Presence Reporting Area

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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
First introduced.	2021.02.1

Feature Description

Presence Reporting Area (PRA) is an area defined within 3GPP packet domain for reporting UE presence within that area for policy control and/or charging reasons.

A Presence Reporting Area consists of:

- TAs or eNBs and/or ECGI for E-UTRAN
- RAs or SAIs or CGIs for UTRAN
- RAs or CGIs for GERAN

The two types of Presence Reporting Areas that apply to an MME pool are UE-dedicated Presence Reporting Areas and Core Network pre-configured Presence Reporting Areas.

Note cnSGW-C supports Core Network pre-configured PRAs in this release.

The information for leveraging PRA for implementing differential charging and policy enforcement is provided in *3GPP TS 23.401*.

The cnSGW supports:

- Passing PRA action to MME as received from PGW in CSRsp, CBReq, UBreq, MBRsp, and CNRsp messages.
- Passing PRA information to PGW if received from MME in CSReq, CBRsp, UBRsp, CNotf Req, and MBReq messages.
- Always passing the message to PGW if PRA information is present in MBReq.

How it Works

This section describes how this feature works.

cnSGW-C relays the instructions received from PGW towards MME and the information thus reported by MME towards PGW.

To pass the information, two IEs are defined on GTPC interface as per *3GPP TS 29274 V15.4.0*. The following section shows the IE support implemented in cnSGW-C.

Presence Reporting Area Action

Table 3: Presence Reporting Area Action

Octets	Bits							
	8	**7**	**6**	**5**	**4**	**3**	**2**	**1**
1	Type = 177							
2–3	Length = n							
4	SPARE				Instance			
5	SPARE				INAPRA	Action		
6–8	Presence Reporting Area Identifier							

Table 4: Action Values

Action	Value (Decimal)
Start Reporting changes of UE presence in the Presence Reporting Area (PRA)	1
Stop Reporting changes of UE presence in the Presence Reporting Area (PRA)	2

- The Action value 1 (Start Reporting change) is used to request to start reporting changes of UE presence in the Presence Reporting Area identified by the Presence Reporting Area Identifier and, if present, the Presence Reporting Area elements composing the Presence Reporting Area.
- The Action value 2 (Stop Reporting change) is used to request to stop reporting changes of UE presence in a Presence Reporting Area.
- The Inactive PRA (INAPRA) flag in the Octet 5 is set to 1 on the S10/S16/S3 interface if the PRA is inactive in the source MME/SGSN during an inter MME/SGSN mobility procedure, i.e. the reporting change of UE presence in this Presence Reporting Area was requested by the PGW/PCRF/OCS but it was deactivated by the source MME/SGSN.
- The Presence Reporting Area Identifier shall be present if the Action value requests to start, stop, or modify reporting changes of UE presence in a Presence Reporting Area. If so, the Presence Reporting Area Identifier shall contain an identifier of the Presence Reporting Area and encoded using full hexadecimal representation.

Presence Reporting Area Information

Table 5: Presence Reporting Area Information

Octets	Bits							
	8	7	6	5	4	3	2	1
1	Type = 178							
2–3	Length = n							
4	SPARE				Instance			
5–7	PRA Identifier							
8	SPARE				INAPRA	SPARE	OPRA	IPRA

- The PRA Identifier in octets 5–7 is present and contains the identifier of the PRA the UE is entering or leaving. It's encoded using full hexadecimal representation (binary, not ASCII encoding). The PRA Identifier is defined in *3GPP TS 23.003 [2], Clause 19.10*.
- The Inside PRA (IPRA) flag is set to 1 if the UE is inside or enters the Presence Reporting Area identified by the PRA Identifier.
- The Outside PRA (OPRA) flag is set to 1 if the UE is outside or leaves the Presence Reporting Area identified by the PRA Identifier.

- The Inactive PRA (INAPRA) flag in octet 8 is set to 1 if the PRA is inactive in the MME/SGSN, i.e. the reporting of change of UE presence in this PRA is currently deactivated in the MME/SGSN, e.g. due to an overload situation.
- Either the IPRA or the OPRA flag or the INAPRA is set to 1, not several ones, for a given Presence Reporting Area Identifier.