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**Universal Mobile Telecommunications System (UMTS);
LTE;
Telecommunication management;
Home Node B (HNB) and Home eNode B (HeNB) management;
Type 2 interface models and mapping functions
(3GPP TS 32.572 version 16.0.0 Release 16)**



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Foreword

This Technical Specification has been produced by the 3rd Generation Partnership Project (3GPP).

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Version x.y.z

where:

- x the first digit:
 - 1 presented to TSG for information;
 - 2 presented to TSG for approval;
 - 3 or greater indicates TSG approved document under change control.
- y the second digit is incremented for all changes of substance, i.e. technical enhancements, corrections, updates, etc.
- z the third digit is incremented when editorial only changes have been incorporated in the document.

Introduction

The present document is part of a TS-family covering the 3rd Generation Partnership Project Technical Specification Group Services and System Aspects, Telecommunication management; as identified below:

32.571 “Telecommunication management; Home Node B (HNB) and Home eNode B (HeNB) management; Type 2 interface concepts and requirements”

32.572: “Telecommunication management; Home Node B (HNB) and Home eNode B (HeNB) management; Type 2 interface models and mapping functions”

1 Scope

The present document describes requirements and concepts including architecture supporting Home NB and Home eNB OAM&P for interface Type 2.

2 References

The following documents contain provisions which, through reference in this text, constitute provisions of the present document.

- References are either specific (identified by date of publication, edition number, version number, etc.) or non-specific.
- For a specific reference, subsequent revisions do not apply.
- For a non-specific reference, the latest version applies. In the case of a reference to a 3GPP document (including a GSM document), a non-specific reference implicitly refers to the latest version of that document *in the same Release as the present document*.

- [1] 3GPP TR 21.905: "Vocabulary for 3GPP Specifications".
- [2] 3GPP TS 32.101: "Telecommunication management; Principles and high level requirements".
- [3] 3GPP TS 32.102: "Telecommunication management; Architecture".
- [4] 3GPP TS 32.622: "Generic network resources Integration Reference Point (IRP); Network Resource Model (NRM)".
- [5] 3GPP TS 32.583 Procedure flows for Type 1 interface HNB to HMS
- [6] 3GPP TS 32.602 Basic CM Integration Reference Point (IRP); Information Service (IS)
- [7] 3GPP TS 32.602 Bulk CM Integration Reference Point (IRP); Information Service (IS)
- [8] 3GPP TS 32.593 Procedure flows for Type 1 interface HeNB to HeNB Management System
- [9] 3GPP TS 32.584 XML definitions for Type 1 interface HNB to HNB Management System
- [10] 3GPP TS 32.594 XML definitions for Type 1 interface HeNB to HeNB Management System
- [11] 3GPP TS 32.111-2: "Telecommunication management; Fault Management; Part 2: Alarm Integration Reference Point (IRP); Information Service (IS)"
- [12] 3GPP TS 32.582: "Telecommunications management; Home Node B (HNB) Operations, Administration, Maintenance and Provisioning (OAM&P); Information model for Type 1 interface HNB to HNB Management System (HMS)".
- [13] 3GPP TS 32.342 File Transfer (FT) Integration Reference Point (IRP); Information Service (IS)
- [14] 3GPP TS 32.772 Home Node B Subsystem (HNS); Network Resource Model (NRM); Integration Reference Point (IRP); Information Service (IS).
- [15] 3GPP TS 32.150 Integration Reference Point(IRP) Concept and definitions

3 Definitions and abbreviations

For the purposes of this document, the terms and definitions given in TS 21.905 [1], TS 32.101 [2] and TS 32.102 [3] and in the following sub-clause 3.1 apply. Same term may be defined in different documents. The precedence rule, applicable to this document, is in the order of: this document, TS 32.101 [2], TS 32.102 [3], TS 21.905 [1].

3.1 Definitions

There is no additional definition defined in this subclause.

3.2 Abbreviations

For the purposes of the present document, the following abbreviations apply:

FT	File Transfer
HNB	Home Node B
HeNB	Home eNode B
HMS	HNB Management System
HeMS	HeNB Management System
HNS	Home Node B Subsystem
IOCs	Information Object Classes
IRP	Integration Reference Point
NRM	Network Resource Model

4 Basic Aspects

4.1 General

4.2 System context

The general definition of the System Context for the present IRP is found in 3GPP TS 32.150 [15] subclause 4.7. Only System Context A applies to this document. In addition, the IRP(s) relevant to the present document are shown.

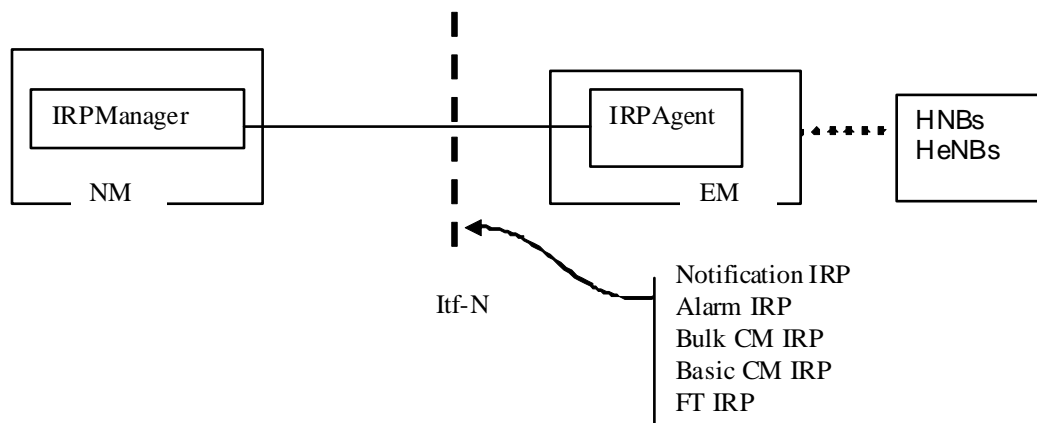


Figure 1: System Context

5 Information Object Classes

This specification does not define its own classes. It uses those defined in Home Node B Subsystem (HNS) [14].

6 Interface Definition

This document does not define its own Interface definition. It re-uses Alarm IRP [11], FT IRP [13], Basic CM IRP [6] and Bulk CM IRP [7].

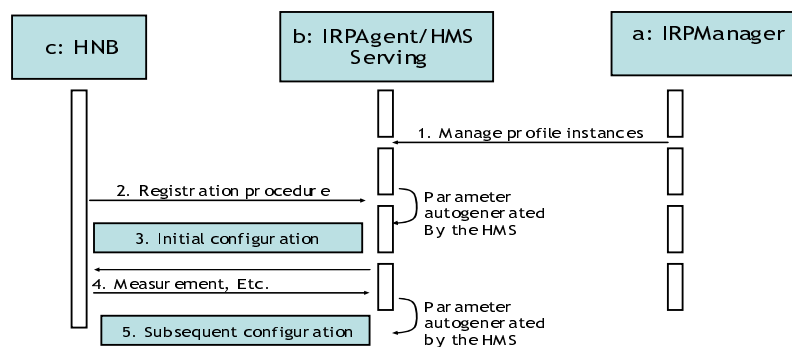
7 Mapping Function

7.1 General

7.2 Configuration management

7.2.1 HNB provisioning support (O)

This subclause applies to HNB case.



IRPManager needs to create an HNBProfile instance. Before doing so, IRPManager

- a) Creates a dataset holding information that will be referred to by the to-be-created HNBProfile.configuration. IRPManager names this dataset using the File Naming Convention of Annex A of [13]. The file name shall contain the specificIRP_extension field which is set to “HNB”. The file schema is defined in subclause 4.2.2 of [9].
- b) Prepares the value of the attribute criterion and attribute userLabel of the to-be-created HNBProfile.
- c) Creates the HNBProfile instance using Basic CM IRP IS createMO of [6] or using Bulk CM IRP IS BulkCmCreateMo (Create MO Sub-operation) of [7].

In case Basic CM IRP is used for the instance creation, IRPManager reception of:

- A createMO positive response or a notifyObjectCreation means:
 - The instance has been created successfully;
- A createMO negative response means:
 - The instance has not been created and the response can include the failure reason.

In case Bulk CM IRP is used for the instance creation, IRPManager reception of:

- A `notifyObjectCreation` means:
 - The instance has been created successfully;

It is noted that in case Bulk CM IRP is used for the instance creation, the `BulkCMIRP` can record the outcome of the instance creation attempt in the session log. The `IRPManager` can obtain the session log (see clause 7.3.6 of [7]) if it wants to determine if the instance is created successfully or not.

The above description is part of interaction 1.

`IRPManager` should not remove the dataset referred to by `HNBProfile.configuration` as long as the `HNBProfile` instance exists. This is because an `IRPAgent` may not make a local copy of the dataset during `HNBProfile` instance creation and therefore needs to read the dataset during the HNB registration.

`IRPManager` should not modify the dataset referred to by `HNBProfile.configuration` as long as the `HNBProfile` instance exists. This is to guarantee an `IRPAgent` behaviour that is independent of the `IRPAgent` implementation choices, such as:

- 1) `IRPAgent` creates its local copy of the dataset when the `HNBProfile` is in existence and uses the local copy during HNB registration;
- 2) `IRPAgent` does not make a local copy of the dataset but reads the dataset during HNB registration.

Interaction 2 is the interactions 5.1, 5.2, 5.3, 5.4, 5.3-bis and 5.4-bis of Clause 5.2.1 of [5].

Via interaction 5.1 (see Clause 5.2.1 of [5]), HNB informs `IRPAgent- Serving HMS` of the HNB location, the HNB ID, etc, called (in the context of this document) the registration information.

`IRPAgent- Serving HMS` identifies a stored `HNBProfile.criterion` that corresponds to the registration information. It then identifies the corresponding `HNBProfile.configuration`.

In case `IRPAgent- Serving HMS` identifies more than one stored `HNBProfile.criterion` that corresponds to the registration information. It then identifies the corresponding `HNBProfile.configuration`, `IRPAgent- Serving HMS` would decide which `HNBProfile.configuration` would be used.

Via interaction 5.3 or 5.4-bis (see Clause 5.2.1 of [5]), `IRPAgent – Serving HMS` configures the HNB using the identified `HNBProfile.configuration`.

7.2.2 HeNB provisioning support (O)

This subclause applies to HeNB case.

This subclause is identical to 7.2.1 except:

- ‘HNB’ is replaced by ‘HeNB’
- ‘HMS’ is replaced by ‘HeMS’
- References [5] and [9] are replaced by [8] and [10].

7.3 Fault management

7.3.1 Handling of “Expedited handling” and “Queued handling” alarms

HNB raises alarms of various categories, two of which are called “Expedited handling” and “Queued handling”. HNB uses TR-069 RPC Methods to send the “Expedited handling” and “Queue handling” categories of alarms (see Clause 6.2.4 of [12]). HNB does not use TR-069 RPC Methods to send other categories of alarms.

On reception of the HNB alarms sent by TR-069 RPC Methods, the mapping function (F) shall process the alarm and decide if

- a) There exists no `AlarmInformation` [11] in `AlarmList` [11] corresponding to the newly received alarm or
- b) There exists an `AlarmInformation` in `AlarmList` corresponding to the newly received alarm. There is a difference in value of `perceivedSeverity` of the newly received alarm and that of the corresponding `AlarmInformation` and the former value is not `Cleared`.
- c) There exists an `AlarmInformation` in `AlarmList` corresponding to the newly received alarm. There is a difference in value of `perceivedSeverity` of the newly received alarm and that of the corresponding `AlarmInformation` and the former value is `Cleared`.

In case of a), a new `AlarmInformation` is added in the `AlarmList`. The `IRPManager`, who has a subscription with `NotificationIRP`, is notified via `notifyNewAlarm` if the added `AlarmInformation` satisfies the subscription filter constraint.

In case of b), the corresponding `AlarmInformation` `perceivedSeverity` is changed. The `IRPManager`, who has a subscription with `NotificationIRP`, is notified via `notifyChangedAlarm` if the subject `AlarmInformation` satisfies the subscription filter constraint.

In case of c), the corresponding `AlarmInformation` is removed from the `AlarmList` if it has been acknowledged; else its `perceivedSeverity` is changed to `Cleared`. The `IRPManager`, who has a subscription with `NotificationIRP`, is notified via `notifyClearedAlarm` if the subject `AlarmInformation` satisfies the subscription filter constraint.

Annex A (informative): Change history

Change history							
Date	TSG #	TSG Doc.	CR	Rev	Subject/Comment	Old	New
2010-03	SA#47	SP-100056	--	--	Presentation to SA for information and approval	--	1.0.0
2010-03	--	--	--	--	Publication of SA approved version	1.0.0	9.0.0
2011-03	-	-	-	-	Update to Rel-10 version (MCC)	9.0.0	10.0.0
2011-06	SP#52	SP-110286	001	--	Modify errors in reference and related paragraphs	10.0.0	11.0.0
2014-10	-	-	-	-	Update to Rel-12 version (MCC)	11.0.0	12.0.0
2016-01	-	-	-	-	Update to Rel-13 version (MCC)	12.0.0	13.0.0
2017-04	SA#75	-	-	-	Promotion to Release 14 without technical change	13.0.0	14.0.0
2018-06	-	-	-	-	Update to Rel-15 version (MCC)	14.0.0	15.0.0
2020-07	-	-	-	-	Update to Rel-16 version (MCC)	15.0.0	16.0.0

History

Document history		
V16.0.0	August 2020	Publication