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HP Opencall SS7 Software Developer's Kit for HP-UX

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1 Introduction

The HP Opencall SS7 SDK is the developer's kit for the HP Opencall SS7 signaling platform. It provides application developers with the tools they need to:

- develop new applications on HP Opencall SS7
- port and deploy HP Opencall SS7 applications on an operational HP Opencall SS7 platform
- evaluate HP Opencall SS7 products

The HP Opencall SS7 SDK is available for both HP-UX and Linux operating systems. The Linux version is available for the IA32 architecture (for more information about the SDK Linux, please refer to the [SDK Datasheet](#)). The HP-UX version is available for the PA architecture on HP-UX 11.0 and 11.i and for the Itanium Processor Family (IPF) architecture on HP-UX 11i v1.5 (for more information about IPF, please refer to the [Itanium HP Home Page](#)).

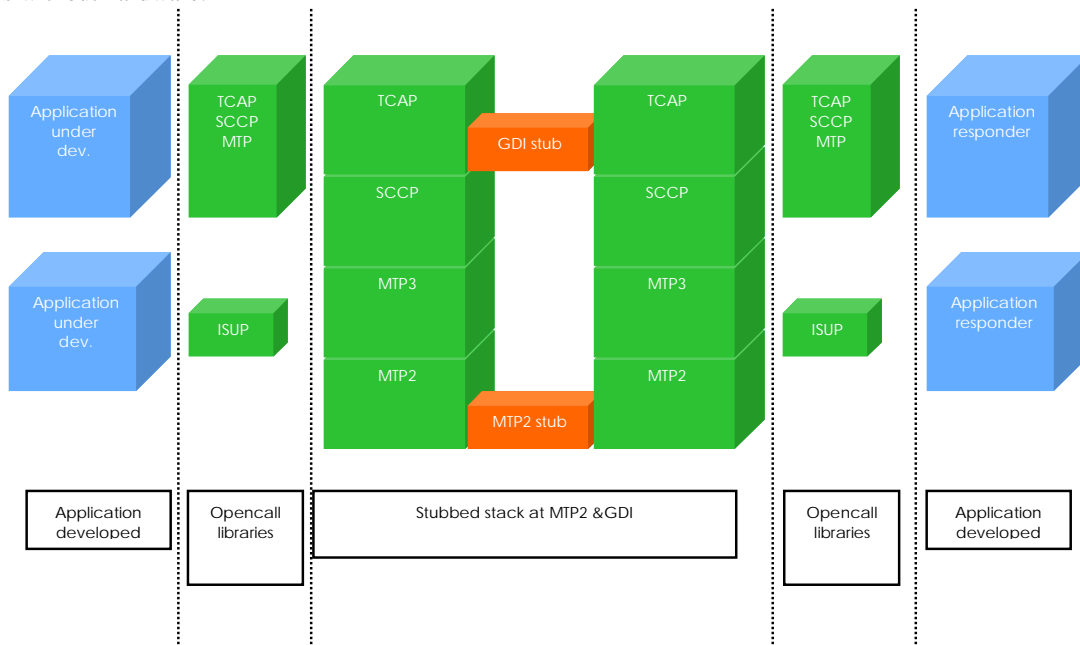
Note: the PA version is an update of the SDK HP-UX on PA of October 2000.

Product Numbers:

- J7117A #004 HP OC SS7 SDK for HP-UX PA-RISC
- J7117A #006 HP OC SS7 SDK for HP-UX IPF

The HP Opencall SS7 Software Developer's Kit for HP-UX allows you to develop your application on top of the HP Opencall SS7 product. Your application can be easily ported and deployed on an operational HP OC SS7 platform.

No connection to the hardware is provided. A stub is provided to allow communication between two stacks at MTP 2 level and another to allow stack communication at GDI level. Thus, a customer can test their application by generating traffic between two stacks without hardware.



The HP OC SS7 SDK features set is based on HP Opencall SS7 release 2.x. The APIs are source code compatible with the HP Opencall SS7 2.2 and 3.x releases. A complete description of the HP Opencall SS7 product is given in the HP Opencall SS7 Technical Guide.

The HP Opencall SS7 SDK package contains:

- Full HP Opencall SS7 API functionality with multiple application levels (ISUP, TCAP, MTP, SCCP, TUP)
- Worldwide SS7 standard compliance (ITU, ANSI)
- HP Opencall SS7 tutorials for all APIs
- Test environment and traffic generators

as well as:

- Technical assistance

2 What's in this Version

2.1 Package Description

Description: HP Opencall SS7 Software Developer's Kit for HP-UX

Note: The SDK HP-UX for PA packages replace those of the SDK HP-UX for PA of October 2000.

Baseline Content

Baseline type	Bundle
Baseline	J7117A

The J7117A SS7 SDK bundle for HP-UX PA is composed of the following packages:

Baseline type	Packages
Baseline	SS7_SDK_PA.01.01 GNUstepEnv_pa11.01.01 SS7_SDK_DOC.01.01

The J7117A SS7 SDK bundle for HP-UX PA is composed of the following packages:

Baseline type	Packages
Baseline	SS7_SDK_IA64.01.01 GNUstepEnv_ia64.01.01 SS7_SDK_DOC.01.01

Refer to the "Additional software" section for more information about dependencies.

OS Version

- HP-UX 11.0 and 11.11 (11i) for PA Architecture
- HP-UX 11.20 for IPF Architecture

HP-UX patch/bundle mandatory

PHSS_24303 for HP-UX 11.0 PA-32 bits only

Incompatible OS patches

None

Package type

Baseline

HP Opencall patch compatibility

Not Applicable

HP Opencall patch conflicts

Not Applicable

Additional software

Perl package must be installed for both HP-UX PA and HP-UX IPF:

Perl5.PERL-RUN,r=B.5.6.1.C,a=HP-UX_B.11.00_32/64,v=HP for HP-UX PA
Perl5.PERL-RUN,r=D.5.6.1.B,a=HP-UX_B.11.20_32/64,v=HP for HP-UX IPF

This software can be downloaded for free at the following URL:

http://www.software.hp.com/cgi-bin/swdepot_parser.cgi/cgi/displayProductInfo.pl?productNumber=PERL

Installation procedure is described at this same address.

Patch Files

Full Delivery

2.2 HP Opencall SDK Features and Behaviors

2.2.1 Features

- All OA&M APIs (except MTP2); Application Message Dispatcher (AMD) for the TCAP layer; Application Guardian (on HP-UX PA).
- MTP2 simulated (socket stub) with two links between a pair of stacks; GDI simulation forced with local IP address.
- **16 predefined configurations** enabling either end-point or gateway-type applications for ISUP, TUP and TCAP layers (refer to Section 3.2.1).
- The **ss7View** CLI is provided for the HP-UX IPF version, in addition to the Platform Monitor, to monitor the HP OC SS7 stack states (see the man pages for more details).
- **On-line documentation (HTML)**. Also available in PDF format. This includes:
 - *HP Opencall SS7 Technical Guide*, provides a complete presentation of the product on which this software development kit is based.
 - *HP Opencall SS7 Operations Guide*, provides the procedures required to manage and operate the HP Opencall SS7 SDK (for Linux or HP-UX).
 - *HP Opencall SS7 Conformance & Compliance Statements*, provides the list of standards that the HP Opencall SS7 platform is compliant with.
 - *HP Opencall SS7 Application Developer's Guide*, provides guidelines for developing MTP/TCAP/SCCP applications for HP Opencall SS7 platforms.
 - *HP Opencall SS7 ISUP Application Developer's Guide*, provides guidelines for developing ISUP/TUP applications for HP Opencall SS7 platforms.

The documentation is available on-line under `/opt/HP-AIN/SS7/share/doc`. Open `navigate.pdf` with the Adobe Acrobat reader or `navigate.htm` in your Web browser to access it.

- **Technical Assistance**

For all questions relating to:

- product features and capability,
- installation,
- configuration,
- use of the documentation,
- API concepts and usage,

One month's technical assistance (countdown from first question asked) is provided.

- **Services**

- WEB delivery
The customer downloads the software directly from the HP Software Depot (www.software.hp.com).
- Customer installable

Note: HP provides a **HP-UX STK** (Software Transition Kit) which gathers useful information and tools to help you transfer your software and systems from PA platforms to IPF platforms.

Information about the STK can be found at the following address: <http://devresource.hp.com/STK/>

2.2.2 Supported Hardware

Supported Hardware Configuration

- Simplex
- A BE/FE environment is available to allow the developer to test from the HP-UX IPF platform the interoperability of their application with an HP-UX Front-End running with SS7 Hardware (PA only so far).
BE-FE configuration:
 - *BE is SDK HP-UX on IPF*
 - *FE is HP-UX on PA*
 - *Simplex only (FE and BE)*
- No SS7 Hardware required

OS version

- HP-UX 11.0 for PA Architecture
- HP-UX 11.i v 1.5 for IPF Architecture

Supported Servers

- Servers for PA
 - rp8400
 - A400/A500
 - rp7400 (formerly N4000)
 - rp5400/5450/5470 (formerly L1000/L2000/L3000)
- Workstations for PA
 - B2000/B2600
- Server for IPF
 - rx4610 (2-4 ways)
- Workstation for IPF
 - I2000 (1-2 ways)

2.2.3 Supported Protocol

Includes all HP Opencall SS7 APIs for the following protocols:

- TCAP/SCCP/MTP —supports ANSI, ITU-T standards; supports General Data Interface (GDI) (TCAP over IP), TTC.
- ISUP support for major international standards —ANSI 95 & ANSI 96; ITU-T 88,93,97; ETSI V2; Japanese TTC2; support for national variants of international ISUP standards; TUP

2.2.4 Supported Configuration

MTP level

- 1 linkset/2 links per linkset

- 1 DPC

SCCP/TCAP level

- Up to 2048 GTs
- Preferred/Next Preferred feature (10 DPC per GT) in ANSI
Primary/Secondary (2 DPCs per GT) in ITU
- Up to 32 TCAP connections
- TCAP Application Message Dispatcher

ISUP level

- 1 LPC
- 1 DPC
- Up to 4096 circuits per DPC depending on the ITU version
Up to 16384 circuits per DPC depending on the ANSI version
- 1 ISUP application per stack

GDI protocol

- 1 stack client and 1 stack server

2.2.5 Application Framework

- Source compatible with HP Opencall SS7 2.2 and 3.x releases
- Support of shared libraries (*no archive libraries*)
- Support of thread level 1B (*no DCE threads*)
- Support of 'cc' and 'aCC' compilers (*no cfront*)

2.2.6 Application Guardian

This feature allows user applications to use the hp Opencall SS7 HA framework. The Fault Tolerant Controller (FTC) controls the high availability of the plug-in (up to 4 plug-ins on the same platform) process via periodic heartbeat exchanges. This feature presented in the “*HP Opencall SS7 Application Developer’s Guide*” is available on the HP Opencall SS7 SDK for HP-UX PA.

2.2.7 ISUP Dynamic Configuration

ISUP Dynamic configuration provided on with the HP Opencall SS7 SDK does not allow saving the newly updated ISUP configuration. Thus, when the ISUP application is restarted, the new configuration will not be taken into account. For more information about this feature, please refer to the “*ISUP Application Developer’s Guide*”.

3 Compatibility Information and Installation Requirements

3.1 Installation Procedure

3.1.1 Prerequisites

If another HP Opencall SS7 product is already installed, you must first remove it. To do this:

- step 1** Log in as root.
- step 2** Start the `swremove` utility on the host by typing: `/usr/sbin/swremove&`
- step 3** Select all the SS7 core and patch-related packages that form part of the previous HP Opencall SS7 baseline.
- step 4** Start the Remove action.
- step 5** Exit `swremove`
- step 6** Remove the directories from the host by typing:

```
rm -rf /opt/HP-AIN
rm -rf /etc/opt/HP-AIN
rm -rf /var/opt/HP-AIN
rm -rf /var/tmp/HP-AIN
```

3.1.2 Overall Procedure

- step 1** Log in as root
- step 2** Install HP-UX package (HP-UX 11.0 on PA Risc only)
- step 3** Download and install the Perl Package
- step 4** Install the HP OC SS7 packages.

3.1.3 HP-UX Patch Installation (HP-UX 11.0 on PA Risc only)

NOTE: The PHSS_24303 patch is required on HP-UX 11.0. You can download it from www.itrc.com

- step 1** Start the `swinstall` utility on the host by typing: `/usr/sbin/swinstall &`
- step 2** Select the HP-UX patch: PHSS_24303 in the local software depot you have downloaded it from.
- step 3** Start the `install` action

3.1.4 Perl Package Installation

- step 1** Download and install the Perl package: refer to “Additional software” in section 2.1 [“Package Description”](#).

3.1.5 HP OC SS7 SDK Installation

To install the baseline package:

- step 1** Start the `swinstall` utility on the host by typing: `/usr/sbin/swinstall &`
- step 2** Select the source depot directory: `/SD_CDROM` or the local software depot from where you have downloaded the HP OC SS7 SDK
- step 3** Select the HP Opencall SS7 SDK for HP-UX bundle (J7117A)
- step 4** Start the `install` action

3.1.6 Removal

Note: All "ss7admin" connections must be closed before removing the HP OC SS7 SDK for HP-UX.

To remove the baseline package:

- step 5** Log in as root.
- step 6** Start the `swremove` utility on the host by typing: `/usr/sbin/swremove&`
- step 7** Select the packages that form the HP OC SS7 SDK for HP-UX baseline packages
- step 8** Start the Remove action.
- step 9** Exit `swremove`.
- step 10** Perform the same action to remove the documentation package.

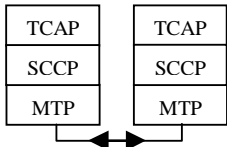
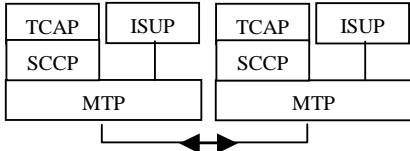
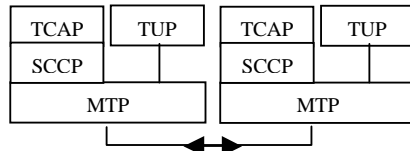
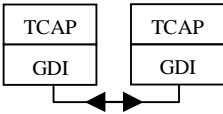
3.2 Configuration

The HP Opencall SS7 SDK includes a test environment, which provides communication between two HP Opencall SS7 stacks, making application testing easier. Up to 16 predefined configurations are provided, enabling either end-point or gateway-type applications for ISUP, TUP and TCAP layers.

3.2.1 Default Configurations

By default, after the HP Opencall SDK installation, the platform configuration “1” (Platform_1) is installed and is ready to run. This configuration supports two pairs of stacks, where each pair conforms to one of two standards (ANSI 96 and ITU-T 92). Other configurations are also saved and can be installed using *cfgInstall*.

A list of the available configurations is given below:

Platform Topologies	Platform Id	Description
	Platform_2	Pair of ANSI 96 stacks (AAA)
	Platform_3	Pair of ITU-T 92 stacks (WBB)
	Platform_8	Pair of ANSI-96 stacks with Application Message Dispatcher feature
	Platform_9	Pair of ITU-92 stacks with Application Message Dispatcher feature
	Platform_10	Pair of ISUP ANSI stacks with message set IsupA95 with CIC from 0 to 16383, bi-directional
	Platform_11	Pair of ISUP ITU stacks with message set IsupI97 with CIC from 0 to 4095, bi-directional
	Platform_12	Pair of ISUP TTC stacks with message set TTC3 with CIC from 0 to 4095, bi-directional
	Platform_16	Pair of TUP Chinese stacks (no MsgSet option) with CIC from 0 to 4095, bi-directional
	Platform_4	Pair of ANSI 96 stacks (AAA) on GDI layer
	Platform_5	Pair of ITU-T 92 stacks (WBB) on GDI layer

Gateway Configurations

	Platform_1	Pair of ANSI 96 stacks (AAA) plus Pair of ITU-92 stacks (WBB)
	Platform_6	Pair of ANSI 96 stacks (AAA) on GDI layer, plus Pair of ANSI 96 stacks
	Platform_7	Pair of ITU-92 stacks (WBB) on GDI layer plus Pair of ITU-92 stacks (WBB)
	Platform_13	Pair of ISUP ANSI stacks with message set IsupA95 (CIC from 0 to 16383, bi-directional), plus Pair of ISUP ITU-T stacks with message set IsupI97 (CIC from 0 to 4095, bi-directional)
	Platform_14	Pair of ISUP ITU-T stacks with message set IsupI97 (CIC from 0 to 4095, bidirectional), plus Pair of ISUP TTC stacks with message set TTC3 (CIC from 0 to 4095, bi-directional)
	Platform_15	Pair of ISUP ITU-T stacks with message set IsupI97 (CIC from 0 to 4095, bi-directional), plus Pair of ITU-T 92 stacks

3.2.2 HP Opencall SS7 SDK on HP-UX Configuration Procedure

To select another configuration

EITHER:

- step 1** Run SAM as `ss7admin` or `root`
- step 2** Select the HP Opencall SS7 Platform Configuration icon
- step 3** Select one of the proposed configurations (state: `SAVED`)
- step 4** Install it by selecting "Install" from the "Actions" menu

OR:

- step 1** Choose a platform configuration from the above table and note the platform Id.
- step 2** Log in as `ss7admin` on the HP-UX system.
- step 3** Install the chosen configuration by running:
`cfgInstall -from /var/opt/HP-AIN/working_config/Platform_<id>`
(For more information, refer to the `cfgInstall` man page)

3.2.3 Activating SNMP traps

SNMP traps can be activated in the running configuration .

- step 1** Log in as `root`.
- step 2** Stop the platform: `ss7Stop -all`
- step 3** Start SAM then, their "*HP OC SS7 Platform Configuration*"
- step 4** Select the "*RUNNING*" configuration
- step 5** In the *action* menu, select *View/Modify*, then *Fault Tolerant Processes*
- step 6** Select *Process Name* to get the available process list
- step 7** Select the `ss7SNMPAgent` process (do not change the default parameters)
- step 8** Click on *Add* button
- step 9** Close SAM
- step 10** Restart the platform: `ss7Start`

4 Software Availability in Native Languages

The Native Language Support for the hp Opencall SS7 software product is as follows:

- The software is available only in English.
- The hp Opencall SS7 documentation set is available only in English.