

Jeffrey Rhodes

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Fifteen years as a systems and core network engineer specifying wireless standards, software requirements and test plans for SS7 and IP applications. Seven years as a technology developer for wireless carriers with expert knowledge of E911 Phase 2 design and node testing. An innovator with initiative available for 1099 contracting and will consider full-time hire in Denver area. Best fit is with defining requirements, standards creation and testing intersystem operations for 3G international multimedia with SIP-based VoIP, 802.16e emerging networks and municipal Wi-Fi/Wi-Max buildouts.

“Stealth Mode”

January 2005 – Present

Inventor

San Diego, California – Denver, Colorado

- Develop and partner under non-disclosure an end-to-end cryptographic key distribution method with node-to-node cross layer feedback enhancements. Study IP packet security and message integrity in Microsoft Research's MSDN mesh connectivity layer 2.5 (MCL source), Linux 2.6 kernel's OpenSSL "crypto" library and GnuPG, to build sample code that demonstrates a new encrypted key distribution between nodes.
- VoIP E911, Wireless and Multimedia Consultant available for location-based routing to PSAPs, CDMA and GSM IP core network technology, messaging and multimedia implementation.
- Specify bridging protocols for First Responders' mesh networks and IP-capable PSAPs.

Wireless Services Corporation (WSC)

May 2004 – November 2004

Consultant

Bellevue, Washington

- Analyzed and re-defined the High Level Design (HLD) document for the off-shore software development of an LNP-capable, cross technology (CDMA, TDMA and GSM) SS7/IP-based SMSC that supports text, over the air programming and MMSC operations. Set course for an MDN-based HLD to include additional, private SMPP TLV parameters, to make crucial SS7 protocol parameters visible to WSC's SMPP gateway.
- Helped refine the data structures for LERG line ranges and carrier's LRNs, so that WSC's carriers can offer their existing users a choice of handset technologies. Influenced control logic to use these data structures and implemented an "intelligent retry", cross technology discovery method for SMS delivery via SS7.
- Wrote test requirements for TDMA, CDMA, and GSM mobile origination (MO) and mobile termination (MT), including GTT Translation Type 10 (TTN10) for bi-directional GSM and TTN12 for ANSI MO.
- Co-conceived a TCAP Point Code Emulator (PCE) network address translation (NAT) function for SS7 vendor to allow multiple private (WSC) network SS7 point codes to appear to the public network as a single SS7 point code. Ensured PCE functionality did not interfere with GTT routing.
- Wrote the STP Migration Plan to guide the intermediate objectives to move live production SS7 traffic from one WSC STP pair to a new WSC STP pair, in an Active/Active redundant configuration for MO and MT.

TeleCommunication Systems (TCS)

September 2000 – January 2004

Systems Design Engineer

Seattle, Washington

- US Patent Number 6,922,565 "PSAP selection for E911 wireless carriers in a GSM type system" (July 2005).
- Active standards contributor and final reviewer of TIA 45.2 and 3GPP2 Wireless Location Services as defined in TIA-881 (PN4747) from early 2001 until completion late 2003.
- Systems Design Engineer and architect for wireless E911 Phase 2 Service Bureau software development, to locate a caller's geo-position, for delivery to E911 dispatchers (2001-2002).
- One of three key software developers to provide pre-sales system engineering support for SS7/IP-based wireless E911 emergency services within ANSI and GSM carrier networks.
- Wrote five test plans and conducted interoperability lab testing for the E911 Service Bureau software at four MSC vendors' test labs, conducted certification and compatibility testing with a large wireless carrier's ANSI and GSM MSC technology labs (2003).
- Primary customer technical contact for customizing Mobile Position Center (MPC) functionality to compensate for other deficiencies in a wireless carrier's network, e.g. ESN to MPCAP assignment to optimize CDMA's IS-801 PDE processing (2002), GSM J-STD-036 with MSC ISUP loop-back trunks for ESRV management by the GMLC (patent application 2002), E2/E2+ steering (2000), "E5+ for GSM" and "PDE throttling" (2003).
- Debugged third party's TCAP and SS7 stack for use with location services software development using MGTS.
- Provided internal support and consulting to the operations staff for SS7/SIGTRAN global title translation.

Powerhouse Technology

January 2000 – September 2000

Senior Consultant

Seattle, Washington

- Wrote whitepapers for a GSM carrier's "Gateway MSC Migration Strategy" that included optimized routing of mobile-to-mobile voice calls using IP-only VoIP, transcoder free operation.
- Wrote "Presence Manager" whitepaper for Xypoint (now TCS) - a summary of ANSI-41 Rev D MSC capabilities that apply to location detection strategies circa 2000.

AWS Aviation – Claircom Division

January 1997 – November 1999

Senior Systems Engineer – Computer/Telephony Integration

Seattle, Washington

- Named as the sole inventor on six patent applications with parent company AT&T.
- Co-designer of a new packet data call type that uses proprietary half-rate TDMA data air links to ground stations that are indirectly connected by TCP/IP back to a centralized Solaris platform (using DLPI for incoming packet detection and raw socket for packet responses), where NAT-like threads spawn to become bi-directional proxies between the aircrafts' IP applications and the Internet.
- Primary editor for an internal "System Interface Design Specification" to detail Claircom's ISDN layers 2 and 3 for a proprietary loop-back PRI, including call setup, intersystem polling and events reporting via Q.931 messages. This was a critical component to expand Claircom's product line.

AT&T Wireless (McCaw Cellular)

August 1993 – January 1997

Member of Technical Team

Kirkland, Washington

- Authored design specification for AWS multi-vendor Calling Number ID product to coordinate the integration of handset display, ANSI-41 MSCs and ISUP as deployed by landline carriers (1995).
- Prepared patent applications related to ANSI-136 Rev A standards and wrote the AWS Caller Name Feature Specification for SS7 network and handset vendors (1996).
- Internal champion for systems lab evolution to preview MSC and HLR software upgrades.
- Managed system lab administrators responsible for STP routing, global title translation, HLR subscriber records, switch dialing plans and lab scheduling for duplex/simplex configurations (1996).
- Provided technical lead for the AT&T (now Lucent) switch vendor's database conversion to support Equal Access IXC routing and billing systems in accordance with McCaw Cellular's Consent Decree with the FCC that allowed AT&T to complete its merger with McCaw Cellular (September 1994).

US West NewVector Group (now Verizon Wireless)

November 1990 – August 1993

Systems Engineer

Bellevue, Washington

- Performed STP integration for ANSI-41 and migrated intersystem data links during internal network MSC change-out from Nortel X.25 to Motorola SS7.
- Created design specification and field integration for custom Motorola EMX to Ericsson AXE using INET protocol converter to thwart tumbling ESNs with new fraud control and roaming features prior to industry standardization on ANSI-41 authentication.
- Founding member and contributor to the CTIA's "Seamless Network Working Group" and TIA's ANSI-41 Rev B wireless mobility standards group (1991-1992).
- Intelligent Network engineering consultant for US West International and US West partners to prepare their consortium's bid for Germany's third GSM license (1992).

AT&T Bell Laboratories (now Lucent Technologies)

August 1983 – May 1990

System Test

Naperville, Illinois

- Led software development for protocol interworking function used on 5ESS International signaling systems R2, C5, SS6, and SS7 - the first use of multi-lab testing.
- Performed the First Office Application (FOA) final field test of Taiwan's first-ever SS7 voice network (1987); development system test lead for ISDN 1B+D Toll Operator Language Assist in gateway office (1988).
- Initiated design review task force to link centralized automatic call barring for all 5ESS common channel signaling systems with centralized congestion control, into the 5E5 domestic generic and the 5EE4 international release. This expanded the 5ESS ISUP message set to include congestion messages and strategies that lessens the 5ESS processor load and protects from overload (1986).
- Key role in final acceptance testing of 5EE3 and Intelligent Peripherals with British Telecom (BT) for the UK's Derived Digital Services Network (DDSN) FreePhone launch (1989).
- Conceived and developed live software update procedures used by BT to distribute 5ESS International ITU ISUP and TCAP databases from a single switch module to multiple switch modules in the same 5ESS, thus tripling the maximum possible number of SS7 links supported by a single switch (1990).

Education

B.S.E.E.	Technology	DeVry Institute of Technology	Chicago, Illinois
B.A.	Economics/Mathematics	University of Illinois	Champaign, Illinois

Patents and Publications

US Patent Number 6,922,565 “Public safety access point (PSAP) selection for E911 wireless callers in a GSM type system” July 26, 2005

QUALITY CONTROL notation in William Stalling's "Data & Computer Communications", Sixth Edition, copyright 2000 to acknowledge a proof review for a chapter on X.25

“Mis-matched Graphics Modes” in Color Computer Magazine, February 1984

Public Key Information

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