BASE®

Public Interfaces

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1 INTRODUCTION

This publication does not include interfaces within the BASE network.

For clarity purposes cross-reference of appropriate international standards is applied throughout the document, using ETSI and IETF terminology wherever possible.

2 BASE INTERFACES SPECIFICATION
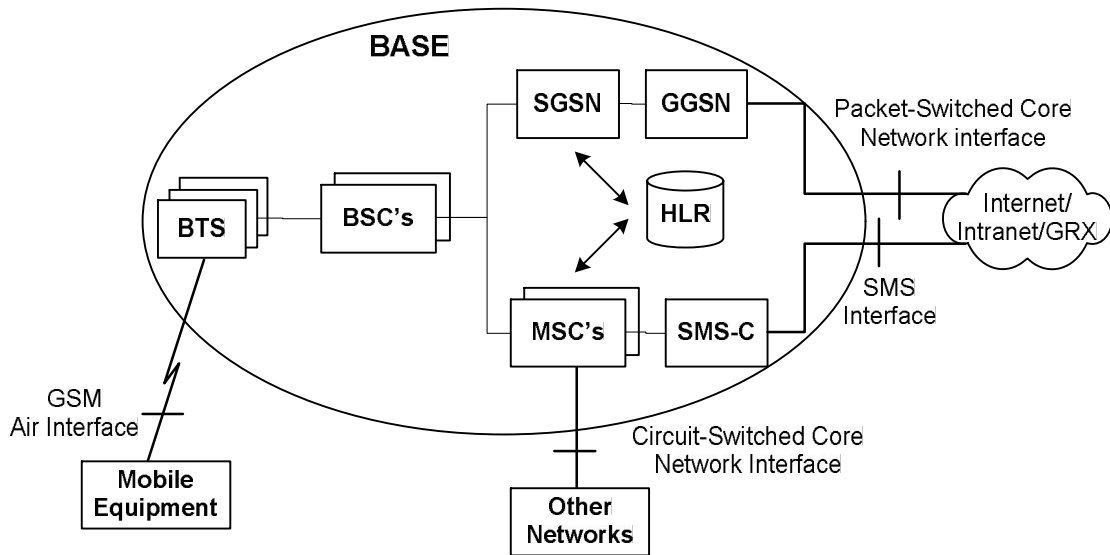

2.1 Public Interfaces Architecture

Figure 1: BASE Schematic Public Interfaces Architecture

BASE offers its services via multiple public interfaces:

- The GSM Air Interface
- The Circuit-Switched Core Network Interface
- The Packet-Switched Core Network Interface
- The SMS Interface

2.2 GSM Air Interface

Via the GSM Air Interface mobile network subscribers (and roamers), using GSM standardized mobile terminal equipment, can access the BASE network and utilize services in accordance with respective subscriber profiles.

The interface between the Mobile Equipment and the Radio Network is specified in the 04- and 05-series of GSM Technical Specifications. Due to the evolution of technology Series 04-05 have evolved to series 44 - 45 for GSM.

The GSM Air interface of the BASE network has been implemented in accordance with the following standards

2.2.1   Technical Specifications related to the **Signalling protocols** ("stage 3") - user equipment to **GSM-GPRS** network (Air Interface) of BASE

Technical Specification	Release	Version	GSM Technical Specification Title before Rel 4
TS 04.07	R98	7.3.0	Mobile Radio Interface Signalling Layer 3 - General Aspects
TS 04.08	R99	8.0.0	Mobile radio interface layer 3 specification
TS 04.10	R98	7.1.0	Mobile Radio Interface Layer 3 - Supplementary Services Specification - General Aspects
TS 04.11	R98	7.1.0	Point-to-Point (PP) Short Message Service (SMS) Support on Mobile Radio Interface
TS 04.80	R98	7.4.1	Mobile Radio Interface Layer 3 - Supplementary Services Specification Formats and Coding

Technical Specification	Release	Version	GSM Technical Specification Title Rel 4 and later
TS 44.001	R6	6.0.0	Mobile Station - Base Station System (MS - BSS) Interface General Aspects and Principles
TS 44.003	R6	6.1.0	Mobile Station - Base Station System (MS - BSS) Interface Channel Structures and Access Capabilities
TS 44.004	R6	6.0.0	Layer 1 - General Requirements
TS 44.005	R6	6.0.0	Data Link (DL) Layer General Aspects
TS 44.006	R6	6.1.0	Mobile Station - Base Stations System (MS - BSS) interface Data Link (DL) layer specification
TS 44.012	R6	6.0.0	Short Message Service Cell Broadcast (SMSCB) support on the mobile radio interface
TS 44.013	R6	6.0.0	Performance Requirements on Mobile Radio Interface
TS 44.018	R7	7.1.0	Mobile radio interface layer 3 specification; Radio Resource Control (RRC) protocol
TS 44.021	R6	6.0.0	Rate Adaption on the Mobile Station - Base Station System (MS-BSS) Interface

Technical Specification	Release	Version	GSM Technical Specification Title Rel 4 and later
TS 44.060	R7	7.1.0	General Packet Radio Service (GPRS); Mobile Station (MS) - Base Station System (BSS) interface; Radio Link Control / Medium Access Control (RLC/MAC) protocol
TS 44.064	R6	6.1.0	Mobile Station - Serving GPRS Support Node (MS-SGSN) Logical Link Control (LLC) Layer Specification
TS 44.065	R6	6.5.0	Mobile Station (MS) - Serving GPRS Support Node (SGSN); Subnetwork Dependent Convergence Protocol (SNDCP)

2.2.2   Technical Specifications related to the **Radio Aspects** of the GSM Air Interface of BASE

Technical Specification	Release	Version	GSM Technical Specification Title Rel 4 and later
TS 45.001	R7	7.1.0	Physical layer on the radio path; General description
TS 45.002	R6	6.11.0	Multiplexing and multiple access on the radio path
TS 45.003	R6	6.8.0	Channel coding
TS 45.004	R6	6.0.0	Modulation
TS 45.005	R7	7.2.0	Radio transmission and reception
TS 45.008	R7	7.0.0	Radio subsystem link control
TS 45.010	R6	6.5.0	Radio subsystem synchronization

2.2.3   Technical Specifications related to the **GSM CODECs** of the Air Interface of BASE

Technical Specification	Release	Version	GSM Technical Specification Title before Rel 4
TS 06.01	R99	8.0.1	Full Rate Speech Processing Functions
TS 06.02	R99	8.0.0	Half Rate Speech Processing Functions
TS 06.06	R99	8.0.1	Half Rate Speech: ANSI-C Code for GSM Half Rate Speech Codec
TS 06.07	R99	8.0.1	Half Rate Speech: Test Sequence for GSM Half Rate Speech Codec
TR 06.08	R99	8.0.0	Half Rate Speech; Performance Characterization of the GSM Half Rate speech codec
TS 06.11	R99	8.0.1	Substitution and Muting of Lost Frames for Full Rate Speech Channels
TS 06.12	R99	8.1.0	Comfort Noise Aspects for Full Rate Speech Traffic Channels
TS 06.21	R99	8.0.1	Half rate speech; Substitution and muting of lost frames for half rate speech traffic channels
TS 06.22	R99	8.0.1	Comfort Noise Aspects for Half Rate Speech Traffic Channels
TS 06.31	R99	8.0.1	Discontinuous Transmission (DTX) for Full Rate Speech Traffic Channels

TS 06.32	R99	8.0.1	Voice Activity Detection (VAD)
TS 06.41	R99	8.0.1	Discontinuous Transmission (DTX) for Half Rate Speech Traffic Channels
TS 06.42	R99	8.0.1	Voice Activity Detection (VAD) for Half Rate Speech Traffic Channels
TS 06.51	R99	8.2.0	GSM Enhanced full rate speech processing functions: General description
TS 06.53	R99	8.0.1	ANSI-C code for the GSM Enhanced Full Rate (EFR) speech codec
TS 06.54	R99	8.2.0	Test sequences for the GSM Enhanced Full Rate (EFR)
TR 06.55	R99	8.0.0	Performance characterisation of the GSM EFR Speech Codec
TS 06.60	R99	8.0.1	Enhanced full rate speech transcoding
TS 06.61	R99	8.0.1	Substitution and muting of lost frames for enhanced full rate speech traffic channels
TS 06.62	R99	8.0.1	Comfort noise aspects for Enhanced Full Rate (EFR) speech traffic channels
TS 06.81	R99	8.0.1	Discontinuous Transmission (DTX) for enhanced full rate speech traffic channels
TS 06.82	R99	8.0.1	Voice Activity Detection (VAD) for enhanced full rate speech traffic channels

2.2.4 Technical Specifications related to the **Signalling protocols** ("stage 3") - user equipment to **UMTS** network (Air Interface) of BASE

Technical Specification	Release	Version	3G/GSM R99 and later
TS 24.002	R6	6.0.0	GSM-UMTS Public Land Mobile Network (PLMN) Access Reference Configuration
TS 24.007	R7	7.0.0	Mobile radio interface signalling layer 3; General Aspects
TS 24.008	R7	7.1.0	Mobile radio interface Layer 3 specification; Core network protocols; Stage 3
TS 24.010	R6	6.0.0	Mobile Radio Interface Layer 3 - Supplementary Services Specification - General Aspects
TS 24.011	R6	6.1.0	Point-to-Point (PP) Short Message Service (SMS) support on mobile radio interface
TS 24.022	R6	6.0.0	Radio Link Protocol (RLP) for circuit switched bearer and teleservices

2.2.5 Technical Specifications related to the **Radio Aspects** of the **UMTS** Air Interface of BASE

Technical Specification	Release	Version	3G/GSM R99 and later
TS 25.101	R7	7.1.0	User Equipment (UE) radio transmission and reception (FDD)
TS 25.104	R7	7.1.0	Base Station (BS) radio transmission and reception (FDD)
TS 25.133	R7	7.1.0	Requirements for support of radio resource management (FDD)
TS 25.201	R6	6.2.0	Physical layer - general description

TS 25.211	R6	6.6.0	Physical channels and mapping of transport channels onto physical channels (FDD)
TS 25.212	R6	6.6.0	Multiplexing and channel coding (FDD)
TS 25.213	R6	6.4.0	Spreading and modulation (FDD)
TS 25.214	R6	6.7.0	Physical layer procedures (FDD)
TS 25.215	R6	6.4.0	Physical layer; Measurements (FDD)
TS 25.301	R6	6.4.0	Radio interface protocol architecture
TS 25.302	R6	6.5.0	Services provided by the physical layer
TS 25.303	R6	6.3.0	Interlayer procedures in Connected Mode
TS 25.304	R6	6.7.0	User Equipment (UE) procedures in idle mode and procedures for cell reselection in connected mode
TS 25.306	R6	6.6.0	UE Radio Access capabilities definition
TS 25.321	R6	6.6.0	Medium Access Control (MAC) protocol specification
TS 25.322	R6	6.5.0	Radio Link Control (RLC) protocol specification
TS 25.323	R6	6.3.0	Packet Data Convergence Protocol (PDCP) specification
TS 25.324	R6	6.4.0	Broadcast/Multicast Control (BMC)
TS 25.331	R6	6.7.0	Radio Resource Control (RRC) protocol specification
TS 25.401	R6	6.7.0	UTRAN overall description
TS 25.402	R6	6.3.0	Synchronization in UTRAN Stage 2

2.3   Circuit-Switched Core Network Interface

The Circuit-Switched Core Network interface of the BASE network has been implemented in accordance with the following standards:

Standard	Protocol
3GPP TS 29.002 TSG#14 TS 29.007 TSG#16 TS 29.010 TSG#14 TS 29.013 TSG#14 TS 29.120 TSG#14	MAP (Mobile application part) Used in MSC/VLR, MSC Server, MSC/MGW
3GPP TS 29.078 TSG#18	Camel phase 3 Used to support IN application Part
3GPP TS 23.078 TSG#15	Camel Phase 2 Used to support IN application part
3GPP TS 22.078 TSG#14	Camel Phase 1 Used to support IN application part
ITU-T Rec. Q.1218, ETS 300 374	INAP Used for Intelligent Networks Capability for Mobile Networks
ITU-T ISUP 97, Q.730-Q.737, Q.761 - Q. 764, Q.850 ETSI ISUP version 3 EN 300 356-1...12, -14…19 ETSI ISUP version 2 ETS 300 356-1…12, -14…19 ETSI ISUP version 1 ETS 300 121	Core ISUP Used in all MSC/VLR, MSC Server, MSC/MGW
ISUP´97 recommendations Q.761-Q.764 and Q.850	ISUP This protocol used to support the basic bearer service
ITU-T ISUP´97 recommendations Q.730-Q.737.	ISUP This protocol supports supplementary services
ISUP version refers to E-ISUP 7.4.	ISUP supports most market specific ISUP variants

2.4 Packet-Switched Core Network Interface

Via the Packet-Switched Core Network Interface mobile network subscribers (and roamers), using Packet-Switched standardized mobile terminal equipment, can access the BASE network and utilize data services (Packet-Switched) in accordance with respective subscriber profiles.

The Packet-Switched Core Network interface of the BASE network has been implemented in accordance with the following standards

2.4.1 SS7 interface (towards external SS7 networks)

Standard	Protocol
ITU-T 1988 Blue book ITU-T (03/93)	MTP-L2
ITU-T 1988 Blue book ITU-T (03/93) White book	MTP-L3
ITU-T 1988 Blue book ITU-T (03/93) ANSI 1992	SCCP
ITU-T 1988 Blue book ITU-T (03/93)	TCAP

2.4.2 Gn/Gp interface (towards external GRX provider for GPRS roaming)

Standard	Protocol
IETF RFC 1034, 1035	DNS
3GPP TS 23.060, 24.008, 29.060, 29.061 GSM 03.60, 04.08, 09.60, 09.61	GTP (v0,v1)

2.4.3 Gi interface (towards external IP networks)

Standard	Protocol
IETF RFC 2865 IETF RFC 2866	RADIUS authentication RADIUS accounting
IETF RFC 1702 IETF RFC 1702	Generic routing encapsulation (GRE) Generic routing encapsulation (GRE) over IPv4 networks
IETF RFCs 2401 to 2411and 2451	IPSec

2.5   SMS Interface

Via the SMS Interface, SMS Premium service Providers, can access the BASE network and utilize the SMS Infrastructure to deliver Premium SMS to the mobile network subscribers.

The SMS Interface of the BASE network has been implemented in accordance with the following standards:

Standard	Protocol
CMG UCP 4.5	Universal Computer Protocol
SMPP 3.4	Short Message Peer to Peer
TS 23.039 v5.0.0	Interface protocols for the connection of Short Message Service Centres (SMSCs) to Short Message Entities (SMEs)
IETF RFCs 2401 to 2411and 2451	IPSec