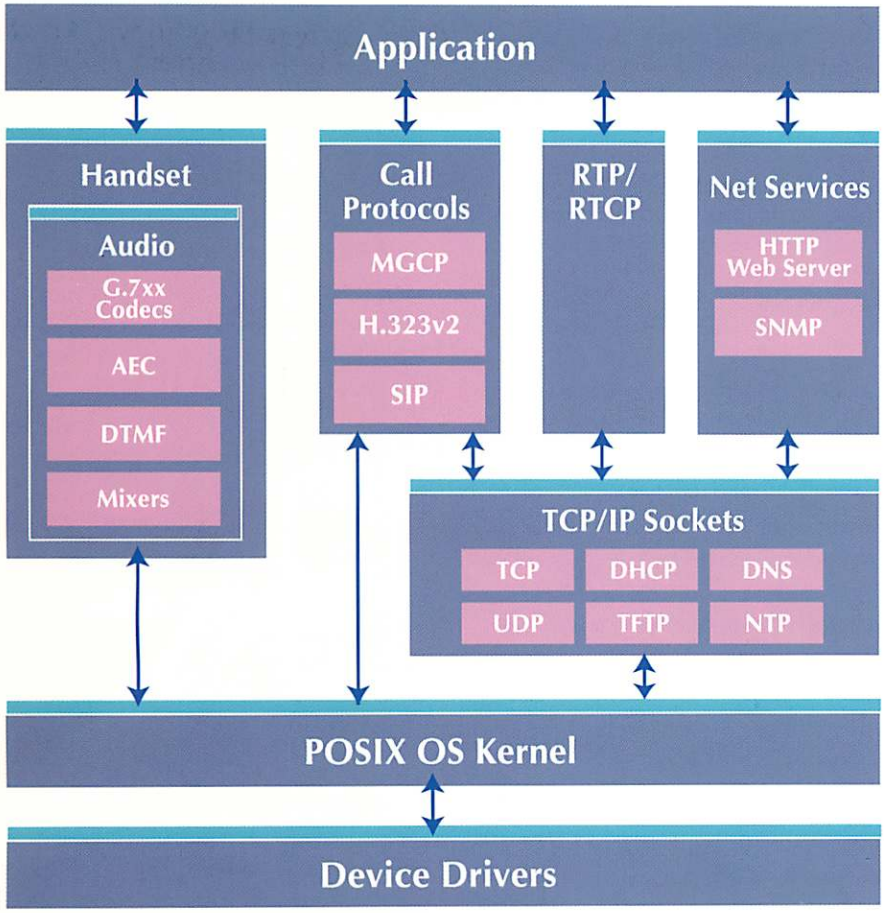
Veracity VoIP Software Stacks



Veracity VoIP Software Stacks

Netergy Networks' Veracity Voice over IP (VoIP) Software Stacks provide a complete package of VoIP software for terminal and network applications.

Unlike other VoIP software stacks, the Veracity Software Stacks include not only VoIP call control protocols but also an embedded operating system, standard network protocols and a complete suite of audio functions. Developers can get all of the VoIP functions they need from one source with the confidence that they work together seamlessly. The Stacks are implemented in 100% ANSI C and use open, industry-standard APIs, enabling programmers to quickly develop and easily maintain VoIP applications either from scratch or in combination with existing code.

The Veracity Software Stacks provide all of the standard Call Control Protocols deployed in VoIP networks today - H.323v2, MGCP and SIP. As VoIP networks evolve from H.323v2 to MGCP and SIP, the Veracity Stack's Common Call Control API ensures that Veracity-based products can be quickly adapted to run on these networks. The API uses the same common core Call Control functions across H.323v2, MGCP and SIP.

Netergy Networks has done extensive interoperability testing of the Veracity Stacks at industry test events, in partners' test labs and in field deployments. Robust interoperation has been achieved with over 50 devices using H.323v2, MGCP or SIP making the Veracity Stacks the most interoperable in the industry.

Summary

- Complete package of VoIP software for terminal and network applications
- Single-source for all protocols, OS, Network and Audio
- 100% ANSI C, open, industry-standard APIs
- H.323v2, MGCP and SIP with Common Call Control API
- Structured and modular with consistent coding style
- Very low memory requirement (code & data)
- Proven H.323v2, MGCP and SIP interoperability

H.323v2 Protocol

- ITU H.323 version 2 compliant
- H.245 version 3
- H.225 version 2
- RAS
- Fast Start
- H.245 tunneling
- Gatekeeper-routed or non-gatekeeper-routed calls
- Extremely flexible dial plan options
- Caller ID through Q.931 messages
- In-call DTMF signaling through H.225 KeypadIE

MGCP

- MGCP version 0.1 PacketCable profile NCS 1.0

SIP

- IETF RFC2543

POSIX OS

- Netergy Networks OS using industry standard POSIX interface
- Multiple Threads
- FIFO or round-robin scheduling
- Semaphores
- Mutexes
- Condition Variables
- Message Queues
- Timers/Signals
- UNIX Device Driver Model

Audio

- G.711, G.722, G.723.1, G.726, G.728, G.729A/B, G.729E
- G.165/ G.168. AEC, AGC, LEC
- DTMF detection/generation
- FAX/Modem tone detection
- N-way mixing capability
- Comfort noise generation
- Voice activity detection
- Caller ID generation (FSK or DTMF)

Network

- HTTP, RTP, RTCP, TFTP, TCP, UDP, DHCP, DNS, ICMP, NTP, IGMPv2, SNMP

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H.323v2 profiles

The Veracity Software Stacks can provide two H.323 profiles, one for full-featured generic H.323 devices, the other focussed on high-integration SETs (Simple Endpoint Terminals in the ITU's H.323 Annex F). Both are H.323v2 compliant and include Fast Start and H.245 tunneling which reduce call set-up time and provide more simple messaging. They require an H.323 Gatekeeper to be present in the network, calls can be either gatekeeper-routed or non-gatekeeper-routed. The generic version includes H.245 signaling, the SET version does not.

TCP/IP

The Veracity stack includes an implementation of TCP/IP with a standard BSD Sockets interface. This features:

- TCP and UDP, reliable and unreliable packet transfer
- Fixed IP address or dynamically using DHCP
- Reference to network entities by name using DNS as well as by IP address
- TFTP for file transfer to the VoIP device, typically used for in-field software update
- ICMP "ping" support
- Time of day determination using NTP
- Multicast support using IGMPv2

Net services

The Veracity Stack provides the following network services which use the TCP/IP stack:

- HTTP server - this is an embedded Web server which is typically used for configuration of VoIP devices. The Web server can source or sink information from/to the VoIP device, using either local Web pages or HTTP messages from an external Web server.
- SNMP version 2 client provides network management of the VoIP device. The Veracity stack includes a tool which assists developers in implementing their own MIB into their VoIP device.

Interoperability

Netergy Networks tests the Veracity Stacks at ITU H.323, PacketCable MGCP & Pulver.com SIP interoperability events and carries out ongoing interoperability testing with industry leaders' equipment. As part of its Developer Support Program, Netergy Networks can also test with specific equipment over the Internet.

H.323 v2 - Robust interoperation with over 30 endpoints, gatekeepers and gateways

MGCP NCS 1.0 - Robust interoperation with over 10 terminals and call agents

SIP (RFC) - Robust interoperation with over 10 terminals and call agents

Prospective customers may purchase Netergy Networks' Symphony telephone gateway test vehicle to perform their own lab testing of Netergy Networks' stacks - MGCP and H.323v2 versions are available.

Operating System

The Veracity Stacks are written to run under operating systems using the industry standard POSIX specification. These include LINUX and Sun Microsystems' SOLARIS.

For embedded applications Veracity is supplied with Netergy Networks' own compact, embedded POSIX OS which runs on its Audacity-T2 chip and can be ported to other platforms. This is multi-threaded, has comprehensive inter-thread communications and uses the UNIX device driver model. It includes a FLASH-memory file system and C library.

To use Veracity Stacks with non-POSIX operating systems a translation layer can be implemented to interface between POSIX and non-POSIX. This technique has been used to enable Veracity Stacks to run on VxWorks and can be used for similar operating systems.

Audio Libraries

The Veracity Stacks include a comprehensive library of ITU vocoders along with a supporting Audio Services library. The vocoder library provides high-quality, compact implementations of the ITU G.711, G.722, G.723.1, G.726, G.728 and G.729 vocoders. The Audio Services library provides support functions required for switched telephony signaling in both terminal and network applications. The Audio Services library has been implemented with great flexibility, allowing in-field configuration of national variations in features such as call progress tones and caller ID signaling.

The vocoders and Audio Services can be multiply instantiated up to the maximum MIPS available from the target platform. Both are available either as 100% ANSI C source or optimised to run on Netergy Networks Audacity-T2 VoIP processor.