

**Digital cellular telecommunications system (Phase 2+);
Network architecture
(GSM 03.02 version 6.1.0 Release 1997)**



Reference

DTS/SMG-120302Q6 (4u0030c3.PDF)

Keywords

Digital cellular telecommunications system,
Global System for Mobile communications (GSM)

ETSI

Postal address

F-06921 Sophia Antipolis Cedex - FRANCE

Office address

650 Route des Lucioles - Sophia Antipolis
Valbonne - FRANCE
Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16
Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

Internet

secretariat@etsi.fr
<http://www.etsi.fr>
<http://www.etsi.org>

Copyright Notification

No part may be reproduced except as authorized by written permission.
The copyright and the foregoing restriction extend to reproduction in all media.

© European Telecommunications Standards Institute 1998.
All rights reserved.

ETSI

Contents

Intellectual Property Rights.....	5
Foreword	5
Introduction	5
1 Scope.....	6
1.1 Normative references.....	6
2 Definitions and abbreviations	8
2.1 Location register	8
2.1.1 Home Location Register (HLR)	8
2.1.2 Visitor Location Register (VLR).....	8
2.1.3 Serving GPRS Support Node (SGSN) \$(GPRS)\$	8
2.1.4 Gateway GPRS Support Node (GGSN) \$(GPRS)\$	8
2.2 Authentication Centre (AuC).....	8
2.3 Equipment Identity Register (EIR)	9
2.4 Mobile-services Switching Centre (MSC)	9
2.5 Border Gateway (BG) \$(GPRS)\$	9
2.6 Public Land Mobile Network (PLMN).....	9
2.7 Cell.....	9
2.8 Base Station Controller (BSC) area	9
2.9 Location Area (LA).....	9
2.10 Routing Area (RA) \$(GPRS)\$	10
2.11 MSC area	10
2.12 GPRS Support Nodes (GSN) \$(GPRS)\$	10
2.13 VLR area.....	10
2.14 SGSN area \$(GPRS)\$.....	10
2.15 Zones for Regional Subscription.....	10
2.16 Service area.....	10
2.17 Group call area.....	10
2.18 Group Call Register (GCR)	11
3 The entities of the mobile system	11
3.1 The Home Location Register (HLR).....	11
3.2 The Visitor Location Register (VLR)	12
3.3 The Authentication Centre (AuC).....	12
3.4 The Equipment Identity Register (EIR)	12
3.5 The Mobile-services Switching Centre (MSC).....	13
3.6 The Gateway MSC (GMSC).....	13
3.7 SMS Gateway MSC (SMS-GMSC).....	13
3.8 SMS Interworking MSC	13
3.9 The Interworking Function (IWF)	13
3.10 The Base Station System (BSS).....	13
3.11 The Mobile Station (MS).....	14
3.12 The Group Call Register (GCR)	14
3.13 Shared InterWorking Function (SIWF) \$(SIWF)\$	14
3.14 Serving GPRS Support Node (SGSN) \$(GPRS)\$	15
3.15 Gateway GPRS Support Node (GGSN) \$(GPRS)\$	15
4 Configuration of a Public Land Mobile Network	15
4.1 General.....	15
4.2 Basic configuration (not supporting GPRS).....	16
4.3 Basic configuration with support for GPRS\$(GPRS)\$	17
4.4 Packet Data Backbone Networks in PLMNs supporting GPRS \$(GPRS)\$	17
5 PLMN interfaces	18
5.1 General.....	18
5.2 Interface between the MSC and Base Station System (A-interface)	18

ETSI

5.3	Interface between BSC and BTS (Abis-interface)	18
5.4	Interface between the MSC and its associated VLR (B-interface).....	19
5.5	Interface between the HLR and the MSC (C-interface).....	19
5.6	Interface between the HLR and the VLR (D-interface)	19
5.7	Interface between MSCs (E-interface).....	19
5.8	Interface between MSC and EIR (F-interface).....	20
5.9	Interface between VLRs (G-interface).....	20
5.10	Interface between HLR and AuC (H-Interface)	20
5.11	Interface between Mobile Station and Base Station System (Um-interface).....	20
5.12	Interface between the MSC and its associated GCR (I-interface).....	20
5.13	Interface between MSC/VLR and SGSN (Gs-interface) \$(GPRS)\$	20
5.14	Interface between SGSN and HLR (Gr-interface) \$(GPRS)\$	20
5.15	Interface between SGSN and GGSN (Gn- and Gp-interface) \$(GPRS)\$	21
5.16	Interface between SGSN and BSS (Gb-interface) \$(GPRS)\$	21
5.17	Signalling Path between GGSN and HLR (Gc-interface) \$(GPRS)\$.....	21
5.18	Interface between SGSN and EIR (Gf-interface) \$(GPRS)\$	21
5.19	Interface between MSC and SIWFS (K-Interface) - \$(SIWF)\$	21
6	Interface to external networks.....	22
6.1	Interface between the fixed networks and the MSC.....	22
6.2	Interface between GGSN and external data networks (Gi-interface) \$(GPRS)\$	22
Annex A (informative): Document change history.....		23
History		24

ETSI

Intellectual Property Rights

IPRs essential or potentially essential to the present document may have been declared to ETSI. The information pertaining to these essential IPRs, if any, is publicly available for **ETSI members and non-members**, and can be found in SR 000 314: *"Intellectual Property Rights (IPRs): Essential, or potentially Essential, IPRs notified to ETSI in respect of ETSI standards"*, which is available **free of charge** from the ETSI Secretariat. Latest updates are available on the ETSI Web server (<http://www.etsi.fr/ipr> or <http://www.etsi.org/ipr>).

Pursuant to the ETSI IPR Policy, no investigation, including IPR searches, has been carried out by ETSI. No guarantee can be given as to the existence of other IPRs not referenced in SR 000 314 (or the updates on the ETSI Web server) which are, or may be, or may become, essential to the present document.

Foreword

This ETSI Technical Specification (TS) has been produced by the Special Mobile Group (SMG) of the European Telecommunications Standards Institute (ETSI).

This TS present the possible architectures of the digital cellular telecommunications system (Phase 2/Phase 2+).

The contents of this TS are subject to continuing work within SMG and may change following formal SMG approval. Should SMG modify the contents of this TS it will then be republished by ETSI with an identifying change of release date and an increase in version number as follows:

Version 6.x.y

where:

- 6 indicates release 1997 of GSM Phase 2+;
 - x the second digit is incremented for all other types of changes, i.e. technical enhancements, corrections, updates, etc.
 - y the third digit is incremented when editorial only changes have been incorporated in the specification.
-

Introduction

The present document includes references to features which are not part of the Phase 2+ Release 96 of the GSM Technical specifications. All subclauses which were changed as a result of these features contain a marker (see table below) relevant to the particular feature.

The following table lists all features that were introduced after Release 96.

Feature	Designator
Shared Inter-Working Function	\$(SIWF)\$
General Packet Radio Services	\$(GPRS)\$

ETSI

Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time alerts** and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.