Initial Attach Support

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Feature Summary and Revision History

Summary Data

Table 1: Summary Data

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

Revision History

Table 2: Revision History

Revision Details	Release
Added support for the Information Elements (IE): • Backoff Timer • Origination Time Stamp • Maximum Wait Time	2021.02.3
First introduced.	2020.04

Feature Description

cnSGW-C supports handling of Initial Attach Create Session Request. As a part of this feature, cnSGW-C supports receiving Create Session Request from the MME through the EGTP endpoint. Further, cnSGW-C decodes the UDP message and converts the message into gRPC message for internal message processing.

How it Works

This section describes how this feature works.

Call Flows

This section describes the key call flow for this feature.

Initial Attach Call Flow

This section describes the Initial Attach call flow.

Figure 1: Initial Attach Call Flow

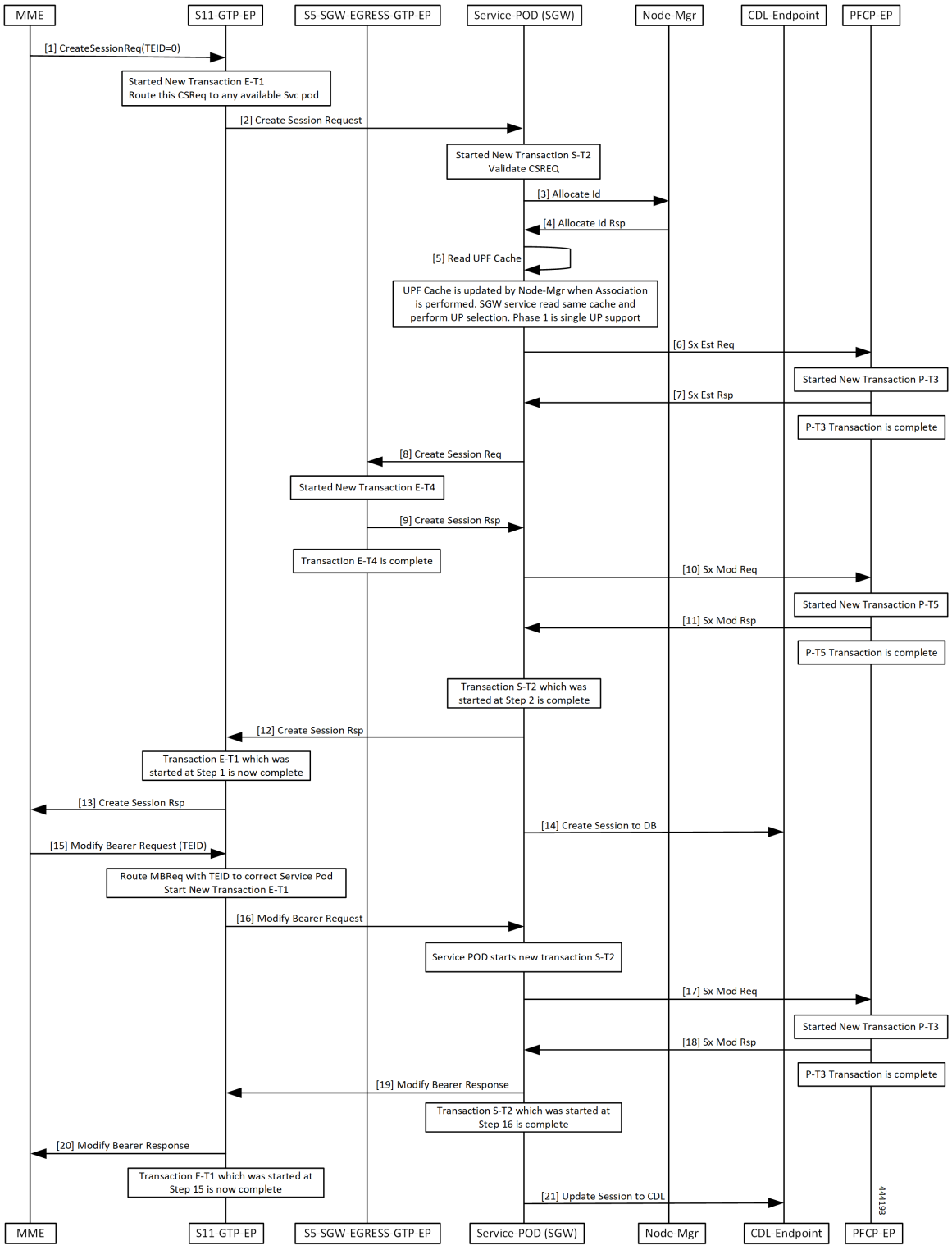

Table 3: Initial Attach Call flow Description

Step	Description
1	The MME sends the Create Session Request with TEID value zero to the S11-GTP-EP.
2	Transaction E-T1 is started. The S11-GTP-EP forwards the Create Session Request to the Service-POD (SGW).
3	Transaction S-T2 is started to validate the Create Session Request. The Service-POD (SGW) sends the Allocate Id Request to the Node-Mgr.
4	The Node-Mgr sends the Allocate Id Response to the Service-POD (SGW).
5	The Service-POD (SGW) reads the cache to perform the UPF selection.
6	The Service-POD (SGW) sends the Sx Establishment Request to the PFCP-EP.
7	Transaction P-T3 is started. The PFCP-EP sends the Sx Establishment Response to the Service-POD (SGW).
8	Transaction P-T3 is completed. The Service-POD (SGW) sends the Create Session Request to the S5-SGW-EGRESS-GTP-EP.
9	Transaction E-T4 is started. The S5-SGW-EGRESS-GTP-EP sends the Create Session Response to the Service-POD (SGW).
10	Transaction E-T4 is completed. The Service-POD (SGW) sends the Sx Modification Request to the PFCP-EP.
11	Transaction P-T5 is started. The PFCP-EP sends the Sx Modification Response to the Service-POD (SGW).
12	Transactions P-T5 and S-T2 are completed. The Service-POD (SGW) sends the Create Session Response to the S11-GPT-EP.
13	Transaction E-T1 is completed. The S11-GPT-EP forwards the Create Session Response to the MME.
14	The Service-POD (SGW) sends the Create Session to DB message to the CDL-Endpoint.
15	The MME sends the Modify Bearer Request with TEID to the S11-GTP-EP.
16	Transaction E-T1 is started. The S11-GTP-EP sends the Modify Bearer Request to the Service-POD (SGW).
17	Transaction S-T2 is started. The Service-POD (SGW) sends the Sx Modification Request to the PFCP-EP.

Step	Description
18	Transaction P-T3 is started. The PFCP-EP sends the Sx Modification Response to the Service-POD (SGW).
19	Transaction P-T3 is completed. The Service-POD (SGW) sends the Modify Bearer Response to the S11-GTP-EP.
20	Transaction S-T2 is completed. The S11-GPT-EP forwards the Modify Bearer Response to the MME.
21	Transaction E-T1 is completed. The Service-POD (SGW) sends the Update Session to CDL message to the CDL-Endpoint. The session is updated in CDL.

Standards Compliance

This feature complies with the following standards specifications:

- *3GPP TS 29.274 "3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3"*

Support for Backoff Timer, Origination TimeStamp, and MaxWait Time

This section describes the support for the Information Elements (IE)—Backoff Timer, Origination Time Stamp, and MaxWait Time.

For more information on technical specifications for the IEs, see *3GPP TS 29.274*.

Backoff Timer

Backoff time indicates the time during which the MME or S4-SGSN refrains from sending the subsequent PDN connection establishment requests to the PGW for the congested APN, for services other than service users or emergency services.

The backoff timer feature enables rejecting new attaches for the failure condition when IP addresses are exhausted.

When IP addresses are exhausted, the PGW-C/SMF detects the status as failure and adds backoff timer in Create Session Response. SGW forwards the backoff timer value to the MME in the Create Session Response.

Origination Time Stamp

Origination Time Stamp is the time at which the originating entity initiated the request. The time stamp is in UTC format.

MME/SGSN and TWAN/ePDG contain the Origination Time Stamp IE on S11/S4 and S2a/S2b interfaces, respectively.

SGW receives the Origination Time Stamp IE from MME/SGSN and includes the IE on the S5/S8 interface.

MaxWaitTime

MaxWaitTime indicates the duration (number of milliseconds since the Origination Time Stamp has lapsed) during which the originator of the request waits for the response.

MME/SGSN and TWAN/ePDG contain the MaxWaitTime IE on S11/S4 and S2a/S2b interfaces, respectively.

SGW contains the MaxWaitTime IE on the S5/S8 interface.