SURF

Your Bridge to Multimedia Processing

iPBX (IP-PBX) Application Note

Enabling next-generation enterprise communications

Target Applications

- » Video Ringback
- » Video Mail
- » Training
- » Organizational Portal
- » Mobile Video
- » Ego-Casting
- » Desktop Client
- » Conferencing
- » Call Center
- » Back-Office Integration
- » Video Portal
- » Video Blog
- » Sports
- » infotainment
- » Gaming
- » Dating
- » Avatars
- » Adult Content
- » More...

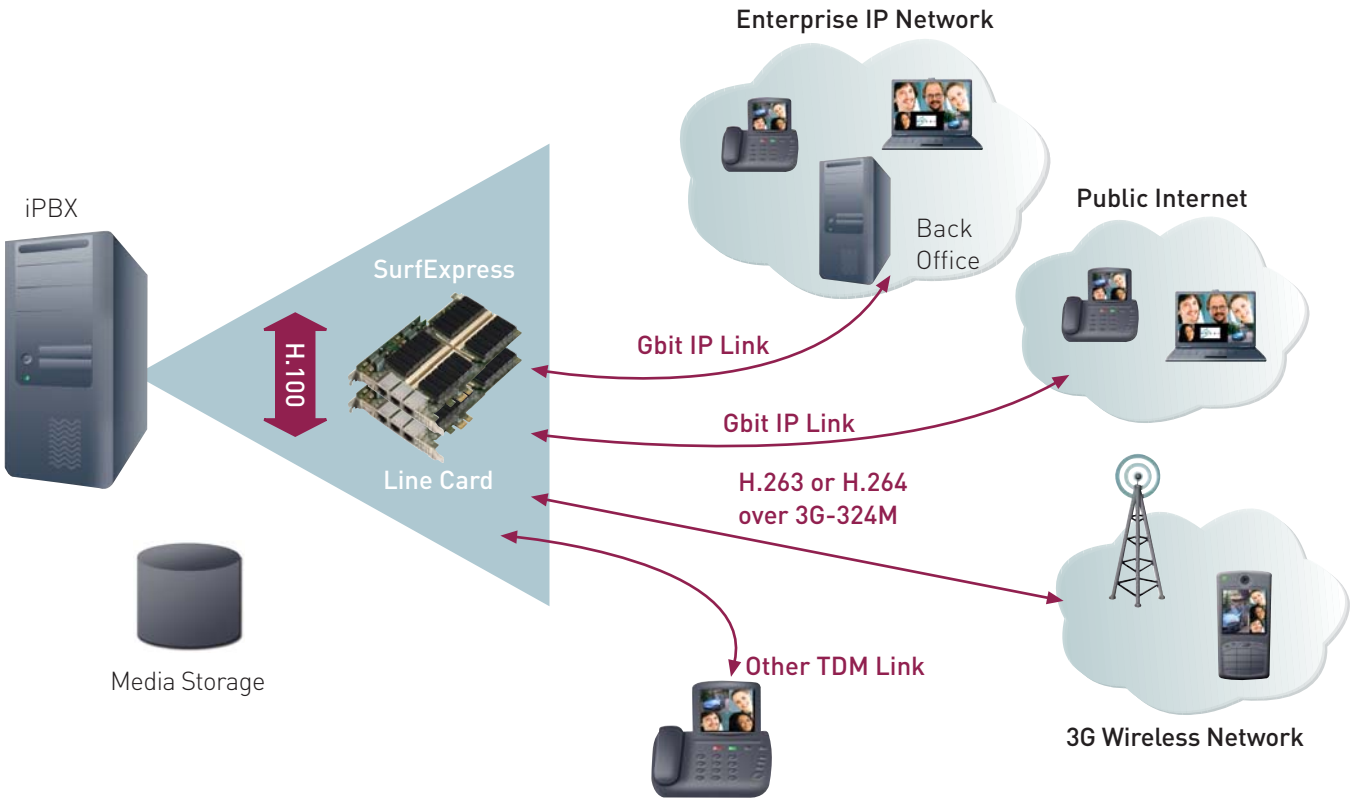
Application Overview

Private branch exchange (PBX) systems connect enterprises and the public switched telephone network (PSTN). Initially deployed for cost savings on internal phone calls, PBXs gained popularity as they started offering a wide variety of services unavailable in the operator network such as call forwarding, extension dialing, auto dialing and call waiting, among many others.

Next-generation iPBX (IP-based PBX) systems, which are at the heart of emerging enterprise communications, enable an extensive range of applications and services including: voice and video conferencing; video-enabled IVR (IVVR); contact centers; organizational portals; voice and video messaging; fax services; and back-office integration.

iPBX systems are introducing a new set of capabilities to leverage IP capabilities and enhance productivity. The goal is easier and enriched communications while keeping costs at a minimum. iPBX systems now require multimedia communications, multiple network bridges and support for a variety of user terminals (3G, IP, PSTN), as well as back-office integration for easier access and management. In 2006, iPBX line shipments exceeded those of traditional PBX systems for the first time (source: 3COM). With the worldwide enterprise iPBX equipment market forecasted at $9.4B in 2008, and with expected annual growth exceeding 20%, iPBX represents a huge opportunity for telecom equipment manufacturers (source: WinterGreen Research 2006).

Enterprise-Grade iPBX Network Diagram



Surf's Solutions

The SurfExpress/PCIe™ is a DSP resource board that serves as a common platform for enterprise-grade voice, video and data processing. This single-platform approach results in reduced development lifecycles, lower R&D costs, and faster time to market. The board's unique design supports the mixing, matching and adding of DSP pairs, ensuring improved system flexibility and scalability.

Surf offers a variety of DSP-level solutions based on members of Texas Instruments C64x™ DSP generation. Each member of the Surf DSP family includes SurfWare-Media™, a complete media processing solution including voice, video, fax and modem. The SurfWare-Media conversion engines also provides a complete software framework including integrated RTP/RTCP running on the DSP, enabling easy and comprehensive DSP control, monitoring, and diagnostic functions. A Host-DSP interface is provided for Linux and Windows® OS and is supported over Ethernet and HPI/PCI communication paths.

The Surf Advantage

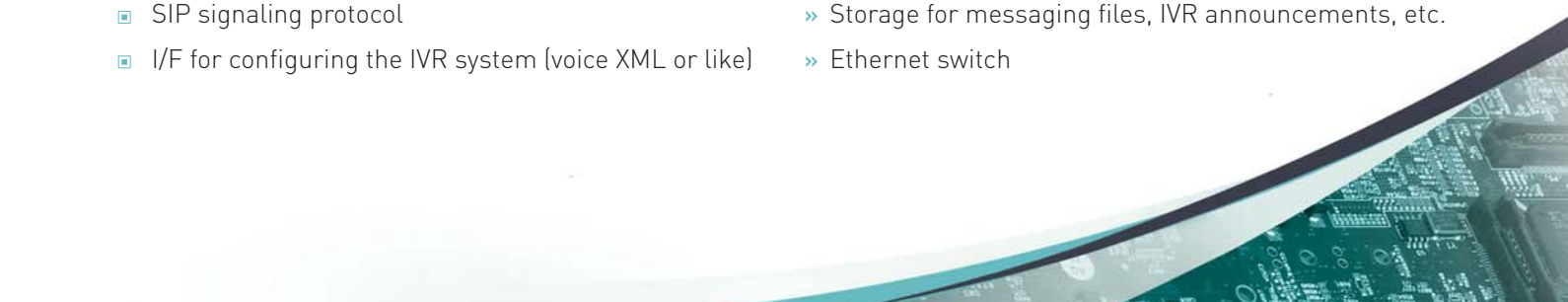
Surf's unique architecture enables the development of a cost-effective, feature-rich iPBX. Highly scalable, the same platform can support low to high densities (8-1,000 ports). The open platform enables seamless integration of telecom equipment manufacturers' proprietary codecs. Surf's PCIe and DSP-level solutions have unique advantages that specifically meet iPBX requirements:

- Upgradeable solution – start with voice and add features as needed
  - video conferencing
  - 3G gateway
  - video messaging
  - video-enabled IVR
- Enhanced manageability – single API and same resources for voice and video
- Bandwidth control – narrow and wideband codecs
- 3-way and N-way voice and video conferencing
  - conferencing bridge
  - ad-hoc conferencing
- Gateway functionality
  - PSTN/IP/mobile bridge (3G-324M)
- DTMF-detection-driven interactive response menu system
- Voice/video messaging
  - support play/record from/to file with transcoding
- Content adaptation to any terminal type over any network type
- Complete control of DSP via IP
  - Operating system is not necessary
  - Customer does not need to write code on DSP
- Fax server
- Backup modem line

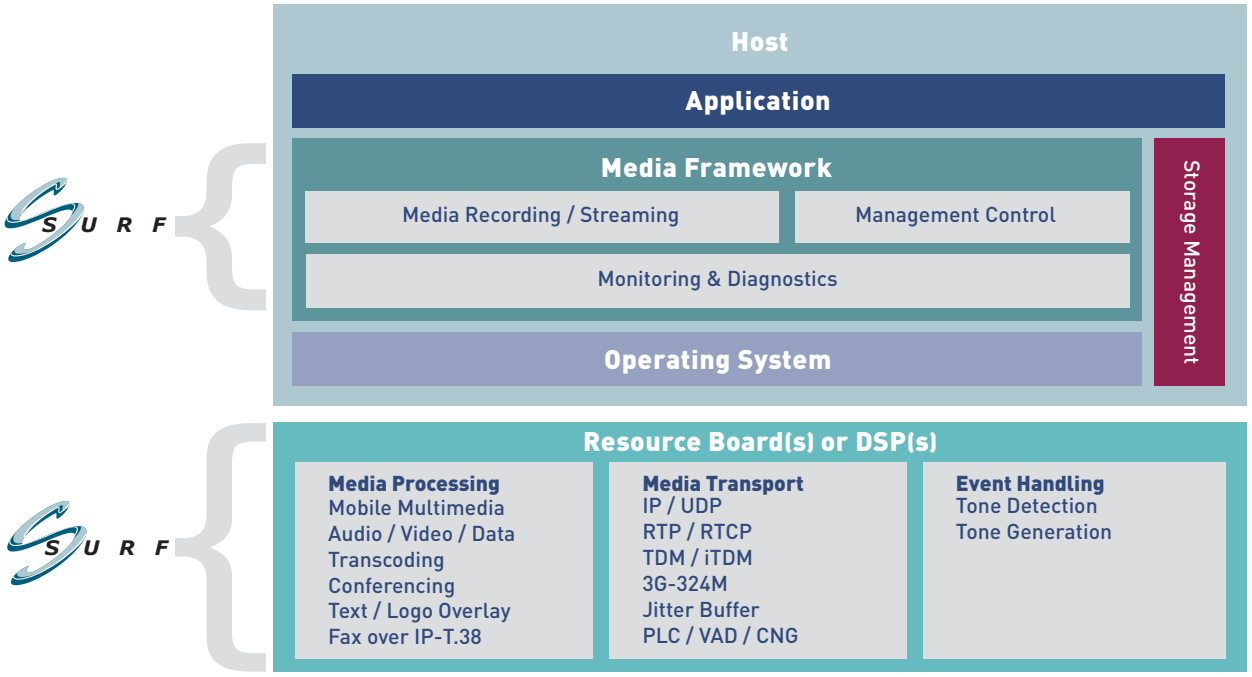
System View

An iPBX system is a self-contained system with an internal host and storage capabilities. A typical iPBX will require the following main modules:

- Control (host) processor
  - iPBX application and control
  - SIP signaling protocol
  - I/F for configuring the IVR system (voice XML or like)
- E1/T1 line cards typically with PRI signaling
- DSP resource board or chip for multimedia processing
- Storage for messaging files, IVR announcements, etc.
- Ethernet switch



Typical iPBX Software Architecture



About SurfExpress/PCIe™ Media Processing Solution

SurfExpress/PCIe is a modular PCI Express form factor DSP resource board for flexible yet heavy-duty enterprise-grade multimedia processing. The board features a highly innovative patent-pending design featuring the SurfDocker™ plug-in, which allows it to carry up to four pairs of DSPs for a total of eight DSPs per board. Providing 2 Gbit Ethernet ports and a CT bus for additional TDM interfaces, SurfExpress/PCIe is designed to meet the requirements of V²oIP enterprise-scale media servers, iPBX, media gateways, 3G-324M video servers, MMSC content adaptation engines, and CTI applications.

About Surf's DSP-Level Media Processing Solutions

The Surf DSP-level family is based on Texas Instruments' C64x™ DSP generation and includes Surf DSP-12/24/82 based on TI's TMS320C6412/24/55/82, respectively. Featuring cost-effective unmatched processing power of varying densities (depending on the DSP model) and Surf's patent-pending Open Framework design, which allows seamless integration of user-defined and proprietary algorithms, each member of the Surf DSP family provides a powerful yet flexible computing environment for developers of telecom infrastructure equipment.

About Surf Communication Solutions

Surf Communication Solutions provides media-processing solutions that enable convergence of voice, video and data across wireline and wireless networks. Surf's solutions are predominantly utilized by media gateway developers, media server developers and IMS equipment manufacturers in the telecommunication infrastructure field to significantly reduce time to market.

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