpointed for both session recovery and ICSR/GR scenarios for availability to the peer session manager.

For more information, refer to the [UCC 5G UPF Configuration and Administration Guide > Security Group Tag Support](#) chapter.



# Subscriber Tracing on UPF through SMF

## Feature Summary and Revision History

### Summary Data

*Table 6: Summary Data*

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

### Revision History

Revision Details	Release
Added support for subscriber tracing on UPF from SMF.	2023.03.0 2023.02.0
First introduced.	Pre 21.24



**Note** Revision history details are not provided for features introduced before release 21.24.

## 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.

# User Credentials for UPF Deployment

## Behavior Change Summary and Revision History

### Summary Data

*Table 7: Summary Data*

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

### Revision History

Revision Details	Release
First introduced.	2023.03.0

## Behavior Change

When you deploy cnUPF or cnMME, ensure that you create at least one user in the VPC Ops-center. The user credentials are mandatory for UPF deployment.

**Previous Behavior:** The username and password credentials were optional for UPF deployment.

**New Behavior:** To configure a UPF deployment, it is mandatory to enter the username and password or SSH public key.

## X-Header Anti-Spoofing Support

### Feature Summary and Revision History

#### Summary Data

*Table 8: Summary Data*

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

## Revision History

**Table 9: Revision History**

Revision Details	Release
Added support for the anti-spoofing functionality through X-header enrichment.	2023.03.0
	2023.02.0
First introduced.	2020.02.x

## Feature Description

UPF supports spoofing detection and provides protection against attacks, when an external portal is used for subscriber or content authorization.

This feature is disabled by default and can be enabled using the **delete-existing** CLI command in the Active Charging Service Configuration mode.

For more information, refer to the the [UCC 5G UPF Configuration and Administration Guide > X-Header Insertion and Encryption](#) chapter.

