**Oracle® Communications
Performance Intelligence Center**

Release Notice

Release 9.0.4

910-6618-01 Revision K

January 2015

ORACLE®

Oracle Communications Performance Intelligence Center Release Notice, Release 9.0.4

Release Notice
PIC 9.0.4 Release Notice

Release notices are distributed to customers with each new release of software. This release notice identifies the new features delivered with this release. It also lists the PRs that have been Resolved/Verified and PRs that are Ready-to-Test.

NOTE: The information in this Release Notice reflects the latest data available as of its date of publication and is subject to change.

<u>**Introduction**</u>

The following document describes the PIC 9.0.4 Release Notice. PIC 9.0.4 is a build stream that provides major and minor content releases for new features. It also contains PR fixes to address issues found in the deployment of previous PIC releases. The most current build stream is PIC 9.0.4 and PN's for that stream are included in this Release Notice.

The information in this document reflects the latest data available as of its date of publication.

PIC 9.0.4 Load Lineup for the Baseline Release

The builds released for PIC 9.0.4 Load Lineup consists of the following software components and versions. *This table also identifies compatible SW versions of existing applications and components that were not changed by PIC 9.0.4 development activities.* Customers with installed versions previous to PIC 9.0.4 ordering expansions may request the expansion to be shipped with their current SW version

PIC 9.0.4 – 1.4.0	Software Version	Media/Iso PN	Zip SKU
All Servers			
IXP (32bits)	**9.0.4-6.1.0**	872-2537-105	V45667-01
DWS (64bits)	**9.0.4-6.1.0**	872-2539-105	V45666-01
Oracle 10 NSP (32bits)	**10.2.0.5**	872-2252-102	V46088-01
Oracle 11 (64bits) for DWS 24/25 disk config (fresh)	**11.2.0.3**	872-2540-102	V45669-01
NSP (32bits)	**9.0.4-5.2.0**	872-2536-107	V45668-01
Weblogic (32bits)	**10.3.5.0-2.2.0**	872-2423-102	V45672-01
IMF for HP & Tek2& Tek3 (32bits)	**9.0.4-6.2.0**	872-2541-106	V45675-01
PMF for HP G5 / G6 (32bits)	**9.0.4-6.2.0**	872-2541-106	V45675-01
PMF for HP Gen8 (64bits)	**9.0.4-6.2.0**	872-2562-106	V45674-01
xDR Builder (32bits)	**9.0.4-7.1.0**	872-2543-107	V45673-01
Tadapt(32bits)	**9.0.2-1.1.0**	872-2684-101	V45671-01
TPD Versions			
TPD Linux HP &TEK2 &TEK 3 (32bits)	**5.1.2-73.6.0**	872-2565-103	V43356-01
TPD Linux HP (Gen8) (64bits)	**5.1.2-73.6.0**	872-2509-103	V43355-01
Firmware			
HP SOLUTIONS FIRMWARE	**Min 2.2.4**	Last available	Last available
PM&C			
PM&C	**5.0.3-50.18.1**	872-2441-109	V45439-01
TVOE	**2.0.2-80.34.0**	872-2442-110	V43304-01

If you need assistance with license keys to activate purchased products, please visit
http://www.oracle.com/us/support/licensecodes/index.html

If you purchase hardware through Tekelec/Oracle, please open a SR to get access to the recommended firmware package

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Architecture versus product

- IMF always 32bits
- PMF
    - Gen8 64bits
    - All other H/W 32bits
- IXP
    - Base / PDU always 32bits
    - DWS : Fresh install 64bits
- NSP always 32 bits

Legacy & Analytics interoperability

All Servers			
Report Server	**9.0.1-2.1.0**	895-1576-402	872-2637-101
PPS	**9.0.1-2.1.0**	895-1576-402	872-2636-101
MSW	**9.1.5-2.0.0**	N/A	872-2112-101
ATM 155		N/A	872-1389-01
SM – used with MSW	**1.5.1-0.0.0**	N/A	872-1279-01
Falco	**1.0.0-1.1.0**	895-1576-402	872-2635-101

Analytics			
TDM Voice (ISUP)	**9.0.1-1.1.0**	895-1605-401	872-2644-101
UM-MSU Accounting	**9.0.1-1.1.0**	895-1605-401	872-2645-101
Roaming SMS	**9.0.1-1.1.0**	895-1605-401	872-2641-101
Roaming Access	**9.0.1-1.1.0**	895-1605-401	872-2640-101
SIGTRAN Transport	**9.01-1.1.0**	895-1605-401	872-2646-101

PIC 9.0.4 Release Notice

Upgrade Path

Upgrade/Installations are supported with the software distributions described in these Release Notes.

Major Upgrade:

PIC 7.1 to 9.0.4
PIC 9.0.3 to 9.0.4

Incremental Upgrade Support: N/A

Fresh Install Support:
PIC 9.0.4

PIC 9.0.x Installation and Upgrade Documentation

Unless otherwise noted in Section 0, the most recent approved versions of the following documentation must be used to install this product. These documents are located in Internal Tekelec Sharepoint Doc Center.

The detail of the doc can be found here
http://signal.tekelec.com/Depts/custservice/gtac/dessupportias/PIC_MR/PIC9.0/default.aspx

PIC / Eagle5 Compatibility Matrix

PIC 9.0.4 Release Notice has been validated with the following Eagle Releases:

PIC Release Baseline	Eagle Release Baseline
PIC 7.5 & 9.0	Eagle 44 Minimun Eagle5 and PIC releases for support of E5-Enet-B and E5-ATM-B card
Note: The following releases constitute "pairings" for delivery of new features / capabilities that required complementary PIC and Eagle development efforts:	
IAS 3.0 + Eagle5 38	Timestamp Management
IAS 6.x + Eagle 40.1 / 41.1	Fastcopy Eagle5 Network Topology Sync
IAS 6.6.4	Eagle5 42
PIC 7.0	Eagle5 42
PIC 7.1	Eagle5 42

Note:
Prior to Eagle 41.1.2, no SPC (Secondary Point Code) information was forwarded to PIC. All monitoring was achieved based on the true point code i.e. Eagle_200-aa-405. Now, with changes made in Eagle 41.1.2, the SPC information is sent; with delivery of IAS 6.6.4, issues related to discovery of the linksets and support for the secondary point code are resolved.

NSP Workstation H/W Description

The following table identifies the minimum configuration for running the NSP applications:

Item	value	unit
RAM	1	GB
CPU	Pentium 4 running @ 3 GHz	
Screen Size	min 15" (1280 x 800) 17" recommended	
Internet Explorer	IE 8.0, FireFox 3.x **IE6 no longer supported**	
Flash player	10 or later.	
Java (for ProAlarm config)	JRE 1.6 (1.6 preferred for performance)	

PIC 9.0.4 Feature Content Summary

PMF 10GE interface

4 ports to allow monitoring of 4x 10G port mirrored (SPAN) ports or 2 bidirectional 10G links with low cost passive optical TAPs

Gb over E1 to GboIP converter

xDR data warehousing DWS-64

Make xDR storage independent from PIC administration and upgrade
Take advantage of 64 bits in term of database performance
Pave the way to database in customer cloud or data center

ProTrace PCAP export : Sigtran only

PMF optimization

New xDR Builders

- Q931 xDR Builders
- SGs xDR Builder
- MAP & INAP Compact xDR Builders
- Diameter accounting for carrier operators

Datafeed

2 data formats and export methods supported
- CSV files in streaming mode (new method with PIC 9)
- CSV files in extraction mode
- Oracle OTO streaming
- Oracle OTO extraction

Automated Static Enrichment Update

Automatic and periodic import of enrichment data from your Inventory System
Simplified data import for a User specific usage

PR Severity Definitions

The following sections refer to PR severity levels. Definitions of these levels can be found in the following publication: TL9000 *Quality Management System - Revision 4.0*.

<u>Resolved PRs – PIC 9.0x Resolved PR's</u>

Table RN-1, "Resolved PRs", reflects information for PRs resolved in Release 7.5. These tables are sorted in ascending order by Severity, Component and then PR #.

Table RN-2. PIC Release 9.0 Resolved PRs

PR	Product	Title
PIC 9.0 Resolved PRs	
221399	Analytics Package	update of the CCNDC Code is not taken into account
221399	Analytics-MSU Accounting	update of the CCNDC Code is not taken into account
225641	Analytics-MSU Accounting	Weekly Vasco file TOTAL.CSV contains two times the volume expected
219457	Analytics-Roaming Access	Some MCC and MNC are not properly translated to names in Roaming Access reports
221399	Analytics-Roaming Access	update of the CCNDC Code is not taken into account
221399	Analytics-Roaming SMS	update of the CCNDC Code is not taken into account
219565	Analytics-TDM Voice	Bad count management for Efficient calls in reports
220842	Analytics-TDM Voice	Differences between TDM Voice indicators and ProTrace queries
220842	Analytics-TDM Voice	Differences between TDM Voice indicators and ProTrace queries
165756	IXP	Nightly jobs IXP_ACTIVE_PURGE crash
202440	IXP	Stream renaming is not propagated to IXP IDB
202848	IXP	Extension-2 QoS-Subscribed is not decoded
207724	IXP	Upgrade Utility for Session Upgrade procedure failed.
210070	IXP	DataExport is not exporting the last second of the period
210453	IXP	Missing HP blade external storage verification step
212873	IXP	Oracle error when running "Most Busy Elements for Selected Messages in Tx Direction" Report
213491	IXP	DTO installation doc must be updated to match PIC load line up
213717	IXP	alert_IXP.log filled up with ORA-12012 and ORA-01878 since DST change
214176	IXP	Alarm is not cleared when a ProTraq is deactivated
215013	IXP	Absent subscriber diagnostic SM value 6 is not decoded in text in full decoding.
218698	IXP	ORA-04031: unable to allocate 3936 bytes of shared memory in Oracle 11.2.0.2.0 rel
224087	IXP	AVP are not decoded proeprly in diameter CC and Gx
224829	IXP	Datafeed starts extracting from its start time after PIC 9.0 upgrade
224829	IXP	Datafeed starts extracting from its start time after PIC 9.0 upgrade
224999	IXP	daily datafeed are not export
225618	IXP	Application column in Protrace detail does not display the Message Type for RAN CC
225755	IXP	The "Bytes" column is not calculated correctly in the session ItfStreamMonitor
226298	IXP	Gb feed not exporting because of mapping
226619	IXP	setDataExport script no longer work in PIC 9.0
227158	IXP	Fresh install on Gen8 failed
227332	IXP	Gn TDR: MSISDN and IMEI are wrong when feed by UP Neptune (APN or IMSI)
227443	IXP	Performance issue IxpInterface process connected to Neptune probe
228491	IXP	Modification of PDU storage duration procedure

228491	IXP	Modification of PDU storage duration procedure
229741	IXP	Pool Monitor data incomplete
230215	IXP	IxpAudit.log is growing beyond partition size on DWS servers
230047	IXP	IXP DFP performance improvment
231372	IXP	Message type empty in SIP-I
231673	IXP	Protraq do not support column filter on enum like "VALUE:0xFFFFFFFF:Not available:-. "
232076	IXP	Upgrade is not complet even if server rebooted automaticaly
232248	IXP	IP Transport: pcap export option summary display problem
232804	IXP	Incorrect decoding when pcap export enabled
233028	IXP	IxpForward: deadthread not automaticaly recovered
235404	IXP	Datafeed apply changes is not working due to IDB limit reached
216955	JMX Agent	Low available memory alarm generated by IXP
161095	NSP	reset counter is failing
162758	NSP	Diagnotic utility is not able to display process state if process name finishes with space.
166007	NSP	Impossible to define ProTraq queries on DUMP values
166730	NSP	updating Dictionary attirbute values fails with timeout
167246	NSP	configuration apply pending banner showing ixpXXXX_Pool message
167371	NSP	Session Q752_7 and Q752_ISUPFailCau cannot be querie with protrace
168589	NSP	Forwarding: date and time in email should use NSP Server time zone
169710	NSP	No possibility to define thresholds for all streams in the CCM
194611	NSP	Association eagle ID do not correspond between IMF idb and NSP oracle table causing synchronisation error
195250	NSP	"Translate ENUM values" checkbox became unchecked and cannot be modified
198585	NSP	Oracle backup is no more working in case it did not complete one time
199725	NSP	Can't Apply & Can't Cancel Changes on CCM for pmf when PCR link defined.
200438	NSP	Update ProPerf documention with kind of field usable as Column in Panel settings
201047	NSP	Scheduled export will stop working when 1000 (EXP_MAX_NB) limit is reached
202180	NSP	CCM does not allow PC value less than 3 digit
202265	NSP	Q931 EPI's are not defined in ProTrace
202359	NSP	ProTraq must prevent ProTraq reserved keyword to be used
203444	NSP	IXP Stream modification does not show IMF "apply changes pending" banner
203745	NSP	No Banner to request apply changes on the PMF when changes are done in the network element tab
203747	NSP	pmf : Internal error in ProTrace query when using a link or linkset filter from a link view with a non admin user
204319	NSP	creation of SP on Node is allowed only if user is admin of owner of the node
206116	NSP	"No data available for selecting element" in NSP while click on table monitoring for choosing linkset
206485	NSP	Audit Viewer filtering possibilities are inconsistent
207724	NSP	Upgrade Utility for Session Upgrade procedure failed.
209340	NSP	application.log is flooded with ProDiag insufficient privilege java exception
210457	NSP	Special characters in Protraq user information fields are prefixed with back slash
210717	NSP	Wrong control of IP address field of way management in IP DF (subnet not accepted, ...).
211273	NSP	https certificated is not updating
211652	NSP	Some queries are not editable in ProTrace
211744	NSP	909-2123-001should mention location of NSP MIB file

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211745	NSP	Store Dataflow Processing cannot be deleted if the same input stream is used by an operate with active protraqs
211748	NSP	The location of the NSP Alarm Forwarding MIB in the on-line documentation is wrong
211749	NSP	Error message disappears when attempting to delete used Enrichment file
211990	NSP	Additional text of event is showing OTID=<error>
212478	NSP	NSP /tmp partition 100% full
212688	NSP	Update E164 country code and point code in RDA to update yugoslavia to seribia
213488	NSP	Managed object class has multiple time the same entries
214564	NSP	Datasource selection shows type that cannot be used by ProPerf
214752	NSP	Error message mentioning a deleted role while applying ProTraq
215865	NSP	Display of the column name in ProPerf
215975	NSP	Q.752 Processing using PDU Dataflows can lead to configuration discrepencies
216171	NSP	Step 2 from section 5.11.9 Configure External LDAP in 909-2123-001 does not work
216464	NSP	"Time zone" settings are not consistents between applications
216768	NSP	NSP instances in failed state (export ftp)
216906	NSP	Retention time for hourly aggregats is limited to 1 week
216912	NSP	Parameterized query is mixing parameters
217148	NSP	Incorrect CSV export format (xDR column title doesn't exist double quotes ")
217288	NSP	The banner of notification(ixp002_Pool) is always displayed even after making apply changes
219620	NSP	Step for upload of builders should be done in advance
220070	NSP	Inconsistent format for exported file that cannot be re-imported
220119	NSP	Missing new protocol for LTE builders
220571	NSP	"Ghost" process after associating/deassociating build DFP for IUControlEnrichment
221181	NSP	No possibility to synchronize/activate/deassociate a ProTraq Configuration
221637	NSP	Protrace Query Dialog issue when remove dictionary.
221738	NSP	Extra not expected columns exported to Excel
221855	NSP	IXP Cancel change created inconsistency in DB (auto created backup failed).
222340	NSP	Impossible to add a list of IMSI when IMSI contains a *
222718	NSP	HTTP 500 if no value entered in Y axis range
222735	NSP	Sorting on OPC DPC is not working
222740	NSP	In IE browser Scroll bar is not displaying for Y axis config page in Properf Config
222886	NSP	Drill down on KPI is failing "an internal error has occured" message
222912	NSP	ProTrace Drill down menu is not visible when trying on a cell at the bottom of the result
223010	NSP	Automatic row insertion proposes only the deletion of the existing lines
223052	NSP	wrong lines deleted with the automatic row insertion
223053	NSP	ProTraq result on field value are incorrect
223159	NSP	Automatic Row insertion doesn't accept line starting by a digit
223276	NSP	impossible to open a new window when windowis released
223395	NSP	Upload builder is failing with "out of memory error"
223442	NSP	ProTace wrong filter after column moving (in applet mode)
223643	NSP	Import doesn't change the operators from lower letters to upper letters
223703	NSP	the Copy/PDU decoding is not working in some cases
223809	NSP	In applet mode impossible to copy/paste a field
223988	NSP	HTML export of sequence diagram is wrong in Internet Explorer
224341	NSP	NSP instance overloaded due to maximum capacity of nsp datasource pool
224447	NSP	Upgrade to 9 error: TRC_9.0.0.mig cannot be found

224458	NSP	Oracle Views not updated after sessions removal
225104	NSP	Obtain session period on query settings take too much time
225435	NSP	Bad management of some control characters
225694	NSP	PDUs are not displayed when querying an Archive session
225873	NSP	Feature for filter on Object name not present after upgrade to 9.0
226171	NSP	Core SystemQueries failed to deploy properly when upgrading to PIC 9.0
226434	NSP	ORA-00904: "A"."STREAM_ID": invalid identifier when applying configuration
226434	NSP	ORA-00904: "A"."STREAM_ID": invalid identifier when applying configuration
226450	NSP	On Demand Application drilldown to protrace not working.
227211	NSP	IXP Cancel change created inconsistency in DB if external probe connected (auto created backup failed).
227855	NSP	CCM window is blocked when filtering on DFP name
227857	NSP	Missing elements to display Events
228056	NSP	Cannot add new linksets in existing PDU Dataflows
228363	NSP	Config Backup cannot be created
229342	NSP	NSP upload builder error: Query/Filter/Trace_Builder Upgrade Failed
229382	NSP	Protrace return an error when reading a scheduled .zip exported file
229450	NSP	Cancel change does not restore duplicate packet feature setting
168589	NSP	Forwarding: date and time in email should use NSP Server time zone
222922	NSP	Right click show ProTraq menu and browser menu
226389	NSP	An Instance column appears in the tables in ProPerf
232211	NSP	Empty zip file shows internal error message
232336	NSP	"Loading Dictionary" when opening a query in protrace is very slow
232804	NSP	Incorrect decoding when pcap export enabled
236285	NSP	ProTraq with filter on hexa field cannot be reopened after upgrade
220953	Report Platform	service BobjEnterprise120 not starting on Report server after upgrade of IXP to 7.5
222744	Report Platform	No possibility to generate DataAging report on related time periods
222745	Report Platform	Data Aging report does not show correct time in columns Job Start/Job End and Aggragation Start Time / Aggregation End Time
195330	xDR Builders	Highlight in session (xDR/SU) the impact of relocation on UMTS IUCS CC Successful field (Yes)
196206	xDR Builders	Fields do not have definition of MAX in dictionary
198103	xDR Builders	MAP dictionnary needs to be enriched for the "C type" filed
200142	xDR Builders	Megaco correlation description
201500	xDR Builders	Correlation key not well managed for MAP UDTS frame
201716	xDR Builders	Gb TDR: SGSN, PCM and Channel ID contains unexpected value for GboIP
203134	xDR Builders	MGCP CDR collision and timer
203251	xDR Builders	Gs Explicit IMSI detach from non-GPRS services procedure are not correlated
203293	xDR Builders	MAP TDR: IMSI is not always populated
208261	xDR Builders	Wrong SIP DR STATUS when the caller hangs up before the called pick up the phone.
211515	xDR Builders	unable to decode part of sccp contents
212044	xDR Builders	Wrong PC in M2UA SUDR
213651	xDR Builders	Gb TDR over IP : SGSN IP address/port, BSC IP address/port fields are populated with wrong information
215774	xDR Builders	MAP TDR: MCC, MNC, LAC, Cell ident not correctly decoded
216615	xDR Builders	Different IMSI for the same CDR in MAP_SM_INTERNATIONAL session
218514	xDR Builders	Diameter DFP is crashing very often
218922	xDR Builders	MAP TDR: Missing IMEI and wrong MSC nb in XDR for « Any Time Interrogation » procedure
219340	xDR Builders	Out of Sequence MSU in DiameterGx
219463	xDR Builders	ISUP Multileg builder issues
220191	xDR Builders	BMSISDN is wrongly enriched

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221036	xDR Builders	INAP builder DR= collision status issue.
223576	xDR Builders	wrong DR type
223582	xDR Builders	Decoding issue on SGsAP
223759	xDR Builders	Some result code are not decoded in S6
223763	xDR Builders	DR status, TCAP Error and Successful with wrong information
223802	xDR Builders	RAN CC wrong enrichment on MO call
223907	xDR Builders	Missing SAC-LAC Cell information on 2G CC sesssions
224457	xDR Builders	RAN CC chosenchannel and currentchannel empty
224471	xDR Builders	Iu P GMM : GMM cause empty even if present in full decoding
224820	xDR Builders	Most PDU are not properly decoded for MAP Tdr
225143	xDR Builders	"Initial Ue message / Paging Response" are missing in session UMTS Iu C TDR
226015	xDR Builders	GnTDR: Transaction Type is not matching PDU TT
226260	xDR Builders	Missing last digit in IMEIsv xdr field of Iup GMM.
226561	xDR Builders	Gp build process is crashing when receiving GTPv2 traffic
226747	xDR Builders	Implicit TMSI reallocation in MM TMSI-Reallocation procedure not supported.
227332	xDR Builders	Gn TDR: MSISDN and IMEI are wrong when feed by UP Neptune (APN or IMSI)
227332	xDR Builders	Gn TDR: MSISDN and IMEI are wrong when feed by UP Neptune (APN or IMSI)
228061	xDR Builders	Diameter CC CDR correlation issues.
228271	xDR Builders	Gb TDR builder crashing
228271	xDR Builders	Gb TDR builder crashing
228906	xDR Builders	Builder Gn crash
229400	xDR Builders	Enabling PCAP export feature decrease correlation rate
229467	xDR Builders	IuCS TDR Builder doesn't handle properly Relocation Preparation Transaction
229467	xDR Builders	IuCS TDR Builder doesn't handle properly Relocation Preparation Transaction
229560	xDR Builders	LTE GTPv2 correlation isse
229663	xDR Builders	Diameter CC : 3GPP-IMSI AVP should be populated to xDR IMSI field.
229805	xDR Builders	S1-AP: L3 Procedure field not always populated
229806	xDR Builders	FTP TDR builder crashing
230054	xDR Builders	Digits "19" are added to MSISDN form "Send IMSI" operation in MAP V2
231905	xDR Builders	LTE DFP builder crash
232217	xDR Builders	Gn, IP User IxpBuild crash (abterm)
232573	xDR Builders	IuC TDR not decoded (summary and full decoding) when pcap export enabled
232804	xDR Builders	Incorrect decoding when pcap export enabled
234172	xDR Builders	RAN CC: A-Number field is always empty for Iu CS
234358	xDR Builders	IMS DIAMETER TDR: Destination Realm field is empty even if present in frame
234611	xDR Builders	IuC TDR: ALCAP fields are empty
236294	xDR Builders	B-MSISDN is not present in FSM when Dynamic Mobile DataBase Enrichment is activated
236771	xDR Builders	INAP TDR: Bad decoding of B-Number information
207867	XMF	Installation document does not include vdisk configuration for HP G6 IMF
211169	XMF	Q752 slor count always zero in some of the linkset even when there is enough traffic in the links
211877	XMF	pmiaCompiler issue on rules not m2pa , on ssn, gt and ip adresses
213440	XMF	pmiaMonitor crash on some specific sigtran filter configuration
219450	XMF	IMF software does not have a cisco configuration for "IMF single siwtch" configuration
220962	XMF	Frequent pduServer0 restart since upgrade to 7.5
223360	XMF	Packets drop at ethernet level
223360	XMF	Packets drop at ethernet level
224124	XMF	PMF crashes and reboot

224124	XMF	PMF crashes and reboot
224826	XMF	dtsClient -P generates empty files
228457	XMF	Trafic missing in TC when IDM is used
231326	XMF	PMF with IDM activated crashes and reboot
236772	XMF	pmia crash on duplicated fragmented packets
236885	XMF	PMF stop sending trafic due to memory leak (oom-killer) on 64 bits OS

<u>**PIC ISO can be burn on DVD's**</u>

All ISO form PIC loadline up can be burn on physical media (DVD) using for example ImgBurn (http://www.imgburn.com/)

- Launch ImgBurn
- Choose Write Image to Disc option
- Select the ISO file you want to burn
- Select the destination (your dvd burner)
- Burn your DVD with the Write button

Appendix A: Supported Protocols – PIC

The following spreadsheet identifies protocols supported by PIC and the version of the protocol specification implemented.

Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x
SS7	ISUP V1	ITU-T			
SS7	ISUP V2	ITU-T			
SS7	ISUP V3	ITU-T	Signalling system N°7 - ISDN user part formats and codes	Q.763 (Q.761 to Q.764, Q.766 and Q.767) Sept-97	Q.763 / Sept_97 (Q.761 to Q.764, Q.766 and Q.767)
SS7	ISUP SPIROU	National France ART	Variante SPIROU SSURF 2000 France Telecom - Système de signalisation n° 7 – formats et codes du sous-système utilisateur RNIS	SPIROU 1998-05 Jul-99	SPIROU 1998-05 Jul-99
SS7	SSUTR2	National France CNET	Spécification de sous-système utilisateur SSUTR2 sur l'interface entre le réseau fixe de France Télécom et les réseaux tiers à l'étape fonctionnelle VN6	V11-T 1998 Rec. Jan-98	V11-T 1998 Rec. Jan-98
SS7	BT NUP (UK)	National UK BT	BT Network Requirement	BTNR 167 Jul-87	BTNR 167 Jul-87
SS7	IUP	British Standard Institute	PNO-ISC Information Document Number 004 - Proprietary Extensions to C7 Interconnect User Part (IUP), Issue 2 PNO-ISC Specification Number 006 - Interconnect User Part (IUP)	PNO-ISC/INFO/004 Oct-99 PNO-ISC/SPEC/006 Jul-00	PNO-ISC/INFO/004 Oct-99 PNO-ISC/SPEC/006 Jul-00
SS7	**ISUP ANSI** **Party Information Parameter (PIP)**	ANSI	Signalling System N°7 (SS7) - Integrated Services Digital Network (ISDN) User Part Calling Party Name Convention Facility Specification	T1.113-1995 Jun-05 TICO076E Feb-98	T1.113-1995 Jun-05 TICO076E Feb-98
SS7	TUP	ITU-T	Telephone User Part - Formats and codes	Q.723 (Q.721 to Q.725) Nov-88	Q.723 (Q.721 to Q.725) Nov-88
SS7	TUP Chinese	National China	Technical specifications of SS7 for the national Telephone network of China	GF 001 - 9001	GF 001 - 9001
SS7	**TUP Brasilian variant**				
SS7	**ISUP Chinese**				
SS7	**ISUP Russian Variant (Sovintel)**	National	CIS ISUP - Functional Description	CIS ISUP - Functional Description	CIS ISUP - Functional Description
SS7	**ISUP Portuguese Variant (NOVIS)**	National Portugal PT	ESPECIFICAÇÃO DE INTERFACE COM A REDE PÚBLICA INTERFACE DE COMUTADOR (2 Mbit/s) Sinalização Canal Comum SS#7 - Procedimento de taxação em ISUP	Spécifications PT - Procedimento de taxação em ISUP Apr-99	Spécifications PT - Procedimento de taxação em ISUP Apr-99

PIC 9.0.4 Release Notice

Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x
SS7	ISUP Brasilian Variant	TELEBRAS	#7 Common Channel Signaling System ISDN User part - ISUP, Issue 3	TB 220-250-732 *Apr-98*	TB 220-250-732 *Apr-98*
SS7	ISUP Colombian Variant	Ministerio des Comunicaciones	Norma Nacional de Señalizacion por Canal Comun N.°7 - SCC7	Norma Nacional *Apr-98*	Norma Nacional *Apr-98*
SS7	ISUP Mexican Variant	Telmex	E-801.04 Sepcification - Integrated Services Degital Network user Part (ISUP), Edition "C-3"	E-801.04 *Dec-97*	E-801.04 *Dec-97*
SS7	ISUP Argentina variant	Telefonica Argentina	RDSI User Part Specification Signaling System N°7	General Specification AR.EG.s1.002 Ed 1 corrected	General Specification AR.EG.s1.002 Ed 1 corrected
SS7	LSSU	ITU-T	Signalling link	Q.703 *Jul-96*	Q.703 *Jul-96*
SS7	MTP ITU-T Level 2 & 3	ITU-T	Functional description of the Message Transfer Part (MTP) of Signalling System No. 7 Signalling link	Q.701 *Mar-93* Q.703 / Q.704 *Jul-96*	Q.701 *Mar-93* Q.703 / Q.704 *Jul-96*
SS7	MTP ANSI Level 2 & 3	ANSI	Signalling System N°7 - Message Transfer Part (MTP)	T1.111-1996 *Mar-96*	T1.111-1996 *Mar-96*
SS7	SCCP ITU-T	ITU-T	Signalling connection control part formats and codes	Q.713 *Jul-96*	Q.713 *Jul-96*
SS7	SCCP ANSI	ANSI	Signalling System Number 7 - Signalling Connection Control Part (SCCP)	T1.112-1996 *Jan-96*	T1.112-1996 *Jan-96*
SS7	TCAP (MAP & INAP support)	ITU-T	Transaction capabilities formats and encoding	Q.773 *Jun-97*	Q.773 *Jun-97*
SS7	TCAP (IS-41 support)	ANSI ANSI	Signalling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP) Signalling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP)	T1.114-1996 *Mar-96* T1.114-2000 *Jun-00*	T1.114-1996 *Mar-96* T1.114-2000 *Jun-00*
SS7	INAP Siemens	Specific: Siemens	Siemens Core INAP	P30308-A7128-A120-01-7659 *May-98*	P30308-A7128-A120-01-7659 *May-98*
Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x

Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x
SS7	INAP CS1	ETSI	Intelligent Network (IN); Intelligent Network Capability Set 1 (CS1); Core Intelligent Network Application Protocol (INAP);	ETS 300 374-1 *Sep-94*	ETS 300 374-1 *Sep-94*
		ITU-T	Introduction to intelligent network capability set 1	ITU-T Q.1211 *Mar-93*	ITU-T Q.1211 *Mar-93*
		ITU-T	Distributed functional plane for intelligent network CS-1	ITU-T Q.1214 *Oct-95*	ITU-T Q.1214 *Oct-95*
		ITU-T	Interface Recommendation for intelligent network CS-1	ITU-T Q.1218 *Oct-95*	ITU-T Q.1218 *Oct-95*
SS7	INAP CS2	ITU-T	Intelligent Network (IN); Intelligent Network Application Protocol (INAP); Capability Set 2 (CS2)	ETS 301 140-1 *Jun-96*	ETS 301 140-1 *Jun-96*
SS7	INAP Ericsson CS1	Ericsson	ERICSSON SUPPORT OF ETSI CORE INAP CS1 Ericsson Support of ETSI Core INAP CS1	87/155-CRT 249 12 Uen *May-98*	87/155-CRT 249 12 Uen *May-98*
SS7	INAP Ericsson CS1+	Ericsson	Ericsson INAP CS1+, Services assumed from TCAP, revision A / Ericsson INAP CS1+, Abstract Synthax, revision B	4/155 17-CRT 249 09 Uen *Aug-96* / 171/155 17-CRT 249 12 Uen *Jun-03*	4/155 17-CRT 249 09 Uen *Aug-96* / 171/155 17-CRT 249 12 Uen *Jun-03*
SS7	INAP Ericsson V2 / V3 / V4	Ericsson	Ericsson's Protocol for Intelligent Networks, version 4, Formats and Codes	2/155 17-CRT 249 01 Uen D (V2) *Jan-96* / 7/155 17-CRT 249 01 Uen B (V3) *Jan-97* / 12/155 17-CRT 249 01 Uen A (V4) *Jan-98*	2/155 17-CRT 249 01 Uen D (V2) *Jan-96* / 7/155 17-CRT 249 01 Uen B (V3) *Jan-97* / 12/155 17-CRT 249 01 Uen A (V4) *Jan-98*
SS7	INAP Alcatel V3	Alcatel	INAP for E10 Version 3	ALCATEL E10 Version 3 *Sep-96*	ALCATEL E10 Version 3 *Sep-96*
SS7	INAP Alcatel V4	Alcatel	INAP for E10 Version 5	ALCATEL E10 Version 5 *Jan-99*	ALCATEL E10 Version 5 *Jan-99*

SS7	**INAP Alcatel CS1**	Alcatel	INAP Alcatel CS1	ALCATEL INAP CS1	ALCATEL INAP CS1
SS7	**CAMEL Phase 2**	ETSI	Digital cellular telecommunications system (Phase 2+); Customised Applications for Mobile network Enhanced Logic (CAMEL); CAMEL Application Part (CAP) specification - **GSM 09.78**	TS 101 046 V7.0.0 (Release 98) *Aug-99*	TS 101 046 V7.0.0 (Release 98) *Aug-99*
SS7	**CAMEL Phase 3**	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Customised Applications for Mobile network Enhanced Logic (CAMEL); CAMEL Application Part (CAP) specification - **GSM 29.78**	TS 129 078 V5.9.0 (Release 5) *Sep-04*	TS 129 078 V5.9.0 (Release 5) *Sep-04*
SS7	**CAMEL Phase 4**	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Customised Applications for Mobile network Enhanced Logic (CAMEL); CAMEL Application Part (CAP) specification - **GSM 29.78**	TS 129 078 V6.5.0 (Release 6) *Jun-06*	TS 129 078 V6.5.0 (Release 6) *Jun-06*
SS7	**BSSAP (Phase 2+) BSSMAP**	ETSI	Digital cellular telecommunications system (Phase 2+); Mobile-services Switching Centre – Base Station Systel (MSC – BSS) interface; Layer 3 specification - **3GPP TS 08.08**	TS 100 590 V8.5.0 (Release 99) *Aug-00*	TS 48.008 V7.13.0 (Release 7) *Sep-08*
	DTAP		Digital cellular telecommunications system (Phase 2+); Mobile Radio Interface;Layer 3 specification - **3GPP TS 04.08**	TS 100 940 V7.14.0 (Release 98) *Oct-00*	TS 24.008 V7.12.0 (Release 7) *Jun-08*
	SMS		Digital cellular telecommunications system (Phase 2+); Point-to-Point (PP) Short message Service support on mobile radio interface - **3GPP TS 04.11**	TS 100 942 V7.0.0 (Release 98) *Aug-99*	TS 24.011 V7.1.0 (Release 7) *Jun-09*
	SMS SM-TP		Digital cellular telecommunications system (Phase 2+); Technical realization of the short Message Service (SMS) - **3GPP TS 03.40**	TS 100 901 V7.4.0 (Release 98)	TS 23.040 V7.2.0 (Release 7) *Mar-09*
	Supplementary Services		Digital cellular telecommunications system (Phase 2+); Mobile Radio interface layer 3 supplementary service specification; Formats and Coding - **3GPP TS 04.80**	TS 100 950 V7.4.0 (Release 98)	TS 24.080 V7.4.0 (Release 7) *Sep-07*
SS7	**BSSAP+ (Gs Interface)**	ETSI	Digital Cellular Telecommunications System (Phase 2+); Universal Mobile Telecommunications System (UMTS); general Packet radio Service (GPRS); Serving GPRS Support Node (SGSN) - Visitor Location register (VLR); Gs Interface layer 3 Specification - **3GPP TS 29.018**	TS 29.018 V6.5.0 (Release 6) *Dec-06*	TS 29.018 V6.5.0 (Release 6) *Dec-06*

Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x
SS7	GSM MAP	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification - **3GPP TS 29.002**	TS 29.002 V5.13.0 (Release 5) *Sep-07*	TS 29.002 V7.14.0 (Release 7) *Dec-09*
SS7	**IS-41 Révisions B, C, D & E (MAP)**	ANSI	Cellular Radiotelecommunications Intersystem Operations	ANSI/TIA/EIA-41-D-1997 *Nov-97*	ANSI/TIA/EIA-41-D-1997 *Nov-97*
	MEID	3GPP2	3G Mobile Equipment identifier (MEID) - Stage 1	3GPP2 S.R0048-A Ver. 4.0 *Jun-05*	3GPP2 S.R0048-A Ver 4.0 *Jun-05*
		Telecommunications Industry Association	MEID Standards Update, version 1.8.4	TIA-MEID *Apr-06*	TIA-MEID *Apr-06*
	IS-41-P	Lucent	ANSI -41 Protocol Extensions for Interfaces C and D (HLR - VLR/MSC) - Issue 2.0	IS-41-P *Nov-04*	IS-41-P *Nov-04*
	IS-41-EE	Ericsson	IS-41 Intersystem Call delivery Signalling	IS-41-EE *Jan-99*	IS-41-EE *Jan-99*
SS7	**ISDN**	ITU-T	ISDN user-network interface layer 3 specification for basic call control	Q.931 *May-98*	Q.931 *May-98*
Family	**Protocol**	**Organization**	**Complete Reference**	**IAS 4.x / 6.x**	**IAS 7.x**
SS7	**AIN**				
	MTP ANSI Level 2 & 3	ANSI	Signalling System N°7 - Message Transfer Part (MTP)	T1.111-1996 *Mar-96*	T1.111-1996 *Mar-96*

Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x
	SCCP ANSI	ANSI	Signalling System Number 7 - Signalling Connection Control Part (SCCP)	T1.112-1996 *Jan-96*	T1.112-1996 *Jan-96*
	TCAP (IS-41 support)	ANSI	Signalling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP)	T1.114-2000 *Jun-00*	T1.114-2000 *Jun-00*
	Services - CNAM - ATF - NS 800 - LNP - Flexible Number Rounting	Telcordia	Telcordia Technologies Generic Requirements, GR-1188-CORE: Calling Name Delivery Generic Requirements, Issue 2	GR-1188-CORE *Dec-00*	GR-1188-CORE *Dec-00*
		Telcordia	Telcordia Technologies Generic Requirements, GR-533-CORE: Databababase Services Service Switching Points - Toll-Free Service Generic Requirements, Issue 2	GR-533-CORE *Jun-01*	GR-533-CORE *Jun-01*
		Telcordia	Telcordia Technologies Generic Requirements, GR-1299-CORE: Switch - Service Control Point (SCP) / Adjunct Interface Generic requirements, Issue 6	GR-1299-CORE *Nov-00*	GR-1299-CORE *Nov-00*
		Telcordia	Telcordia Technologies Generic Requirements, GR-1519-CORE: CCS Network Interface Specification (CCSNIS) Supporting TR-NWT-001188 Calling Name Delivery Generic Requirements, Issue 1A	GR-1519-CORE *Oct-94*	GR-1519-CORE *Oct-94*
		Telcordia	Telcordia Technologies Generic Requirements, GR-2982-CORE: Local Number LNP Capability, Issue 1	GR-2982-CORE *Dec-97*	GR-2982-CORE *Dec-97*
		Telcordia	Telcordia Technologies Generic Requirements, GR-246-CORE: Specification of Signaling System Number 7, Issue 5	GR-246-CORE *Dec-00*	GR-246-CORE *Dec-00*
		Telcordia	Telcordia Technologies Generic Requirements, GR-2892-CORE: Switching and Signaling Generic Requirements for Toll-Free Service using AIN, Issue 1	GR-2892-CORE *Apr-95*	GR-2892-CORE *Apr-95*
SS7	LIDB	Telcordia	Telcordia Technologies Generic Requirements, GR-1158-CORE : OSSGR Section 22.3: Line Information Database, Issue 4	GR-1158-CORE *Dec-00*	GR-1158-CORE *Dec-00*
			Telcordia Technologies Generic Requirements, GR-1149-CORE - OSSGR Section 10: System Interfaces, Issue 6	GR-1149-CORE *Sep-06*	GR-1149-CORE *Sep-06*
Family	**Protocol**	**Organization**	**Complete Reference**	**IAS 4.x / 6.x**	**IAS 7.x**
SS7	CLASS	Telcordia	Telcordia Technologies Generic Requirements, GR-1188-CORE: Calling Name Delivery Generic Requirements, Issue 2	GR-1188-CORE *Dec-00*	GR-1188-CORE *Dec-00*
			Telcordia Technologies Generic Requirements, GR-215-CORE: LSSGR: CLASS Feature: Automatic Callback (FSD 01-02-1250), Issue 2	GR-215-CORE *Apr-02*	GR-215-CORE *Apr-02*

			Telcordia Technologies Generic Requirements, GR-220-CORE: LSSGR: CLASS Feature: Screening List Editing (FSD 30-28-0000), Issue 2	GR-220-CORE *Apr-02*	GR-220-CORE *Apr-02*
			Telcordia Technologies Generic Requirements, GR-227-CORE: LSSGR: CLASS Feature: Automatic Recall (FSD 01-02-1260), Issue 2	GR-227-CORE *Apr-02*	GR-227-CORE *Apr-02*
SS7	**WIN Services**	Telcordia	Wireless Intelligent Network	EIA/TIA IS-771 *Jul-99*	EIA/TIA IS-771 *Jul-99*
	IS-771	Telcordia	Wireless Intelligent Network - Addendum 1	EIA/TIA IS-771 *Aug-01*	EIA/TIA IS-771 *Aug-01*
		Telcordia	Cellular Radiotelecommunications ntersystem Operations, Revision B to E	EIS/TIA IS-41 *Nov-97*	EIS/TIA IS-41 *Nov-97*
		3GPP2	Win Phase 1, Version 1.0	3GPP2 N.S0013-0 *Dec-98*	3GPP2 N.S0013-0 *Dec-98*
		3GPP2	Win Phase 2, Version 1.0	3GPP2 N.S0004-0 *Apr-01*	3GPP2 N.S0004-0 *Apr-01*
		3GPP2	ANSI -41-D Miscellaneous Enhancements, Version 1.0.0, Revision 0	3GPP2 N.S0015 *Jan-00*	3GPP2 N.S0015 *Jan-00*
	IS-826	Telcordia	Wireless Intelligent Network Capabilities for pre-paid Charging	TIA/EIA/IS-826 (1 to 7) *Aug-00*	TIA/EIA/IS-826 (1 to 7) *Aug-00*
	J-STD-036B	ANSI	Enhanced Wireless SP-3-3890-RV2 9-1-1 Phase II	J-STD-036-B *Jan-08*	J-STD-036-B *Jan-08*
	IS-843	Telecommunications Industry Association	Wireless Intelligent network Support for Location Based Services	TIA-843 *Aug-04*	TIA-843 *Aug-04*
	IS-801	Telecommunications Industry Association	Position Determination Service for cdma2000 Spread Spectrum Systems	TIA-801-A *Apr-04*	TIA-801-A *Apr-04*

	IS-881	Telecommunications Industry Association	TIA/EIA-41-D Location Services Enhancements	TIA-881 *Mar-04*	TIA-881 *Mar-04*
	IS-725	Nortel	TIA/EIA-41-D Enhancements for Over-The-Air Service Provisioning (OTASP) & Parameter Administration (OTAPA), Version 1	TIA/EIA/IS-725-A *Mar-99*	TIA/EIA/IS-725-A *Mar-99*
	IS-764	Telecommunications Industry Association	TIA/EIA-41-D Enhancements for Wireless Calling Name - Feature Descriptions	TIA-764 *Jan-02*	TIA-764 *Jan-02*
	IS-756	Telcordia	TIA/EIA-41-D Enhancements for Wireless Number Portability Phase II	TIA/EIA/IS-756-A *Dec-98*	TIA/EIA/IS-756-A *Dec-98*
SS7	**BICC ETSI**	ITU-T	Bearer Independant Call Control protocol	Q.1901 *Apr-02*	Q.1901 *Apr-02*
			Signaling System N°7 - ISDN User Part	Q.763 *Sep-97* (Q.761 to Q.764, Q.766 and Q.767)	Q.763 *Sep-97* (Q.761 to Q.764, Q.766 and Q.767)
SS7	**BICC ANSI**	ANSI	Specifications of the Bearer Independant Call Control	ANSI T1.BICC.1-2000 to ANSI T1.BICC.7-2000 *Jan-00*	ANSI T1.BICC.1-2000 to ANSI T1.BICC.7-2000 *Jan-00*
SS7	**SIGTRAN**	IETF			
	SCTP		Stream Control Transmission Protocol	RFC 2960 *Oct-00*	RFC 2960 *Oct-00*
	M3UA		Signaling System 7 (SS7) Message Transfer Part 3 (MTP3) - User Adaptation Layer (M3UA)	RFC 4666 *Sep-06*	RFC 4666 *Sep-06*
	M2UA		Signaling System 7 (SS7) Message Transfer Part 2 (MTP2) - User Adaptation Layer	RFC 3331 *Sep-02*	RFC 3331 *Sep-02*
	SUA		Signaling Connection Control Part User Adaptation Layer (SUA)	RFC 3868 *Oct-04*	RFC 3868 *Oct-04*
	M2PA		Signaling System 7 (SS7) Message Transfer Part 2 (MTP2) - User Peer-to-Peer Adaptation Layer (M2PA)	RFC 4165 *Sep-05*	RFC 4165 *Sep-05*

Family	Protocol	Organization	Complete Reference	IAS 4.x / 6.x	IAS 7.x
GPRS / IP	GPRS Gn & Gp	ETSI	Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS);GPRS Tunneling Protocol (GTP) accross the Gn and Gp Interface - **3GPP TS 09.60**	TS 101 347 V7.8.0 (Release 98) *Sep-01*	TS 101 347 V7.8.0 (Release 98) *Sep-01*
			Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS);GPRS Tunneling Protocol (GTP) accross the Gn and Gp Interface - **3GPP TS 09.60**	TS 29 060 V6.13.0 (Release 6) *Jun-06*	TS 29.060 V7.13.0 (Release 7) *Jun-09*
GPRS	**GPRS Gb**				
	Network Service (NS)	ETSI	Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) Interface; Network Service **- 3GPP TS 48.016**	TS 48 016 V5.1.0 (Release 5) *Dec-01*	TS 48.016 V7.4.0 (Release 7) *Mar-08*
	BSS GPRS Protocol (BSSGP)	ETSI	Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Base Station System (BSS) - Serving GPRS Support Node (SGSN) Interface; BSS GPRS Protocol (BSSGP) - **3GPP TS 48.018**	TS 48 018 V5.4.0 (Release 5) *Jul-02*	TS 48.018 V7.13.0 (Release 7) *Dec-09*
	Logical Link Control (LLC)	ETSI	Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Serving GPRS Support Node (MS - SGSN) Logical Link Control Layer (LLC) - **3GPP TS 04.64**	TS 101 351 V7.4.0 (Release 98) *Feb-01*	TS 44.064 V7.3.0 (Release 7) *Mar-08*
	GPRS Mobility Management (GMM) **GPRS Session Managment (GSM)**	ETSI	Digital cellular telecommunications system (Phase 2+)(GSM); Mobile Radio Interface; Layer 3 Specification - **3GPP TS 04.08**	TS 100 940 V6.14.0 *Apr-01*	TS 24.008 V7.12.0 (Release 7) *Jun-08*
	SNDCP	ETSI	Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS); Mobile Station - Serving GPRS Support Node (MS - SGSN); Subnetwork Dependent Convergence Protocol (SNDCP) - **3GPP TS 04.65**	TS 101 297 V8.0.0 *Mar-00*	TS 24.065 V7.0.0 (Release 7) *Dec-06*

	Short Message Service (SMS)	ETSI	Digital cellular telecommunications system (Phase 2+); Point-to-Point (PP) Short Message service (SMS) Support on Mobile Rdio Interface - **3GPP TS 04.11** Digital cellular telecommunications system (Phase 2+); Technical realization of Short Message Service (SMS) Point-to-Point (PP) - **3GPP TS 03.40**	TS 100 942 V5.3.0 *Oct-00* TS 100 901 V7.4.0 *Dec-99*	TS 24.011 V7.1.0 (Release 7) *Jun-09* TS 23.040 V7.2.0 (Release 7) *Mar-09*
GPRS	**GPRS Gr & Gd**	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile Application Part (MAP) specification - **3GPP TS 29.002**	TS 29.002 V5.13.0 (Release 5) *Sep-07*	TS 29.002 V7.14.0 (Release 7) *Dec-09*
IP	**DNS**	IETF	Domain Names - Concepts and Facilities Domain Names - Implementation and Specification	RFC 1034 *Nov-87* RFC 1035 *Nov-87*	RFC 1034 *Nov-87* RFC 1035 *Nov-87*
IP	**DNS ENUM**	IETF	E.164 Number and DNS	RFC 2916 *Sep-00*	RFC 2916 *Sep-00*
IP	**RADIUS**	IETF	Remote Authentication Dial In User Service (RADIUS)	RFC 2865 *Jun-00*	RFC 2865 *Jun-00*

IP	**DHCP**
	   BOOTP
	
	   DHCP
		IETF
		
		IETF
			Bootstrap protocol (BOOTP)
			
			Dynamic Host Configuration Protocol
				RFC 951
				Sep-85
				RFC 2131
				May-97
					RFC 951
					Sep-85
					RFC 2131
					May-97

IP	**WAP**
	   WTP
	
	   WSP
		WAP Forum / OMA
		
		WAP Forum / OMA
			Wireless Transaction protocol
			
			WAP - Wireless Session Protocol Specification
				WAP-224-WTP-20010710-a
				Jul-01
				WAP-230-WSP-20010705-p
				Jul-01
					WAP-224-WTP-20010710-a
					Jul-01
					
					WAP-230-WSP-20010705-p
					Jul-01

IP	**MMS**	OMA	Multimedia Messaging Service Encapsulation Protocol Version 1.1	OMA-MMS-ENC-v1_1-20021030-C *Oct-02*	OMA-MMS-ENC-v1_1-20021030-C *Oct-02*
IP	**HTTP**	IETF	Hypertext Transfer Protocol - HTTP/1.1	RFC 2616 *Jun-99*	RFC 2616 *Jun-99*

IP	WAP2	IETF	Hypertext Transfer Protocol - HTTP/1.1	RFC 2616 *Jun-99*	RFC 2616 *Jun-99*
		WAP Forum / OMA	WAP Architecture	WAP-210-WAPArch-20010712 *Jul-01*	WAP-210-WAPArch-20010712 *Jul-01*
IP	POP3	IETF	Post Office protocol - Version 3	RFC 1460 *Jun-93*	RFC 1460 *Jun-93*
IP	SMTP	IETF	Simple Mail Transfer Protocol	RFC 2821 *Apr-01*	RFC 2821 *Apr-01*
IP	IMAP4	IETF	Internet Message Access Protocol - Version 4rev1	RFC 2060 *Mar-03*	RFC 2060 *Mar-03*
IP	FTP	IETF	File Transfer Protocol	RFC 959 *Oct-85*	RFC 959 *Oct-85*
IP	TCP	IETF	Transmission Control Protocol	RFC 793 *Sep-81*	RFC 793 *Sep-81*
IP	RTSP	IETF	Real Time Streaming Protocol (RTSP)	RFC 2326 *Apr-98*	RFC 2326 *Apr-98*
		IETF	SDP:Session Description Protocol	RFC 2327 *Apr-98*	RFC 2327 *Apr-98*
IP	I-mode	IETF	Hypertext Transfer Protocol - HTTP/1.1	RFC 2616 *Jun-99*	RFC 2616 *Jun-99*
IP	OSPF	IETF	OSPF Version 2	RFC 2178 *Apr-98*	RFC 2178 *Apr-98*
IP	BGP	IETF	A Boarder Gateway Protocol 4 (BGP-4)	RFC 4271 *Jan-06*	RFC 4271 *Jan-06*
IP	SMPP	SMS Forum	Short Message Peer-to-Peer protocol Specification, Version 5.0	SMPP v5.0 *Feb-03*	SMPP v5.0 *Feb-03*
IP	UCP	Logica CMG	Short Message Service center; EMI - UCP Interface 4.6	EMI UCP Interface *May-05*	EMI UCP Interface *May-05*
UMTS	**UMTS** **Iu-CS Control Plane** **Iu-PS Control Plane**		Universal Mobile Telecommunications System (UMTS); UTRAN Iu interface Radio Access Network Application Part (RANAP) signalling - **3GPP TS 25.413**	TS 25 413 V6.6.0 (Release 6) *Jun-05*	TS 25 413 V7.10.0 (Release 7) *Mar-09*
			Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile radio interface layer 3 specification; Radio Resource Control (RRC) protocol - **3GPP TS 44.018**	TS 44 018 V6.17.0 (Release 6) *May-06*	TS 44 018 V7.17.0 (Release 7) *Jun-09*
			Digital cellular telecommunications system (Phase 2+); Mobile Radio interface layer 3 supplementary service specification; Formats and Coding - **3GPP TS 04.80**	TS 100 950 V7.4.1 (Release 98)	TS 24.080 V7.4.0 (Release 7) *Sep-07*

			Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Technical realization of Short Message Service (SMS) Point-to-Point (PP) - **3GPP TS 24.011**	TS 24 011 V6.1.0 (Release 6) *Jun-05*	TS 24.011 V7.1.0 (Release 7) *Jun-09*
			Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Mobile radio interface Layer 3 specification; Core network protocols; Stage 3 - **3GPP TS 24.008**	TS 24 008 V6.12.0 (Release 6) *Mar-06*	TS 24.008 V7.12.0 (Release 7) *Jun-08*
	AAL2	ITU-T	Switching and Signalling: Broadband ISDN - Common aspects of B-ISDN application protocols for access signalling and network signlling and networking AAL2 Type 2 signalling protocol - Capability Set 3	Q.2630.3 *Oct-03*	Q.2630.3 *Oct-03*
	lu-PS User Plane	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS);GPRS Tunneling Protocol (GTP) accross the Gn and Gp Interface - **3GPP TS 09.60**	TS 29 060 V6.13.0 (Release 6) *Jun-06*	TS 29.060 V7.13.0 (Release 7) *Jun-09*
VoIP	**VoIP SIP / SIP-T / SIP-I**	IETF	**SIP** Session Initiation Protocol	RFC 3261 *Jun-02*	RFC 3261 *Jun-02*
		IETF	Reliability of Provisional Responses in the Session Initiation Protocol (SIP)	RFC 3262 *Jun-02*	RFC 3262 *Jun-02*
		IETF	Session Initiation Protocol (SIP) - Specific Event Notification	RFC 3265 *Jun-02*	RFC 3265 *Jun-02*
		IETF	The Session Initiation Protocol (SIP) UPDATE Method	RFC 3311 *Sep-02*	RFC 3311 *Sep-02*
		IETF	The Session Initiation Protocol (SIP) Refer Method	RFC 3515 *Apr-03*	RFC 3515 *Apr-03*
		IETF	The SIP INFO Method	RFC 2976 *Oct-00*	RFC 2976 *Oct-00*
		IETF	Session Initiation Protocol for Telephones (**SIP-T**): Context and Architectures	RFC 3372 *Sep-02*	RFC 3372 *Sep-02*
		IETF	SDP:Session Description Protocol	RFC 2327 *Apr-98*	RFC 2327 *Apr-98*
		IETF	Session Description Protocol (SDP) Simple Capability Declaration	RFC 3407	RFC 3407
		ITU-T	Interworking between Session Initiation Protocol (SIP) and Bearer Independant Call Control Protocol or ISDN User Part.	Q.1912-5 *Mar-04*	Q.1912-5 *Mar-04*
		Nortel	CS2000 SIP/SIP-T Interoperability Specification (Issue 0.82) System Requirement Document	Nortel CS2000 *01/10/2003*	Nortel CS2000 *01/10/2003*

VoIP	**VoIP H.225/Q.931**	ITU-T	Serie H: Audiovisual and Multimedia Systems - Call Signalling protocols and media stream packetisation for packet-based multimedia communication systems	H.225.0 *Jul-03*	H.225.0 *Jul-03*
		ITU-T	ISDN user-network interface layer 3 specification for basic call control	Q.931 *Dec-99*	Q.931 *Dec-99*
VoIP	**VoIP H.225/RAS**	ITU-T	Call Signalling protocols and media stream packetisation for packet-based multimedia communication systems	H.225.1 *Jul-03*	H.225.1 *Jul-03*
VoIP	**VoIP H.245**	ITU-T	Control Protocol for multimrdia communication	H.245 *Jul-03*	H.245 *Jul-03*
VoIP	**VoIP RTCP**	IETF	RTP: A Transport Protocol for Real-Time Application	RFC 3550 *Jul-03*	RFC 3550 *Jul-03*
VoIP	**MGCP**	IETF	Media Gateway Control Protocol (MGCP) version 1.0	RFC 3435 *Jan-03*	RFC 3435 *Jan-03*
		IETF	Media Gateway Control Protocol (MGCP) Return Code Usage	RFC 3661 *Dec-03*	RFC 3661 *Dec-03*
		IETF	Media Gateway Control Protocol (MGCP) Packages	RFC 3660 *Dec-03*	RFC 3660 *Dec-03*
VoIP	**MEGACO**	IETF	Gateway Control Protocol Version 1.0	RFC 3525 *Jun-03*	RFC 3525 *Jun-03*
VoIP	**H.248**	ITU-T	Gateway Control Protocol: Version 2	H.248.1 *May-02*	H.248.1 *May-02*
VoIP	**Sonus GSX-to-GSX Signaling Protocol**	Specific: Sonus	Sonus Gateway to Gateway Call Signaling Protocol Specification	Sonus Network Specification *Jul-05*	Sonus Network Specification *Jul-05*
IMS	**Diameter**	IETF	Diameter Base Protocol	RFC 3588 *Sep-03*	RFC 3588 *Sep-03*
		IETF	Diameter Credit-Control Application	RFC 4006 *Aug-05*	RFC 4006 *Aug-05*
	Diameter Credit-Control (Cc, Ro, Rf, Gy, Ga)	ETSI / 3GPP	3rd Generation Partnership Project; Technical Specification Group Service and System Aspects; Telecommunication management; Charging management; Diameter charging applications	TS 32.299 V6.12.0 (release 6) *Sep-07*	TS 32.299 V6.12.0 (release 6) *Sep-07*
	Diameter Gq	ETSI	Universal Mobile Telecommunications System (UMTS); Policy control over Gq interface (3GPP TS 29.209 version 6.5.0 Release 6)	TS 29.209 V6.5.0 (Release 6) *Jun-06*	TS 29.209 V6.5.0 (Release 6) *Jun-06*
	Diameter Cx/Dx	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); IP Multimedia (IM) Subsystem Cx and Dx Interfaces; Signalling flows and message contents **3GPP TS 29.228**	TS 29 228 V6.11.0 (Release 6) Jun-06	TS 29 228 V6.11.0 (Release 6) Jun-06

		ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Cx and Dx interfaces based on the Diameter protocol **3GPP TS 29.229**	TS 29 229 V6.8.0 (Release 6) Jun-06	TS 29 229 V6.8.0 (Release 6) Jun-06
		ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Diameter applications; 3GPP specific codes and identifiers **3GPP TS 29.230**	TS 29 230 V6.8.0 (Release 6) Jun-06	TS 29 230 V6.8.0 (Release 6) Jun-06
	Diameter Sh	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Sh interface based on the Diameter protocol; **3GPP TS 29.329**	TS 29 329 V6.6.0 (Release 6) Sep-05	TS 29 329 V6.6.0 (Release 6) Sep-05
LTE (7.5 only)	**Diameter S6**	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Evolved Packet System (EPS); Mobility Management Entity (MME) and Serving GPRS Support Node (SGSN) related interfaces based on Diameter protocol (Release 9)	N/A	TS 29.272 V9.4.0 (Release 9) *Sep-10*
	Diameter Gx	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Policy and Charging Control over Gx reference point (Release 9)	N/A	TS 29.212 V9.4.0 (Release 9) *Sep-10*
	Diameter Rx	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Policy and Charging Control over Rx reference point (Release 9)	N/A	TS 29.214 V9.4.0 (Release 9) *Sep-10*
	GTPv2	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; 3GPP Evolved Packet System (EPS); Evolved General Packet Radio Service (GPRS) Tunnelling Protocol for Control plane (GTPv2-C); Stage 3 (Release 9)	N/A	TS 29.274 V9.4.0 (Release 9) *Sep-10*
	S1-AP	3GPP	3rd Generation Partnership Project; Technical Specification Group Radio Access Network; Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP) (Release 9)	N/A	TS 36.413 V9.4.0 (Release 9) *Sep-10*
		3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3 (Release 9)	N/A	TS 24.301 V9.4.0 (Release 9) *Sep-10*

| **LTE User Plane (S5-U, S8-U, S1-U, S12-U)** | 3GPP | 3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; General Packet Radio System (GPRS) Tunnelling Protocol User Plane (GTPv1-U) (Release 9) | N/A | TS 29.281 V9.3.0 (Release 9) *Jun-10* |