Collection and Reporting of Usage Data over N4 Interface

This chapter covers the following topics:

Feature Summary and Revision History

Summary Data

Table 1: 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

Table 2: Revision History

Revision Details	Release
First Introduced	2020.02.0

Feature Description

With this release, the User Plane Function (UPF) supports offline charging and reporting of usage data over the N4 interface.

Here, the SMF controls the collection and reporting of usage data by creating necessary PDRs and URRs, and associates the URRs with its relevant PDRs defined for a PFCP session. It also controls data usage reporting at an IP-CAN bearer level, IP-CAN session, TDF session, SDF, or at an application level.

The URR consists of the usage measurement method, reporting triggers, threshold, and quota values.

Important In this release, only URR creation is supported during PFCP session establishment.

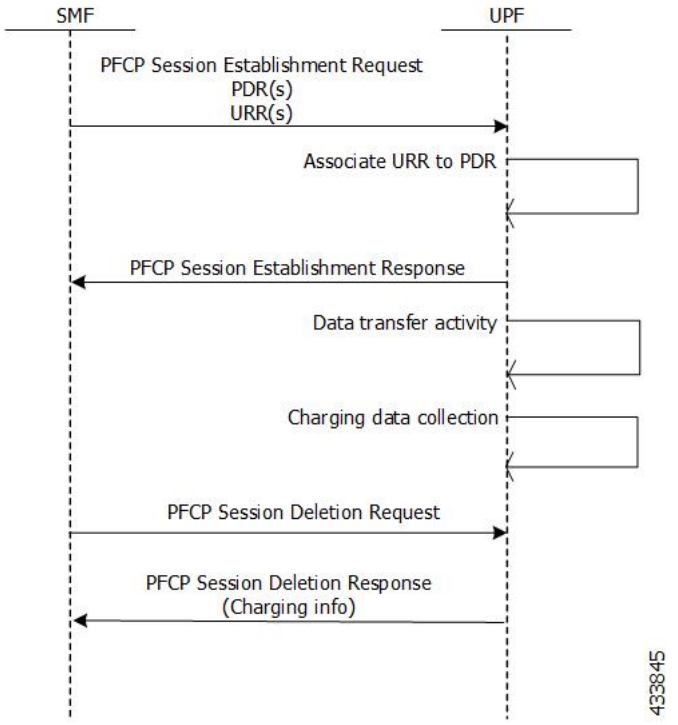
How it Works

This section describes how UPF supports offline charging of usage data.

To implement offline charging, the charging information is sent to the SMF only during PFCP session deletion.

Time and volume-based reporting is supported in the offline charging implementation. The following call flow illustrates offline charging in UPF.

Figure 1: Offline Charging in UPF



During the PFCP session deletion, UPF transfers the following charging information to the SMF:

- Timestamp of the first and last data packet
- Duration measurement – This IE specifies the time difference between URR creation and usage-reporting
- Volume measurement – This IE specifies the uplink data, downlink data and the total bytes transferred from the UPF to gNodeB.

Standards Compliance

UPF support for collection and reporting of data is compliant with the following standards:

- 3GPP TS 29.244 - LTE; Interface between the Control Plane and the User Plane of EPC Nodes
- 3GPP TS 23.501 - 5G; System Architecture for the 5G System
- 3GPP TS 23.502v - 5G; Procedures for the 5G System

Configuration to Collect and Report Volume Measurement over N4 Interface

This section describes the configuration required to collect and report volume measurement (usage data). However, to achieve this, SMF-based configurations for volume measurement needs to be configured.

The following SMF-based configuration is required to send volume measurement data in the URR by the UPF.

Configuring Charging Action for a Required Billing Action

Use the following configuration to configure charging-action for a required billing-action:

```
configure
   require active-charging
   active-charging service service_name
      charging-action charging_action_name
         billing-action interface_name
         end
```

NOTES:

- **billing-action**: Enables the specified billing type. The supported interfaces are:
  - **egcdr**: Enables the GGSN charging data record.

Associating a Charging Action with a Rulebase

Use the following configuration to associate a charging action with a rulebase:

```
configure
```

```
require active-charging
active-charging service service_name
   rulebase rulebase_name
      billing-records interface_name
      action priority priority_value ruledef ruledef_name charging-action
charging_action_name
      end
```

NOTES:

- **rulebase**: Enables the Active Charging Service Rulebase configuration.
- **billing-records**: Enables the generation of billing records. The supported interface is **egcdr**
- **action**: Decides the action to be taken on the ruledef.
- **priority**: Assigns priority to a ruledef in the rulebase. Priority must be a unique integer value ranging from 1 to 65535.
- **ruledef**: Specifies the ruledef.
- **charging-action**: Specifies the charging action.