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Supported Protocols

GERAN

Abis interface:

CS services

- > LAPD: Q.921, CCITT (ITU-T)
- > BTSM: GSM 08.58 v.8.6.0
- > Nokia BTSM
- > Ericsson BTSM
- > Siemens BTSM
- > Motorola Mobis
- > Nortel Abis RSL
- > Nortel AGPRS GSL
- > GSM L3 RR layer: 3GPP TS 44.018 v.4.11.0
- > GSM/3G layer 3: 3GPP TS 24.008 v.4.8.0
- > GSM supplementary services: 3GPP 29.002 v.4.3.0
- > LCS:
 - 3GPP TS 48.031 v.4.1.0
 - 3GPP TS 44.031 v.4.6.0
 - 3GPP TS 44.071 v.4.3.0
 - 3GPP TS 48.071 v.4.1.0
 - 3GPP TS 49.031 v.4.3.0
- > GSM-R:
 - GCC: 3GPP TS 44.068 v.5.01
 - BCC: 3GPP TS 44.069 v.5.00
- > TRAU Full-rate and enhanced full-rate: GSM TS 08.60 v.4.3.0
- > TRAU Half-rate: GSM TS 08.61 v.4.0.0
- > TRAU AMR: GSM TS 08.60 v.8.1.0, GSM TS 08.61 v.7.2.1

PS services

- > Ericsson PCU frame analysis
- > Nokia PCU frame analysis
- > Lucent PCU frame analysis
- > Nortel PCU frame analysis
- > Siemens PCU frame analysis
- > LLC: 3GPP TS 44.064 v.4.3.0
- > GSM/3G layer 3: 3GPP TS 24.008 v.4.8.0
- > GSM SMS (PP) – TP:
 - 3GPP TS 23.038 v.4.4.0
 - 3GPP TS 23.040 v.4.7.0
 - 3GPP TS 24.011 v.4.1.1
- > SNDCP: 3GPP TS 44.065 v.4.1.0

> Mobile IP protocols on top of SNDCP:

- IP, IPv4: RFC 791 (9/1981)
- TCP: RFC 793 (9/1981)
- UDP: IETF RFC 768 (8/1980)
- ICMP:
 - IETF RFC 792 (09/1981)
 - IETF RFC 1256, ICMP Router Discovery Messages (09/1991)

O&M service

- > LAPD: Q.921, CCITT (ITU-T)
- > Abis O&M transport layer: GSM TS 08.59 v.3.1.0
- > Nokia O&M
- > Ericsson O&M
- > Nortel Abis O&M
- > Nortel AGPRS OAM
- > Siemens O&M
- > Lucent O&M
- > Alcatel O&M

A interface:

- > MTP-2: Q.703, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > MTP-3: Q.704, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > SCCP: Q.713 (07/96), CCITT (ITU-T) Blue Book / ANSI T1.112-1996
- > BSSMAP: 3GPP TS 48.008 v.4.8.0
- > GSM/3G layer 3: 3GPP TS 24.008 v.4.8.0
- > GSM L3 RR layer: 3GPP TS 44.018 v.4.11.0
- > GSM SMS (PP) – TP:
 - 3GPP TS 23.038 v.4.4.0
 - 3GPP TS 23.040 v.4.7.0
 - 3GPP TS 24.011 v.4.1.1
- > GSM supplementary services: 3GPP 29.002 v.4.3.0
- > LCS:
 - 3GPP TS 48.031 v.4.1.0
 - 3GPP TS 44.031 v.4.6.0
 - 3GPP TS 44.071 v.4.3.0
 - 3GPP TS 48.071 v.4.1.0
 - 3GPP TS 49.031 v.4.3.0
- > GSM-R:
 - GCC: 3GPP TS 44.068 v.5.01
 - BCC: 3GPP TS 44.069 v.5.00

> GSM data and fax protocols (TRAU):

- ITU-T V.110
- Rate adaptation: ETS 300 591 (GSM 08.20)
- Radio Link Protocol (RLP): ETS 300 563 (GSM 04.22)
- L2RCOP: ETS 300 583 (GSM 07.02)
- L2RBOP: ETS 300 584 (GSM 07.03)
- Facsimile group 3 transparent: ETS 300 538 (GSM 03.45)
- CCITT Recommendation T.30

Gb interface:

- > Frame Relay: GSM TS 08.14 v.6.0.0, ANSI T1.607-1998
- > NS: 3GPP 48.016 v.4.2.0
- > BSSGP: 3GPP TS 48.018 v.4.5.0
- > LLC: 3GPP TS 44.064 v.4.3.0
- > SNDCP: 3GPP TS 44.065 v.4.1.0
- > Mobile IP protocols on top of SNDCP:
 - IP, IPv4: RFC 791 (9/1981)
 - TCP: RFC 793 (9/1981)
 - UDP: IETF RFC 768 (8/1980)
 - ICMP:
 - IETF RFC 792 (09/1981)
 - IETF RFC 1256, ICMP Router Discovery Messages (09/1991)
- > GSM/3G layer 3: 3GPP TS 24.008 v.4.8.0
- > GSM SMS (PP) – TP:
 - 3GPP TS 23.038 v.4.4.0
 - 3GPP TS 23.040 v.4.7.0
 - 3GPP TS 24.011 v.4.1.1

CORE NETWORK

Common signalling interfaces:

SS7 interfaces (C, D, E, F, G, Gc, Gd, Gf, Gr)

- > MTP-2: Q.703, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > MTP-3: Q.704, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > SCCP: Q.713 (07/96, 1997), CCITT (ITU-T) Blue Book / ANSI T1.111 T1.112-1996
- > TUP: Q.723 (1988), CCITT (ITU-T) Blue Book / Chinese GF 001-9001, 1994

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- > UK NUP: BT, BTNR 167, 1992
- > ISUP:
 - ANSI: ANSI, T1.113, 1995
 - Blue Book: ITU-T, Q.763, 1988
 - Chinese: YDN 038-1997
 - ITU-T -97: ITU-T, Q.763, 1997
 - Finnish: THK, ISUP, 1996
 - Russian: National ISUP, 1994
 - UK: PNO-ISC/SPEC/007, Issue 2, 1997
 - French: Spirou 1998
- > H-ISUP: ACIF G500: 2000
- > TCAP: ANSI T1.114-1996, ITU-T Q.771-Q.775-1997
- > MAP: 3GPP TS 29.002 v.4.9.0 and v.3.10.0
- > INAP:
 - ETSI, ETS 300 374, 1994
 - TIA/EIA/IS-41.5-C, Feb 1996
- > Ericsson INAP
- > Siemens INAP
- > CAMEL/CAP: 3GPP TS 29.078 v.3.11.0 (2002-03), 3GPP TS 23.078 v.3.12.0 (2002-03)

SigTran interfaces

- > Ethernet: RFC 826 A Standard for the Transmission of IP Datagrams over Ethernet Networks, Blue Book: ITU-T, Q.763, 1988
- > IP: RFC 791 Internet Protocol
- > SCTP: RFC 2960
- > M3UA: RFC 3332
- > SCCP, E1: ITU-T Q.713, 07/96
- > SCCP, T1: ANSI T1.112, 1996
- > TC-97: ITU-T White Book, 1997
- > ISUP: ITU-T, Q.763, 1997
- > INAP:
 - ETSI, ETS 300 374, 1994
 - TIA/EIA/IS-41.5-C, Feb 1996
- > MAP: 3GPP TS 29.002 v.3.10.0 and v.4.9.0
- > 3GPP CAMEL/CAP:
 - CAMEL: 3GPP TS 23.078 v.3.12.0 (2002-03)
 - CAP: 3GPP TS 29.078 v.3.11.0 (2002-03)

High Speed Signalling Link (HSL) interfaces

- > TUP: Q.723 (1988), CCITT (ITU-T) Blue Book / Chinese GF 001-9001, 1994
- > ISUP:
 - ANSI: ANSI, T1.113, 1995
 - Blue Book: ITU-T, Q.763, 1988
 - Chinese: YDN 038-1997
 - ITU-T -97: ITU-T, Q.763, 1997
 - Finnish: THK, ISUP, 1996
 - Russian: National ISUP, 1994
 - UK: PNO-ISC/SPEC/007, Issue 2, 1997
 - French: Spirou 1998
- > INAP: ETSI, ETS 300 374, 1994
- > Ericsson INAP
- > Siemens INAP
- > MAP: 3GPP TS 29.002 v.3.10.0 and v.4.9.0
- > CAMEL/CAP: 3GPP TS 29.078 v.3.11.0 (2002-03), 3GPP TS 23.078 v.3.12.0 (2002-03)

PS service interfaces**Gs interface**

- > MTP-2: Q.703, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > MTP-3: Q.704, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > SCCP: Q.713 (07/96), CCITT (ITU-T) Blue Book / ANSI T1.112-1996
- > BSSAP+: 3GPP TS 29.018 v.4.2.0, GSM 09.18 T1P1.5/98-230R1

Gn, Gp, Ga, Gi Ethernet based interfaces

- > Physical layer (MAC) of 10/100 Mbit/s Ethernet
- > IP, IPv4: RFC 791 (9/1981)
- > TCP: RFC 793 (9/1981)
- > UDP: IETF RFC 768 (8/1980)
- > ICMP:
 - IETF RFC 792 (09/1981)
 - IETF RFC 1256, ICMP Router Discovery Messages (09/1991)

- > GPRS Tunnelling Protocol (GTP) version 0 and 1: GSM TS 09.60 v.6.6.0, 3GPP TS 29.060 v.4.5.0
- > GTP: 3GPP TS 32.015 v.3.4.0
- > IP, TCP, UDP and ICMP on application layer
- > Support for WAP over GPRS at Gi interface:
 - WAP WSP (05 November 1999 v.1.2)
 - WAP WTP (11 June 1999 v.1.2)
 - WAP WTLS (Version 05-Nov-1999)

Other interfaces:**Location Services (LCS) interfaces**

- > MTP-2: Q.703, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > MTP-3: Q.704, CCITT (ITU-T) Blue Book / ANSI T1.111-1996
- > SCCP: Q.713 (07/96), CCITT (ITU-T) Blue Book / ANSI T1.112-1996
- > BSSAP-LE: 3GPP TS 49.031 v.4.3.0
- > BSSLAP: 3GPP TS 48.071 v.4.1.0
- > BSSMAP : 3GPP TS 48.008 v.4.8.0
- > LLP: 3GPP TS 44.071 v.4.2.0
- > SMLCPP: 3GPP TS 48.031 v.4.1.0
- > RRLP: 3GPP TS 44.031 v.4.6.0

PSTN interfaces

- > TUP: Q.723 (1988), CCITT (ITU-T) Blue Book / Chinese GF 001-9001, 1994
- > ISUP:
 - ANSI: ANSI, T1.113, 1995
 - Blue Book: ITU-T, Q.763, 1988
 - Chinese: YDN 038-1997
 - ITU-T -97: ITU-T, Q.763, 1997
 - Finnish: THK, ISUP, 1996
 - Russian: National ISUP, 1994
 - UK: PNO-ISC/SPEC/007, Issue 2, 1997
 - French: Spirou 1998