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**3RD GENERATION
PARTNERSHIP
PROJECT 2
"3GPP2"**

9 **Legacy MS Domain – Step 1**

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11 *System Requirements*

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5 ***REVISION HISTORY***

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1 **1. INTRODUCTION**

2 This document specifies the system requirements for and operations of the initial release
3 (step-1) of the Legacy MS Domain (LMSD) of the All-IP network. Each of the functional
4 entities of the LMSD is described with respect to functionality, interfaces, and the roles it
5 plays in the functioning of the network.

6 The requirements contained in this document apply only to the initial step of the LMSD.

7 **2. REFERENCES**

8 The document references, which are applicable to this specification include the following:

- A.S0011 – 3GPP2 Access Network Interface Interoperability Specification
- A.S0017
- A.S0004 3GPP2 Tandem Free Operation Specification
- C.S0001 cdma2000 Introduction to cdma2000 Spread Spectrum Systems
- C.S0002 Physical Layer Standard for cdma2000 Spread Spectrum Systems
- C.S0003 Medium Access Layer (MAC) for cdma2000 Spread Spectrum Systems
- C.S0004 Signaling Link Access Layer (LAC) for cdma2000 Spread Spectrum Systems
- C.S0005 Upper Layer (Layer 3) Signaling Standard for cdma2000 Spread Spectrum Systems
- C.S0006 Analog Signaling Standard for cdma2000 Spread Spectrum Systems

- C.S0017 (14.4 kbps) Data SOs for Spread Spectrum Systems – STU III Transparent + Non-transparent
- C.S0017-0-1 Addendum for cdma2000 RLP and Additional Packet Data Support
- C.S0020 13k Vocoder TTY/TDD Extension
- C.S0024 cdma2000 High Rate Packet Data Air Interface Specification
- C.S0028 CDMA TTY/TDD Minimum Performance Specification
- N.S0005 Cellular Radiotelecommunications Intersystem Operations
- N.S0018 Prepaid Charging
- N.S0004 WIN Phase II
- N.S0013 WIN Phase I and addendum
- P.S0001 Wireless IP Network Standard
- S.P0037 IP Network Architecture Model for cdma2000 Spread Spectrum Systems
- S.P0049 Requirements for a 3G Network Based on Internet Protocol (“All-IP”) with Support for TIA/EIA-41 Interoperability
- S.P0006 Cellular Feature Descriptions [TIA/EIA-664]

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10 **3. DEFINITIONS AND ABBREVIATIONS**

11 This terms and abbreviations which are used within this specification are defined as
12 follows:

- AAA Authentication, Authorization, Accounting
- Core network Legacy MS Domain core network

System Requirements: Legacy MS Domain – Step 1

FA	Foreign Agent
HA	Home Agent
HLR/HLRe	Home Location Register/ Home Location Register emulation
IETF	Internet Engineering Task Force
IP	Internet Protocol
ISUP	ISDN User Part
LMSD	Legacy MS Domain
MGCF	Media Gateway Control Function
MGW	Media Gateway
MIP	Mobile IP
MRFP	Media Resource Function Processor
MS	Mobile Station
MSC	Mobile Switching Center
MSCe	MSC emulation
NAM	Network Architecture Model
OAM&P	Operations, Administration, Maintenance and Provisioning
PCM	Pulse Code Modulation
PSTN	Public Switched Telephone Network
QoS	Quality of Service
RAN	Radio Access Network
RFC	Request for Comments (an IETF standard)
SIP	Session Initiation Protocol
SS7	Signaling System 7
VoIP	Voice over IP

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Legacy MS	Any mobile station that supports an TIA/EIA-41 call model
Legacy Systems	The mobile system as defined in TSB-100A

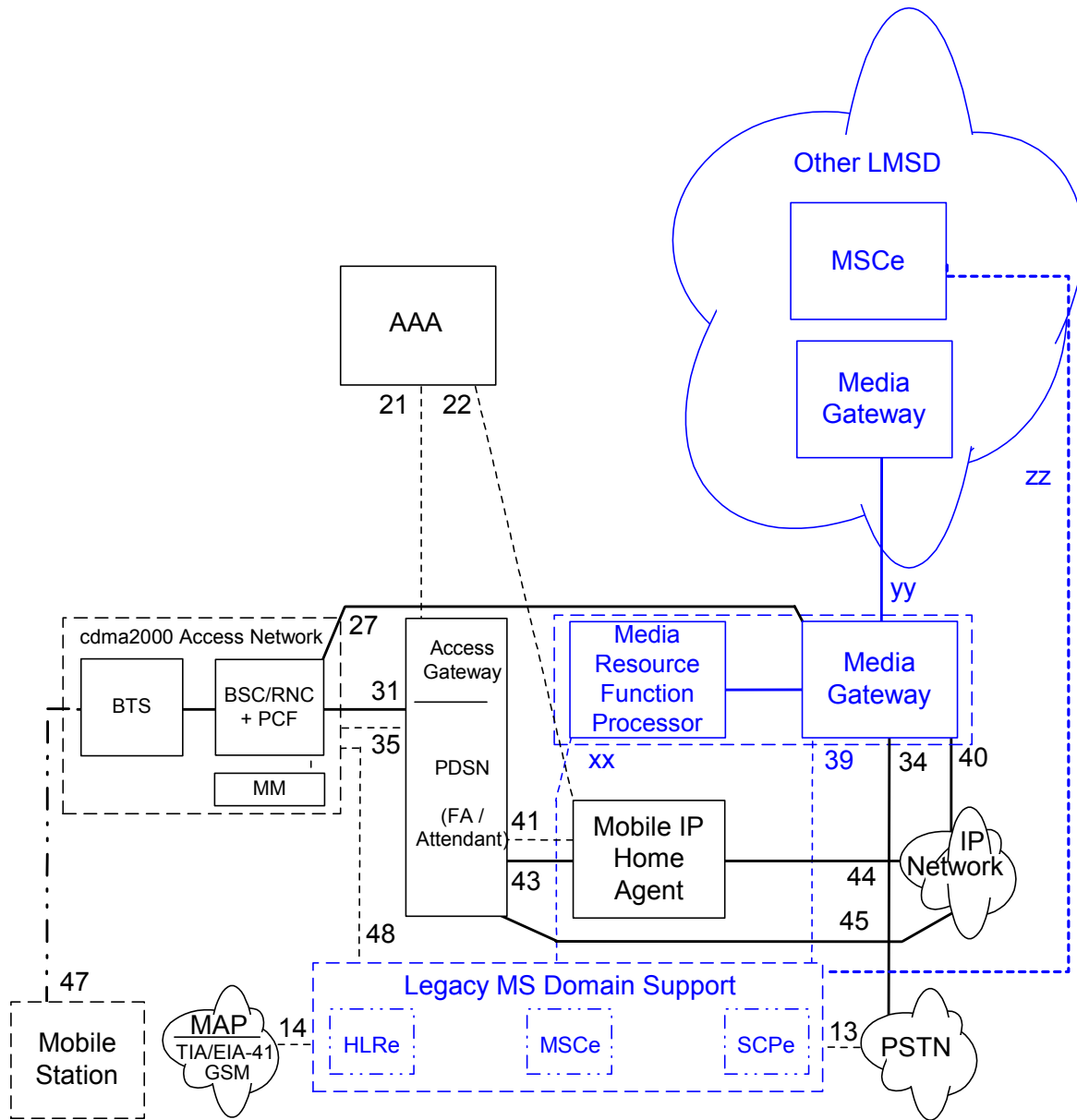
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1 **4. GENERAL DESCRIPTION**

2 The LMSD Step-1 provides support for legacy MS such that they can receive the same
3 features using the LMSD that they receive in legacy systems. Such features include, but
4 are not limited too, the features defined in TIA/EIA-664A and beyond.

5 Enhancements beyond legacy systems include:

- 6
- separation of the MSC into a MSCe and MGW/MRFP and
 - specification of interfaces xx, yy, zz, and 39 (see Figure 1 LMSD Step-1).
- 7
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1 In Figure-1 BLUE is used to identify LMSD Step-1 work areas.

2

Figure 1 - LMSD Step-1

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1 **5. SYSTEM REQUIREMENTS**

2 **5.1. General Requirements**

3 Existing TIA/EIA-41 signaling will be used for call control, services, and handoff.

4 Existing IOS 4.3 specifications will be used for RAN connectivity. It should be noted
5 that at current several features in both IOS 4.2 and 4.3 require TIA/EIA-41 support.

6 These features MAY NOT function until TIA/EIA-41 support is available. All other IOS
7 features SHOULD function as defined.

8 Existing air-interface specifications will be used.

9 Existing P.S0001 specification will be used for cdma2000 packet data services

10 Tandem Free Operation shall be supported in LMSD Step-1, but it shall not be supported
11 over the yy interface due to technology limitations for this release.

12 All security features of the legacy system shall be supported in the LMSD.

13 **5.2. New Network Entities**

14 **5.2.1. MSCe**

15 Has the signaling and call control aspects of a MSC.

16 Uses TIA/EIA-41 for call control and service signaling.

17 Uses IP signaling to control the MRFP for tones and announcements.

18 Uses IP signaling to control the MGW for bearer establishment.

19 Uses IP signaling to control the MGW for bridging control.

20 Uses IP signaling for bearer management control associated with interface yy.

21 For Call Delivery, the MSCe translates a received E.164 TLDN into an IP address when
22 IP bearer is to be used.

23 **1.1.2.5.2.2. MGW/MRFP**

24 Has the bearer aspects and switching fabric of a MSC.

25 Has the tone and announcement capabilities of a MSC.

26 Has the bridging capabilities of a MSC.

27 Supports IP bearer for Call Delivery to other LMSDs.

28 Supports circuit bearer for connectivity to the PSTN.

29 Uses IP signaling from the MSCe for tones and announcements control.

30 Uses IP signaling from the MSCe for bearer establishment.

31 Uses IP signaling from the MSCe for bridging control.

32 Interface 33 between MGW and MRFP is not specified in LMSD Step-1, but is subject
33 for future development.

1 MGW shall support translation of PCM-A law to/from PCM-u law.

2 MGW shall provide a means to support existing circuit data and fax service options.

3 **5.3. New Interfaces**

4 **5.3.1. Interface 39**

5 Provides IP signaling from the MSCe to the MGW/MRFP to control bearer resource
6 assignment.

7 Provides IP signaling from the MSCe to the MGW/MRFP to control bridging.

8 **1.1.2.5.3.2. Interface xx**

9 Provides IP signaling from the MSCe to the MGW/MRFP to control insertion of tones
10 and announcements into the bearer stream.

11 **1.1.3.5.3.3. Interface yy**

12 Provides IP bearer between MGW/MRFPs

13 Security features are implementation-specific in this release.

14 QoS features are implementation-specific in this release.

15 Will not operate across the Internet, will more then likely be a managed network.

16 IOS A5 bearer traffic shall not be supported over this interface since handoffs are done
17 via TIA/EIA-41. Handoffs will need to be supported over traditional IMT trunks.

18 This interface may existing betwven MGWs sharing the same MSCe or different MSCe's

19 **5.3.4. Interface zz**

20 Provides IP signaling control associated with interface yy. This interface is between
21 MSCes.

22

1 6. Feature Requirements

2 The following is a list of feature and service requirements that shall be included in LMSD Step-1.

3 The specifics on how these are to be implemented into the specifications will be defined in the
4 forthcoming stage-2 and stage-3 documents.

5 Features and Services defined in S.P0006 shall be supported.

6 The Service Drivers defined in N.S0004, N.S0013, and N.S0018 shall be supported.

7 When involving these features, services, and service drivers the user shall not perceive any
8 difference in the operation of the capabilities.

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