

OpenSS7 SoftSwitch Complex High-Level Design

OpenSS7 SoftSwitch Complex

High-Level Design

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Abstract:

This document provides a High-Level Design for the OpenSS7 SoftSwitch Complex.

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The OpenSS7 Project <<http://www.openss7.org/>>

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Executive Overview

This document provides a High-Level Design for the OpenSS7 SoftSwitch Complex. The initial and primary purposes of this equipment is to provide a scalable, carrier-grade platform for providing New Generation Voice services for the PSTN and VoIP networks. The purpose is both one of providing traditional PSTN switching capabilities as well as providing VoIP interfaces for new generation customers.

The OpenSS7 Project

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The OpenSS7 SoftSwitch Complex

OpenSS7 can provide SoftSwitch COmplex capabilities in a collection of high-performance, low-cost, small-footprint platforms leveraging the GNU/Linux operating system distributions and tools, and utilizing low-cost commodity, or high-quality standardized hardware.

For details on platform applications, see [Chapter 2 \[Application Architecture\]](#), page 7, [Chapter 3 \[Network Architecture\]](#), page 9, [\(undefined\) \[\(undefined\)\]](#), page [\(undefined\)](#), and [\(undefined\) \[\(undefined\)\]](#), page [\(undefined\)](#).

Open Source Software

The OpenSS7 Project leverages the widespread use of GNU/Linux operation systems, distributions, and FSF tools such as ‘`autoconf`’ and *RPM*. For example, this document was formatted for PDF, HTML, info and plain text using the GNU *texinfo* system, ‘`autoconf`’, and the \TeX formatting system.

The open source model avoids proprietary lock-in and permits in-house or outsourced development. All source code is available for use and modification by the end customer. All build tools, documentation and associated resources are generally available. The availability of the source code and complete documentation eases problem resolution and can offer upgrades and fixes even in advance of client problem reports.

For details on software solutions, see [Chapter 7 \[Protocol Architecture\]](#), page 17, [Chapter 8 \[Software Architecture\]](#), page 19, [\(undefined\) \[\(undefined\)\]](#), page [\(undefined\)](#), and [\(undefined\) \[\(undefined\)\]](#), page [\(undefined\)](#).

Commodity Hardware

By best utilizing commodity PC, hardened server, or standardized CompactPCI hardware, OpenSS7 makes available the highest performance platforms available on the market at back-to-school prices. When carrier-grade and large scale is not essential, 3GHz Pentium class servers in hardened rack mount chassis can be used at a fraction of the cost, and yet outperform, other solutions. Where carrier-grade is necessary, embedded Linux on standardized PICMG 2.16 NEBS compliant chassis make for a higher cost, but more reliable alternative.

For details on hardware solutions, see [Chapter 5 \[Platform Architecture\]](#), page 13, [Chapter 6 \[Hardware Architecture\]](#), page 15 and [\(undefined\) \[\(undefined\)\]](#), page [\(undefined\)](#).

Operations Support

Operational support is provided using the most widespread operational support protocols (SNMP, CMOT, TMN) available today. All systems can be managed, monitored and administered using management protocols. Because OpenSS7 components were engineered with management in mind, no mediation devices are necessary and fully native element management system agents are provided. By leveraging open source network management system tools such as OpenNMS, and the provided SNMP applications, complete management solutions are easy to adopt and integrate with existing systems.

For details on operational support, see [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#) and [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#).

Rapid Development

The OpenSS7 Project has already developed protocol components completing the SS7 and SIGTRAN signalling stacks, including MTP Level 2 and Level 3, ISUP, SCCP, TCAP; and SCTP, M2PA, M2UA, M3UA, SUA and TUA. Development of a carrier-grade Softswitch Complex to meet initial deployment requirements needs on the development of some intermediate and auxiliary modules.

For details on scheduling, see [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#).

An Evolving Solution

The OpenSS7 Project is evolving to support more protocol stacks including ISDN and VoIP. Support for an ever expanding capability is demonstrated by the additional options available as described in [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#), [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#), [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#), [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#), [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#), [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#), and [\[\[undefined\]\(#\)\]](#), page [\[\[undefined\]\(#\)\]](#).

Conclusions

In summary, an OpenSS7 Softswitch Complex is an excellent application of the OpenSS7 SS7 and VoIP stacks and can be provided at an affordable price on short term time-lines, while offering an evolution path for future deployment applications.

Brian Bidulock
The OpenSS7 Project

Preface

1 Introduction

2 Application Architecture

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4 System Architecture

5 Platform Architecture

6 Hardware Architecture

7 Protocol Architecture

8 Software Architecture

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