Oracle® Communications

Performance Intelligence Center

Release Notice

Release 10.5.0.2.0

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ORACLE®

Oracle Communications, Performance Intelligence Center Release Notice, Release 10.5.0.2.0

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Chapter 1: Introduction

Topics:

PIC Release 10.5.0.2.0 Introduction
Software Lifecycle

This Release Notice includes information on new Features, Supported Hardware Baseline, Media and Documentation pack contents, and identifies Firmware and Supported Upgrade Paths for Release 10.5.0.2.0. This document also includes listing of both Resolved and Known Bugs for this Release.

Release Notice is included in the Documentation Pack and made available with every Software Release.

PIC Release 10.5.0.2.0 Introduction

Oracle Communications Performance Intelligence Center provides the tools that service providers need to capture network traffic data and convert it into useful Business Intelligence for troubleshooting and for managing traffic, roaming, and services, in addition to revenue. With its powerful and configurable filtering, operators can sort through the data to create comprehensive dashboards and key performance indicators (KPIs) for all departments within the service provider. They can also leverage a comprehensive array of performance management and service management capabilities based on network traffic.

Software Lifecycle

The section describes the content description of 10.5.0.2.0

- Uplift/Remediation of 3rd party libraries.
- Upgraded to MySQL 8.4 based COMCOL version 8.1.0.21.0.
- DIU upgrade support of IXP and XMF.
- NSP major upgrade support from 10.5 to 10.5.0.2 along with Weblogic upgrade from 14.1.1 to 14.1.2
- TPD upgrade to 8.10.1.8.0 version.
- Bug fixes as mentioned in the Chapter 7.

Chapter 2: Feature Description

There is no new feature added in PIC release 10.5.0.2.0.

Chapter 3: Obsolescence

The following are the obsolescence for this release:

- In Historical KPI Specific Parameters field is deprecated for Execute every day and Day Scheduling.
- HP G6 Bare metal servers are not supported.
- HP G8 Blades servers are not supported.
- MGMT, IXP and XMF installation supported only in VM.
- Direct support of P2000 and attached D2700 is no more supported.
- Performance Intelligence Center is no longer compatible with
  - Neptune 3G Probe
  - PMF SS7
  - Cross-connect
- Web service to apply queries without connecting to UI
- Acquisition (xMF) and Mediation (IXP) installation is not supported on Bare metal server. Installation of these components only supported on VM.
- Mediation Protocols End of Service Life for the following protocols:

Family	Builder	SKU	SW license name	Legacy Part Number
GPRS	Gn Gp Stats	L99462	OC Protocol Mediation I	950-0180-01MKT
SS7	IUP CDR Reconstitution	L99462	OC Protocol Mediation I	950-0214-01MKT
SS7	TUP CDR Reconstitution	L99462	OC Protocol Mediation I	950-0082-01MKT
VoIP	RTCP stats	L99462	OC Protocol Mediation I	950-0124-01MKT

Note: These are already part of 10.3.x release.

Chapter 4:
Media and Documentation

Topics:

Media Pack
    PIC Release 10.5.0.2.0
Load Line Up
Documentation Pack

Oracle Communications software is available for electronic download on the Oracle Software Delivery Cloud (OSDC). Documentation is delivered electronically on the Oracle Help Center (OHC). Both the software Media Pack and Documentation Pack are listed in this chapter.

Media Pack

All components available for download from the Oracle Software Delivery Cloud (https://edelivery.oracle.com/) are in Load Line Up

Note: This list is accurate at the time of release but is subject to change. See the Oracle software delivery website for the latest information.

In addition, look for the latest patches for this release in the Knowledge Management note Information Center: Patches for Oracle Communications Performance Intelligence Center (Doc ID 1989320.2) in https://support.oracle.com

PIC Release 10.5.0.2.0

Oracle Communications Performance Intelligence Center 10.5.0.2.0	Tekelec
Tekelec Platform Distribution 8.10.1.8.0	Tekelec

Load Line Up

PIC 10.5.0.2.0	Software Version	Platform
Mediation Server – IXP Base (on Tekelec Platform Distribution)	10.5.0.2.0_2.0.1	Tekelec
Management – NSP (on Oracle Linux)	10.5.0.2.0_2.0.1	Tekelec*/OL
Probed and Integrated Acquisition – xMF(on Tekelec Platform Distribution)	10.5.0.2.0_2.0.1	Tekelec
Mediation Protocol - xDR Builder	10.5.0.2.0_2.0.1	Tekelec
Acquisition Data Feed - Tadapt(32bits)	10.5.0.2.0_2.0.1	Tekelec
Performance Intelligence Center MIBS	10.3.0.0.0	Tekelec
Compatible Software		
Tekelec Platform Distribution	8.10.1.8.0_150.19.0	Tekelec
Java 17	jdk-17.0.17 or later	Linux-x86-64
Oracle Linux 8	Update 10	Linux-x86-64
Oracle Database 19c Enterprise Edition Release 64bit	19.0.0.0.0/19.3.0.0.0	Linux-x86-64
Oracle WebLogic Server enterprise Edition (FMW, WLS, WebLogic Server 14c) for platform Linux x86-64	14.1.2.0.0	Linux-x86-64

Oracle WebLogic Server Plug-in from Oracle WebLogic Server Standard Edition 14.1.2.0.0 for Linux x86-64	14.1.2.0.0	Linux-x86-64
KVM hypervisor	1.5.3 or later	Linux-x86-64
Open vSwitch	2.5.5 or later	Linux-x86-64
Compatible Products		
Eagle	46.5, 45.0.1, 46.6, 46.7, 46.8, 46.9, 47.0, 47.1	
Diameter Signaling Router	8.0, 8.1, 8.2,8.4, 8.5, 8.6.0.x, 9.0.1.x, 9.0.2, 9.1, 9.2	
Falco	Latest	
Oracle Database Appliance	Latest	
Oracle ZFS Storage Appliance	Latest	
Firmware		
HP Solutions Firmware Upgrade Pack	2.2.10 or later	
Oracle Firmware Upgrade Pack	3.1.6 or later	

Note: Management on TPD support is deprecated.

PIC is tested with the above versions of Compatible Software. For the latest versions:

- All latest CPU patches should be applied as per Oracle CPU publications
- Java 17 refer to My Oracle Support Information Center: Installation & Configuration for Oracle Java SE
- HP Firmware refer to Oracle Help Center
  https://docs.oracle.com/en/industries/communications/tekelec-platform/index.html
- Oracle Firmware refer to Oracle Help Center
  https://docs.oracle.com/en/industries/communications/tekelec-platform/index.html
- Oracle Linux refer to Oracle Software Delivery Cloud https://edelivery.oracle.com/
- Oracle Database and related patches refer to Oracle Software Delivery Cloud
  https://edelivery.oracle.com/ and My Oracle Support https://support.oracle.com/
- Oracle WebLogic Server and Proxy Plugins refer to Oracle Software Delivery Cloud
  https://edelivery.oracle.com/
- Oracle ASMLib refer to Oracle Technology Network
  http://www.oracle.com/technetwork/server-storage/linux/asmlib/ol7-2352094.html

  Note: PIC 10.5.0.2.0 release does not need ASMLib. In the place of ASM lib, OL-8 provide ASM-AFD which is used for partitioning purpose.

Documentation Pack

PIC customer documentation and online help are created whenever significant changes are made that affect system operation or configuration. Revised editions of the documentation and online help are distributed and installed on the customer system. Consult your Installation Manual for details on how to update user documentation. Additionally, all customer documentation is available on the Oracle Help Center. Release Notes are available on Oracle Help Center with each new release of software. The Release Notes list the bugs that have been resolved in the current release and the bugs that are known to exist in the current release.

All documents available for download from the Oracle Help Center (OHC) site.

Release Notices and Licensing Information User Manuals Document Set
PIC 10.5.0.2.0 Release Notice
PIC 10.5.0.2.0 Licensing Information User Manual
Installation, Upgrade, Configuration, and Maintenance Document Set
Installation Guide
Upgrade Guide
Configuration Files
Patch Installation Guide
Maintenance Guide
Acquisition Data Feed Installation and Configuration Guide
Feature Guide
Planning Guide
Security Guide
Hardware Installation Guidelines
Core Documents Set
Quick Start Guide
Alarm Forwarding Administration Guide
Audit Viewer Administration Guide
Centralized Configuration Guide
On Demand UP Guide
Data Feed Configuration Guide
Browser Export Guide
Management Security User's Guide

Alarm Configuration User's Guide
Alarm Application User's Guide
SS7 Surveillance Guide
Dashboard Configuration User's Guide
Dashboard Application User's Guide
Troubleshooting Application User's Guide
KPI Configuration User's Guide
Browser Export Scheduler Guide
SIGTRAN Surveillance Guide
System Alarms Guide
Observability Application Guide

Chapter 5:
Supported Hardware Baseline

Topics:

Refer to the Hardware Installation Guidelines G10371-01 for the hardware and server versions that have been verified with this release.

PIC Component	Supported platform
PMF	Virtual machine (VM)
IMF	Virtual machine (VM), E5-APP-B card
IXP	Virtual machine (VM)
NSP	Virtual machine (VM)
DWH (XDR Storage server)	Virtual machine (VM)
PDU Server	Virtual machine (VM)

Note: For details, refer to the **Hardware Installation Guidelines.**

Chapter 6:
Supported Upgrade Paths

Topics:

    Supported Upgrade Paths

This release has been tested for upgrade from specific prior releases. This chapter contains the exact paths for upgrade. Please verify your current installed release is listed on a valid upgrade path.

Supported Upgrade Paths

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

All documents are available on Oracle Help Center.

Migration Support from PIC 10.4.0.4.x to 10.5.0.2.0

PIC 10.5.0.2.0 does not support major upgrade, but migration is supported from 10.4.0.4.4 and earlier releases. Customers need to follow the disaster recovery procedure to upgrade to PIC 10.5.0.2.0.

Procedure:

1. Take a NSP Oracle Database backup.
2. Perform a PIC 10.5.0.2.0 fresh installation of NSP, IXP and XMF.
3. Restore the NSP DB backup.
4. Apply change.

Note: Please refer the Appendix E of installation guide for more information.

Major Upgrade

The possible DIU (Dual Image Upgrade) upgrade paths to Performance Intelligence Center 10.5.0.2.0 are listed in the following table.

From	To
Performance Intelligence Center 10.5	Performance Intelligence Center 10.5.0.2
Performance Intelligence Center 10.5.0.1	Performance Intelligence Center 10.5.0.2

Note:

1. IXP and XMF will be upgraded using DIU procedure.
2. For NSP upgrade from 10.5 to 10.5.0.2, Weblogic need to be upgraded from 14.1.1.0 to 14.1.2.0 along will application upgrade.
3. The steps to upgrade the NSP is present in upgrade guide.

Fresh Install Support:

Fresh installation is supported on the Performance Intelligence Center 10.5.0.2.0 release.

Disaster Recovery:

Disaster Recovery is supported for the Performance Intelligence Center 10.5.0.2.0 release.

Disaster Recovery (HW failure) shall replace existing supported server with the same HW if available. If not possible, a fresh install of the new hardware shall be done in PIC 10.5.0.2.0

Note: PMF installation is supported on VM. IMF installation is supported on VM and E5APP-B card. Mediation installation supported on VM and NSP installation supported on VM or on compatible server.

Chapter 7:
Resolved and Known Bugs

Topics:

Severity Definitions
Resolved Bug List
    Fixed in 10.5.0.2.0 Release
    Fixed in 10.5.0.1.0 Release
    Fixed in 10.5.0.0.0 Release
Customer Known Bug List

This chapter lists the resolved and known bugs for PIC release 10.5.x.

These lists are distributed to customers with a new software release at the time of General Availability (GA) and are updated for each maintenance release.

Severity Definitions

The following sections refer to Bug severity levels. Definitions of these levels can be found in the following publication: *TL9000 Quality Management System – R 5.5*

Resolved Bug List

Fixed in 10.5.0.2.0

Bug	Components	Title	Severity
31185480	MGMT	Bug 31185480 - Editing of browser export configuration for ZIP format doesnot retain previous selected parameters	3
38550175	MGMT	Bug 38550175 - 3-42458227831 IMSI in Dialog Info Header of PCAP does not match IMSI in TCAP Begin	2
31185338	MGMT	Bug 31185338 - Name of ZIP file in Browser export is truncated	3
37440900	MEDSRV	Bug 37440900 - IXP11-1D , is very unstable	2
37842131	MEDSRV	Bug 37842131 - The IXP share memory increase after upgrade to 10.4.0.4	3
38525286	PROBED	Bug 38525286 - TADAPT packets are unsorted	3
38525337	PROBED	Bug 38525337 - showCardInfo is empty because of route missing after reboot	3
38525404	PROBED	Bug 38525404 - RouteDisp is not showing traffic movement after applying filters	3

Fixed in 10.5.0.1.0

Bug	Components	Title	Severity
36754864	MGMT	Bug 36754864 - CVE-2024-28182: NGHTTP2 UPDATE TO AT LEAST 1.61.0	2
36813986	MEDSRV	Bug 36813986 - Proc manager does not starts automatically after IXP reboots	4
31465102	MGMT	Bug 31465102 - nsp_update_proc.sh script terminates due to missing file	3
31887944	MGMT	Bug 31887944 - NSP Nightly Backup script is taking invalid backups when oracle database isn't opened	3
36994476	MGMT	Bug 36994476 - KPI'snmp trap showing wrong format for OTID, LinkName and OpCode	2

33399947	MGMT	Bug 33399947 - Data Feed information not displayed correctly when navigated through Mediation Data Feed Elements Pane	3
37329827	MGMNT	Bug 37329827 - Troubleshooting |use of both AND plus OR in the multiple conditions for a query fails only for OPC and DPC fields	3
37241337	MEDPROT	Bug 37241337 - Rating-Group xDR column is empty & not populating even the Value is present in decoded PDU section	3
37455715	MEDPROT	Bug 37455715 - Troubleshooting app ~ SIP/SIPT Invite/Identity header info not being properly parsed into Summary record	3
37160349	MEDPROT	Bug 37160349 - Rx IMSI, MSISDN, IMEI field not filled or not correctly filled	3
36404200	MEDSRV	Bug 36404200 - OC-PIC Password Control Fixes	3
37847208	MEDSRV	Bug 37847208 - Error: There are too many feeds (13) for subsystem. Should be 12 at most	3
37221463	MEDPROT	Enhancement Request 37221463 - InvokeID added to dictionary to distinguish amongst the PDUs of concatenated SMS	2

Fixed in 10.5.0.0.0

Bug	Components	Title	Severity
28799642	MEDSRV	PDU decode is not available in LTE Diameter session for IP6oIPv4 packets.	3
29043938	INT_OPS	Bug 29043938 - File System permissions	4
36060121	MGMT	CVE-2023-44487: NGHTTP2 UPDATE TO AT LEAST 1.57.0	2
32245196	MGMT	NullPointerException thrown when first dashboard configuration has no panels	3
36267860	MGMT	Not able install RPM, IXP could not add xDR builders	3
31190506	MGMT	Few Fields NSP gui allowing the double hyphen as an input	2
36409093	MEDPROT	OPC decoding issue with XUDT messages	3
36497224	MGMT	ProTrace cannot export to EXCEL format	4
36681056	MGMT	after PIC upgrade Re-config task schedule export , file can't export	3

| 36687029 | PROBED | Enhancement Request 36687029 - Increasing Filter Limit in PMF | 4 |
| 36739107 | PROBED | Bug 36739107 - IMF IP gets truncated after 13 characters on Production network | 2 |

Customer Known Bug List

Bug	Component	Title	Severity	Customer Impact	Workaround
27347747	PROBED	E_NOMEM error in IMF leads to input traffic drop	3	The issue has an impact on the IMFs with less memory e.g. E5-APP-B with 8GB RAM. The fcMonitor hogs upto 60% of physical memory and during failover the system might get into in No Memory state and drops MSUs.	When E_NOMEM, error is observed in fcMonitor or eagleMonitor process traces and shl.op is showing Deny counts increasing continuously in its output, then perform the following steps: 1. Login as cfguser on IMF server 2. Run command pm.set off fcMonitor 3. Run command pm.set on fcMonitor 4. Execute shl.op command to verify that Deny count in the output is not increasing. 5. Apart from the above work around, it is recommended that FC links and associations are distributed across other spare servers if available in IMF sub-system.
27340452	MGMT	Unable to execute Historical Protraq sessions	3	In case the issue is encountered then concerned historical KPI does not work and also the running historical KPI can't be stopped.	If the status goes to cancelled instead of idle when you click on Stop then 1. Click the stop button again. 2. The status will be changed back to idle. Now check and verify that the session can be started.
29680982	MEDSRV	PIC 10.3.0.1 Max value of all Unsigned Datatype	3	The max value of all unsigned datatypes of	Not Available.

		is not available in first window		the dictionary fields is not displayed in 1st window of the XDR session in Troubleshooting Application.	
30400051	MGMT	The PIC System generating TKPIC00001 alarms continuously	4	The PIC System generating TKPIC00001 alarms continuously	Work Around. 1. Edit the file "/opt/TKLCjmxagent/in/agent.properties" on xMF which is reporting the alarms and update the parameter "Heartbeat=300" to 120 2. Restart jmxAgent process.
30278288	MEDSRV	Datafeed issue due to IxpStore restart(RT 20158)	3	No records are fetched in the exported file.	This is Oracle DB connection/performance related issue and is fixed with the update of parameter "optimizer_features_enable to '11.2.0.4' " To update the parameter in your local server, please execute below query: 1. alter system set optimizer_features_enable='11.2.0.4'; 2. DB restart
29532884	MEDSRV	SR: Pool Connection Error in IXP servers	3	IxpStore process restart during the nightly job	This issue needs to be documented as known bug as Pool Connection error is due to aggressive resource utilization by some system process during maintenance window. This leaves very little resource for the OCPIC related operation, due to which the IxpStore process thread strucks.This is coming from Oracle DB.
30460437	MGMT	ORA-00001: unique constraint (NSP.AK1_COR_MANAGED_OBJECT) violated	3	The managed object ID is not generated uniquely if the names of the KPI session are similar e.g. KPI session name 'xx_yy_zz_v3' to a new KPI session name	Work Around: Use the new KPI session name with multiple characters/digits (added or changed) in the existing name.

				'xx_yy_zz_v4'	
32151713	PROBED	Duplicate entries observed on PMF after upgrade or Disaster Recovery	4	User can get confused about the link/route status.	Work Around: 1. Edit the corresponding IDB table using ivi <table_name> 2. Remove the duplicate entry against which the NodeId is 0 instead of the hostname 3. Save the table : Apply the change [y] TABLE for mfDisp=DbMsgFeederStat.0 TABLE for routDisp=DbDestStat.0
33357071	MGMT	SR: Chrome and Edge Browsers are not fully compatible with PIC 10.4	3	Filter icon in chrome and edge is greyed out	• Disabled/Greyed the filter icon in chrome and edge as it was hampering the table display. Awaiting few of the fixes from browser. • Filter option is compatible in Firefox browser Work Around: To use latest Firefox browser
31656570	MGMT	Sigtran Servellience tables not getting updated with data	3	The SIGTRAN surveillance application will not show the statistics	Work Around: Check if the inetmerge process is running on all the IMF servers, if not then start it on all the servers in the sub-system. If inetmerge is running on all the servers in the sub-system in IMF then Restart the IDB on all the IMF servers in the sub-system As cfguser, prod.dbdown –i prod.start
33962008	MGMT	Sometimes the child paned is not opening	3	Sometimes the child panel does not open within the parent panel	Workaround: Create and configure the child panel manually
31190626	MEDSERV	SSL connection is using few deprecated ciphers	2	Security Scans scowing this error	No code changes required to fix this issue. After PIC installation please refer below page which explains how to resolve cipher issues https://gbuconfluence.oraclecorp.com/display/SP/OCPIC+Cipher+Scan+Analysis refer to below section to remove deprecated ciphers :- 3. Action item to remove ciphers..

36813986	MEDSERV	Proc manager does not start automatically after IXP reboots	4	If the proc manager does not start, then traffic will not reach to IXP and even the xDR's will not be generated	1. login ixp as su – cfguser. 2. execute pl command 3. if it does not shows any process then type prod.start -i and then recheck the processes again by executing pl command. if process does not started then execute again prod.start -i
36809211	MGMT	Unable to Mask the xdr/PDU columns in troubleshooting application	4	User cannot be able to Mask the xDR/PDU columns Values in troubleshooting application	User can Hide that column from display in troubleshooting application. 1. User needs to enable the PDU Hiding from CCM 2. In CCM --> Mediation --> Dictionaries --> find the respective XDR and Edit the "dictionary attribute info" where you have check box option to display and mask and hide. 3. Cross the application and check respective map/ISUP etc. which you have modified and applied changes done for the masking column. with this 10.5 you cannot mask the value for that column.
38413149	PROBED	Traffic copying on IMF 10.5.0.1 gets stopped after some time	3	E5AppB IMF will not get traffic in FC mode.	This issue is coming only when links/linksets/associations are changed on EAGLE side and changes applied on IMF via NSP. The workaround to be followed whenever link composition on IMF is changed: It is always recommended to restart FcMonitor process in E5APPB setups during following scenarios 1. Whenever failover occurs 2. Any changes happening on FC card from eagle side(adding new link or associations, modifying or deleting) 3. reinitializing the card 4. Whenever you see memory getting exhausted (use free -h to track) 5. Sometimes you may notice freeze in linkDisp output 6. When synchronize is performed from NSP side 7. When you see a logs like below in FcMonitor process 1130:103834.224 TR-V DbMsuBlock01 DBMsuBlock::newBlock reserve failed: ERROR: E_NOMEM: ShmLimit: deny RigidShm alloc of 9,504B ; cur=156,478,212 cap=107,320,980 [ShMemLimit.cxx:651] **Commands to restart FcMonitor**

						process as cfguser 1. pm.set off fcMonitor 2. execute pl command and check whether fcMonitor is still running or not. If not, then proceed to step 3 3. pm.set on fcMonitor
38466410	PROBED	IP's on STC cards disappear when we reboot STC cards, need to restart dhcpd on IMF for IP's to come	3	IP's on STC cards disappear when we reboot STC cards, need to restart dhcpd on IMF for IP's to come		During fresh installation of Eagle, IP addresses on STC cards may disappear. This issue occurs because the DHCP service (dhcpd) is not properly enabled and configured at the time of Eagle installation. The TKLCPlatxmf RPM package, which is part of the IMF installation, is responsible for enabling and configuring dhcpd. If Eagle is installed before IMF, the DHCP service is not set up correctly, leading to missing IPs on STC cards. Resolution Steps: Correct Installation Order: 1. First install Eagle. 2. Then install IMF (which includes TKLCPlatxmf RPM). 3. This ensures that dhcpd is enabled and configured automatically during IMF installation. Alternative Fix (if Eagle was installed after IMF): Manually restart the dhcpd service on IMF once Eagle installation is complete using, • systemctl restart dhcpd

38723876	MGMT	Tasks created in Browser export are not running after Major Upgrade
		
		Reproduction steps -
		
		1- Upgrade is done successfully and PIC is upgraded to 10.5.0.2.
		
		2- Open Browser Export in the configuration on the NSP Home page.
		
		3- Schedule the exisiting job which was created in 10.5 release.
		
		4- You will find that the export files are not getting created.
			4	Issue Description - When the user upgrades from PIC release 10.5.0 to 10.5.0.2 then the jobs configured in the Browser Export, will fail to work as it was working in 10.5.0.		Work Around -
						1- Delete the old tasks created in the 10.5 release.
						  a) login to mgmt.
						  b) go to "Browser data export" in configuration section.
						  c) click on "Browser export scheduler" and then click on tasks.
						  d) delete all the tasks created by all users.
						2- Recreate the same tasks with same configurations after successfull upgrade to 10.5.0.2.
						  a) Follow the "Creating a Scheduled Task" section from "pic_Scheduler_User_Guide.pdf".
						3- After recreating the tasks, all the export works fine.

38548047	MGMT	DNS Session || PCAP export showing 0 count || PIC 10.4.0.4	3	In some situation PCAP export shows zero count whereas TXT export showing		No Workaround.

				records for "DNS" session	

Chapter 8:
Oracle References and Services

Topics:

> My Oracle Support (MOS)
> Emergency Response

This chapter describes how to obtain help, where to find related documentation, and provides other general information.

My Oracle Support (MOS)

MOS (https://support.oracle.com) is your initial point of contact for all product support and training needs. A representative at Customer Access Support (CAS) can assist you with MOS registration.

Call the CAS main number at 1-800-223-1711 (toll-free in the US), or call the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. When calling, make the selections in the sequence shown below on the Support telephone menu:

1. Select 2 for new service request.
2. Select 3 for hardware, networking, and Solaris operating system support.
3. Select one of the following options:

   - For technical issues such as creating a new Service Request (SR), select 1.

   - For non-technical issues such as registration or assistance with MOS, select 2.

You are connected to a live agent who can assist you with MOS registration and opening a support ticket.

MOS is available 24 hours a day, 7 days a week, and 365 days a year.

Emergency Response

In the event of a critical service situation, emergency response is offered by the Customer Access Support (CAS) main number at 1-800-223-1711 (toll-free in the US) or by calling the Oracle Support hotline for your local country from the list at http://www.oracle.com/us/support/contact/index.html. The emergency response provides immediate coverage, automatic escalation, and other features to ensure the critical situation is resolved as rapidly as possible.

A critical situation is defined as a problem with the installed equipment that severely affects service, traffic, or maintenance capabilities, and requires immediate corrective action. Critical situations affect service and/or system operation resulting in one or several of these situations:

- A total system failure that results in loss of all transaction processing capability

- Significant reduction in system capacity or traffic handling capability

- Loss of the system's ability to perform automatic system reconfiguration

- Inability to restart a processor or the system

- Corruption of system databases that requires service affecting corrective actions

- Loss of access for maintenance or recovery operations

- Loss of the system ability to provide any required critical or major trouble notification

  Any other problem severely affecting service, capacity/traffic, billing, and maintenance capabilities may be defined as critical by prior discussion and agreement with Oracle.

Appendix A: List of Supported protocols and Builders

The following table identifies the protocols supported by PIC and the version of the protocol specification implemented based on the protocol family.

SS7 Protocols

Protocol	Organization	Complete Reference	PIC 10.2 standards	Final builder
ISUP V1	ITU-T			see ISUP V3
ISUP V2	ITU-T			see ISUP V3
ISUP V3	ITU-T	Signaling system N°7 - ISDN user part formats and codes	Q.763 / Sept_97 (Q.761 to Q.764, Q.766 and Q.767)	SS7IsupEtsiCdr SS7IsupEtsiSudrAccounting Ss7IsupEtsiSuperCdr SS7UMSudr
BT NUP (UK)	National UK BT	BT Network Requirement	BTNR 167 *Jul-87*	SS7BtnupCdr
ISUP ANSI	ANSI	Signaling System N°7 (SS7) - Integrated Services Digital Network (ISDN) User Part	T1.113-1995 *Jun-05*	SS7IsupAnsiCdr Ss7IsupAnsiSentinelCdr SS7UMSudr
Party Information Parameter (PIP)		Calling Party Name Convention Facility Specification	TICO076E *Feb-98*	
ISUP Chinese		ETSI ISUP support with 24 bits OPC/DPC		see ISUP V3
ISUP Russian Variant (Sovintel)	National	CIS ISUP - Functional Description	CIS ISUP - Functional Description	see ISUP V3
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*	see ISUP V3
ISUP Brasilian Variant	TELEBRAS	#7 Common Channel Signaling System ISDN User part - ISUP, Issue 3	TB 220-250-732 *Apr-98*	see ISUP V3

ISUP Colombian Variant	Ministerio des Comunicaciones	Norma Nacional de Señalizacion por Canal Comun N.°7 - SCC7	Norma Nacional *Apr-98*	see ISUP V3
ISUP Mexican Variant	Telmex	E-801.04 Sepcification - Integrated Services Digital Network user Part (ISUP), Edition "C-3"	E-801.04 *Dec-97*	see ISUP V3
ISUP Argentina variant	Telefonica Argentina	RDSI User Part Specification Signaling System N°7	General Specification AR.EG.s1.002 Ed 1 corrected	see ISUP V3
Cisco E-ISUP	Cisco	EISUP Specification - Cisco Systems	Cisco ENG-46168 Release 44	SS7_EISUP_CDR
	IETF	Reliable UDP Protocol	draft-ietf-sigtran-reliable-udp-00.txt *Feb-1999*	
LSSU	ITU-T	Signaling link	Q.703 *Jul-96*	
MTP ITU-T Level 2 & 3	ITU-T	Functional description of the Message Transfer Part (MTP) of Signaling System No. 7	Q.701 *Mar-93*	SS7L2L3EtsiSudr SS7Q752EtsiStats
		Signaling link	Q.703 / Q.704 *Jul-96*	
MTP ANSI Level 2 & 3	ANSI	Signaling System N°7 - Message Transfer Part (MTP)	T1.111-1996 *Mar-96*	SS7L2L3AnsiSudr
SCCP ITU-T	ITU-T	Signaling connection control part formats and codes	Q.713 *Jul-96*	Ss7SccpSuaSudr
SCCP ANSI	ANSI	Signaling System Number 7 - Signaling Connection Control Part (SCCP)	T1.112-1996 *Jan-96*	Ss7SccpSuaSudr
TCAP (MAP & INAP support)	ITU-T	Transaction capabilities formats and encoding	Q.773 *Jun-97*	
TCAP (IS-41 support)	ANSI	Signaling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP)	T1.114-1996 *Mar-96*	
	ANSI	Signaling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP)	T1.114-2000 *Jun-00*	
INAP Siemens	Specific: Siemens	Siemens Core INAP	P30308-A7128-A120-01-7659 *May-98*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
INAP CS1	ETSI	Intelligent Network (IN); Intelligent Network Capability Set 1 (CS1); Core Intelligent Network	ETS 300 374-1 *Sep-94*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR

		Application Protocol (INAP);		
	ITU-T	Introduction to intelligent network capability set 1	ITU-T Q.1211 *Mar-93*	
	ITU-T	Distributed functional plane for intelligent network CS-1	ITU-T Q.1214 *Oct-95*	
	ITU-T	Interface Recommendation for intelligent network CS-1	ITU-T Q.1218 *Oct-95*	
INAP CS2	ITU-T	Intelligent Network (IN); Intelligent Network Application Protocol (INAP); Capability Set 2 (CS2)	ETS 301 140-1 *Jun-96*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
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*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
INAP Ericsson CS1+	Ericsson	Ericsson INAP CS1+, Services assumed from TCAP, revision A	4/155 17-CRT 249 09 Uen *Aug-96*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
		Ericsson INAP CS1+, Abstract Synthax, revision B	171/155 17-CRT 249 12 Uen *Jun-03*	
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*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
			7/155 17-CRT 249 01 Uen B (V3) *Jan-97*	
			12/155 17-CRT 249 01 Uen A (V4) *Jan-98*	
INAP Alcatel V3	Alcatel	INAP for E10 Version 3	ALCATEL E10 Version 3 *Sep-96*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
INAP Alcatel V4	Alcatel	INAP for E10 Version 5	ALCATEL E10 Version 5 *Jan-99*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
INAP Alcatel CS1	Alcatel	INAP Alcatel CS1	ALCATEL INAP CS1	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
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*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR

CAMEL Phase 3	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Customized 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*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
CAMEL Phase 4	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); Customized 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*	SS7InapSudrAccounting SS7InapTdr SS7_INAP_Compact_TDR
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 48.008 V12.0.0 (Release 12) Sept-14	RanCC2Cdr RanMMTdr RanSMSTdr RanUSSD SS7BssapTdr
DTAP		Digital cellular telecommunications system (Phase 2+); Mobile Radio Interface;Layer 3 specification - **3GPP TS 04.08**	TS 24.008 V12.7.0 (Release 12) Sept-14	
SMS		Digital cellular telecommunications system (Phase 2+); Point-to-Point (PP) Short message Service support on mobile radio interface - **3GPP TS 04.11**	TS 24.011 V12.0.0 (Release 12) Sept-14	
SMS SM-TP		Digital cellular telecommunications system (Phase 2+); Technical realization of the short Message Service (SMS) - **3GPP TS 03.40**	TS 23.040 V12.2.0 (Release 12) Dec-14	
Supplementary Services		Digital cellular telecommunications system (Phase 2+); Mobile Radio interface layer 3 supplementary service specification; Formats and Coding - **3GPP TS 04.80**	TS 24.080 V12.0.0 (Release 12) Sept-14	
BSSAP+ (Gs Interface)	ETSI	Digital Cellular Telecommunications System (Phase 2+);	TS 29.018 V6.5.0	Ss7GsInterfaceTdr

		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**	(Release 6) *Dec-06*	
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 V12.6.0 (Release 12) Sept-14	Ss7HLRVTdr SS7MapTdr SS7MapSudrAccounting SS7MapSmTdr SS7MapMultiLegTdr SS7MapDB SS7Smdr SS7_MAP_Compact_TDR
IS-41 Révisions B, C, D & E (MAP)	ANSI	Cellular Radiotelecommunications Intersystem Operations	ANSI/TIA/EIA-41-D-1997 *Nov-97*	SS7IS41DB SS7IS41DE SS7IS41Tdr
MEID	3GPP2	3G Mobile Equipment identifier (MEID) - Stage 1	3GPP2 S.R0048-A Ver 4.0 *Jun-05*	
	Telecommunications Industry Association	MEID Standards Update, version 1.8.4	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-EE	Ericsson	IS-41 Intersystem Call delivery Signaling	IS-41-EE *Jan-99*	
ISDN over IUA	ITU-T	ISDN user-network interface layer 3 specification for basic call control	Q.931 *May-98*	VoIP_Q_931_Cdr
AIN				SS7AinTdr
MTP ANSI Level 2 & 3	ANSI	Signaling System N°7 - Message Transfer Part (MTP)	T1.111-1996 *Mar-96*	
SCCP ANSI	ANSI	Signaling System Number 7 - Signaling Connection Control Part (SCCP)	T1.112-1996 *Jan-96*	
TCAP (IS-41 support)	ANSI	Signaling System Number 7 (SS7) - Transaction Capabilities Application Part (TCAP)	T1.114-2000 *Jun-00*	
Services - CNAM - ATF - NS 800 - LNP - Flexible Number Routing	Telcordia	Telcordia Technologies Generic Requirements, GR-1188-CORE: Calling Name Delivery Generic Requirements, Issue 2	GR-1188-CORE *Dec-00*	
	Telcordia	Telcordia Technologies Generic Requirements, GR-533-CORE: Databases Services Service Switching Points - Toll-Free Service	GR-533-CORE *Jun-01*	

		Generic Requirements, Issue 2		
	Telcordia	Telcordia Technologies Generic Requirements, GR-1299-CORE: Switch - Service Control Point (SCP) / Adjunct Interface Generic requirements, Issue 6	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*	
	Telcordia	Telcordia Technologies Generic Requirements, GR-2982-CORE: Local Number LNP Capability, Issue 1	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*	
	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*	
LIDB	Telcordia	Telcordia Technologies Generic Requirements, GR-1158-CORE : OSSGR Section 22.3: Line Information Database, Issue 4	GR-1158-CORE *Dec-00*	SS7LidbTdr
		Telcordia Technologies Generic Requirements, GR-1149-CORE - OSSGR Section 10: System Interfaces, Issue 6	GR-1149-CORE *Sep-06*	
CLASS	Telcordia	Telcordia Technologies Generic Requirements, GR-1188-CORE: Calling Name Delivery Generic Requirements, Issue 2	GR-1188-CORE *Dec-00*	SS7ClassTdr
		Telcordia Technologies Generic Requirements, GR-215-CORE: LSSGR: CLASS Feature: Automatic Callback (FSD 01-02-1250), Issue 2	GR-215-CORE *Apr-02*	
		Telcordia Technologies Generic Requirements, GR-220-CORE: LSSGR: CLASS Feature:	GR-220-CORE *Apr-02*	

		Screening List Editing (FSD 30-28-0000), Issue 2		
		Telcordia Technologies Generic Requirements, GR-227-CORE: LSSGR: CLASS Feature: Automatic Recall (FSD 01-02-1260), Issue 2	GR-227-CORE *Apr-02*	
WIN Services	Telcordia	Wireless Intelligent Network	EIA/TIA IS-771 *Jul-99*	SS7WinServiceTdr
IS-771	Telcordia	Wireless Intelligent Network - Addendum 1	EIA/TIA IS-771 *Aug-01*	
	Telcordia	Cellular Radio telecommunications ntersystem Operations, Revision B to E	EIS/TIA IS-41 *Nov-97*	
	3GPP2	Win Phase 1, Version 1.0	3GPP2 N.S0013-0 *Dec-98*	
	3GPP2	Win Phase 2, Version 1.0	3GPP2 N.S0004-0 *Apr-01*	
	3GPP2	ANSI -41-D Miscellaneous Enhancements, Version 1.0.0, Revision 0	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*	
J-STD-036B	ANSI	Enhanced Wireless SP-3-3890-RV2 9-1-1 Phase II	J-STD-036-B *Jan-08*	
IS-843	Telecommunications Industry Association	Wireless Intelligent network Support for Location Based Services	TIA-843 *Aug-04*	
IS-801	Telecommunications Industry Association	Position Determination Service for cdma2000 Spread Spectrum Systems	TIA-801-A *Apr-04*	
IS-881	Telecommunications Industry Association	TIA/EIA-41-D Location Services Enhancements	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*	
IS-764	Telecommunications Industry Association	TIA/EIA-41-D Enhancements for Wireless Calling Name - Feature Descriptions	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*	

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
BICC ETSI	ITU-T	Bearer Independent Call Control protocol	Q.1901 *Apr-02*	Ss7BICCEtsiCdr
		Signaling System N°7 - ISDN User Part	Q.763 *Sep-97* (Q.761 to Q.764, Q.766 and Q.767)	
BICC ANSI	ANSI	Specifications of the Bearer Independent Call Control	ANSI T1.BICC.1-2000 to ANSI T1.BICC.7-2000 *Jan-00*	Ss7BICCAnsiCdr
SIGTRAN	IETF	**Support only for ISUP Family Planned for MAP, INAP and IS-41**		IPSctpStats IPSctpSudr SS7M2paStats SS7M2PaSudr Ss7M2uaStats Ss7M2uaSudr SS7M3uaStats Ss7M3uaSudr Ss7SccpSuaSudr Ss7SuaStats SS7_SIGTRAN_Transport_SUDR
SCTP		Stream Control Transmission Protocol . Used as support for SIGTRAN	RFC 2960 *Oct-00*	
M3UA		Signaling System 7 (SS7) Message Transfer Part 3 (MTP3) - User Adaptation Layer (M3UA). SUDR & Statistics	RFC 4666 *Sep-06*	
M2UA		Signaling System 7 (SS7) Message Transfer Part 2 (MTP2) - User Adaptation Layer	RFC 3331 *Sep-02*	
SUA		Signaling Connection Control Part User Adaptation Layer (SUA)	RFC 3868 *Oct-04*	
M2PA		Signaling System 7 (SS7) Message Transfer Part 2 (MTP2) - User Peer-to-Peer Adaptation Layer (M2PA). SUDR & Statistics	RFC 4165 *Sep-05*	

GPRS/IP Protocols

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
GPRS Gn & Gp	ETSI	Digital cellular telecommunications system (Phase 2+); General Packet Radio Service (GPRS);GPRS Tunneling Protocol (GTP) across the Gn and Gp Interface - **3GPP TS 09.60**	TS 101 347 V7.8.0 (Release 98) *Sep-01*	GprsGnGpCdr GprsGnGpTdr IP_Sessions_summary_TDR

		Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS);GPRS Tunneling Protocol (GTP) across the Gn and Gp Interface - **3GPP TS 09.60**	TS 29.060 V12.6.0 (Release 12) Sept-14	

GPRS Protocols

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
GPRS Gb				GprsGbTdr
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 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 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 44.064 V7.3.0 (Release 7) *Mar-08*	
GPRS Mobility Management (GMM) GPRS Session Management (GSM)	ETSI	Digital cellular telecommunications system (Phase 2+)(GSM); Mobile Radio Interface; Layer 3 Specification - **3GPP TS 04.08**	TS 24.008 V7.12.0 (Release 7) *Jun-08*	

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
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 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 Radio 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 24.011 V7.1.0 (Release 7) *Jun-09* TS 23.040 V7.2.0 (Release 7) *Mar-09*	
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 V12.6.0 (Release 12) Sept-14	SS7MapTdr SS7_MAP_Compact_TDR

IP Protocol

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
DNS	IETF	Domain Names - Concepts and Facilities	RFC 1034 *Nov-87* Not relevant or supported: RFC1101, RFC1183, RFC1348, RFC1876, RFC1982, RFC2065, RFC2181, RFC2308, RFC2535, RFC4033, RFC4034, RFC4035, RFC4343, RFC4035, RFC4592, RFC5936	IpDnsTdr

			RFC 1035 *Nov-87* Not relevant or supported: RFC1101, RFC1183, RFC1348, RFC1876, RFC1982, RFC1995, RFC1996, RFC2065, RFC2136, RFC2181, RFC2137, RFC2308, RFC2535, RFC2845, RFC3425, RFC3658, RFC4033, RFC4034, RFC4035, RFC4343, RFC5936, RFC5966	
		Domain Names - Implementation and Specification		
DNS ENUM	IETF	E.164 Number and DNS	RFC 2916 *Sep-00*	IpDnsEnumTdr
RADIUS	IETF	Remote Authentication Dial In User Service (RADIUS)	RFC 2865 *Jun-00* RFC2866 *Jun-00* Not relevant or supported: RFC2868, RFC3575, RFC5080	IpRadius
DHCP				IpDhcpTdr
BOOTP	IETF	Bootstrap protocol (BOOTP)	RFC 951 *Sep-85* Not relevant or supported: RFC1395, RFC1497, RFC1532, RFC1542, RFC5494	
DHCP	IETF	Dynamic Host Configuration Protocol	RFC 2131 *May-97* Not relevant or supported: RFC3396, RFC4361, RFC5494	
WAP				IpWapv1Tdr
WTP	WAP Forum / OMA	Wireless Transaction protocol	WAP-224-WTP-20010710-a *Jul-01*	
WSP	WAP Forum / OMA	WAP - Wireless Session Protocol Specification	WAP-230-WSP-20010705-p *Jul-01*	
MMS	OMA	Multimedia Messaging Service Encapsulation Protocol Version 1.1	OMA-MMS-ENC-v1_1-20021030-C *Oct-02*	IpMmsWapv1Tdr IpMmsWapv2Tdr
HTTP	IETF	Hypertext Transfer Protocol - HTTP/1.1	RFC 2616 *Jun-99* Not relevant or supported: RFC2817, RFC5785, RFC6266	IpHttpTdr

HTTP2	IETF	Hypertext Transfer Protocol - HTTP/2	RFC 7540, 7541	EvolvedHttpTdr
WAP2	IETF	Hypertext Transfer Protocol - HTTP/1.1	RFC 2616 *Jun-99* Not relevant or supported: RFC2817, RFC5785, RFC6266	IpWapv2Tdr
	WAP Forum / OMA	WAP Architecture	WAP-210-WAPArch-20010712 *Jul-01*	
POP3	IETF	Post Office protocol - Version 3	RFC 1460 *Jun-93*	IpPop3Tdr
SMTP	IETF	Simple Mail Transfer Protocol	RFC 2821 *Apr-01*	IpSmtpTdr
IMAP4	IETF	Internet Message Access Protocol - Version 4rev1	RFC 2060 *Mar-03*	IpImap4Tdr
FTP	IETF	File Transfer Protocol	RFC 959 *Oct-85* Not relevant or supported: RFC2228, RFC2640, RFC2773, RFC3659, RFC5797	IpFtpTdr
TCP	IETF	Transmission Control Protocol	RFC 793 *Sep-81* Not relevant or supported: RFC1122, RFC3168, RFC6093	IpTcpCdr
RTSP	IETF	Real Time Streaming Protocol (RTSP)	RFC 2326 *Apr-98*	IpRtspTdr
	IETF	SDP:Session Description Protocol	RFC 2327 *Apr-98*	
SMPP	SMS Forum	Short Message Peer-to-Peer protocol Specification, Version 5.0	SMPP v5.0 *Feb-03*	IpSmppTdr
UCP	Logica CMG	Short Message Service center; EMI - UCP Interface 4.6	EMI UCP Interface *May-05*	IpUcpTdr

UMTS Protocol

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
UMTS				
Iu-CS Control Plane over IP Iu-PS Control Plane over IP		Universal Mobile Telecommunications System (UMTS); UTRAN Iu interface Radio Access Network	TS 25.413 V12.3.0 (Release 12) Dec-14	Ran_CC2_Cdr Ran_MM_Tdr Ran_SMS_Tdr Ran_USSD UMTS_Iu_C_TDR

				UMTS_Iu_P_GMM_TDR UMTS_Iu_P_TDR UMTS_Iu_P_SM_TDR
		Application Part (RANAP) signaling - **3GPP TS 25.413**		
		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 V12.3.0 (Release 12) Sept-14	
		Digital cellular telecommunications system (Phase 2+); Mobile Radio interface layer 3 supplementary service specification; Formats and Coding - **3GPP TS 04.80**	TS 24.080 V12.0.0 (Release 12) Sept-14	
		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 V12.0.0 (Release 12) Sept-14	
		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 V12.7.0 (Release 12) Sept-14	
Iu-PS User Plane over IP	ETSI	Digital cellular telecommunications system (Phase 2+); Universal Mobile Telecommunications System (UMTS); General Packet Radio Service (GPRS);GPRS Tunneling Protocol (GTP) across the Gn and Gp Interface - **3GPP TS 09.60**	TS 29.060 V12.6.0 (Release 12) Sept-14	

VoIP Protocol

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
VoIP SIP / SIP-T / SIP-I	IETF	**SIP** Session Initiation Protocol	RFC 3261 *Jun-02* Not relevant or supported: RFC3853, RFC4320, RFC4916, RFC5393, RFC5621, RFC5626, RFC5630, RFC5922, RFC5954, RFC6026, RFC6141	VoipSipCdr VoipSiptAnsiCdr VoipSiptItuCdr
	IETF	Reliability of Provisional Responses in the Session Initiation Protocol (SIP)	RFC 3262 *Jun-02*	
	IETF	Session Initiation Protocol (SIP) - Specific Event Notification	RFC 3265 *Jun-02* Not relevant or supported: RFC5367, RFC5727, RFC6446	
	IETF	The Session Initiation Protocol (SIP) UPDATE Method	RFC 3311 *Sep-02*	
	IETF	The Session Initiation Protocol (SIP) Refer Method	RFC 3515 *Apr-03*	
	IETF	The SIP INFO Method	RFC 2976 *Oct-00*	
	IETF	Session Initiation Protocol for Telephones (**SIP-T**): Context and Architectures	RFC 3372 *Sep-02*	
	IETF	SDP:Session Description Protocol	RFC 2327 *Apr-98*	
	IETF	Session Description Protocol (SDP) Simple Capability Declaration	RFC 3407	
	ITU-T	Interworking between Session Initiation Protocol (SIP) and Bearer Independent Call Control Protocol or ISDN User Part.	Q.1912-5 *Mar-04*	
	Nortel	CS2000 SIP/SIP-T Interoperability Specification (Issue 0.82) System Requirement Document	Nortel CS2000 *01/10/2003* *RFC5057*	

		Multiple Dialog Usages in the Session Initiation Protocol		
VoIP H.225/Q.931	ITU-T	Series H: Audiovisual and Multimedia Systems - Call Signaling protocols and media stream packetisation for packet-based multimedia communication systems	H.225.0 *Jul-03*	VoipQ931Cdr
	ITU-T	ISDN user-network interface layer 3 specification for basic call control	Q.931 *Dec-99*	
VoIP H.225/RAS	ITU-T	Call Signaling protocols and media stream packetisation for packet-based multimedia communication systems	H.225.1 *Jul-03*	VoipRasTdr
VoIP H.245	ITU-T	Control Protocol for multimrdia communication	H.245 *Jul-03*	VoipH245Tdr
VoIP RTP	IETF	RTP: A Transport Protocol for Real-Time Application	RFC 3550, *Jul-03* RFC3551 *Jul-03* Not relevant or supported: RFC5506, RFC5761, RFC6051, RFC6222	VoipSipCdr
MGCP	IETF	Media Gateway Control Protocol (MGCP) version 1.0	RFC 3435 *Jan-03* Not relevant or supported: RFC3661	VoipMgcpCdr VoipMgcpTdr
	IETF	Media Gateway Control Protocol (MGCP) Return Code Usage	RFC 3661 *Dec-03*	
	IETF	Media Gateway Control Protocol (MGCP) Packages	RFC 3660 *Dec-03*	
MEGACO	IETF	Gateway Control Protocol Version 1.0	RFC 3525 *Jun-03*	VoipMEGACOTdr
H.248	ITU-T	Gateway Control Protocol: Version 2	H.248.1 *May-02* Supported packages H.248.2 until H.248.31	VoipH248Tdr

IMS Protocols

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
Diameter	IETF	Diameter Base Protocol	RFC 3588 *Sep-03*	ImsDiameterCcTdr ImsDiameterCxTdr ImsDiameterGqTdr ImsDiameterShTdr ImsDiameterTdr LTE_Diameter-TDR
Diameter Credit-Control (Cc, Ro, Rf, Gy, Ga)	IETF	Diameter Credit-Control Application	RFC 4006 *Aug-05*	
	ETSI / 3GPP	3rd Generation Partnership Project; Technical Specification Group Service and System Aspects; Telecommunication management; Charging management; Diameter charging applications	TS 32.299 V12.6.0 (Release 12) Sept-14	
Diameter Gq	ETSI	Universal Mobile Telecommunications System (UMTS); Policy control over Gq interface (3GPP TS 29.209 version 6.5.0 Release 6). Replaced by Rx in LTE	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; Signaling flows and message contents **3GPP TS 29.228**	TS 29.228 V12.3.0 (Release 12) Sept-14	
	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 V12.3.0 (Release 12) Sept-14	
	ETSI	Digital cellular telecommunications system (Phase 2+);	TS 29.230 V12.6.0 (Release 12)	

		Universal Mobile Telecommunications System (UMTS); Diameter applications; 3GPP specific codes and identifiers **3GPP TS 29.230**	Sept-14	
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 V12.4.0 (Release 12) Sept-14	

LTE Protocols

Protocol	Organization	Complete Reference	PIC 10.2 Standards	Final Builder
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)	TS 29.272 V12.6.0 (Release 12) Sept-14	LTE_Diameter_S6_TDR LTE_Diameter_SUDR_Accounting LTE_Diameter-TDR
Diameter Gx/S7	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Policy and Charging Control over Gx reference point (Release 9)	TS 29.212 V12.6.0 (Release 12) Sept-14	LTE_Diameter_Gx_TDR LTE_Diameter-TDR
Diameter Rx	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Policy and Charging Control over Rx reference point (Release 9)	TS 29.214 V12.5.0 (Release 12) Sept-14	LTE_Diameter_Rx_TDR LTE_Diameter-TDR

Diameter Gy	3GPP	3rd Generation Partnership Project; Technical Specification Group Services and System Aspects; Telecommunication management; Charging management; Diameter charging applications	TS 32.299 V12.6.0 (Release 12) Sept-14	LTE_DIAMETER_Gy_TDR LTE_Diameter-TDR
Diameter S9	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Policy and Charging Control (PCC) over S9 reference point; Stage 3	TS 29.215 V12.5.0 (Release 12) Sept-14	LTE_DIAMETER_S9_TDR LTE_Diameter-TDR
Diameter AAA	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Evolved Packet System (EPS); 3GPP EPS AAA interfaces	TS 29.273 V12.5.0 (Release 12) Sept-14	LTE_Diameter_AAA_TDR
Diameter LCS	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Location Services (LCS); Evolved Packet Core (EPC) LCS Protocol (ELP) between the Gateway Mobile Location Centre (GMLC) and the Mobile Management Entity (MME); SLg interface	TS 29.172 V12.4.0 (Release 12) Mar-14	LTE_Diameter_LCS_TDR
		3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Location Services (LCS); Diameter-based SLh	TS 29.173 V12.2.0 (Release 12) Sept-14	

		interface for Control Plane LCS		
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)	TS 29.274 V12.6.0 (Release 12) Sept-14	LTE_GTP_v2_Tunnel_Management_TDR LTE_GTP_v2_Mobility_Management_TDR LTE_GTP_v2_Sv_TDR
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)	TS 36.413 V12.3.0 (Release 12) Sept-14	LTE_S1AP_TDR RAN_ESM_TDR RAN_EMM_TDR
	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)	TS 24.301 V12.6.0 (Release 12) (Release 12)Sept-14	
SGs	3GPP	3rd Generation Partnership Project; Technical Specification Group Core Network and Terminals; Mobility Management Entity (MME) – Visitor Location Register (VLR) SGs interface specification (Release 9)	TS 29.118 V12.6.0 (Release 12) Sept-14	LTE_SGsAP_TDR
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	TS 29.281 V11.6.0 (Release 11) Mar-13	LTE_GTP_User_Plane_Capture

		(GPRS) Tunnelling Protocol User Plane (GTPv1-U) (Release 9)		