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3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"

OAM&P for cdma2000 (3GPP R4 Delta Specification)

Revision: A

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1 **SCOPE**

2 This document is intended to define the OAM&P Stage 2 and 3 requirements
3 and interface definitions for cdma2000-based systems.

4 **REFERENCES**

- 5 • [01] 3GPP2 S.R0017-0 3G Wireless Network Management System High
6 Level Requirements; Revision: 0
- 7 • [02] 3GPP TS 32.101: "3G Telecom Management: Principles and high
8 level requirements"; V4.2.1 (Release 4)
9 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 10 • [03] 3GPP TS 32.102: "3G Telecom Management architecture"; V4.2.0
11 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 12 • [04] 3GPP TS 32.111-1: "Fault Management; Part 1: 3G Fault
13 Management Requirements"; V4.0.0 (Release 4)
14 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 15 • [05] 3GPP TS 32.111-2: "Fault Management; Part 2: Alarm Integration
16 Reference Point: Information Service"; V4.4.0
17 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 18 • [06] 3GPP TS 32.111-3: "Fault Management; Part 3: Alarm Integration
19 Reference Point: CORBA Solution Set"; V4.4.0
20 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 21 • [07] note used
- 22 • [08] 3GPP TS 32.300: "3G Configuration Management (CM); Name
23 Convention for Managed Objects"; V4.1.0
24 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 25 • [09] 3GPP TS 32.301: "Notification Management; Notification IRP:
26 Requirements"; V4.0.1 (Release 4)
27 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 28 • [10] 3GPP TS 32.302: "Notification Management; Notification IRP:
29 Information Service"; V4.1.0 (Release 4)
30 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/

- 1 • [11] 3GPP TS 32.303: “Notification Management; Notification IRP:
2 CORBA Solution Set”; V4.3.0 (Release 4)
3 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 4 • [12] not used
- 5 • [13] 3GPP TS 32.311: “Generic IRP Management; Requirements”;
6 V4.0.1 (Release 4)
7 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 8 • [14] 3GPP TS 32.312: “Generic IRP Management; Information
9 Service”; V4.0.0 (Release 4)
10 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 11 • [15] 3GPP TS 32.401: "Performance Management (PM); Concept and
12 Requirements"; V4.2.0 (Release 4)
13 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 14 • [16] not used
- 15 • [17] 3GPP TS 32.600: "3G Configuration Management (CM); Concept
16 and High-level Requirements "; V4.0.0 (Release
17 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 18 • [18] 3GPP TS 32.601: “3G Configuration Management: Basic
19 Configuration Management IRP: Requirements”;
20 V4.0.0 (Release 4)
21 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 22 • [19] 3GPP TS 32.602: “3G Configuration Management: Basic
23 Configuration Management IRP: Information
24 Service”; V4.1.0 (Release 4)
25 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 26 • [20] 3GPP TS 32.603: “3G Configuration Management: Basic
27 Configuration Management IRP: CORBA
28 Solution Set”; V4.3.1 (Release 4)
29 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 30 • [21] not used
- 31 • [22] 3GPP TS 32.611: “3G Configuration Management: Bulk
32 Configuration Management IRP: Requirements”;
33 V4.0.0 (Release 4)
34 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 35 • [23] 3GPP TS 32.612: “3G Configuration Management: Bulk
36 Configuration Management IRP: Information
37 Service”; V4.3.0 (Release 4)
38 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/

- 1 • [24] 3GPP TS 32.613: “3G Configuration Management: Bulk
2 Configuration Management IRP: CORBA
3 Solution Set”; V4.3.0 (Release 4)
4 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 5 • [25] not used
- 6 • [26] 3GPP TS 32.615: “3G Configuration Management: Bulk
7 Configuration Management IRP: XML File
8 Format Definition”; V4.2.0 (Release 4)
9 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 10 • [27] 3GPP TS 32.621: “3G Configuration Management: Generic
11 Network Resources IRP: Requirements”; V4.0.0
12 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 13 • [28] 3GPP TS 32.622: “3G Configuration Management: Generic
14 Network Resources IRP: Network Resource
15 Model”; V4.3.0 (Release 4)
16 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 17 • [29] 3GPP TS 32.623: “3G Configuration Management: Generic
18 Network Resources IRP: CORBA Solution Set”;
19 V4.2.0 (Release 4)
20 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 21 • [30] not used
- 22 • [31] 3GPP TS 32.631: “3G Configuration Management: Core Network
23 Resources IRP: Requirements”; V4.0.0 (Release
24 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 25 • [32] 3GPP TS 32.632: “3G Configuration Management: Core Network
26 Resources IRP: Network Resource Model”;
27 V4.2.0 (Release 4)
28 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 29 • [33] 3GPP TS 32.633: “3G Configuration Management: Core Network
30 Resources IRP: CORBA Solution Set”; V4.1.0
31 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 32 • [34] not used
- 33 • [35] 3GPP TS 32.641: “3G Configuration Management: UTRAN
34 Network Resources IRP: Requirements”; V4.0.0
35 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/

- 1 • [36] 3GPP TS 32.642: “3G Configuration Management: UTRAN
2 Network Resources IRP: Network Resource
3 Model”; V4.2.0 (Release 4)
4 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 5 • [37] 3GPP TS 32.643: “3G Configuration Management: UTRAN
6 Network Resources IRP: CORBA Solution Set”;
7 V4.1.0 (Release 4)
8 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 9 • [38] not used
- 10 • [39] 3GPP TS 32.651: “3G Configuration Management: GERAN
11 Network Resources IRP: Requirements”; V4.0.0
12 (Release 4) http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 13 • [40] 3GPP TS 32.652: “3G Configuration Management: GERAN
14 Network Resources IRP: Network Resource
15 Model”; V4.4.0 (Release 4)
16 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 17 • [41] 3GPP TS 32.653: “3G Configuration Management: GERAN
18 Network Resources IRP: CORBA Solution Set”;
19 V4.1.0 (Release 4)
20 http://www.3gpp.org/ftp/tsg_sa/WG5_TM/specs/
- 21 • [42] not used
- 22 • [50] 3GPP2 S.R0005-B Network Reference Model for cdma2000 Spread
23 Spectrum Systems; Revision: B, Version 1.0
- 24 • [51] 3GPP2 S.R0037-0 IP Network Architecture Model for cdma2000
25 Spread Spectrum Systems; Revision: 0, Version
26 2.1.0

27 **Abbreviations**

28	CM	Configuration Management
29	CMIP	Common Management Information Protocol
30	CN	Core Network
31	CORBA	Common Object Request Broker Architecture
32	EM(S)	Element Management (System)
33	FM	Fault Management
34	GDMO	Guidelines for the Definition of Managed Objects

1	IDL	Interface Definition Language
2	IOC	Information Object Class
3	IRP	Integration Reference Point
4	IS	Information Service(s)
5	Itf-N	Interface-N / Northbound Interface (EM-NM/OSS Interface)
6	NAM	Network Architecture Model
7	NM(S)	Network Management (System)
8	NRM	Network Reference Model (context: 3GPP2 Architecture)
9	NRM	Network Resource Model (context: 3GPP2 OAM&P)
10	OAM&P	Operations, Accounting, Maintenance & Provisioning
11	OSS	Operations Support System(s)
12	PM	Performance Management
13	RAN	Radio Access Network
14	SS	Solution Set
15	TMF	TeleManagement Forum
16	TMN	Telecommunications Management Network (ITU-T)
17	UML	Unified Modeling Language
18	<i>See also Annex E for additional abbreviations.</i>	

19 **GENERAL**

20 This document contains the OAM&P requirements and interface definitions for
21 cdma2000-based systems. It is an extension of operations and maintenance
22 requirements, per latest 3GPP Release 4 32-series specifications capabilities to
23 enable operation in a cdma2000 systems environment as part of the
24 TIA/EIA/IS-2000 family of standards. They are in alignment with OAM&P Stage
25 1 IS-2000 requirements defined in [01].

26
27 These requirements are expressed as additions to and/or exclusions from the
28 Release 4 specification of the 3GPP 32-series. This specification is therefore
29 composed as “delta” document. The 3GPP 32-series specifications are included
30 as a reference. It is intended that all upgrades to the 32-series Release 99
31 specification will also apply to this “delta” document.

32
33 This OAM&P Stage 2/3 for cdma2000 contains recommendations and
34 requirements related to:

- 35 ▪ Logical and physical management architecture.

- 1 ▪ General configuraton, fault and perfomance management
2 requirements.
- 3 ▪ Definitions for the management interface between element
4 management function and network mangement system.

5
6 For Revision A of this document 3GPP Charging and Billing requirements and
7 related definitions are not applicable. In addition CMIP Solution Set
8 specifications are not applicable for Revision A.

9 **Overview of OAM&P for cdma2000 (3GPP Delta Specification)**

10 The structure of this document is aligned with the structure of the 3GPP 32-
11 series of specifications (excluding the Billing and Charging related definitions
12 specified within the 32.2xx-series as well as CMIP Solution Set specifications):

- 13 ▪ 32.101 "3G Telecom Management: Principles and high level
14 requirements" (see [02]) contains complementary and extended
15 requirements to [01] as well as the definition of the logical
16 management architecture.
- 17 ▪ 32.102 "3G Telecom Management architecture" (see [03]) defines a
18 framework to help define a telecom management physical
19 architecture and to adopt standards and provide products that are
20 easy to integrate.
- 21 ▪ The 32.111-series (see [04]-[07]) contains fault management
22 requirements as well as related definitions for the management
23 interface between element management function and network
24 mangement system (Alarm IRP).
- 25 ▪ The 32.3xx-series (see [08]-[14]) contains common IRP definitions
26 (currently Notification IRP, Generic IRP).
- 27 ▪ Specification 32.401 (see [15]) contains general requirements on
28 performance management, specifications for the structure and
29 transfer of measurement files. *Measurements definition for*
30 *cdma2000 is for further study (UMTS & GSM measurementds defined*
31 *by 3GPP SA5 are not applicable for cdma2000).*

- 1 ▪ The 32.6xx-series (see [17]-[41]) contains configuration management
2 requirements as well as related definitions for the management
3 interface between element management function and network
4 management system (Basic CM IRP, BulkCM IRP, applicable NRM
5 IRP's).
- 6 ▪ Subsequent Annexes provide detailed delta definitions as necessary
7 for some 32-series specifications:
 - 8 ▪ Annex A contains the Network Resource Model (NRM) for the
9 3GPP2 Generic Network Resources
 - 10 ▪ Annex A.1 contains the Information Services (IS)
11 definitions of the 3GPP2 Generic NRM
 - 12 ▪ Annex A.2 contains the CORBA Solution Set (SS)
13 definitions of the 3GPP2 Generic NRM
 - 14 ▪ Annex A.3 will contain the XML Solution Set (SS)
15 definitions of the 3GPP2 Generic NRM in a future
16 version of this document (currently defined within
17 Annex D)
 - 18 ▪ Annex B contains the Network Resource Model (NRM) for the
19 3GPP2 Core Network Resources (CN)
 - 20 ▪ Annex B.1 contains the Information Services (IS)
21 definitions of the 3GPP2 CN NRM
 - 22 ▪ Annex B.2 contains the CORBA Solution Set (SS)
23 definitions of the 3GPP2 CN NRM
 - 24 ▪ Annex B.3 contains the XML Solution Set (SS)
25 definitions of the 3GPP2 CN NRM in a future version of
26 this document (currently defined within Annex D)
 - 27 ▪ Annex C contains the Network Resource Model (NRM) for the
28 3GPP2 Radio Access Network (RAN)
 - 29 ▪ Annex C.1 contains the Information Services (IS)
30 definitions of the 3GPP2 RAN NRM
 - 31 ▪ Annex C.2 contains the CORBA Solution Set (SS)
32 definitions of the 3GPP2 RAN NRM

- 1 ▪ Annex C.3 contains the XML Solution Set (SS)
2 definitions of the 3GPP2 RAN NRM in a future version
3 of this document (currently defined within Annex D)
- 4 ▪ Annex D specifies the 3GPP2 specifics of the BulkCM XML Solution
5 Set (currently including the XML definitions for 3GPP Generic NRM,
6 3GPP2 Generic NRM, 3GPP2 CN NRM, and 3GPP2 RAN NRM.
- 7 ▪ The two final Annexes provide informative information:
 - 8 ▪ Annex A “Terminology” provides a mapping between UMTS
9 and cdma2000 terminology for clarification pupose.
 - 10 ▪ Annex B “Integration Reference Points - IRPs” contains an
11 IRP overview for information purpose.

1 **32.101 "3G Telecom Management: Principles and high level requirements"**

2 (see [02])

3 **General Exceptions**

4 The term UMTS is not applicable for the cdma2000 family of standards.
5 Nevertheless the term UMTS is used in 3GPP 32.101 [02] mostly in the broader
6 sense of "3G Wireless System". If not stated otherwise there are no additions or
7 exclusions required.

8 **Specific Exceptions**

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 Normative Reference on TS 22.101 and TS 22.115 are not applicable for
13 cdma2000 systems.

14 Chapter 03: Definitions and abbreviations

15 There are no additions or exclusions.

16 Chapter 04: General

17 The UMTS reference model introduced in chapter 4.1.2 ("UMTS Reference
18 Model") is not applicable for cdma2000 systems (including the listed
19 signalling mechanisms). The IS-2000 Network Reference Model and
20 network interfaces will apply (see [50]).

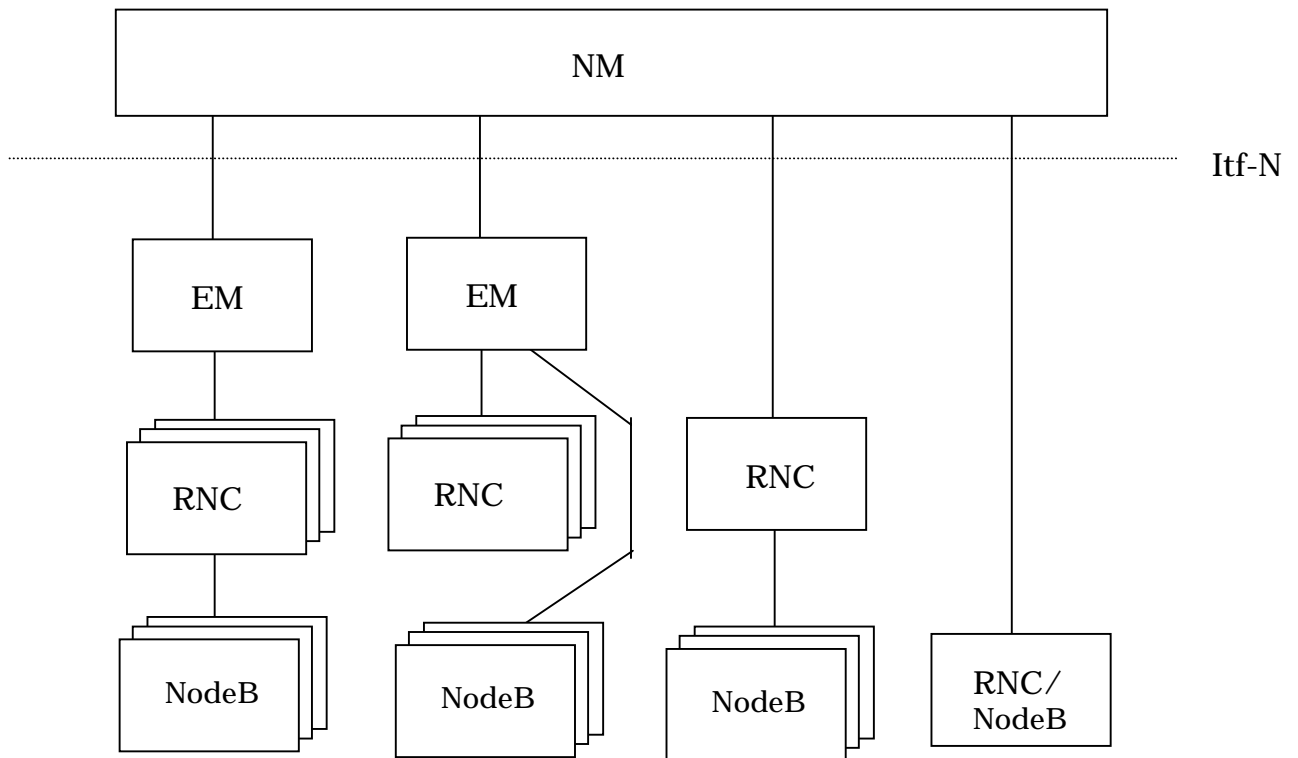
21 Reference on TS 22.101 in chapter 4.1.3 ("UMTS Provisioning Entities") is
22 not applicable for cdma2000 systems.

23 Chapter 05: Architectural Framework

24 With respect to chapter 5.2 ("Interface levels") the following clarifications
25 shall apply:

- Itf-N is the “Northbound” interface between the Network Management System and the Element Manager/Network Element.
- RNC is equivalent to BSC in cdma2000 systems and shall be interpreted as such.
- NodeB is equivalent to BTS in cdma2000 systems and shall be interpreted as such.
- IubLink is equivalent to Abis in cdma2000 systems and shall be interpreted as such.

Typical configurations on interfaces between the network and management components is shown below (where RAN network elements are used as an example):



Chapter 06: UMTS Management Processes

There are no additions or exclusions.

1 Chapter 07: UMTS Management Functional Architecture

2 Chapter 7.9 ("Accounting Management") is not applicable for the IS-2000
3 Release B version of this document (see also related statement in section
4 "General" of this document).

5 Annex A (normative): UMTS Management Application Layer Protocols

6 There are no additions or exclusions.

7 Annex B (normative): UMTS Management Network Layer Protocols

8 There are no additions or exclusions.

9 Annex C (normative): UMTS Management IRP Solution Sets

10 CMIP Solution Set specification are not applicable for Revision A of this
11 document.

12 Annex D (informative): QoS Management

13 There are no additions or exclusions.

14 Annex E (informative): Change history

15 Additions or exclusions are not applicable.

1 **32.102 "3G Telecom Management architecture"**

2 (see [03])

3 **General Exceptions**

4 The term UMTS is not applicable for the cdma2000 family of standards.
5 Nevertheless the term UMTS is used in 3GPP 32.102 [03] mostly in the broader
6 sense of "3G Wireless System". If not stated otherwise there are no additions or
7 exclusions required.

8 **Specific Exceptions**

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 Normative Reference on TS 23.002 and TS 23.101 are not applicable for
13 cdma2000 systems.

14 Chapter 03: Definitions and abbreviations

15 There are no additions or exclusions.

16 Chapter 04: General

17 The UMTS reference model introduced in chapter 4.1.1 ("UMTS Reference
18 Model") is not applicable for cdma2000 systems (including the listed
19 signalling mechanisms). The IS-2000 Network Reference Model and
20 network interfaces will apply (see [50]).

21 Chapter 05: General view of UMTS Management Physical architectures

22 There are no additions or exclusions.

23 Chapter 06: Basic objectives for a UMTS Physical Architecture

24 There are no additions or exclusions.

Chapter 07: TM Architectural aspects

The OSF instantiations presented within Figure 7.2 of chapter 7.3.2 (“Interfaces”) are not applicable for cdma2000. The IS-2000 Network Reference Model and related interworking with 2G systems might apply (see [50]).

The network components presented within entities of figures 7.3a (Basic AN entities), 7.3b (Basic CN entities), 7.3c (Examples of Service Specific entities) and 7.3d (Basic User Equipment) within chapter 7.3.3 (“Basic entities of a UMTS”) are not applicable for cdma2000 systems. The IS-2000 Network Reference Model and network interfaces will apply (see [50]). Nevertheless the intend of presenting a view on “building blocks” is valid for cdma2000 systems as well.

Chapter 08: UMTS Management Physical architectures

Interface definitions made in Chapter 8.3 (“Subnetwork Management Architecture”) on resource management functions between RNC and NodeB are not applicable for cmda2000 systems. For clarification please note:

- RNC is equivalent to BSC in cdma2000 systems and shall be interpreted as such.
- NodeB is equivalent to BTS in cdma2000 systems and shall be interpreted as such.

Chapter 09: TMN applications

There are no additions or exclusions.

Chapter 10: Integration Reference Points (IRPs)

There are no additions or exclusions.

Chapter 11: Implementation aspects

There are no additions or exclusions.

Chapter 12: UMTS TMN Conformance

There are no additions or exclusions.

Chapter 13: TMN planning and design considerations

There are no additions or exclusions.

Chapter 14: Mediation/Integration

There are no additions or exclusions.

Annex A (informative): Technology considerations

There are no additions or exclusions.

Annex B (informative): Overview of a UMTS Network

The Element Management Domains and Interfaces presented and described are not applicable for cdma2000 systems. The IS-2000 Network Reference Model and network interfaces will apply (see [50]).

Annex C (informative): Information Service template

There are no additions or exclusions.

Annex D (informative): Example of inheritance between ISs

There are no additions or exclusions.

Annex E (informative): General rules for Solution Sets

There are no additions or exclusions.

Annex F (normative): Rules for CORBA Solution Sets

There are no additions or exclusions.

Annex G (informative): Change history

Additions or exclusions are not applicable.

1 **32.111-series “Fault Management”**

2 (see [04]-[06])

3 **General Exceptions**

4 There are no global additions or exclusions for 3GPP 32.111-1 [04], 3GPP
5 32.111-2 [05], 3GPP 32.111-3 [06].

6 **Specific Exceptions**

7 **32.111-1 "Fault Management; Part 1: 3G Fault Management Requirements"**

8 (see [04])

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 There are no additions or exclusions.

13 Chapter 03: Definitions and abbreviations

14 There are no additions or exclusions.

15 Chapter 04: Fault Management concept and requirements

16 There are no additions or exclusions.

17 Chapter 05: N interface (Itf-N)

18 There are no additions or exclusions.

19 Annex A (informative): Change history

20 There are no additions or exclusions.

32.111-2 "Fault Management; Part 2: Alarm Integration Reference Point: Information Service (Release 4)"

(see [05])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: Basic aspects

There are no additions or exclusions.

Chapter 05: Information Object Classes

There are no additions or exclusions.

Chapter 06: Interface Definition

There are no additions or exclusions.

Annex A (normative): Event Types

There are no additions or exclusions.

Annex B (normative): Probable Causes

The following Probable Causes from Table B.3 "Probable Causes from GSM 12.11" are not applicable to cdma2000:

GSM 12.11 Probable Cause	Event Type
A-bis to TRX interface failure	Equipment
Invalid MSU received	Communications
LAPD link protocol failure	Communications

Definition of cdma2000-specific probable cause values is for further study.

1 Annex C (informative): Examples of using notifyChangedAlarm

2 There are no additions or exclusions.

3 Annex D (informative): Change history

4 There are no additions or exclusions.

5 **32.111-3 "Fault Management; Part 3: Alarm Integration Reference Point:**
6 **CORBA Solution Set (Release 4)"**

7 (see [06])

8 Chapter 01: Scope

9 There are no additions or exclusions.

10 Chapter 02: References

11 There are no additions or exclusions.

12 Chapter 03: Definitions and abbreviations

13 There are no additions or exclusions.

14 Chapter 04: Architectural Features

15 There are no additions or exclusions.

16 Chapter 05: Mapping

17 There are no additions or exclusions.

18 Chapter 06: AlarmIRPNotifications Interface

19 There are no additions or exclusions.

20 Annex A (normative): IDL specification (file name "AlarmIRPConstDefs.idl")

21 Regarding the use of Probable Cause please refer to exceptions stated on
22 32.111-2 "Alarm Integration Reference Point: Information Service",
23 Appendix B "Probable Causes".

24 Annex B (informative): Change history

25 There are no additions or exclusions.

32.300 “3G Configuration Management (CM); Name convention for Managed Objects”

(see [08])

General Exceptions

There are no global additions or exclusions for 3GPP 32.300 [08].

Specific Exceptions

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: System Overview

There are no additions or exclusions.

Chapter 05: Name Convention for Managed Objects

There are no additions or exclusions.

Chapter 06: Representations of DN

CMIP Solution Set specification are not applicable for Revision A of this document.

Chapter 07: String Representation of DN

There are no additions or exclusions.

Chapter 08: Examples of DN in string representation

There are no additions or exclusions.

1 Chapter 09: Usage Scenario

2 There are no additions or exclusions.

3 Annex A (normative): Mapping of RDN AttributeType to Strings

4 There are no additions or exclusions.

5 Annex B (normative): Rule for MO Designers regarding AttributeType interpretation

6 There are no additions or exclusions.

7 Annex C (informative): DN Prefix and Local Distinguished Name (LDN)

8 There are no additions or exclusions.

9 Annex D (informative): Change history

10 There are no additions or exclusions.

11

1 **32.301/32.302/32.303-series “Notification IRP”**

2 (see [09]-[11])

3 **General Exceptions**

4 There are no global additions or exclusions for 3GPP 32.301 [09], 3GPP 32.302
5 [10] and 3GPP 32.303 [11].

6 **Specific Exceptions**

7 **32.301 "Notification IRP : Requirements (Release 4)"**

8 (see [09])

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 There are no additions or exclusions.

13 Chapter 03: Definitions and abbreviations

14 There are no additions or exclusions.

15 Chapter 04: Notification management functions over Itf-N

16 With respect to statements within 4.3 “Notification control functions”:
17 CMIP Solution Set specification are not applicable for Revision A of this
18 document.

19 Annex A (informative): Change history

20 There are no additions or exclusions.

32.302 "Notification Integration Reference Point: Information Service (Release 4)"

(see [10])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: System Overview

There are no additions or exclusions.

Chapter 05: Information Object Classes

There are no additions or exclusions.

Chapter 06: Interface Definition

There are no additions or exclusions.

Annex A (informative): Change history

There are no additions or exclusions.

32.303 "Notification Integration Reference Point: CORBA Solution Set (Release R4)"

(see [07])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

- 1 Chapter 04: Architectural Features
- 2 There are no additions or exclusions.
- 3 Chapter 05: Mapping
- 4 There are no additions or exclusions.
- 5 Chapter 06: IRP Agent's Behaviour
- 6 There are no additions or exclusions.
- 7 Annex A (normative): IDL Specification (file name "ManagedGenericIRPConstDefs.idl")
- 8 There are no additions or exclusions.
- 9 Annex B (informative): Change history
- 10 There are no additions or exclusions.

1 **32.311/32.312-series "Generic IRP"**

2 (see [13]-[14])

3 **General Exceptions**

4 There are no global additions or exclusions for 3GPP 32.311 [13] and 3GPP
5 32.312 [14].

6 **Specific Exceptions**

7 **32.311 "Generic IRP Management; Requirements (Release 4)"**

8 (see [13])

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 There are no additions or exclusions.

13 Chapter 03: Definitions and abbreviations

14 There are no additions or exclusions.

15 Chapter 04: Notification management functions over Itf-N

16 There are no additions or exclusions.

17 Annex A (informative): Change history

18 There are no additions or exclusions.

19 **32.312 " Generic IRP Management; Information Service (Release 4)"**

20 (see [14])

21 Chapter 01: Scope

22 There are no additions or exclusions.

- 1 Chapter 02: References
- 2 There are no additions or exclusions.
- 3 Chapter 03: Definitions and abbreviations
- 4 There are no additions or exclusions.
- 5 Chapter 04: System Overview
- 6 There are no additions or exclusions.
- 7 Chapter 05: Information Object Classes
- 8 There are no additions or exclusions.
- 9 Chapter 06: Interface Definition
- 10 There are no additions or exclusions.
- 11 Annex A (informative): Change history
- 12 There are no additions or exclusions.

1 **32.401 “Performance Management (PM); Concept and Requirements”**

2 (see [15])

3 **General Exceptions**

4 The terms UMTS & GSM are not applicable for the cdma2000 family of
5 standards - nevertheless these terms are used in 3GPP 32.401 [15] mostly in
6 the broader sense of “Wireless System”. If not stated otherwise there are no
7 additions or exclusions required.

8 **Specific Exceptions**

9 Chapter 01: Scope

10 References to 32.403 & 52.402 are not applicable for cdma2000 systems

11 Chapter 02: References

12 Reference to 3GPP TS 25.442 is not applicable for cdma2000 systems.

13 References to GSM 12.04 & GSM 12.06 are not applicable for cdma2000
14 systems.

15 Reference to 3GPP TR 32.800 is not applicable for cdma2000 systems.

16 References to 3GPP TS 32.403 & 3GPP TS 52.402 are not applicable for
17 cdma2000 systems.

18 Chapter 03: Definitions and Abbreviations

19 There are no additions or exclusions.

20 Chapter 04: Concept

21 References to 3GPP TS 32.403 & 3GPP TS 52.402 are not applicable for
22 cdma2000 systems.

23 The following clarifications shall apply to definitions made throughout
24 chapter 4:

➤ RNC is equivalent to BSC in cdma2000 systems and shall be interpreted as such.

➤ NodeB is equivalent to BTS in cdma2000 systems and shall be interpreted as such.

The in chapter 4.4 specified option “Q3 interface specified in the GSM 12.xx series of specifications” is not applicable for cdma2000 systems.

Chapter 05: Functional requirements

References to 3GPP TS 32.403 & 3GPP TS 52.402 are not applicable for cdma2000 systems.

Reference on TS 25.442 and TR 32.800 in chapter 5.2 (“Basic Functions”) is not applicable for cdma2000 systems. In addition the following clarifications shall apply to definitions made in chapter 5.2:

➤ Itf-N is the “Northbound” interface between the Network Management System and the Element Manager/Network Element.

➤ RNC is equivalent to BSC in cdma2000 systems and shall be interpreted as such.

➤ NodeB is equivalent to BTS in cdma2000 systems and shall be interpreted as such.

➤ IubLink is equivalent to Abis in cdma2000 systems and shall be interpreted as such.

Annex A (normative): Measurement Report File Format

References to 3GPP TS 32.403 & 3GPP TS 52.402 are not applicable for cdma2000 systems.

Annex B (normative): Measurement Report File Conventions and Transfer Procedure

Reference on TS 25.442 in chapter B.1.1 (“NE based approach”) is not applicable for cdma2000 systems. In addition the following clarifications shall apply to definitions made in chapter B.1.1:

➤ RNC is equivalent to BSC in cdma2000 systems and shall be interpreted as such.

➤ NodeB is equivalent to BTS in cdma2000 systems and shall be interpreted as such.

1 ➤ IubLink is equivalent to Abis in cdma2000 systems and shall be
2 interpreted as such.

3 Annex C (informative): The table oriented file format structure

4 Reference to GSM 12.04 is made for clarification purpose only.

5 Annex D (informative): Change history.

6 There are no additions or exclusions.

7

32.600 “Configuration Management (CM); Concept and High-level Requirements”

(see [17])

General Exceptions

The term UMTS is not applicable for the cdma2000 family of standards - nevertheless it is used in 3GPP 32.600 [17] mostly in the broader sense of “3G Wireless System”. If not stated otherwise there are no additions or exclusions required.

Specific Exceptions

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: Network configuration management (CM)

There are no additions or exclusions.

Chapter 05: CM service components

There are no additions or exclusions.

Chapter 06: CM functions

There are no additions or exclusions.

Chapter 07: I/f-N Interface

With respect to statement made in chapter 7.3.1.1 “Real-time forwarding of CM-related event reports”, CMIP Solution Set specification are not applicable for Revision A of this document.

- 1 Annex A (informative): Change history
- 2 There are no additions or exclusions.

1 **32.601/32.602/32.603-series “BasicCM IRP”**

2 (see [18]-[20])

3 **General Exceptions**

4 There are no global additions or exclusions for 3GPP 32.601 [18], 3GPP 32.602
5 [19] and 3GPP 32.603 [20].

6 **Specific Exceptions**

7 **32.601 " Basic Configuration Management IRP: Requirements"**

8 (see [18])

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 References to 3GPP TS 32.632, 3GPP TS 32.642 & 3GPP TS 32.652 are
13 not applicable for cdma2000 systems (the 3GPP2 Network Reference
14 Model and network interfaces will apply (see [50] and Annex A-C of this
15 document).

16

17 Chapter 03: Definitions and abbreviations

18 There are no additions or exclusions.

19 Chapter 04: Requirements

20 References to 3GPP TS 32.632, 3GPP TS 32.642 & 3GPP TS 32.652 are
21 not applicable for cdma2000 systems (the 3GPP2 Network Reference
22 Model and network interfaces will apply (see [50] and Annex A-C of this
23 document).

24 Annex A (informative): Change history

25 There are no additions or exclusions.

32.602 " Basic Configuration Management IRP: Information Service"

(see [19])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: System Overview

There are no additions or exclusions.

Chapter 05: Modelling Approach

With respect to statement made in chapter 5.1 "IRP Information Service modelling approach", CMIP Solution Set specification are not applicable for Revision A of this document.

Chapter 06: IRP Information Service

There are no additions or exclusions.

Annex A (informative): Notification/Event Types

CMIP Solution Set specification are not applicable for Revision A of this document.

Annex B (informative): Change history

There are no additions or exclusions.

32.603 " Basic Configuration Management IRP: CORBA Solution Set"

(see [20])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

There are no additions or exclusions.

- 1 Chapter 03: Definitions and abbreviations
- 2 There are no additions or exclusions.
- 3 Chapter 04: IRP document version number string
- 4 There are no additions or exclusions.
- 5 Chapter 05: Architectural Features
- 6 There are no additions or exclusions.
- 7 Chapter 06: Mapping
- 8 There are no additions or exclusions.
- 9 Chapter 07: Use of OMG StructuredEvent
- 10 There are no additions or exclusions.
- 11 Chapter 08: Rules for NRM extensions
- 12 There are no additions or exclusions.
- 13 Annex A (normative): CORBA IDL, Access Protocol
- 14 There are no additions or exclusions.
- 15 Annex B (normative): CORBA IDL, Notification Definitions
- 16 There are no additions or exclusions.
- 17 Annex C (informative): Change history
- 18 There are no additions or exclusions.

1 **32.611/32.612/32.613/32.615-series "BulkCM IRP"**

2 (see [22]-[24], [26])

3 **General Exceptions**

4 There are no global additions or exclusions for 3GPP 32.611 [22], 3GPP 32.612
5 [23], 3GPP 32.613 [24] and 3GPP 32.615 [26].

6 **Specific Exceptions**

7 **32.611 " Bulk Configuration Management IRP: Requirements"**

8 (see [22])

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 There are no additions or exclusions.

13 Chapter 03: Definitions and abbreviations

14 There are no additions or exclusions.

15 Chapter 04: Bulk CM and Itf-N Interface

16 It should be noted that CM data are not necessarily restricted to radio
17 network parameters (even though they may not be standardized).

18 For clarification please note that RNC (used in chapter 4.3 "Bulk CM
19 Requirements") is equivalent to BSC in cdma2000 systems and shall be
20 interpreted as such.

21 Annex A (informative): Change history

22 There are no additions or exclusions.

32.612 " Bulk Configuration Management IRP: Information Service"

(see [23])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

References to 3GPP TS 32.642 & 3GPP TS 32.652 are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: System Overview

There are no additions or exclusions.

Chapter 05: Modelling Approach

There are no additions or exclusions.

Chapter 06: IRP Information Service

References to 3GPP TS 32.642 & 3GPP TS 32.652 within chapter 6.3 "Network Resource Model (NRM)" are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 07: State Machine

There are no additions or exclusions.

Chapter 08: Bulk Configuration Data File

There are no additions or exclusions.

Annex A (informative): Scenarios

There are no additions or exclusions.

Annex B (informative): Change history

There are no additions or exclusions.

32.613 " Bulk Configuration Management IRP: CORBA Solution Set"

(see [24])

Chapter 01: Scope

References to 3GPP TS 32.642 & 3GPP TS 32.652 are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 02: References

References to 3GPP TS 32.642 & 3GPP TS 32.652 are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 03: Definitions and abbreviations

References to 3GPP TS 32.642 & 3GPP TS 32.652 are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 04: Mapping

There are no additions or exclusions.

Chapter 05: BulkCMIRPNotifications Interface

There are no additions or exclusions.

Annex A (normative): IDL: BulkCmIRPConstDefs

There are no additions or exclusions.

Annex B (normative): IDL: BulkCmIRPSystem

There are no additions or exclusions.

Annex C (informative): Change history

There are no additions or exclusions.

32.615 " Bulk Configuration Management IRP: XML File Format Definition"

(see [26])

Chapter 01: Scope

There are no additions or exclusions.

Chapter 02: References

References to 3GPP TS 32.642 & 3GPP TS 32.652 are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 03: Definitions and abbreviations

There are no additions or exclusions.

Chapter 04: Structure and content of configuration data XML files

References to Annex A of 32.615 [26] are for example purposes only (the relevant 3GPP2 definitions are provided within Annex D.1 of specification).

References to 3GPP TS 32.642 & 3GPP TS 32.652 as well as NRM IOC's of these specifications are not applicable for cdma2000 systems (the 3GPP2 Network Reference Model and network interfaces will apply (see [50] and Annex A-C of this document).

Chapter 05: Structure and content of session log XML files

There are no additions or exclusions.

Annex A (normative): Configuration data file base XML schema

Not applicable for 3GPP2/cdma2000 systems. Instead the definitions provided within Annex D.1 apply.

Annex B (normative): Configuration data file NRM specific XML schemas

Not applicable for 3GPP2/cdma2000 systems. Instead the definitions provided within Annex D.2 apply. A later future version of this document will provide dedicated XML definitions on a per 3GPP2 NRM basis within Annex A.3 (for "3GPP2 Generic Network Resource Model IRP"), Annex B.3 (for "3GPP2 Core Network Resource Model IRP"), and Annex C.3 (for "3GPP2 Radio Access Network Resource Model IRP")

Annex C (informative): Configuration data file vendor-specific XML schema example

There are no additions or exclusions.

Annex D (normative): Session log file XML schema

There are no additions or exclusions.

1 Annex C (informative): Change history

2 There are no additions or exclusions.

3

1 **32.621/32.622/32.623-series “Generic NRM IRP”**

2 (see [27]-[29])

3 **General Exceptions**

4 There are no global additions or exclusions for 3GPP 32.621 [27], 3GPP 32.622
5 [28] and 3GPP 32.623 [29].

6 **Specific Exceptions**

7 **32.621 " Generic NRM IRP: Requirements"**

8 (see [27])

9 Chapter 01: Scope

10 There are no additions or exclusions.

11 Chapter 02: References

12 There are no additions or exclusions.

13 Chapter 03: Definitions and abbreviations

14 There are no additions or exclusions.

15 Chapter 04: Requirements

16 Requirement (2) “The Network Resource Model defined by this IRP shall
17 support management of UMTS-GSM Inter-system handover” is not
18 applicable to cdma2000 systems (Note: this requirement has no impacts
19 on the reuse of the Generic NRM IRP for cdma2000 systems).

20 Annex A (informative): Change history

21 There are no additions or exclusions.

1 **32.622 " Generic NRM IRP: Information Service"**

2 (see [28])

3 Chapter 01: Scope

4 There are no additions or exclusions.

5 Chapter 02: References

6 Reference to 3GPP TS 32.642 is not applicable for cdma2000 systems (but
7 also not used throuout the document).

8 Chapter 03: Definitions and abbreviations

9 There are no additions or exclusions.

10 Chapter 04: System Overview

11 There are no additions or exclusions.

12 Chapter 05: Modelling Approach

13 There are no additions or exclusions.

14 Chapter 06: Information Object Class definitions

15 The Release 4 restrictions on SubNetwork cardinality defined within
16 Figure 5 "Generic NRM Containment/Naming and Association diagram"
17 (chapter 6.1.2.1 "Attributes and relationships") are not applicable for
18 3GPP2/cdma2000-based systems – in addition the following rule shall
19 apply:

20 *If the configuration contains several instances of SubNetwork, exactly*
21 *one SubNetwork instance shall directly or indirectly contain all the*
22 *other SubNetwork instances.*

23 The stated definition of legal values for *managedElementType* (chapter
24 6.1.5.1, Table 11 "Attributes" as well as 8.2.2.2, Table 17 "Attributes of
25 ManagedElement)" are not applicable for cdma2000 systems – these shall
26 be considered as reserved values only.

27 Chapter 07: Mapping from IOCs to MOCs

28 There are no additions or exclusions.

29 Chapter 08: Managed Object Class definitions

30 There are no additions or exclusions.

1 Annex A (informative): Change history

2 There are no additions or exclusions.

3 **32.623 " Generic NRM IRP: CORBA Solution Set"**

4 (see [29])

5 Chapter 01: Scope

6 There are no additions or exclusions.

7 Chapter 02: References

8 There are no additions or exclusions.

9 Chapter 03: Definitions and abbreviations

10 There are no additions or exclusions.

11 Chapter 04: Architectural features

12 There are no additions or exclusions.

13 Chapter 05: Mapping

14 There are no additions or exclusions.

15 Chapter 06: New methodology Mapping

16 There are no additions or exclusions.

17 Chapter 07: Rules for NRM extensions

18 There are no additions or exclusions.

19 Annex A (normative): CORBA IDL, Access Protocol

20 There are no additions or exclusions.

21 Annex B (normative): CORBA IDL, NRM Definitions

22 There are no additions or exclusions.

23 Annex C (informative): Change history

24 There are no additions or exclusions.

1 **32.631/32.632/32.633-series “CN Resource IRP” &**
2 **32.641/32.642/32.643-series “UTRAN Resource IRP” &**
3 **32.651/32.652/32.653-series “GERAN Resource IRP”**

4 (see [31]-[33], [35]-[37] and [38]-[40])

5 **General Exceptions**

6 32.631/32.632/32.633-series “CN Resource IRP” ([31]-[33]),
7 32.641/32.642/32.643-series “UTRAN Resource IRP” ([35]-[37]) &
8 32.651/32.652/32.653-series “GERAN Resource IRP” ([38]-[40]) are not
9 applicable for 3GPP2/cdma2000 systems. Instead the following definitions
10 apply (provided within Annex A-C):

- 11 ▪ Annex A “3GPP2 Generic Network Resource Model IRP”
- 12 ▪ Annex B “3GPP2 Core Network Resource Model IRP”
- 13 ▪ Annex C “3GPP2 Radio Access Network Resource Model IRP”

Annex A (normative) “3GPP2 Generic Network Resource Model IRP”

This annex defines the 3GPP2 Generic Network Resource Model for wireless systems based on 3GPP2 specifications.

A.1 3GPP2 Generic Network Resource Model IRP (IS)

Within this section the Information Service (IS) level definitions for the 3GPP2 Generic Network Resource Model are specified.

This model is defined following the IRP IS methodology specified in 3GPP TS 32.102 [03].

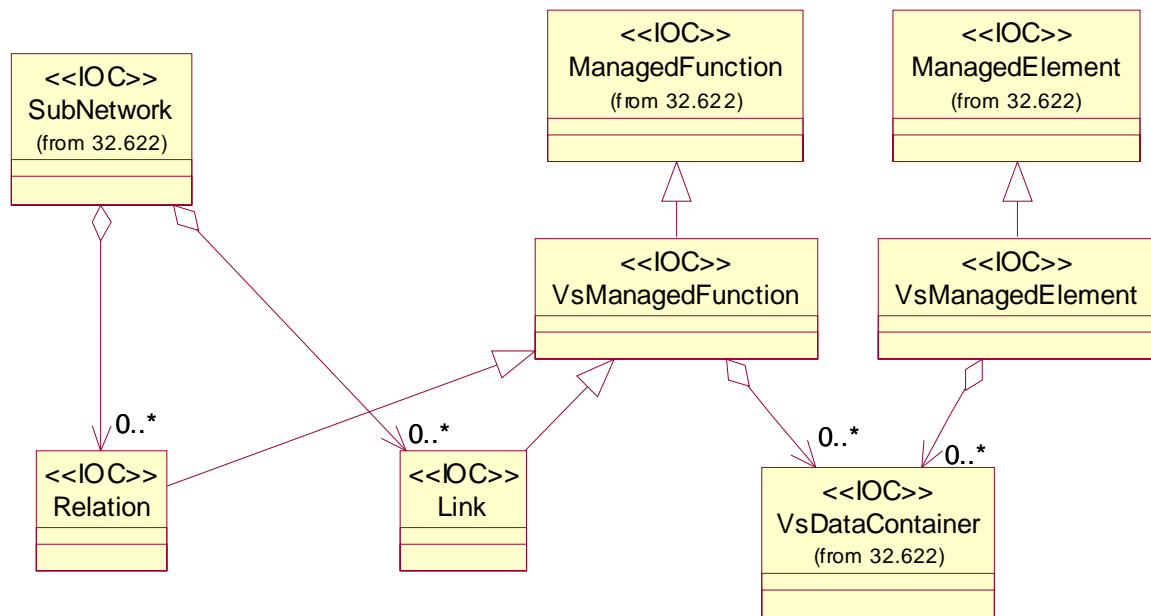
A.1.1 Information entities imported and local labels

Label reference	Local label
3GPP TS 32.622 [28], information object class, ManagedElement	ManagedElement
3GPP TS 32.622 [28], information object class, ManagedFunction	ManagedFunction
3GPP TS 32.622 [28], information object class, SubNetwork	SubNetwork
3GPP TS 32.622 [28], information object class, VsDataContainer	VsDataContainer

1 A.1.2 Class diagram

2 A.1.2.1 Attributes, relationships and inheritance

3 Figure A-1 shows the containment/naming, association and inheritance
4 diagram for the 3GPP2 Generic Network:



5
6 **Figure A-1: 3GPP2 Generic Network NRM Containment/Naming, Association and Inheritance**

7 A.1.3 Information object classes definition

8 A.1.3.1 IOC Link

9 A.1.3.1.1 Definition

10 This IOC represents the relationship between two instances.
11 It is derived from VsManagedFunction.

12

A.1.3.1.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
linkId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
protocolName	--	+	O	M	--
protocolVersion	--	+	O	M	--
aEnd	--	+	M	M	--
zEnd	--	+	M	M	--

A.1.3.2 IOC Relation

A.1.3.2.1 Definition

This IOC represents the relationship between two instances. It is derived from the vsManagedFunction.

A.1.3.2.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
relationId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
aEnd	--	+	M	M	--
zEnd	--	+	M	M	--

1 A.1.3.3 IOC vsManagedFunction

2 A.1.3.3.1 Definition

3 This IOC represents VsManagedFunction class. It inherits from
4 ManagedFunction.

5 A.1.3.3.2 Attributes

6 All attributes are inherited from ManagedFunction.
7

8 A.1.3.4 IOC vsManagedElement

9 A.1.3.4.1 Definition

10 This IOC represents VsManagedElement class. It inherits from
11 ManagedElement.

12 A.1.3.4.2 Attributes

13 All attributes are inherited from ManagedElement.

14 A.1.4 Information attributes definition

15 A.1.4.1 Definition and legal values

16

Attribute Name	Definition	Legal Values
aEnd	The value of this attribute shall be the DN of the instance to which this link/relation is connected.	--
linkId	It contains 'name+value' that is the RDN, when naming an instance, of this object class containing this attribute. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	--
objectClass	As defined in 32.622 [28]: An attribute which captures the name of the class from which the object instance is an occurrence of.	--
objectInstance	As defined in 32.622 [28]: An information which captures the Distinguished Name of any object.	--

Attribute Name	Definition	Legal Values
relationId	It contains 'name+value' that is the RDN, when naming an instance, of this object class containing this attribute. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	--
protocolName	Protocol name.	--
protocolVersion	Protocol version.	--
userLabel	Based on definition from 32.622 [28]: A user-friendly (and user assigned) name of the associated instance.	--
zEnd	The value of this attribute shall be the DN of the instance to which this link/relation is connected.	--

1

2 **A.2 3GPP2 Generic Network Resource Model (CORBA SS)**

3 Within this section the CORBA Solution Set (SS) definitions for the 3GPP2
4 Generic Network Resource Model are specified.

5 **A.2.1 Architectural features**

6 The overall architectural feature of 3GPP2 Generic Network Resource Model IRP
7 (IS) is specified in section Annex A.1 within this document.

8 This clause specifies features that are specific to the CORBA SS.

9 **A.2.1.1 Notifications**

10 Notifications are sent according to the Notification IRP: CORBA SS (see
11 3GPP TS 32.303 [11])

12 **A.2.2 Mapping**

13 **A.2.2.1 General mappings**

14 The IS parameter name managedObjectInstance is mapped into DN.

15 Attributes modeling associations as defined in the NRM (here also called
16 “reference attributes”) are in this SS mapped to attributes. The names of the
17 reference attributes in the NRM are mapped to the corresponding attribute
18 names in the IOC. When the cardinality for an association is 0..1 or 1..1 the
19 data type for the reference attribute is defined as an MOReference. The value of

an MO reference contains the distinguished name of the associated MO. When the cardinality for an association allows more than one referred MO, the reference attribute will be of type MOReferenceSet, which contains a sequence of MO references.

If a reference attribute is changed, an AttributeValueChange notification is emitted.

A.2.2.2 3GPP2 Generic Network NRM Information Object Class (IOC) mapping

A.2.2.2.1 IOC Link

NRM Attributes of IOC Link	SS Attributes	SS Type	Qualifier	Read	Write
linkId	linkId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
protocolName	protocolName	string	O	M	--
protocolVersion	protocolVersion	string	O	M	--
aEnd	aEnd	string	M	M	--
zEnd	zEnd	string	M	M	--

A.2.2.2.2 IOC Relation

NRM Attributes of IOC Relation	SS Attributes	SS Type	Qualifier	Read	Write
relationId	relationId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
aEnd	aEnd	string	M	M	--
zEnd	zEnd	string	M	M	--

1 A.2.3 IDL specification (file name "PP2GenericNRMDefs.idl")

```

2      #ifndef PP2GenericNRMDefs_idl
3      #define PP2GenericNRMDefs_idl
4
5      #include "GenericNetworkResourcesNRMDefs"
6
7      #pragma prefix "3gpp2.org"
8
9      /**
10     * This module defines constants for each IOC class name and
11     * the attribute names for each defined IOC class.
12     */
13     module PP2GenericNRMDefs
14     {
15         /**
16         * Definition for MO VsManagedFunction
17         */
18         interface VsManagedFunction :
19         GenericNetworkResourcesNRMDefs::ManagedFunction
20         {};
21
22         /**
23         * Definition for MO VsManagedElement
24         */
25         interface VsManagedElement :
26         GenericNetworkResourcesNRMDefs::ManagedElement
27         {};
28
29         /**
30         * Definitions for MO class Link
31         */
32         interface Link : VsManagedFunction
33         {
34             const string CLASS = "Link";
35
36             // Attribute Names
37             //
38             const string linkId = "linkId";
39             const string protocolName = "protocolName";
40             const string protocolVersion = "protocolVersion";
41             const string aEnd = "aEnd";
42             const string zEnd = "zEnd";
43         };
44
45         /**
46         * Definitions for MO class Relation
47         */
48         interface Relation : GenericNetworkResourcesNRMDefs::ManagedFunction
49         {
50             const string CLASS = "Relation";
51
52             // Attribute Names
53             //
54             const string relationId = "relationId";
55             const string aEnd = "aEnd";
56             const string zEnd = "zEnd";
57

```

```
1          };  
2  
3      };  
4  
5      #endif  
6
```

1 **A.3 3GPP2 Generic Network Resource Model (XML SS)**

2 Within this section the XML Solution Set (SS) definitions for the 3GPP2 Generic
3 Network Resource Model will be specified in a future version of this document
4 (currently defined within Annex D).
5

Annex B (normative) “3GPP2 Core Network Resource Model IRP”

This annex defines the 3GPP2 Core Network Resources Model for wireless systems based on 3GPP2 specifications.

It is mainly based on the following documents:

- *3GPP2 S.R0005-B* [50]: This document defines the wireless network reference model depicting circuit-mode and packet-mode operations that include network entities and reference points.
- *3GPP2 S.R0037* [51]: This document defines the All IP Network Architecture Model for cdma2000 Spread Spectrum Systems.

B.1 3GPP2 Core Network Resource Model IRP (IS)

Within this section the Information Service (IS) level definitions for the 3GPP2 Core Network Resource Model are specified.

This model is defined following the IRP IS methodology specified in 3GPP TS 32.102 [03].

B.2.1 Information entities imported and local labels

Label reference	Local label
32.622 [28], information object class, ManagedElement	ManagedElement
Annex A, information object class, VsManagedFunction	VsManagedFunction
Annex A, information object class, Link	Link
Annex C, information object class, ALink	ALink
Annex C, information object class, AquaterLink	AquaterLink

1 B.2.2 Class diagram

2 B.1.2.1 Attributes and relationships

3 Figure B-1 shows the containment/naming hierarchy of the 3GPP2 Core
 4 Network NRM.

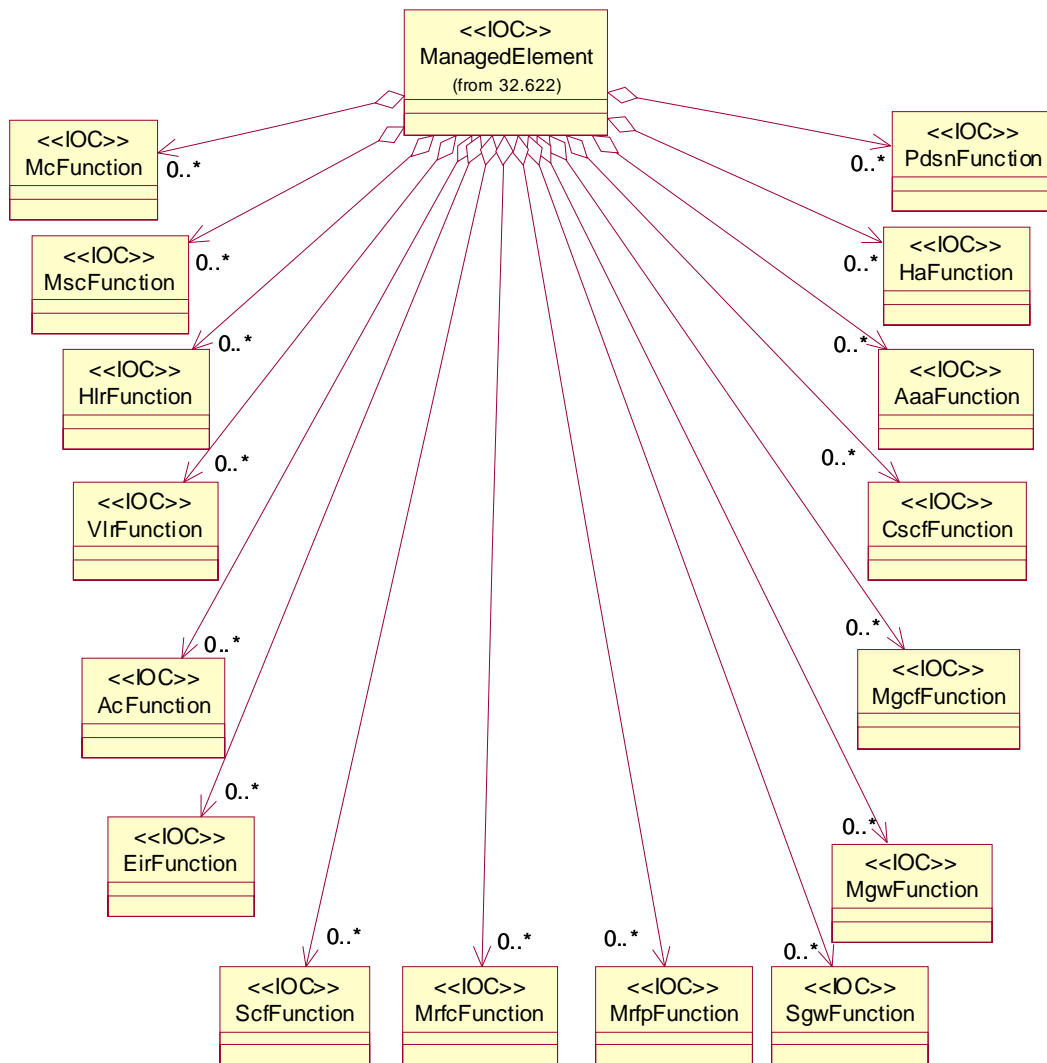


Figure B-1: 3GPP2 Core Network NRM Containment/Naming

- 1 Figure B-2 shows the associations related to the packet part of the 3GPP2 Core
- 2 Network NRM:

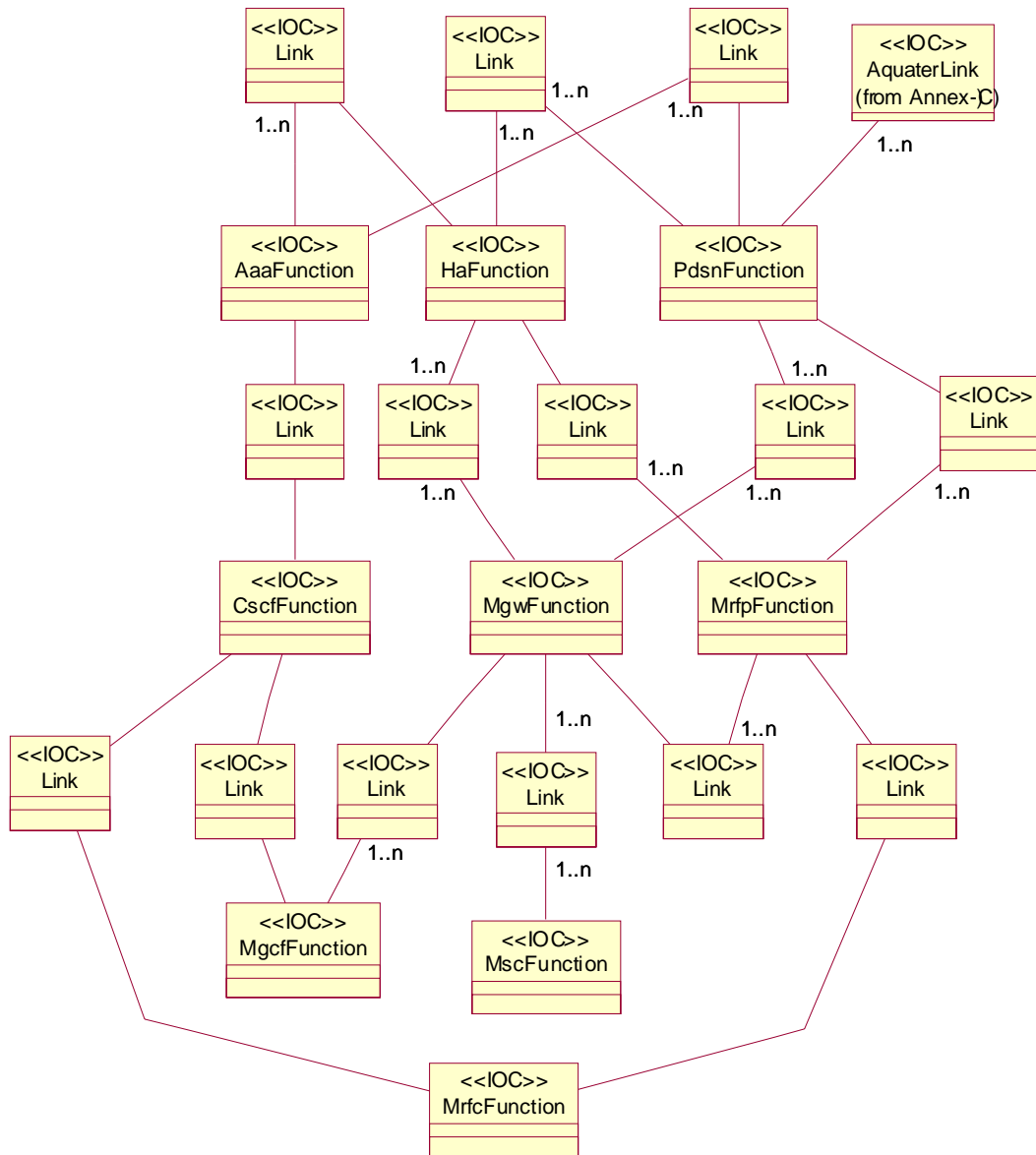
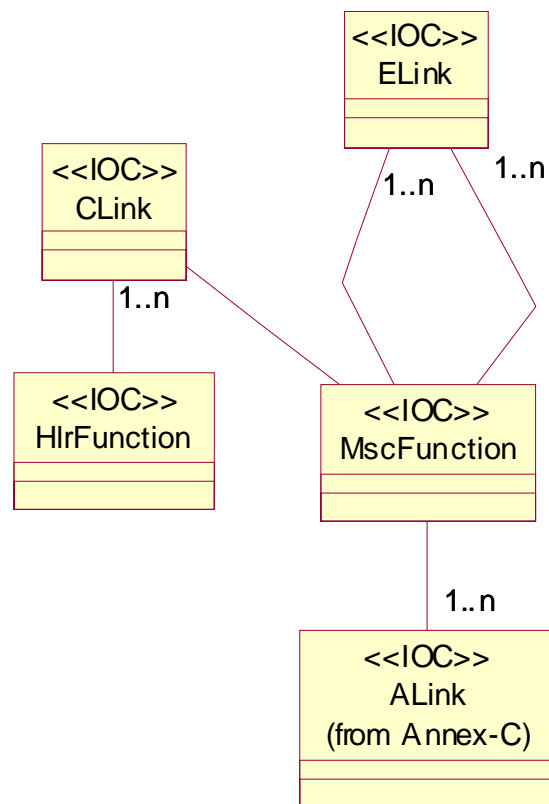


Figure B-2: 3GPP2 Core Network NRM Association Diagram (Part I)

- 1 Figure B-3 shows the associations related to the circuit part of the 3GPP2 Core
- 2 Network NRM:

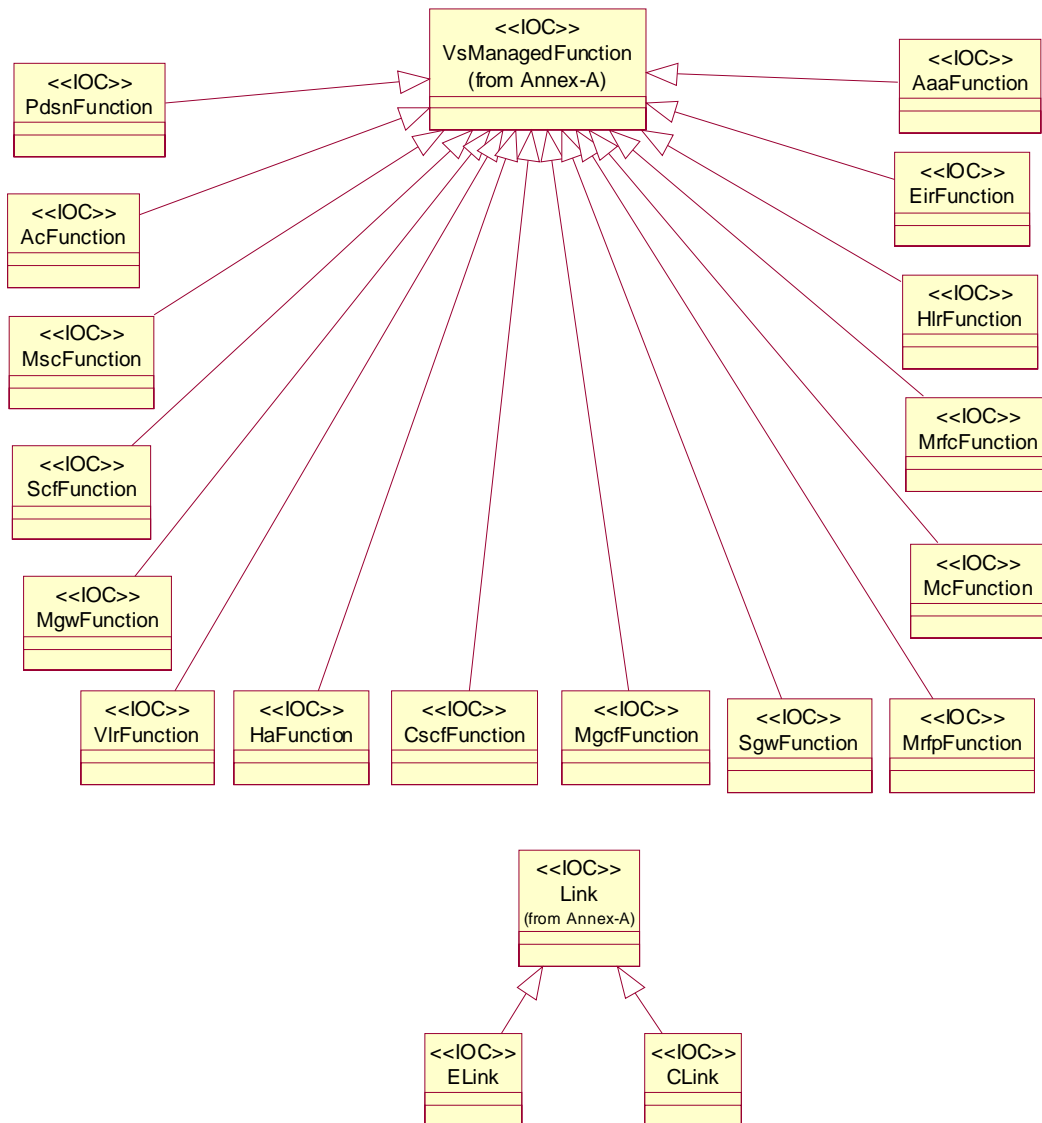


- 3
- 4

Figure B-3: 3GPP2 Core Network NRM Association Diagram (Part II)

1 B.1.2.2 Inheritance

2 Figure B-4 shows the inheritance hierarchy for the 3GPP2 Core Network NRM.



3
4 **Figure B-4: 3GPP2 Core Network NRM Inheritance Hierarchy**

1 B.2.3 Information object classes definition

2 B.1.3.1 IOC MscFunction

3 B.1.3.1.1 Definition

4 This IOC represents MSC functionality. For more information, see [50].

5 It is derived from VsManagedFunction.

6 B.1.3.1.2 Attributes

7

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
mscFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
mscFunction-aLink-list	--	+	O	M	--
mscFunction-cLink	--	+	O	M	--
mscFunction-eLink-list	--	+	O	M	--
mscFunction-mgwFunction-link-list	--	+	O	M	--

8

9 B.1.3.2 IOC HlrFunction

10 B.1.3.2.1 Definition

11 This IOC represents HLR functionality. For more information, see [50].

12 It is derived from VsManagedFunction.

13 B.1.3.2.2 Attributes

14

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
hlrFunctionId	--	+	M	M	--

objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+	M ^{inherited}	M ^{inherited}	-- ^{inherited}
hlrFunction-cLink-list	--	+	O	M	--

1

2 B.1.3.3 IOC vlrFunction

3 B.1.3.3.1 Definition

4 This IOC represents VLR functionality. For more information, see [50].

5 It is derived from VsManagedFunction.

6 B.1.3.3.1 Attributes

7

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
vlrFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

8

9 B.1.3.4 IOC AcFunction

10 B.1.3.4.1 Definition

11 This IOC represents AC functionality. For more information, see [50].

12 It is derived from VsManagedFunction.

13 B.1.3.4.1 Attributes

14

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
acFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

1

2 B.1.3.5 IOC PdsnFunction

3 B.1.3.5.1 Definition

4 This IOC represents PDSN functionality. For more information, see [50] or [51].

5 It is derived from VsManagedFunction.

6 B.1.3.5.2 Attributes

7

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
pdsnFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
pdsnFunction-haFunction-link-list	--	+	O	M	--
pdsnFunction-aquaterLink-list	--	+	O	M	--
pdsnFunction-aaaFunction-link	--	+	O	M	--
pdsnFunction-mgwFunction-link-list	--	+	O	M	--
pdsnFunction-mrpfFunction-link	--	+	O	M	--

8

9 B.1.3.6 IOC HaFunction

10 B.1.3.6.1 Definition

11 This IOC represents the mobile IP home agent functionality. For more
12 information, see [51].

13 It is derived from VsManagedFunction.

B.1.3.6.1 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
haFunctionId	--	+	M	M	--
objectClass	Top	+ _{inherited}	M ^{inherited}	M ^{inherited}	-- _{inherited}
objectInstance	Top	+ _{inherited}	M ^{inherited}	M ^{inherited}	-- _{inherited}
userLabel	ManagedFunction	+ _{inherited}	M ^{inherited}	M ^{inherited}	-- _{inherited}
haFunction-aaaFunction-link	--	+	O	M	--
haFunction-pdsnFunction-link-list	--	+	O	M	--
haFunction-mgwFunction-link-list	--	+	O	M	--
haFunction-mrfpFunction-link	--	+	O	M	--

B.1.3.7 IOC AaaFunction**B.1.3.7.1 Definition**

This IOC represents AAA functionality. For more information, see [50] or [51].
It is derived from VsManagedFunction.

B.1.3.7.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
aaaFunctionId	--	+	M	M	--
objectClass	Top	+ _{inherited}	M ^{inherited}	M ^{inherited}	-- _{inherited}
objectInstance	Top	+ _{inherited}	M ^{inherited}	M ^{inherited}	-- _{inherited}
userLabel	ManagedFunction	+ _{inherited}	M ^{inherited}	M ^{inherited}	-- _{inherited}
aaaFunction-haFunction-link-list	--	+	O	M	--
aaaFunction-pdsnFunction-link-list	--	+	O	M	--
aaaFunction-cscfFunction-link	--	+	O	M	--

1 B.1.3.8 IOC EirFunction

2 B.1.3.8.1 Definition

3 This IOC represents EIR functionality. For more information, see [50].

4 It is derived from VsManagedFunction.

5 B.1.3.8.2 Attributes

6

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
eirFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

7

8 B.1.3.9 IOC ScfFunction

9 B.1.3.9.1 Definition

10 This IOC represents the SCP functionality. For more information, see [50].

11 It is derived from VsManagedFunction.

12 B.1.3.9.2 Attributes

13

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
scfFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

14

1 B.1.3.10 IOC CscfFunction

2 B.1.3.10.1 Definition

3 This IOC represents Session Control Manager functionality. For more
4 information, see [51].

5 It is derived from VsManagedFunction.

6 B.1.3.10.2 Attributes

7

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
cscfFunctionI	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
cscfFunction-aaaFunction-link	--	+	O	M	--
cscfFunction-mrfcFunction-link	--	+	O	M	--
cscfFunction-mgcfFunction-link	--	+	O	M	--

8

9 B.1.3.11 IOC MgcfFunction

10 B.1.3.11.1 Definition

11 This IOC represents MGCF functionality. For more information, see [51].

12 It is derived from VsManagedFunction.

13 B.1.3.11.2 Attributes

14

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
mgcfFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

mgcfFunction-cscfFunction-link	--	+	O	M	--
mgcfFunction-mgwFunction-link-list	--	+	O	M	--

1

2 B.1.3.12 IOC MgwFunction

3 B.1.3.12.1 Definition

4 This IOC represents MGW functionality. For more information, see [51].

5 It is derived from VsManagedFunction.

6 B.1.3.12.2 Attributes

7

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
mgwFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
mgwFunction-pdsnFunction-link-list	--	+	O	M	--
mgwFunction-haFunction-link-list	--	+	O	M	--
mgwFunction-mgcfFunction-link	--	+	O	M	--
mgwFunction-mscFunction-link-list	--	+	O	M	--
mgwFunction-mrfpFunction-link	--	+	O	M	--

8

9 B.1.3.13 IOC MrfcFunction

10 B.1.3.13.1 Definition

11 This IOC represents MRFC functionality. For more information, see [51].

12 It is derived from VsManagedFunction.

B.1.3.13.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
mrfcFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
mrfcFunction-mrfpFunction-link	--	+	O	M	--
mrfcFunction-cscfFunction-link	--	+	O	M	--

B.1.3.14 IOC MrfpFunction

B.1.3.14.1 Definition

This IOC represents MRFP functionality. For more information, see [51].

It is derived from VsManagedFunction.

B.1.3.14.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
mrfpFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
mrfpFunction-mrfcFunction-link	--	+	O	M	--
mrfpFunction-mgwFunction-link-list	--	+	O	M	--
mrfpFunction-haFunction-link-list	--	+	O	M	--
mrfpFunction-pdsnFunction-link-list	--	+	O	M	--

B.1.3.15 IOC McFunction**B.1.3.15.1 Definition**

This IOC represents the Message Center functionality. For more information, see [50].

It is derived from VsManagedFunction.

B.1.3.15.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
mcFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

B.1.3.16 IOC SgwFunction**B.1.3.16.1 Definition**

This IOC represents the signaling gateway functionality. For more information, see [51].

It is derived from VsManagedFunction.

B.1.3.16.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
sgwFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

1 B.1.3.17 IOC CLink**2 B.1.3.17.1 Definition**

3 This IOC represents the C link functionality between MSC and HLR. For more
4 information, see [50].

5 It is derived from Link.

6 B.1.3.17.2 Attributes

7 All attributes are inherited from Link.

8 B.1.3.18 IOC ELink**9 B.1.3.18.1 Definition**

10 This IOC represents the E link functionality between MSCs. For more
11 information, see [50].

12 It is derived from Link.

13 B.1.3.18.2 Attributes

14 All attributes are inherited from Link.

15 B.2.4 Information attributes definition**16 B.1.4.1 Definition and legal values**

17

Attribute Name	Definition	Legal Values
aaaFunctionId	It contains 'name+value' that is the RDN, when naming an instance, of this object class containing this attribute. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	--
acFunctionId		--
cscfFunctionId		--
eirFunctionId		--
haFunctionId		--
hlrFunctionId		--
linkId		--
mcFunctionId		--
mgcfFunctionId		--

mgwFunctionId		--
mrfcFunctionId		--
mrfpFunctionId		--
mscFunctionId		--
pdsnFunctionId		--
scfFunctionId		--
vlrFunctionId		--
aaaFunction-cscfFunction-link	The value shall be the DN of the related link instance.	--
aaaFunction-haFunctionlink-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one HaFunction instance.	--
aaaFunction-pdsnFunction-link-list	The value shall be the related link instance DNs. Each link instance is related to one PdsnFunction instance.	--
aEnd	The value of this attribute shall be the DN of the instance to which this link/relation is connected.	--
cscfFunction-aaaFunction-link	The value shall be the DN of the related Link instance.	--
cscfFunction-mgcfFunction-link	The value shall be the DN of the related Link instance.	--
cscfFunction-mrfcFunction-link	The value shall be the DN of the related Link instance.	--
haFunction-aaaFunction-link	The value of this attribute shall be the DN of the related link instance.	--
haFunction-mgwFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one MgwFunction instance.	--
haFunction-mrfpFunction-link	The value shall be the DN of the related link instance.	--
haFunction-pdsnFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one PdsnFunction instance.	--
hlrFunction-cLink-list	The value shall be the list of the related CLink instance DNs.	--
mgcfFunction-cscfFunction-link	The value shall be the DN of the related Link instance.	--
mgcfFunction-mgwFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one MgwFunction instance.	--
mgwFunction-haFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one HaFunction instance.	--

mgwFunction-mgcfFunction-link	The value shall be the DN of the related Link instance.	--
mgwFunction-mrfpFunction-link	The value shall be the DN of the related Link instance.	--
mgwFunction-mscFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one MscFunction instance.	--
mgwFunction-pdsnFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one PdsnFunction instance.	--
mrfcFunction-cscfFunction-link	The value shall be the DN of the related Link instance.	--
mrfcFunction-mrfpFunction-link	The value shall be the DN of the related Link instance.	--
mrfpFunction-haFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one HaFunction instance.	--
mrfpFunction-mgwFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one MgwFunction instance.	--
mrfpFunction-mrfcFunction-link	The value shall be the DN of the related Link instance.	--
mrfpFunction-pdsnFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one PdsnFunction instance.	--
mscFunction-aLink-list	The value shall be the list of the related ALink instance DNs.	--
mscFunction-cLink	The value shall be the DN of the related CLink instance.	--
mscFunction-mlink-list	The value shall be the list of the related ELink instance DNs.	--
mscFunction-mgwfunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one MgwFunction instance.	--
objectClass	As defined in 32.622 [28]: An attribute which captures the name of the class from which the object instance is an occurrence of.	--
objectInstance	As defined in 32.622 [28]: An information which captures the Distinguished Name of any object.	--
pdsnFunction-aaaFunction-link	The value of this attribute shall be the DN of the related link instance.	--
pdsnFunction-aquaterLink-list	The value shall be the list of the related AquaterLink instance DNs.	--

pdsnFunction-haFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one HaFunction instance.	--
pdsnFunction-mgwFunction-link-list	The value shall be the list of the related link instance DNs. Each link instance is related to one MgwFunction instance.	--
pdsnFunction-mrfpFunction-link	The value shall be the DN of the related link instance.	--
protocolName	Protocol name	--
protocolVersion	Protocol version	--
userLabel	Based on definition from 32.622 [28]: A user-friendly (and user assigned) name of the associated instance.	--
zEnd	The value of this attribute shall be the DN of the instance to which this link/relation is connected.	--

1 **B.2 3GPP2 Core Network Resource Model (CORBA SS)**

2 Within this section the CORBA Solution Set (SS) definitions for the 3GPP2 Core
3 Network Resource Model are specified.

4 **B.2.1 Architectural features**

5 The overall architectural feature of 3GPP2 Core Network Resource Model IRP
6 (IS) is specified in section Annex B.1 within this document.

7 This clause specifies features that are specific to the CORBA SS.

8 **B.2.1.1 Notifications**

9 Notifications are sent according to the Notification IRP: CORBA SS (see
10 3GPP TS 32.303 [11])

11 **B.2.2 Mapping**

12 **B.2.2.1 General mappings**

13 The IS parameter name managedObjectInstance is mapped into DN.

14 Attributes modeling associations as defined in the NRM (here also called
15 “reference attributes”) are in this SS mapped to attributes. The names of the
16 reference attributes in the NRM are mapped to the corresponding attribute
17 names in the IOC. When the cardinality for an association is 0..1 or 1..1 the
18 data type for the reference attribute is defined as an MOReference. The value of
19 an MO reference contains the distinguished name of the associated MO. When
20 the cardinality for an association allows more than one referred MO, the
21 reference attribute will be of type MOReferenceSet, which contains a sequence
22 of MO references.

23 If a reference attribute is changed, an AttributeValueChange notification is
24 emitted.

1 B.2.2.2 3GPP2 Core Network NRM Information Object Class (IOC) mapping

2 B.2.2.2.1 IOC MscFunction

3

NRM Attributes of IOC MscFunction	SS Attributes	SS Type	Qualifier	Read	Write
mscFunctionId	mscFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
mscFunction-alink-list	mscFunction-alink-list	string	O	M	--
mscFunction-clink	mscFunction-clink	string	O	M	--
mscFunction-mlink-list	mscFunction-mlink-list	string	O	M	--
mscFunction-mgwFunction-link-list	mscFunction-mgwFunction-link-list	string	O	M	--

4

5 B.2.2.2.2 IOC HlrFunction

6

NRM Attributes of IOC HlrFunction	SS Attributes	SS Type	Qualifier	Read	Write
hlrFunctionId	hlrFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
hlrFunction-clink-list	hlrFunction-clink-list	string	O	M	--

7

8 B.2.2.2.3 IOC vlrFunction

9

NRM Attributes of IOC vlrFunction	SS Attributes	SS Type	Qualifier	Read	Write
vlrFunctionId	vlrFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited

NRM Attributes of IOC VlrFunction	SS Attributes	SS Type	Qualifier	Read	Write
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

1

2 **B.2.2.2.4 IOC AcFunction**

3

NRM Attributes of IOC AcFunction	SS Attributes	SS Type	Qualifier	Read	Write
acFunctionId	acFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

4

5 **B.2.2.2.5 IOC EirFunction**

6

NRM Attributes of IOC EirFunction	SS Attributes	SS Type	Qualifier	Read	Write
eirFunctionId	eirFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

7

8 **B.2.2.2.6 IOC PdsnFunction**

9

NRM Attributes of IOC PdsnFunction	SS Attributes	SS Type	Qualifier	Read	Write
pdsnFunctionId	pdsnFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited

NRM Attributes of IOC PdsnFunction	SS Attributes	SS Type	Qualifier	Read	Write
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
pdsnFunction-haFunction-link-list	pdsnFunction-haFunction-link-list	string	O	M	--
pdsnFunction-aquaterLink-list	pdsnFunction-aquaterLink-list	string	O	M	--
pdsnFunction-aaaFunction-link	pdsnFunction-aaaFunction-link	string	O	M	--
pdsnFunction-mgwFunction-link-list	pdsnFunction-mgwFunction-link-list	string	O	M	--
pdsnFunction-mrfpFunction-link	pdsnFunction-mrfpFunction-link	string	O	M	--

1

2 B.2.2.2.7 IOC HaFunction

3

NRM Attributes of IOC HaFunction	SS Attributes	SS Type	Qualifier	Read	Write
haFunctionId	haFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
haFunction-aaaFunction-link	haFunction-aaaFunction-link	string	O	M	--
haFunction-pdsnFunction-link-list	haFunction-pdsnFunction-link-list	string	O	M	--
haFunction-mgwFunction-link-list	haFunction-mgwFunction-link-list	string	O	M	--
haFunction-mrfpFunction-link	haFunction-mrfpFunction-link	string	O	M	--

4

B.2.2.2.8 IOC ScfFunction

NRM Attributes of IOC ScfFunction	SS Attributes	SS Type	Qualifier	Read	Write
scfFunctionId	scfFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

B.2.2.2.9 IOC AaaFunction

NRM Attributes of IOC AaaFunction	SS Attributes	SS Type	Qualifier	Read	Write
aaaFunctionId	aaaFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
aaaFunction-haFunction-link-list	aaaFunction-haFunction-link-list	string	O	M	--
aaaFunction-pdsnFunction-link-list	aaaFunction-pdsnFunction-link-list	string	O	M	--
aaaFunction-cscfFunction-link	aaaFunction-cscfFunction-link	string	O	M	--

B.2.2.2.10 IOC CscfFunction

NRM Attributes of IOC CscfFunction	SS Attributes	SS Type	Qualifier	Read	Write
cscfFunctionId	cscfFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
cscfFunction-aaaFunction-link	cscfFunction-aaaFunction-link	string	O	M	--

NRM Attributes of IOC CscfFunction	SS Attributes	SS Type	Qualifier	Read	Write
cscfFunction-mrfcFunction-link	cscfFunction-mrfcFunction-link	string	O	M	--
cscfFunction-mgcfFunction-link	cscfFunction-mgcfFunction-link	string	O	M	--

1

2 **B.2.2.2.11 IOC MgcFunction**

3

NRM Attributes of IOC MgcFunction	SS Attributes	SS Type	Qualifier	Read	Write
mgcfFunctionId	mgcfFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
mgcfFunction-cscfFunction-link	mgcfFunction-cscfFunction-link	string	O	M	--
mgcfFunction-mgwFunction-link-list	mgcfFunction-mgwFunction-link-list	string	O	M	--

4

5 **B.2.2.2.12 IOC MgwFunction**

6

NRM Attributes of IOC MgwFunction	SS Attributes	SS Type	Qualifier	Read	Write
mgwFunctionId	mgwFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
mgwFunction-pdsnFunction-link-list	mgwFunction-pdsnFunction-link-list	string	O	M	--
mgwFunction-haFunction-link-list	mgwFunction-haFunction-link-list	string	O	M	--
mgwFunction-mgcfFunction-link	mgwFunction-mgcfFunction-link	string	O	M	--
mgwFunction-mscFunction-link-list	mgwFunction-mscFunction-link-list	string	O	M	--

NRM Attributes of IOC MgwFunction	SS Attributes	SS Type	Qualifier	Read	Write
mgwFunction- mrfpFunction-link	mgwFunction- mrfpFunction-link	string	O	M	--

1

2 B.2.2.2.13 IOC MrfcFunction

3

NRM Attributes of IOC MrfcFunction	SS Attributes	SS Type	Qualifier	Read	Write
mrfcFunctionId	mrfcFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
mrfcFunction- mrfpFunction-link	mrfcFunction- mrfpFunction-link	string	O	M	--
mrfcFunction-cscfFunction- link	mrfcFunction- cscfFunction-link	string	O	M	--

4

5 B.2.2.2.14 IOC MrfpFunction

6

NRM Attributes of IOC MrfpFunction	SS Attributes	SS Type	Qualifier	Read	Write
mrfpFunctionId	mrfpFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
mrfpFunction- mrfcFunction-link	mrfpFunction- mrfcFunction-link	string	O	M	--
mrfpFunction- mgwFunction-link-list	mrfpFunction- mgwFunction-link-list	string	O	M	--
mrfpFunction-haFunction- link-list	mrfpFunction- haFunction-link-list	string	O	M	--
mrfpFunction- pdsnFunction-link-list	mrfpFunction- pdsnFunction-link-list	string	O	M	--

7

B.2.2.2.15 IOC McFunction

NRM Attributes of IOC McFunction	SS Attributes	SS Type	Qualifier	Read	Write
mcFunctionId	mcFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

B.2.2.2.16 IOC SgwFunction

NRM Attributes of IOC SgwFunction	SS Attributes	SS Type	Qualifier	Read	Write
sgwFunctionId	sgwFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

B.2.3 IDL specification (file name "PP2CoreNRMDefs.idl")

```

#ifndef PP2CoreNRMDefs_idl
#define PP2CoreNRMDefs_idl

#include "PP2GenericNRMDefs.idl"

#pragma prefix "3gpp2.org"

/**
 * This module defines constants for each IOC class name and
 * the attribute names for each defined IOC class.
 */
module PP2CoreNRMDefs
{
    /**
     * Definitions for MO class MscFunction
     */
    interface MscFunction : PP2GenericNRM::VsManagedFunction
    {
        const string CLASS = "MscFunction";

        // Attribute Names

```

```

1          //
2          const string mscFunctionId = "mscFunctionId";
3          const string mscFunction-alink-list = "mscFunction-alink-list";
4          const string mscFunction-cLink = "mscFunction-cLink";
5          const string mscFunction-eLink-list = "mscFunction-eLink-list";
6          const string mscFunction-mgwFunction-link-list= "mscFunction-
7mgwFunction-link-list";
8      };
9
10         /**
11         *  Definitions for MO class HlrFunction
12         */
13         interface HlrFunction : PP2GenericNRM::VsManagedFunction
14         {
15             const string CLASS = "HlrFunction";
16
17             // Attribute Names
18             //
19             const string hlrFunctionId = "hlrFunctionId";
20             const string hlrFunction-cLink-list = "hlrFunction-cLink-list";
21         };
22
23
24         /**
25         *  Definitions for MO class VlrFunction
26         */
27         interface VlrFunction : PP2GenericNRM::VsManagedFunction
28         {
29             const string CLASS = "VlrFunction";
30
31             // Attribute Names
32             //
33             const string vlrFunctionId = "vlrFunctionId";
34         };
35
36
37
38         /**
39         *  Definitions for MO class AcFunction
40         */
41         interface AcFunction : PP2GenericNRM::VsManagedFunction
42         {
43             const string CLASS = "AcFunction";
44
45             // Attribute Names
46             //
47             const string acFunctionId = "acFunctionId";
48         };
49
50
51         /**
52         *  Definitions for MO class EirFunction
53         */
54         interface EirFunction : PP2GenericNRM::VsManagedFunction
55         {
56             const string CLASS = "EirFunction";
57
58             // Attribute Names
59             //

```

```

1      const string eirFunctionId = "eirFunctionId";
2  };
3
4
5      /**
6       * Definitions for MO class McFunction
7       */
8      interface McFunction : PP2GenericNRM::VsManagedFunction
9      {
10         const string CLASS = "McFunction";
11
12         // Attribute Names
13         //
14         const string mcFunctionId = "mcFunctionId";
15     };
16
17
18     /**
19      * Definitions for MO class PdsnFunction
20      */
21     interface PdsnFunction : PP2GenericNRM::VsManagedFunction
22     {
23         const string CLASS = "PdsnFunction";
24
25         // Attribute Names
26         //
27         const string pdsnFunctionId = "pdsnFunctionId";
28         const string pdsnFunction-haFunction-link-list = "pdsnFunction-
29 haFunction-link-list";
30         const string pdsnFunction-aquaterLink-list = "pdsnFunction-
31 aquaterLink-list";
32         const string pdsnFunction-aaaFunction-link = "pdsnFunction-
33 aaaFunction-link";
34         const string pdsnFunction-mgwFunction-link-list = "pdsnFunction-
35 mgwFunction-link-list";
36         const string pdsnFunction-mrftpFunction-link= "pdsnFunction-
37 mrftpFunction-link";
38     };
39
40
41     /**
42      * Definitions for MO class HaFunction
43      */
44     interface HaFunction : PP2GenericNRM::VsManagedFunction
45     {
46         const string CLASS = "HaFunction";
47
48         // Attribute Names
49         //
50         const string haFunctionId = "haFunctionId";
51         const string haFunction-aaaFunction-link = "haFunction-
52 aaaFunction-link";
53         const string haFunction-pdsnFunction-link-list = "haFunction-
54 pdsnFunction-link-list";
55         const string haFunction-mgwFunction-link-list = " haFunction-
56 mgwFunction-link-list ";
57         const string haFunction-mrftpFunction-link = "haFunction-
58 mrftpFunction-link";
59

```

```

1      };
2
3
4      /**
5       * Definitions for MO class CscfFunction
6       */
7      interface CscfFunction : PP2GenericNRM::VsManagedFunction
8      {
9          const string CLASS = "CscfFunction";
10
11         // Attribute Names
12         //
13         const string cscfFunctionId = "cscfFunctionId";
14         const string cscfFunction-aaaFunction-link = "cscfFunction-
15 aaaFunction-link";
16         const string cscfFunction-mrfcFunction-link = "cscfFunction-
17 mrfcFunction-link";
18         const string cscfFunction-mgcfFunction-link = "cscfFunction-
19 mgcfFunction-link";
20
21     };
22
23
24     /**
25      * Definitions for MO class MgcFunction
26      */
27     interface MgcFunction : PP2GenericNRM::VsManagedFunction
28     {
29         const string CLASS = "MgcFunction";
30
31         // Attribute Names
32         //
33         const string mgcfFunctionId = "mgcfFunctionId";
34         const string mgcfFunction-cscfFunction-link = "mgcfFunction-
35 cscfFunction-link";
36         const string mgcfFunction-mgwFunction-link-list = "mgcfFunction-
37 mgwFunction-link-list";
38
39     };
40
41     /**
42      * Definitions for MO class MrfcFunction
43      */
44     interface MrfcFunction : PP2GenericNRM::VsManagedFunction
45     {
46         const string CLASS = "MrfcFunction";
47
48         // Attribute Names
49         //
50         const string mrfcFunctionId = "mrfcFunctionId";
51         const string mrfcFunction-mrpfFunction-link = "mrfcFunction-
52 mrpfFunction-link";
53         const string mrfcFunction-cscfFunction-link = "mrfcFunction-
54 cscfFunction-link";
55
56     };
57
58     /**
59      * Definitions for MO class MrpfFunction

```

```

1      */
2      interface MrfpFunction : PP2GenericNRM::VsManagedFunction
3      {
4          const string CLASS = "MrfpFunction";
5
6          // Attribute Names
7          //
8          const string mrfpFunctionId = "mrfpFunctionId";
9          const string mrfpFunction-mrfcFunction-link = "mrfpFunction-
10 mrfcFunction-link";
11          const string mrfpFunction-mgwFunction-link-list = "mrfpFunction-
12 mgwFunction-link-list";
13          const string mrfpFunction-haFunction-link-list = "mrfpFunction-
14 haFunction-link-list";
15          const string mrfpFunction-pdsnFunction-link-list= "mrfpFunction-
16 pdsnFunction-link-list ";
17      };
18
19
20      /**
21       * Definitions for MO class AaaFunction
22       */
23      interface AaaFunction : PP2GenericNRM::VsManagedFunction
24      {
25          const string CLASS = "AaaFunction";
26
27          // Attribute Names
28          //
29          const string aaaFunctionId = "aaaFunctionId";
30          const string aaaFunction-haFunction-link-list = "aaaFunction-
31 haFunction-link-list";
32          const string aaaFunction-pdsnFunction-link-list = "aaaFunction-
33 pdsnFunction-link-list";
34          const string aaaFunction-cscfFunction-link = "aaaFunction-
35 cscfFunction-link";
36      };
37
38
39      /**
40       * Definitions for MO class ScfFunction
41       */
42      interface ScfFunction : PP2GenericNRM::VsManagedFunction
43      {
44          const string CLASS = "ScfFunction";
45
46          // Attribute Names
47          //
48          const string scfFunctionId = "scfFunctionId";
49      };
50
51
52      /**
53       * Definitions for MO class MgwFunction
54       */
55      interface MgwFunction : PP2GenericNRM::VsManagedFunction
56      {
57          const string CLASS = "MgwFunction";
58
59          // Attribute Names

```

```

1          //
2          const string mgwFunctionId = "mgwFunctionId";
3          const string mgwFunction-haFunction-link-list = "mgwFunction-
4          haFunction-link-list";
5          const string mgwFunction-pdsnFunction-link-list = "mgwFunction-
6          pdsnFunction-link-list";
7          const string mgwFunction-mgcfFunction-link = "mgwFunction-
8          mgcfFunction-link";
9          const string mgwFunction-mscFunction-link-list = "mgwFunction-
10         mscFunction-link-list";
11         const string mgwFunction-mrfpFunction-link = "mgwFunction-
12         mrfpFunction-link";
13     };
14
15     /**
16     *  Definitions for MO class SgwFunction
17     */
18     interface SgwFunction : PP2GenericNRM::VsManagedFunction
19     {
20         const string CLASS = "SgwFunction";
21
22         // Attribute Names
23         //
24         const string sgwFunctionId = "sgwFunctionId";
25     };
26
27     /**
28     *  Definitions for MO class CLink
29     */
30     interface CLink : PP2GenericNRM::Link
31     {
32         const string CLASS = "CLink";
33     };
34
35
36     /**
37     *  Definitions for MO class ELink
38     */
39     interface ELink : PP2GenericNRM::Link
40     {
41         const string CLASS = "ELink";
42     };
43
44 };
45
46 #endif

```

1 **B.3 3GPP2 Core Network Resource Model (XML SS)**

2 Within this section the XML Solution Set (SS) definitions for the 3GPP2 Core
3 Network Resource Model will be specified in a future version of this document
4 (currently defined within Annex D).
5

Annex C (normative) “3GPP2 Radio Access Network Resource Model IRP”

This annex defines the 3GPP2 Radio Access Network Model for wireless systems based on 3GPP2 specifications.

It is mainly based on the following documents:

- *3GPP2 S.R0005-B* [50]: This document defines the wireless network reference model depicting circuit-mode and packet-mode operations that include network entities and reference points.
- *3GPP2 S.R0037* [51]: This document defines the All IP Network Architecture Model for cdma2000 Spread Spectrum Systems.

C.1 3GPP2 Radio Access Network Resource Model IRP (IS)

Within this section the Information Service (IS) level definitions for the 3GPP2 Radio Access Network Resource Model are specified.

This model is defined following the IRP IS methodology specified in 3GPP TS 32.102 [03].

C.1.1 Information entities imported and local labels

Label reference	Local label
32.622 [28], information object class, ManagedElement	ManagedElement
32.622 [28], information object class, Top	Top
Annex A, information object class, VsManagedFunction	VsManagedFunction
Annex A, information object class, VsManagedElement	VsManagedElement
Annex A, information object class, Link	Link
Annex A, information object class, Relation	Relation

1 C.1.2 Class diagram

2 C.1.2.1 Attributes and relationships

3 Figure C-1 shows the containment/naming and association diagram of the
4 3GPP2 Radio Network NRM.

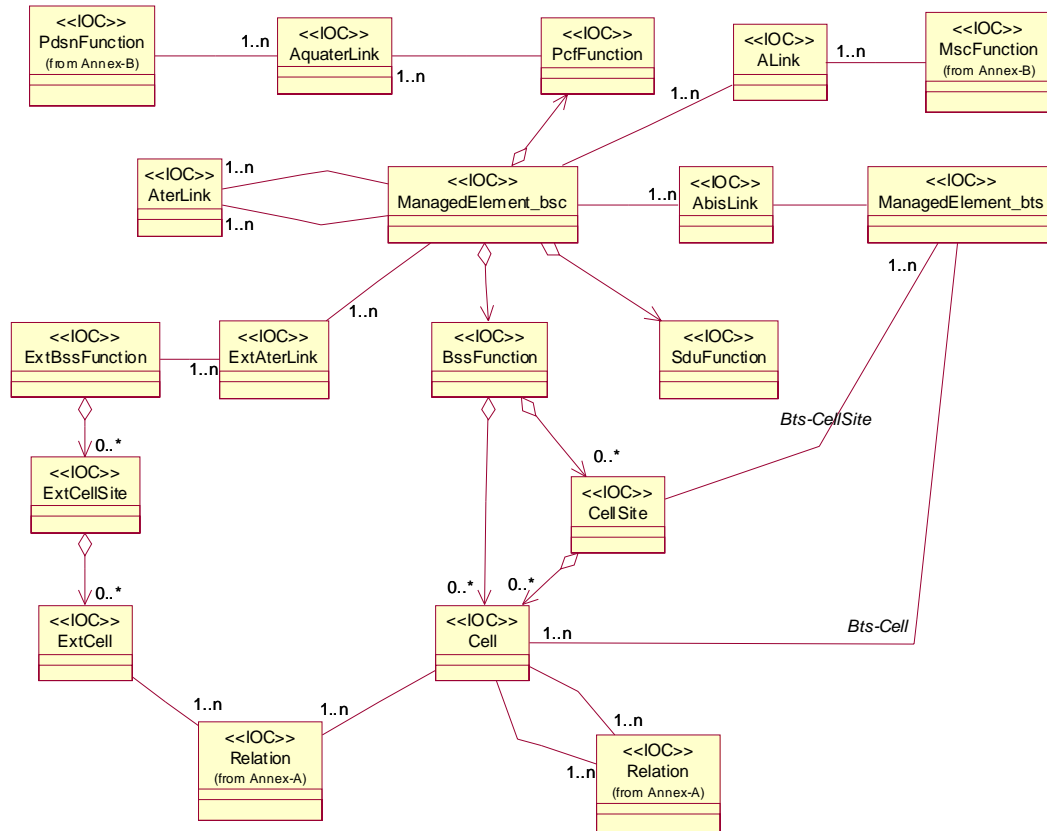
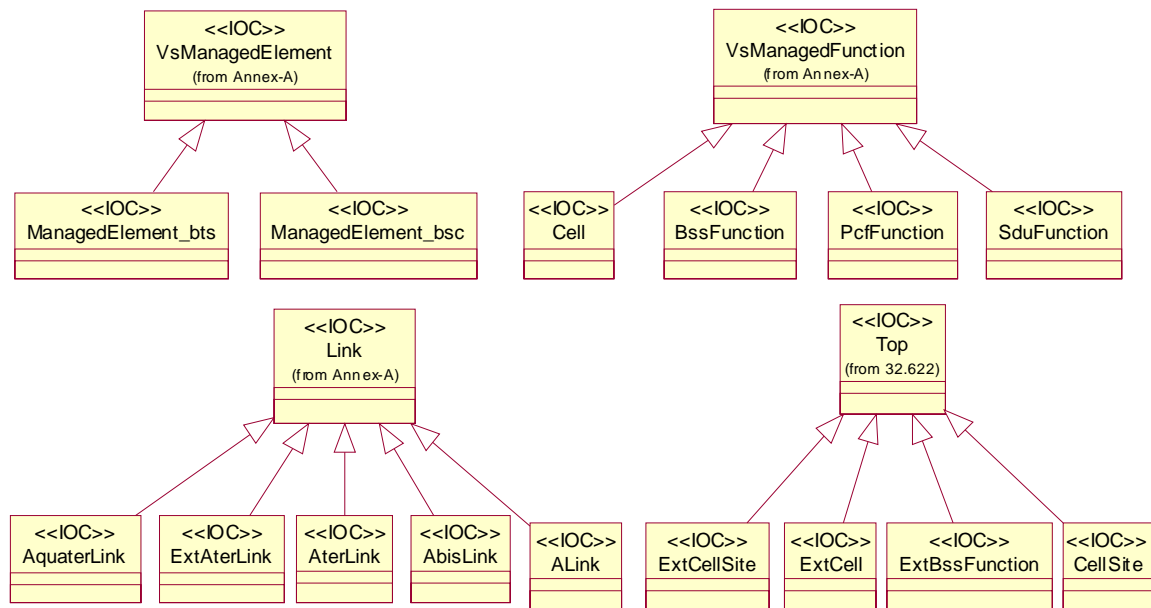


Figure C-1: 3GPP2 Radio Network NRM Containment/Naming and Association

1 C.1.2.2 Inheritance

2 Figure C-2 shows the inheritance hierarchy for the 3GPP2 Radio Network NRM.



3
4 **Figure C-2: 3GPP2 Radio Network NRM Inheritance Hierarchy**

5 C.1.3 Information object class definition

6 C.1.3.1 IOC BssFunction

7 C.1.3.1.1 Definition

8 This IOC represents BSS functionality. For more information, see [50].

9 It is derived from VsManagedFunction.

10 C.1.3.1.2 Attributes

11

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
bssFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

1

2 C.1.3.1.3 Constraints

3 The containment of Cell or CellSite by BssFunction is exclusive.

4 C.1.3.2 IOC ManagedElement_Bsc

5 C.1.3.2.1 Definition

6 This IOC represents BSC functionality. For more information, see [50].

7 It is derived from VsManagedElement.

8 C.1.3.2.2 Attributes

9

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
managedElementId	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
dnPrefix	ManagedElement	+ ^{inherited}	C ^{inherited}	M ^{inherited}	-- ^{inherited}
managedElementType	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
vendorName	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userDefinedState	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
locationName	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
swVersion	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
managedBy	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
mcc	--	+	O	M	--
mnc	--	+	O	M	--
managedElement_bsc-aterLink-list	--	+	O	M	--
managedElement_bsc-aLink-list	--	+	O	M	--
managedElement_bsc-abisLink-list	--	+	O	M	--

managedElement_bsc- extAterLink-list	--	+	O	M	--
---	----	---	---	---	----

1

2 C.1.3.3 IOC ManagedElement_Bts

3 C.1.3.3.1 Definition

4 This IOC represents BTS functionality. For more information, see [50].

5 It is derived from VsManagedElement.

6 C.1.3.3.2 Attributes

7

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
managedElementId	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
dnPrefix	ManagedElement	+ ^{inherited}	C ^{inherited}	M ^{inherited}	-- ^{inherited}
managedElementType	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
vendorName	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userDefinedState	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
locationName	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
swVersion	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
managedBy	ManagedElement	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
managedElement_bts-abisLink	--	+	O	M	--
managedElement_bts-cellSite	--	+	O	M	--
managedElement_bts-cell	--	+	O	M	--

8

9 C.1.3.4 IOC CellSite

10 C.1.3.4.1 Definition

11 This IOC represents the site as a geographical area that has some transmit and
12 receive antennas.

C.1.3.4.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
cellSiteId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
cellSite- managedElement_bts	--	+	O	M	--

C.1.3.5 IOC ExtBssFunction**C.1.3.5.1 Definition**

This IOC represents an external BSS.

C.1.3.5.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
extBssFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
extBssFunction-extAterLink-list	--	+	O	M	--

C.1.3.6 IOC Cell**C.1.3.6.1 Definition**

This IOC represents an abstract cell class.

It is derived from VsManagedFunction.

C.1.3.6.2 Attributes

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
cellId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
cell-cell-relation-list	--	+	O	M	--
cell-extCell-relation-list	--	+	O	M	--
cell- managedElement_bts	--	+	O	M	--

1

2 **C.1.3.7 IOC ExtCell**3 **C.1.3.7.1 Definition**

4 This IOC represents an external Cell.

5 **C.1.3.7.2 Attributes**

6

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
extCellId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
extCell-cell-relation-list	--	+	O	M	--

7

8 **C.1.3.8 IOC ExtCellSite**9 **C.1.3.8.1 Definition**

10 This IOC represents the external site.

11 **C.1.3.8.2 Attributes**

12

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
extCellSiteId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

1

2 **C.1.3.9 IOC AquaterLink**3 **C.1.3.9.1 Definition**

4 This IOC represents the RP link between the BSC and the PDSN. For more
5 information, see [50].

6 It inherits from Link.

7 **C.1.3.9.2 Attributes**

8 All attributes are inherited from Link.

9 **C.1.3.10 IOC ALink**10 **C.1.3.10.1 Definition**

11 This IOC represents the A link between the BSC and the MSC. For more
12 information, see [50].

13 It inherits from Link.

14 **C.1.3.10.2 Attributes**

15 All attributes are inherited from Link.

16 **C.1.3.10.3 Constraints**

17 This IOC is not applicable to PcfFunction.

1 **C.1.3.11 IOC AbisLink**

2 **C.1.3.11.1 Definition**

3 This IOC represents the Abis link between the BSC and the BTS. For more
4 information, see [50].

5 It inherits from Link.

6 **C.1.3.11.2 Attributes**

7 All attributes are inherited from Link.

8 **C.1.3.11.3 Constraints**

9 This IOC is not applicable to PcfFunction.

10 **C.1.3.12 IOC AterLink**

11 **C.1.3.12.1 Definition**

12 This IOC represents the Ater link between BSSs. For more information, see [50].
13 It inherits from Link.

14 **C.1.3.12.2 Attributes**

15 All attributes are inherited from Link.

16 **C.1.3.12.3 Constraints**

17 This IOC is not applicable to PcfFunction.

18 **C.1.3.13 IOC ExtAterLink**

19 **C.1.3.13.1 Definition**

20 This IOC represents the Ater link between a BSS and an external BSS. For more
21 information, see [50].

22 It inherits from Link.

1 C.1.3.13.2 Attributes

2 All attributes are inherited from `Link`.

3 C.1.3.13.3 Constraints

4 This IOC is not applicable to `PcfFunction`.

5 C.1.3.14 IOC `PcfFunction`**6 C.1.3.14.1 Definition**

7 This IOC represents the PCF functionality. For more information, see [50].

8 It is derived from `VsManagedFunction`.

9 C.1.3.14.2 Attributes

10

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
<code>pcfFunctionId</code>	--	+	M	M	--
<code>objectClass</code>	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
<code>objectInstance</code>	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
<code>userLabel</code>	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
<code>pcfFunction-aterLink-list</code>	--	+	O	M	--

11

12 C.1.3.15 IOC `SduFunction`**13 C.1.3.15.1 Definition**

14 This IOC represents the SDU functionality.

15 It is derived from `VsManagedFunction`.

16 C.1.3.15.2 Attributes

17

Attribute name	Defined in	Visibility	Support Qualifier	Read Qualifier	Write Qualifier
sduFunctionId	--	+	M	M	--
objectClass	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
objectInstance	Top	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}
userLabel	ManagedFunction	+ ^{inherited}	M ^{inherited}	M ^{inherited}	-- ^{inherited}

1

2 C.1.4 Information relationships definition

3 C.1.4.1 Bts-CellSite

4 C.1.4.1.1 Definition

5 This represents a bi-directional relation between the Bts and CellSite. The role
 6 of the IOC shall be mapped to a reference attribute of the IOC. The name of the
 7 reference attribute shall be the role name.

8 C.6.1.4.1.2 Roles

Name
ManagedElement_bts-cellSite
cellSite- managedElement_bts

9

10 C.1.4.1.3 Constraints

11 The Relation Bts-CellSite is only instantiated when BssFunction has
 12 containment with CellSite.

13 C.1.4.2 Bts-Cell

14 C.1.4.2.1 Definition

15 This represents a bi-directional relation between the Bts and Cell. The role of
 16 the IOC shall be mapped to a reference attribute of the IOC. The name of the
 17 reference attribute shall be the role name.

1 C.1.4.2.2 Roles

Name
managedElement_bts-cell
cell- managedElement_bts

2

3 C.1.4.2.3 Constraints

4 The Relation Bts-Cell is only instantiated when BssFunction has containment
5 with Cell.

6 C.1.5 Information attributes definition

7 C.1.5.1 Definition and legal values

8

Attribute Name	Definition	Legal Values
bssFunctionId	It contains 'name+value' that is the RDN, when naming an instance, of this object class containing this attribute. This RDN uniquely identifies the object instance within the scope of its containing (parent) object instance.	--
cellId		--
extBssId		--
extCellId		--
extCellSiteId		--
managedElementId		--
pcfFunctionId		--
sduFunctionId		--
cell-cell-relation-list	The value shall be the list of the related Cell instance DNs	--
cell-extCell-relation-list	The value shall be the list of the related ExtCell instance DNs	--
cellSite- managedElement_bts	The value shall be the DN of the related BTS instance. This is a reference attribute modelling the role that this CellSite is connected to BTS.	--
dnPrefix	As defined in 32.622 [28]: It carries the DN Prefix information as defined in Annex C of 32.300 [08]. It shall only be specified if the instance of the information object class supporting this attribute is a local root instance of the MIB. Otherwise the value shall carry the NULL semantics.	--
extBss-extAterLink-list	The value shall be the list of the related ExtAterLink instance DNs	--

Attribute Name	Definition	Legal Values
locationName	As defined in 32.622 [28]: The physical location of this entity (e.g. an address).	--
managedBy	Based on definition from 32.622 [28]: Refers to the DN of the related managementNode instance. This is a reference attribute modelling the role (of the association MgmtAssociation) that this ME is managed by zero or one managementNode.	--
managedElement_bsc-aterLink-list	The value shall be the list of the related AterLink instance DNs	--
managedElement_bsc-aLink-list	The value shall be the list of the related ALink instance DNs	--
managedElement_bsc-abisLink-list	The value shall be the list of the related AbisLink instance DNs	--
managedElement_bsc-extAterLink-list	The value shall be the list of the related ExtAterLink instance DNs.	--
managedElement_bts-abisLink	The value of this attribute shall be the DN of the related AbisLink instance.	--
managedElement_bts-cellSite	The value shall be the DN of the related CellSite instance. This is a reference attribute modelling the role that this BTS is connected to CellSite.	--
managedElementType	Based on definition from 32.622 [28]: The type of managed element. It is a multi-valued attribute with one or more elements. Thus, it may represent one ME functionality, e.g. an BSC, or a combination of more than one functionality e.g. an MSC/HLR. The actual syntax and encoding of this attribute is Solution Set specific	<p>3GPP/3GPP2 reserved values: MSC, HLR, VLR, EIR, IWF, MGW, SCF</p> <p>3GPPreserved values: RNC, NodeB, AuC, SMS-IW MSC, SMS-GMSC, GMSC, SGSN, GGSN, BG, BS, CBC, CGF, GMLC, GMSC Server, MNP-SRF, MSC Server, NPDB, R-SGW, SMLC, SRF, SSF</p> <p>3GPP2 reserved values: BSC, BTS, AAA, AC, CSCF, HA, MC, MGCF, MRFC, MRFP, PDSN</p>
mcc	Mobile Country Code, MCC. It is a part of the PLMN Id.	--
mnc	Mobile Network Code, MNC. It is a part of the PLMN Id	--
objectClass	As defined in 32.622 [28]: An attribute which captures the name of the class from which the object instance is an occurrence of.	--

Attribute Name	Definition	Legal Values
objectInstance	As defined in 32.622 [28]: An information which captures the Distinguished Name of any object.	--
pcfFunction-aterLink-list	The value shall be the DN of the related AterLink instance. This is a reference attribute modelling the role that this PcfFunction is connected to AterLink.	--
swVersion	As defined in 32.622 [28]: The software version of the ManagementNode or ManagedElement (this is used for determining which version of the vendor specific information is valid for the ManagementNode or ManagedElement).	--
userDefinedState	As defined in 32.622 [28]: An operator defined state for operator specific usage.	--
userLabel	Based on definition from 32.622 [28]: A user-friendly (and user assigned) name of the associated instance.	--
vendorName	As defined in 32.622 [28]: The name of the vendor.	--

1 **C.2 3GPP2 Radio Access Network Resource Model (CORBA SS)**

2 Within this section the CORBA Solution Set (SS) definitions for the 3GPP2 Radio
3 Access Network Resource Model are specified.

4 **C.2.1 Architectural features**

5 The overall architectural feature of 3GPP2 Radio Access Network Resource
6 Model IRP (IS) is specified in section Annex C.1 within this document.

7 This clause specifies features that are specific to the CORBA SS.

8 **C.2.1.1 Notifications**

9 Notifications are sent according to the Notification IRP: CORBA SS (see
10 3GPP TS 32.303 [11]).

11 **C.2.2 Mapping**

12 **C.2.2.1 General mappings**

13 The IS parameter name managedObjectInstance is mapped into DN.

14 Attributes modeling associations as defined in the NRM (here also called
15 “reference attributes”) are in this SS mapped to attributes. The names of the
16 reference attributes in the NRM are mapped to the corresponding attribute
17 names in the IOC. When the cardinality for an association is 0..1 or 1..1 the
18 data type for the reference attribute is defined as an MOReference. The value of
19 an MO reference contains the distinguished name of the associated MO. When
20 the cardinality for an association allows more than one referred MO, the
21 reference attribute will be of type MOReferenceSet, which contains a sequence
22 of MO references.

23 If a reference attribute is changed, an AttributeValueChange notification is
24 emitted.

C.2.2.2 3GPP2 Radio Access Network NRM Information Object Class (IOC) mapping

C.2.2.2.1 IOC BssFunction

NRM Attributes of IOC BssFunction	SS Attributes	SS Type	Qualifier	Read	Write
bssFunctionId	bssFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

C.2.2.2.2 IOC ManagedElement_bsc

NRM Attributes of IOC ManagedElement_bsc	SS Attributes	SS Type	Qualifier	Read	Write
managedElementId	managedElementId	Defined in ManagedElement	inherited	inherited	inherited
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
dnPrefix	dnPrefix	Defined in ManagedElement	inherited	inherited	inherited
managedElementType	managedElementType	Defined in ManagedElement	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedElement	inherited	inherited	inherited
vendorName	vendorName	Defined in ManagedElement	inherited	inherited	inherited
userDefinedState	userDefinedState	Defined in ManagedElement	inherited	inherited	inherited
locationName	locationName	Defined in ManagedElement	inherited	inherited	inherited
swVersion	swVersion	Defined in ManagedElement	inherited	inherited	inherited
managedBy	managedBy	Defined in ManagedElement	inherited	inherited	inherited
mcc	mcc	string	O	M	--
mnc	mnc	string	O	M	--

NRM Attributes of IOC ManagedElement_bsc	SS Attributes	SS Type	Qualifier	Read	Write
managedElement_bsc- aterLink-list	managedElement_bsc- aterLink-list	string	O	M	--
managedElement_bsc- aLink-list	managedElement_bsc- aLink-list	string	O	M	--
managedElement_bsc- abisLink-list	managedElement_bsc- abisLink-list	string	O	M	--
managedElement_bsc - extAterLink-list	managedElement_bsc - extAterLink-list	string	O	M	--

1

2 **C.2.2.2.3 IOC ManagedElement_bts**

3

NRM Attributes of IOC ManagedElement_bts	SS Attributes	SS Type	Qualifier	Read	Write
managedElementId	managedElementId	Defined in ManagedElement	inherited	inherited	inherited
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
dnPrefix	dnPrefix	Defined in ManagedElement	inherited	inherited	inherited
managedElementType	managedElementType	Defined in ManagedElement	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedElement	inherited	inherited	inherited
vendorName	vendorName	Defined in ManagedElement	inherited	inherited	inherited
userDefinedState	userDefinedState	Defined in ManagedElement	inherited	inherited	inherited
locationName	locationName	Defined in ManagedElement	inherited	inherited	inherited
swVersion	swVersion	Defined in ManagedElement	inherited	inherited	inherited
managedBy	managedBy	Defined in ManagedElement	inherited	inherited	inherited
managedElement_bts- abisLink	managedElement_bts- abisLink	string	O	M	--
managedElement_bts- cellSite	managedElement_bts- cellSite	string	O	M	--
managedElement_bts-cell	managedElement_bts-cell	string	O	M	--

C.2.2.2.4 IOC CellSite

NRM Attributes of IOC CellSite	SS Attributes	SS Type	Qualifier	Read	Write
cellSiteId	cellSiteFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
cellSite-managedElement_bts	cellSite-managedElement_bts	string	O	M	--

C.2.2.2.5 IOC ExtBssFunction

NRM Attributes of IOC ExtBssFunction	SS Attributes	SS Type	Qualifier	Read	Write
extBssFunctionId	extBssFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
extBssFunction-extAterLink-list	extBssFunction-extAterLink-list	string	O	M	--

C.2.2.2.6 IOC Cell

NRM Attributes of IOC Cell	SS Attributes	SS Type	Qualifier	Read	Write
cellId	cellId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
cell-cell-relation-list	cell-cell-relation-list	string	O	M	--
cell-extCell-relation-list	cell-extCell-relation-list	string	O	M	--
cell- managedElement_bts	cell-managedElement_bts	string	O	M	--

C.2.2.2.7 IOC ExtCell

NRM Attributes of IOC ExtCell	SS Attributes	SS Type	Qualifier	Read	Write
extCellId	extCellId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
extCell-cell-relation-list	extCell-cell-relation-list	string	O	M	--

C.2.2.2.8 IOC ExtCellSite

NRM Attributes of IOC ExtCellSite	SS Attributes	SS Type	Qualifier	Read	Write
extCellSiteId	extCellSiteId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited

C.2.2.2.9 IOC PcfFunction

NRM Attributes of IOC PcfFunction	SS Attributes	SS Type	Qualifier	Read	Write
pcfFunctionId	pcfFunctionId	string	M	M	--
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited
pcfFunction-aquaterLink-list	pcfFunction-aquaterLink-list	string	O	M	--

C.2.2.2.10 IOC sduFunction

NRM Attributes of IOC sduFunction	SS Attributes	SS Type	Qualifier	Read	Write
sduFunctionId	sduFunctionId	string	M	M	--

NRM Attributes of IOC SduFunction	SS Attributes	SS Type	Qualifier	Read	Write
objectClass	objectClass	Defined in Top	inherited	inherited	inherited
objectInstance	objectInstance	Defined in Top	inherited	inherited	inherited
userLabel	userLabel	Defined in ManagedFunction	inherited	inherited	inherited

1

2 C.2.3 IDL specification (file name "PP2RanNRMDefs.idl")

```

3
4     #ifndef PP2RanNRMDefs_idl
5     #define PP2RanNRMDefs_idl
6
7     #include "PP2GenericNRMDefs.idl"
8
9     #pragma prefix "3gpp2.org"
10
11     /**
12     * This module defines constants for each IOC class name and
13     * the attribute names for each defined IOC class.
14     */
15     module PP2RanNRMDefs
16     {
17
18         /**
19         * Definitions for MO class BssFunction
20         */
21         interface BssFunction : PP2GenericNRM::VsManagedFunction
22         {
23             const string CLASS = "BssFunction";
24
25             // Attribute Names
26             //
27             const string bssFunctionId = "bssFunctionId";
28         };
29
30         /**
31         * Definitions for MO class ManagedElement_bsc
32         */
33         interface ManagedElement_bsc : PP2GenericNRM::VsManagedElement
34         {
35             const string CLASS = "ManagedElement_bsc";
36
37             // Attribute Names
38             //
39             const string mcc = "mcc";
40             const string mnc = "mnc";
41             const string managedElement_bsc-aterLink-list =
42 "managedElement_bsc-aterLink-list";
43             const string managedElement_bsc-aLink-list = "managedElement_bsc-
44 aLink-list";
45             const string managedElement_bsc-abisLink-list =
46 "managedElement_bsc-abisLink-list";

```

```

1      const string managedElement_bsc -extAterLink-list =
2      "managedElement_bsc -extAterLink-list";
3      };
4
5
6      /**
7       * Definitions for MO class ManagedElement_bts
8       */
9      interface ManagedElement_bts : PP2GenericNRM::VsManagedElement
10     {
11         const string CLASS = "ManagedElement_bts";
12
13         // Attribute Names
14         //
15         const string managedElement_bts-abisLink = "managedElement_bts-
16         abisLink";
17         const string managedElement_bts-cellSite = "managedElement_bts-
18         cellSite";
19         const string managedElement_bts-cell = "managedElement_bts-cell";
20     };
21
22
23     /**
24      * Definitions for MO class CellSite
25      */
26     interface CellSite : PP2GenericNRM::Top
27     {
28         const string CLASS = "CellSite";
29
30         // Attribute Names
31         //
32         const string cellSiteId = "cellSiteId";
33         const string cellSite-managedElement_bts = "cellSite-
34         managedElement_bts"
35     };
36
37
38     /**
39      * Definitions for MO class ExtBssFunction
40      */
41     interface ExtBssFunction : PP2GenericNRM::Top
42     {
43         const string CLASS = "ExtBssFunction";
44
45         // Attribute Names
46         //
47         const string extBssFunctionId = "extBssFunctionId";
48         const string extBssFunction-extAterLink-list =
49         "extBssFunction-extAterLink-list";
50     };
51
52
53     /**
54      * Definitions for MO class Cell
55      */
56     interface Cell : PP2GenericNRM::VsManagedFunction
57     {
58         const string CLASS = "Cell";
59

```

```

1          // Attribute Names
2          //
3          const string cellId = "cellId";
4          const string cell-cell-relation-list = "cell-cell-relation-list";
5          const string cell-extCell-relation-list = "cell-extCell-relation-
6list";
7          const string cell-managedElement_bts = "cell-managedElement_bts";
8      };
9
10
11      /**
12       * Definitions for MO class ExtCell
13       */
14      interface ExtCell : PP2GenericNRM::Top
15      {
16          const string CLASS = "ExtCell";
17
18          // Attribute Names
19          const string extCellId = "extCellId";
20          const string extCell-cell-relation-list = "extCell-cell-relation-
21list";
22      };
23
24
25      /**
26       * Definitions for MO class ExtCellSite
27       */
28      interface ExtCellSite : PP2GenericNRM::Top
29      {
30          const string CLASS = "ExtCellSite";
31          // Attribute Names
32          //
33          const string extCellSiteId = "extCellSiteId";
34      };
35
36
37      /**
38       * Definitions for MO class ALink
39       */
40      interface ALink : PP2GenericNRM::Link
41      {
42          const string CLASS = "ALink";
43      };
44
45
46      /**
47       * Definitions for MO class AbisLink
48       */
49      interface AbisLink : PP2GenericNRM::Link
50      {
51          const string CLASS = "AbisLink";
52      };
53
54      /**
55       * Definitions for MO class ALink
56       */
57      interface ALink : PP2GenericNRM::Link
58      {
59          const string CLASS = "ALink";

```

```

1      };
2
3
4      /**
5      *  Definitions for MO class AterLink
6      */
7      interface AterLink : PP2GenericNRM::Link
8      {
9          const string CLASS = "AterLink";
10     };
11
12     /**
13     *  Definitions for MO class ExtAterLink
14     */
15     interface ExtAterLink : PP2GenericNRM::Link
16     {
17         const string CLASS = "ExtAterLink";
18     };
19
20
21     /**
22     *  Definitions for MO class AquaterLink
23     */
24     interface AquaterLink : PP2GenericNRM::Link
25     {
26         const string CLASS = "AquaterLink";
27     };
28
29     /**
30     *  Definitions for MO class PcfFunction
31     */
32     interface PcfFunction : PP2GenericNRM::VsManagedFunction
33     {
34         const string CLASS = "PcfFunction";
35
36         // Attribute Names
37         //
38         const string pcfFunctionId = "pcfFunctionId";
39
40         const string pcfFunction-aquaterLink-list = "pcfFunction-
41 aquaterLink-list";
42     };
43
44 /**
45 *  Definitions for MO class SduFunction
46 */
47 interface SduFunction : PP2GenericNRM::VsManagedFunction
48 {
49     const string CLASS = "SduFunction";
50
51     // Attribute Names
52     //
53     const string sduFunctionId = "sduFunctionId";
54 };
55
56 };
57
58 #endif

```


1 **C.3 3GPP2 Radio Access Network Resource Model (XML SS)**

2 Within this section the XML Solution Set (SS) definitions for the 3GPP2 Radio
3 Access Network Resource Model will be specified in a future version of this
4 document (currently defined within Annex D).
5

1 Annex D (normative) “3GPP2 BulkCM IRP XML Solution Set”

2 This annex defines the 3GPP2 BulkCM IRP XML Solution Set for wireless
3 systems based on 3GPP2 specifications.

4 **D.1 3GPP2 Configuration data file base XML schema**

5 The following XML schema PP2BulkCM.xsd is the base schema for 3GPP2
6 configuration data XML files:

```

7
8 <?xml version="1.0" encoding="UTF-8" ?>
9 <!--
10 3GPP2 S.S0028-A Bulk CM IRP Configuration data file base XML
11 schema PP2BulkCM.xsd
12 -->
13 <xs:schema
14   targetNamespace="http://www.3gpp2.org/Public_html/specs/S.S0028-
15   A_v1.0.pdf#PP2BulkCM"
16   xmlns:xg="http://www.3gpp2.org/Public_html/specs/S.S0028-
17   A_v1.0.pdf#PP2GenericNRM"
18   xmlns:xr="http://www.3gpp2.org/Public_html/specs/S.S0028-
19   A_v1.0.pdf#PP2RadioAccessNRM"
20   xmlns:xc="http://www.3gpp2.org/Public_html/specs/S.S0028-
21   A_v1.0.pdf#PP2CoreNRM"
22   xmlns:xs="http://www.w3.org/2001/XMLSchema"
23   xmlns="http://www.3gpp2.org/Public_html/specs/S.S0028-
24   A_v1.0.pdf#PP2BulkCM" elementFormDefault="qualified"
25   attributeFormDefault="unqualified">
26   <xs:import namespace="PP2GenericNRM"
27     schemaLocation="http://www.3gpp2.org/Public_html/specs/S.S0028-
28     A_v1.0.pdf#PP2GenericNRM.xsd" />
29   <xs:import namespace="PP2CoreNRM"
30     schemaLocation="http://www.3gpp2.org/Public_html/specs/S.S0028-
31     A_v1.0.pdf#PP2CoreNRM.xsd" />
32   <xs:import namespace="PP2RadioAccessNRM"
33     schemaLocation="http://www.3gpp2.org/Public_html/specs/S.S0028-
34     A_v1.0.pdf#PP2RadioAccessNRM.xsd" />
35   <xs:attributeGroup name="ModifierAttributeGroup">
36     <xs:attribute name="modifier" use="optional">
37       <xs:simpleType>
38         <xs:restriction base="xs:string">
39           <xs:enumeration value="create" />

```

```

1      <xs:enumeration value="delete" />
2      <xs:enumeration value="update" />
3    </xs:restriction>
4  </xs:simpleType>
5 </xs:attribute>
6 </xs:attributeGroup>
7 <xs:element name="bulkCMDDataFile">
8   <xs:complexType>
9     <xs:sequence>
10      <xs:element name="fileHeader">
11        <xs:complexType>
12          <xs:attribute name="fileFormatVersion"
13            type="xs:string" use="required" />
14          <xs:attribute name="senderName" type="xs:string"
15            use="optional" />
16          <xs:attribute name="vendorName" type="xs:string"
17            use="optional" />
18        </xs:complexType>
19      </xs:element>
20      <xs:element name="configData">
21        <xs:complexType>
22          <xs:choice maxOccurs="unbounded">
23            <xs:element ref="subNetwork" />
24            <xs:element ref="meContext" />
25            <xs:element ref="managedElement" />
26            <xs:element ref="vsManagedElement" />
27            <xs:element ref="vsManagedFunction" />
28            <xs:element name="managedElement_bts"
29              type="xr:BtsManagedElementType" />
30            <xs:element name="managedElement_bsc"
31              type="xr:BscManagedElementType" />
32            <xs:element name="bssFunction"
33              type="xr:BssFunctionType" />
34            <xs:element name="cell" type="xr:CellType" />
35          </xs:choice>
36          <xs:attribute name="dnPrefix" type="xs:string"
37            use="optional" />
38        </xs:complexType>
39      </xs:element>
40      <xs:element name="fileFooter">
41        <xs:complexType>
42          <xs:attribute name="dateTime" type="xs:dateTime"
43            use="required" />
44        </xs:complexType>
45      </xs:element>
46    </xs:sequence>

```

```

1      </xs:complexType>
2  </xs:element>
3  <xs:element name="subNetwork">
4      <xs:complexType>
5          <xs:complexContent>
6              <xs:extension base="xg:SubNetworkType">
7                  <xs:choice minOccurs="0" maxOccurs="unbounded">
8                      <xs:element ref="subNetwork" />
9                      <xs:element ref="managedElement" />
10                     <xs:element ref="meContext" />
11                     <xs:element ref="xg:irpAgent" />
12                     <xs:element ref="xg:managementNode" />
13                 </xs:choice>
14                 <xs:attributeGroup ref="ModifierAttributeGroup" />
15             </xs:extension>
16         </xs:complexContent>
17     </xs:complexType>
18 </xs:element>
19 <xs:element name="managedElement">
20     <xs:complexType>
21         <xs:complexContent>
22             <xs:extension base="xg:ManagedElementType">
23                 <xs:choice minOccurs="0" maxOccurs="unbounded">
24                     <xs:element ref="xg:irpAgent" />
25                     <xs:element name="mscFunction"
26                         type="xc:MscFunctionType" />
27                     <xs:element name="hlrFunction"
28                         type="xc:HlrFunctionType" />
29                     <xs:element name="vlrFunction"
30                         type="xc:VlrFunctionType" />
31                     <xs:element name="acFunction"
32                         type="xc:AcFunctionType" />
33                     <xs:element name="pdsnFunction"
34                         type="xc:PdsnFunctionType" />
35                     <xs:element name="haFunction"
36                         type="xc:HaFunctionType" />
37                     <xs:element name="aaaFunction"
38                         type="xc:AaaFunctionType" />
39                     <xs:element name="eirFunction"
40                         type="xc:EirFunctionType" />
41                     <xs:element name="scfFunction"
42                         type="xc:ScfFunctionType" />
43                     <xs:element name="cscfFunction"
44                         type="xc:CscfFunctionType" />
45                     <xs:element name="mgcfFunction"
46                         type="xc:MgcfFunctionType" />

```

```

1      <xs:element name="mgwFunction"
2          type="xc:MgwFunctionType" />
3      <xs:element name="mrfcFunction"
4          type="xc:MrfcFunctionType" />
5      <xs:element name="mrfpFunction"
6          type="xc:MrfpFunctionType" />
7      <xs:element name="mcFunction"
8          type="xc:McFunctionType" />
9      <xs:element name="sqwFunction"
10         type="xc:SgwFunctionType" />
11  </xs:choice>
12  <xs:attributeGroup ref="ModifierAttributeGroup" />
13  </xs:extension>
14  </xs:complexContent>
15  </xs:complexType>
16 </xs:element>
17 <xs:element name="meContext">
18     <xs:complexType>
19         <xs:complexContent>
20             <xs:extension base="xg:MeContextType">
21                 <xs:sequence>
22                     <xs:element name="attributes" minOccurs="0"
23                         maxOccurs="unbounded">
24                         <xs:complexType />
25                     </xs:element>
26                     <xs:choice minOccurs="0" maxOccurs="unbounded">
27                         <xs:element ref="managedElement" />
28                     </xs:choice>
29                 </xs:sequence>
30                 <xs:attributeGroup ref="ModifierAttributeGroup" />
31             </xs:extension>
32         </xs:complexContent>
33     </xs:complexType>
34 </xs:element>
35 <xs:element name="vsManagedElement"
36     type="xg:VsManagedElementType" />
37 <xs:element name="vsManagedFunction"
38     type="xg:VsManagedFunctionType" />
39 </xs:schema>
40

```

1 D.2 3GPP2 Configuration data file NRM specific XML schemas

2 The XML schemas within this section are the 3GPP2 NRM specific schemas for
3 configuration data XML files.

4
5 The following XML schema PP2GenericNRM.xsd is the NRM specific schema for
6 the 3GPP2 Generic NRM defined in Annex A within this specification, which is
7 based on the 3GPP Generic NRM as defined in TS 32.622 [28]:
8

```

9  <?xml version="1.0" encoding="UTF-8" ?>
10 <!--
11     3GPP2 S.S0028-A Bulk CM IRP
12     Configuration data file 3GPP2 Generic NRM XML schema
13     PP2GenericNRM.xsd
14     -->
15 <xs:schema
16     targetNamespace="http://www.3gpp2.org/Public_html/specs/S.S0028-
17     A_v1.0.pdf#PP2GenericNRM"
18     xmlns="http://www.3gpp2.org/Public_html/specs/S.S0028-
19     A_v1.0.pdf#PP2GenericNRM"
20     xmlns:xs="http://www.w3.org/2001/XMLSchema"
21     elementFormDefault="qualified" attributeFormDefault="unqualified">
22   <xs:complexType name="TopType">
23     <xs:annotation>
24       <xs:documentation>From TS 32.622</xs:documentation>
25     </xs:annotation>
26     <xs:attribute name="objectClass" type="xs:string" use="required" />
27     <xs:attribute name="objectInstance" type="xs:string" use="required"
28       />
29   </xs:complexType>
30   <xs:complexType name="XmlNrmSolutionSetType">
31     <xs:annotation>
32       <xs:documentation>This type is introduced to support the ability
33         to define an id on an entity. A large number of the classes in
34         the UML models are subclasses of Top as well as having a
35         generic ID; the UML models missed this and don't model a
36         concept an "Identifiable Entity" This class models the
37         concept of an identifiable entity. Since this is added strictly to
38         ensure the XML is well formed; the name indicates locality to
39         the XML NRM Solution Set ...</xs:documentation>
40     </xs:annotation>
41     <xs:complexContent>
42       <xs:extension base="TopType">
```

```

1      <xs:attribute name="id" type="xs:string" use="required" />
2    </xs:extension>
3  </xs:complexContent>
4 </xs:complexType>
5 <xs:complexType name="XmlNrmLabeledSolutionSetType">
6   <xs:annotation>
7     <xs:documentation>This type is introduced to support the ability
8       to define a label on an entity. A large number of the classes in
9       the UML models are subclasses of Top as well as having a
10      user label the UML models missed this and don't model a
11      concept an "UserLabeled Entity" This entity models the
12      concept of an user labeled entity. Since this is added strictly
13      to ensure the XML is well formed; the name indicates locality
14      to the XML NRM Solution Set ...</xs:documentation>
15   </xs:annotation>
16   <xs:complexContent>
17     <xs:extension base="XmlNrmSolutionSetType">
18       <xs:attribute name="userLabel" type="xs:string"
19         use="required" />
20     </xs:extension>
21   </xs:complexContent>
22 </xs:complexType>
23 <xs:complexType name="XmlNrmSolutionSetNodeType">
24   <xs:annotation>
25     <xs:documentation>This type supports the generic concept of
26       node within a network/subnetwork. Within TS 32.622,
27       ManagedElement and ManagedNode both define attributes
28       vendorName, userDefinedState, locationName and
29       swVersion; these attributes share a common description.
30       Both IOCs are subclasses of the same ICO; the UML modelers
31       missed an abstraction when producing the TS 32.622 UML.
32       This entity is added to the XML solution set type repertoire to
33       ensure the well-formedness of the XML. The name reflects
34       the fact that this entity was added to the XML NRM Solution
35       Set and is not part of the GenericNRM
36       model(s).</xs:documentation>
37   </xs:annotation>
38   <xs:complexContent>
39     <xs:extension base="XmlNrmLabeledSolutionSetType">
40       <xs:all>
41         <xs:element name="userDefinedState" type="xs:string"
42           />
43       </xs:all>
44       <xs:attribute name="vendorName" type="xs:string"
45         use="required" />
46       <xs:attribute name="swVersion" type="xs:string"
47         use="required" />

```

```

1      <xs:attribute name="locationName" type="xs:string"
2          use="required" />
3      </xs:extension>
4      </xs:complexContent>
5  </xs:complexType>
6  <xs:complexType name="ManagedElementType">
7      <xs:annotation>
8          <xs:documentation>From TS 32.622</xs:documentation>
9      </xs:annotation>
10     <xs:complexContent>
11         <xs:extension base="XmlNrmSolutionSetNodeType">
12             <xs:all>
13                 <xs:element name="managedBy" type="xs:string" />
14             </xs:all>
15             <xs:attribute name="dnPrefix" type="xs:string"
16                 use="required" />
17             <xs:attribute name="managedElementType" type="xs:string"
18                 use="required" />
19         </xs:extension>
20     </xs:complexContent>
21 </xs:complexType>
22 <xs:complexType name="VsManagedElementType">
23     <xs:complexContent>
24         <xs:extension base="ManagedElementType">
25             <xs:all minOccurs="0">
26                 <xs:element ref="vsDataContainer" />
27             </xs:all>
28         </xs:extension>
29     </xs:complexContent>
30 </xs:complexType>
31 <xs:complexType name="ManagedFunctionType">
32     <xs:annotation>
33         <xs:documentation>From TS 32.622</xs:documentation>
34     </xs:annotation>
35     <xs:complexContent>
36         <xs:extension base="XmlNrmLabeledSolutionSetType" />
37     </xs:complexContent>
38 </xs:complexType>
39 <xs:complexType name="VsManagedFunctionType">
40     <xs:complexContent>
41         <xs:extension base="ManagedFunctionType">
42             <xs:all minOccurs="0">
43                 <xs:element ref="vsDataContainer" />
44             </xs:all>
45         </xs:extension>
46     </xs:complexContent>

```

```

1      </xs:complexType>
2      <xs:complexType name="SubNetworkType">
3          <xs:annotation>
4              <xs:documentation>From TS 32.622</xs:documentation>
5          </xs:annotation>
6          <xs:complexContent>
7              <xs:extension base="XmlNrmLabeledSolutionSetType">
8                  <xs:all>
9                      <xs:element name="userDefinedNetworkType"
10                         type="xs:string" />
11                  </xs:all>
12                  <xs:attribute name="dnPrefix" type="xs:string"
13                     use="required" />
14              </xs:extension>
15          </xs:complexContent>
16      </xs:complexType>
17      <xs:complexType name="LinkType">
18          <xs:complexContent>
19              <xs:extension base="VsManagedFunctionType">
20                  <xs:all>
21                      <xs:element name="aEnd" type="xs:string" />
22                      <xs:element name="zEnd" type="xs:string" />
23                  </xs:all>
24                  <xs:attribute name="protocolName" type="xs:string"
25                     use="optional" />
26                  <xs:attribute name="protocolVersion" type="xs:string"
27                     use="optional" />
28              </xs:extension>
29          </xs:complexContent>
30      </xs:complexType>
31      <xs:complexType name="RelationType">
32          <xs:complexContent>
33              <xs:extension base="VsManagedFunctionType">
34                  <xs:all>
35                      <xs:element name="aEnd" type="xs:string" />
36                      <xs:element name="zEnd" type="xs:string" />
37                  </xs:all>
38              </xs:extension>
39          </xs:complexContent>
40      </xs:complexType>
41      <xs:complexType name="MeContextType">
42          <xs:annotation>
43              <xs:documentation>From TS 32.622</xs:documentation>
44          </xs:annotation>
45          <xs:complexContent>
46              <xs:extension base="XmlNrmSolutionSetType">

```



```

1      <xs:attribute name="dnPrefix" type="xs:string"
2          use="required" />
3      </xs:extension>
4      </xs:complexContent>
5  </xs:complexType>
6  <xs:complexType name="ManagementNodeType">
7      <xs:annotation>
8          <xs:documentation>From TS 32.622</xs:documentation>
9      </xs:annotation>
10     <xs:complexContent>
11         <xs:extension base="XmlNrmSolutionSetNodeType" />
12     </xs:complexContent>
13 </xs:complexType>
14 <xs:complexType name="IRPAgentType">
15     <xs:annotation>
16         <xs:documentation>From TS 32.622</xs:documentation>
17     </xs:annotation>
18     <xs:complexContent>
19         <xs:extension base="XmlNrmSolutionSetType">
20             <xs:attribute name="systemDN" type="xs:string"
21                 use="required" />
22         </xs:extension>
23     </xs:complexContent>
24 </xs:complexType>
25 <xs:complexType name="GenericIRPType">
26     <xs:annotation>
27         <xs:documentation>From TS 32.622</xs:documentation>
28     </xs:annotation>
29     <xs:complexContent>
30         <xs:extension base="TopType">
31             <xs:attribute name="irpVersion" type="xs:string"
32                 use="optional" />
33         </xs:extension>
34     </xs:complexContent>
35 </xs:complexType>
36 <xs:complexType name="VsDataContainerType">
37     <xs:annotation>
38         <xs:documentation>From TS 32.622</xs:documentation>
39     </xs:annotation>
40     <xs:complexContent>
41         <xs:extension base="TopType">
42             <xs:sequence>
43                 <xs:element name="attributes">
44                     <xs:complexType>
45                         <xs:all>
46                             <xs:element name="vsDataType"
47                                 type="xs:string" minOccurs="0" />

```

```

1          <xs:element name="vsDataFormatVersion"
2              type="xs:string" minOccurs="0" />
3          </xs:all>
4      </xs:complexType>
5  </xs:element>
6  <xs:element ref="vsData" minOccurs="0" />
7  </xs:sequence>
8  </xs:extension>
9  </xs:complexContent>
10 </xs:complexType>
11 <xs:simpleType name="IdListType">
12   <xs:list itemType="xs:integer" />
13 </xs:simpleType>
14 <xs:simpleType name="DNListType">
15   <xs:list itemType="xs:string" />
16 </xs:simpleType>
17 <xs:element name="irpAgent">
18   <xs:complexType>
19     <xs:complexContent>
20       <xs:extension base="IRPAgentType">
21         <xs:choice minOccurs="0" maxOccurs="unbounded">
22           <xs:element ref="notificationIRP" />
23           <xs:element ref="alarmIRP" />
24           <xs:element ref="basicCmIRP" />
25           <xs:element ref="bulkCmIRP" />
26         </xs:choice>
27       </xs:extension>
28     </xs:complexContent>
29   </xs:complexType>
30 </xs:element>
31 <xs:element name="notificationIRP" type="GenericIRPType" />
32 <xs:element name="alarmIRP" type="GenericIRPType" />
33 <xs:element name="basicCmIRP" type="GenericIRPType" />
34 <xs:element name="bulkCmIRP" type="GenericIRPType" />
35 <xs:element name="managementNode">
36   <xs:complexType>
37     <xs:complexContent>
38       <xs:extension base="ManagedElementType">
39         <xs:choice minOccurs="0" maxOccurs="unbounded">
40           <xs:element ref="irpAgent" />
41         </xs:choice>
42       </xs:extension>
43     </xs:complexContent>
44   </xs:complexType>
45 </xs:element>
46 <xs:element name="vsDataContainer">

```

```
1      <xs:complexType>
2        <xs:complexContent>
3          <xs:extension base="VsDataContainerType">
4            <xs:sequence minOccurs="0" maxOccurs="unbounded">
5              <xs:element ref="vsDataContainer" />
6            </xs:sequence>
7          </xs:extension>
8        </xs:complexContent>
9      </xs:complexType>
10    </xs:element>
11    <xs:element name="vsData">
12      <xs:annotation>
13        <xs:documentation>Used for substitution
14          group</xs:documentation>
15      </xs:annotation>
16      <xs:complexType />
17    </xs:element>
18  </xs:schema>
```

The following XML schema PP2CoreNRM.xsd is the NRM specific schema for the 3GPP2 Core NRM defined in Annex B within this specification:

```

1  <?xml version="1.0" encoding="UTF-8" ?>
2  <!--
3      3GPP2 S.S0028-A Bulk CM IRP
4      Configuration data file 3GPP2 Core NRM XML schema
5      PP2CoreNRM.xsd
6      -->
7  <xs:schema
8      targetNamespace="http://www.3gpp2.org/Public_html/specs/S.S0028-
9      A_v1.0.pdf#PP2CoreNRM"
10     xmlns="http://www.3gpp2.org/Public_html/specs/S.S0028-
11     A_v1.0.pdf#PP2CoreNRM"
12     xmlns:xs="http://www.w3.org/2001/XMLSchema"
13     xmlns:xn="http://www.3gpp2.org/Public_html/specs/S.S0028-
14     A_v1.0.pdf#PP2GenericNRM" elementFormDefault="qualified"
15     attributeFormDefault="unqualified">
16     <xs:import
17         namespace="http://www.3gpp2.org/Public_html/specs/S.S0028-
18         A_v1.0.pdf#PP2GenericNRM"
19         schemaLocation="http://www.3gpp2.org/Public_html/specs/S.S0028-
20         A_v1.0.pdf#PP2GenericNRM.xsd" />
21     <xs:complexType name="MscFunctionType">
22         <xs:complexContent>
23             <xs:extension base="xn:VsManagedFunctionType">
24                 <xs:all minOccurs="0">
25                     <xs:element name="aLink-list" type="xn:DNListType"
26                         minOccurs="0" />
27                     <xs:element name="cLink" type="xs:string"
28                         minOccurs="0" />
29                     <xs:element name="eLink-list" type="xn:DNListType"
30                         minOccurs="0" />
31                     <xs:element name="mgwFunction-link-list"
32                         type="xn:DNListType" minOccurs="0" />
33                 </xs:all>
34             </xs:extension>
35         </xs:complexContent>
36     </xs:complexType>
37     <xs:complexType name="HlrFunctionType">
38         <xs:complexContent>
39             <xs:extension base="xn:VsManagedFunctionType">
40                 <xs:all minOccurs="0">
41                     <xs:element name="cLink-list" type="xn:DNListType"
42                         minOccurs="0" />
43                 </xs:all>
44             </xs:extension>
45         </xs:complexContent>
46     </xs:complexType>

```

```

1      </xs:extension>
2      </xs:complexContent>
3  </xs:complexType>
4  <xs:complexType name="VlrFunctionType">
5      <xs:complexContent>
6          <xs:extension base="xn:VsManagedFunctionType" />
7      </xs:complexContent>
8  </xs:complexType>
9  <xs:complexType name="AcFunctionType">
10     <xs:complexContent>
11         <xs:extension base="xn:VsManagedFunctionType" />
12     </xs:complexContent>
13 </xs:complexType>
14 <xs:complexType name="PdsnFunctionType">
15     <xs:complexContent>
16         <xs:extension base="xn:VsManagedFunctionType">
17             <xs:all minOccurs="0">
18                 <xs:element name="haFunction-link-list"
19                     type="xn:DNListType" minOccurs="0" />
20                 <xs:element name="aquaterLink-list"
21                     type="xn:DNListType" minOccurs="0" />
22                 <xs:element name="aaaFunction-link" type="xs:string"
23                     minOccurs="0" />
24                 <xs:element name="mgwFunction-link-list"
25                     type="xn:DNListType" minOccurs="0" />
26                 <xs:element name="mrfpFunction-link" type="xs:string"
27                     minOccurs="0" />
28             </xs:all>
29         </xs:extension>
30     </xs:complexContent>
31 </xs:complexType>
32 <xs:complexType name="HaFunctionType">
33     <xs:complexContent>
34         <xs:extension base="xn:VsManagedFunctionType">
35             <xs:all minOccurs="0">
36                 <xs:element name="aaaFunction-link" type="xs:string"
37                     minOccurs="0" />
38                 <xs:element name="pdsnFunction-link-list"
39                     type="xn:DNListType" minOccurs="0" />
40                 <xs:element name="mgwFunction-link-list"
41                     type="xn:DNListType" minOccurs="0" />
42                 <xs:element name="mrfpFunction-link"
43                     type="xn:DNListType" minOccurs="0" />
44             </xs:all>
45         </xs:extension>
46     </xs:complexContent>
47 </xs:complexType>

```

```

1      <xs:complexType name="AaaFunctionType">
2          <xs:complexContent>
3              <xs:extension base="xn:VsManagedFunctionType">
4                  <xs:all minOccurs="0">
5                      <xs:element name="haFunction-link-list"
6                          type="xn:DNListType" minOccurs="0" />
7                      <xs:element name="pdsnFunction-link-list"
8                          type="xn:DNListType" minOccurs="0" />
9                      <xs:element name="cscfFunction-link" type="xs:string"
10                          minOccurs="0" />
11                  </xs:all>
12              </xs:extension>
13          </xs:complexContent>
14      </xs:complexType>
15      <xs:complexType name="EirFunctionType">
16          <xs:complexContent>
17              <xs:extension base="xn:VsManagedFunctionType" />
18          </xs:complexContent>
19      </xs:complexType>
20      <xs:complexType name="ScfFunctionType">
21          <xs:complexContent>
22              <xs:extension base="xn:VsManagedFunctionType" />
23          </xs:complexContent>
24      </xs:complexType>
25      <xs:complexType name="CscfFunctionType">
26          <xs:complexContent>
27              <xs:extension base="xn:VsManagedFunctionType">
28                  <xs:all minOccurs="0">
29                      <xs:element name="aaaFunction-link" type="xs:string"
30                          minOccurs="0" />
31                      <xs:element name="mrfcFunction-link" type="xs:string"
32                          minOccurs="0" />
33                      <xs:element name="mgcfFunction-link" type="xs:string"
34                          minOccurs="0" />
35                  </xs:all>
36              </xs:extension>
37          </xs:complexContent>
38      </xs:complexType>
39      <xs:complexType name="MgcfFunctionType">
40          <xs:complexContent>
41              <xs:extension base="xn:VsManagedFunctionType">
42                  <xs:all minOccurs="0">
43                      <xs:element name="cscfFunction-link" type="xs:string"
44                          minOccurs="0" />
45                      <xs:element name="mgwFunction-link-List"
46                          type="xn:DNListType" minOccurs="0" />
47                  </xs:all>

```

```

1      </xs:extension>
2      </xs:complexContent>
3  </xs:complexType>
4  <xs:complexType name="MgwFunctionType">
5      <xs:complexContent>
6          <xs:extension base="xn:VsManagedFunctionType">
7              <xs:all minOccurs="0" maxOccurs="unbounded">
8                  <xs:element name="pdsnFunction-link-list"
9                      minOccurs="0" />
10                 <xs:element name="haFunction-link-list" minOccurs="0"
11                     />
12                 <xs:element name="mgcfFunctionLink" minOccurs="0" />
13                 <xs:element name="mscFunction-link-list" minOccurs="0"
14                     />
15                 <xs:element name="mrfpFunctionLink" minOccurs="0" />
16             </xs:all>
17         </xs:extension>
18     </xs:complexContent>
19 </xs:complexType>
20 <xs:complexType name="MrfcFunctionType">
21     <xs:complexContent>
22         <xs:extension base="xn:VsManagedFunctionType">
23             <xs:all minOccurs="0">
24                 <xs:element name="mrfpFunction-link" type="xs:string"
25                     minOccurs="0" />
26                 <xs:element name="cscfFunction-link" type="xs:string"
27                     minOccurs="0" />
28             </xs:all>
29         </xs:extension>
30     </xs:complexContent>
31 </xs:complexType>
32 <xs:complexType name="MrfpFunctionType">
33     <xs:complexContent>
34         <xs:extension base="xn:VsManagedFunctionType">
35             <xs:all minOccurs="0">
36                 <xs:element name="mrfcFunction-link" type="xs:string"
37                     minOccurs="0" />
38                 <xs:element name="mgwFunction-link-list"
39                     type="xn:DNListType" minOccurs="0" />
40                 <xs:element name="haFunction-link-list"
41                     type="xn:DNListType" minOccurs="0" />
42                 <xs:element name="psdnFunction-link-list"
43                     type="xn:DNListType" minOccurs="0" />
44             </xs:all>
45         </xs:extension>
46     </xs:complexContent>
47 </xs:complexType>

```

```
1      <xs:complexType name="McFunctionType">
2          <xs:complexContent>
3              <xs:extension base="xn:VsManagedFunctionType" />
4          </xs:complexContent>
5      </xs:complexType>
6      <xs:complexType name="SgwFunctionType">
7          <xs:complexContent>
8              <xs:extension base="xn:VsManagedFunctionType" />
9          </xs:complexContent>
10     </xs:complexType>
11     <xs:complexType name="CLinkType">
12         <xs:complexContent>
13             <xs:extension base="xn:LinkType" />
14         </xs:complexContent>
15     </xs:complexType>
16     <xs:complexType name="ELinkType">
17         <xs:complexContent>
18             <xs:extension base="xn:LinkType" />
19         </xs:complexContent>
20     </xs:complexType>
21 </xs:schema>
```


The following XML schema PP2RadioAccessNRM.xsd is the NRM specific schema for the 3GPP2 RAN NRM defined in Annex C within this specification:

```

1  <?xml version="1.0" encoding="UTF-8" ?>
2  <!--
3
4      3GPP2 S.S0028-A Bulk CM IRP
5      Configuration data file 3GPP2 RAN NRM XML schema
6      PP2RadioAccessNRM.xsd
7
8      -->
9
10 <xs:schema
11   targetNamespace="http://www.3gpp2.org/Public_html/specs/S.S0028-
12   A_v1.0.pdf#PP2RadioAccessNRM"
13   xmlns:xn="http://www.3gpp2.org/Public_html/specs/S.S0028-
14   A_v1.0.pdf#PP2GenericNRM"
15   xmlns:xs="http://www.w3.org/2001/XMLSchema"
16   xmlns="http://www.3gpp2.org/Public_html/specs/S.S0028-
17   A_v1.0.pdf#PP2RadioAccessNRM" elementFormDefault="qualified"
18   attributeFormDefault="unqualified">
19   <xs:import
20     namespace="http://www.3gpp2.org/Public_html/specs/S.S0028-
21     A_v1.0.pdf#PP2GenericNRM"
22     schemaLocation="http://www.3gpp2.org/Public_html/specs/S.S0028-
23     A_v1.0.pdf#PP2GenericNRM.xsd" />
24   <xs:complexType name="BtsManagedElementType">
25     <xs:complexContent>
26       <xs:extension base="xn:VsManagedElementType">
27         <xs:all minOccurs="0">
28           <xs:element name="abisLink" type="xs:string"
29             minOccurs="0" />
30           <xs:element name="cellSite" type="xs:string"
31             minOccurs="0" />
32           <xs:element name="cell" type="xs:string" minOccurs="0"
33             />
34         </xs:all>
35       </xs:extension>
36     </xs:complexContent>
37   </xs:complexType>
38   <xs:complexType name="BscManagedElementType">
39     <xs:complexContent>
40       <xs:extension base="xn:VsManagedElementType">
41         <xs:all>
42           <xs:element name="mcc" type="xs:string" minOccurs="0"
43             />
44           <xs:element name="mnc" type="xs:string" minOccurs="0"
45             />

```

```

1      <xs:element name="aterLink-list" type="xn:DNListType"
2          minOccurs="0" />
3      <xs:element name="aLink-list" type="xn:DNListType"
4          minOccurs="0" />
5      <xs:element name="abisLink-list" type="xn:DNListType"
6          minOccurs="0" />
7      <xs:element name="extAterLink-list"
8          type="xn:DNListType" minOccurs="0" />
9  </xs:all>
10 </xs:extension>
11 </xs:complexContent>
12 </xs:complexType>
13 <xs:complexType name="CellType">
14     <xs:complexContent>
15         <xs:extension base="xn:VsManagedFunctionType">
16             <xs:all minOccurs="0">
17                 <xs:element name="cell-cell-relation-list"
18                     type="xn:DNListType" minOccurs="0" />
19                 <xs:element name="cell-extCell-relation-list"
20                     type="xn:DNListType" minOccurs="0" />
21                 <xs:element name="cell-managedElement_bts"
22                     type="xs:string" minOccurs="0" />
23             </xs:all>
24         </xs:extension>
25     </xs:complexContent>
26 </xs:complexType>
27 <xs:complexType name="BssFunctionType">
28     <xs:complexContent>
29         <xs:extension base="xn:VsManagedFunctionType" />
30     </xs:complexContent>
31 </xs:complexType>
32 <xs:complexType name="AquaterLinkType">
33     <xs:complexContent>
34         <xs:extension base="xn:LinkType" />
35     </xs:complexContent>
36 </xs:complexType>
37 <xs:complexType name="ExtAterLinkType">
38     <xs:complexContent>
39         <xs:extension base="xn:LinkType" />
40     </xs:complexContent>
41 </xs:complexType>
42 <xs:complexType name="AterLinkType">
43     <xs:complexContent>
44         <xs:extension base="xn:LinkType" />
45     </xs:complexContent>
46 </xs:complexType>
47 <xs:complexType name="AbisLinkType">

```

```

1      <xs:complexContent>
2          <xs:extension base="xn:LinkType" />
3      </xs:complexContent>
4  </xs:complexType>
5  <xs:complexType name="ALinkType">
6      <xs:complexContent>
7          <xs:extension base="xn:LinkType" />
8      </xs:complexContent>
9  </xs:complexType>
10 <xs:complexType name="ExtCellSiteType">
11     <xs:complexContent>
12         <xs:extension base="xn:XmlNrmSolutionSetType" />
13     </xs:complexContent>
14 </xs:complexType>
15 <xs:complexType name="ExtCellType">
16     <xs:complexContent>
17         <xs:extension base="xn:XmlNrmSolutionSetType">
18             <xs:all>
19                 <xs:element name="extCell-cell-relation-list"
20                     type="xn:DNListType" minOccurs="0" />
21             </xs:all>
22         </xs:extension>
23     </xs:complexContent>
24 </xs:complexType>
25 <xs:complexType name="ExtBssFunctionType">
26     <xs:complexContent>
27         <xs:extension base="xn:XmlNrmSolutionSetType">
28             <xs:all>
29                 <xs:element name="extAterLink-list"
30                     type="xn:DNListType" minOccurs="0" />
31             </xs:all>
32         </xs:extension>
33     </xs:complexContent>
34 </xs:complexType>
35 <xs:complexType name="CellSiteType">
36     <xs:complexContent>
37         <xs:extension base="xn:XmlNrmSolutionSetType">
38             <xs:all>
39                 <xs:element name="cell-managedElement_bts"
40                     type="xs:string" />
41             </xs:all>
42         </xs:extension>
43     </xs:complexContent>
44 </xs:complexType>
45 <xs:complexType name="PcfFunctionType">
46     <xs:complexContent>
47         <xs:extension base="xn:VsManagedFunctionType">

```

```
1      <xs:all>
2          <xs:element name="aterLink-list" minOccurs="0" />
3      </xs:all>
4  </xs:extension>
5  </xs:complexContent>
6 </xs:complexType>
7 <xs:complexType name="SduFunctionType">
8     <xs:complexContent>
9         <xs:extension base="xn:VsManagedFunctionType" />
10     </xs:complexContent>
11 </xs:complexType>
12 </xs:schema>
13
```

1 Annex E (informative) “Terminology”

2 This Annex provides a mapping between UMTS and cdma2000 terminology for
3 clarification purpose.

4

3GPP/UMTS	3GPP2/cdma2000
Radio Network Controller (RNC)	Base Station Controller (BSC)
Node B	Base Transceiver System (BTS)
Iub (Interface between RNC and Node B)	A _{bis} (Interface between BSC and BTS)
Itf-N (“Northbound” Interface)	Reference Point O (see [50])
Authentication Centre (AuC)	Authentication Center (AC)
Equipment Identity Register (EIR)	Equipment Identity Register (EIR)
Home Location Register (HLR)	Home Location Register (HLR)
Mobile-services Switching Centre (MSC) / Gateway MSC (GMSC)	Mobile Switching Center (MSC)
SMS Gateway MSC (SMS-GMSC) / SMS Interworking MSC	Similar in functionality to Message Center (MC)
Visitor Location Register (VLR)	Visitor Location Register (VLR)
Home Subscriber Server (HSS)	Databases (<i>within All-IP NAM</i>)

5

1 **Annex F (informative) “Integration Reference Points - IRPs”**

2 This Annex is provided for background information purposes only and has no
3 impact on the completeness of this specification.

4
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