



# Media Gateway

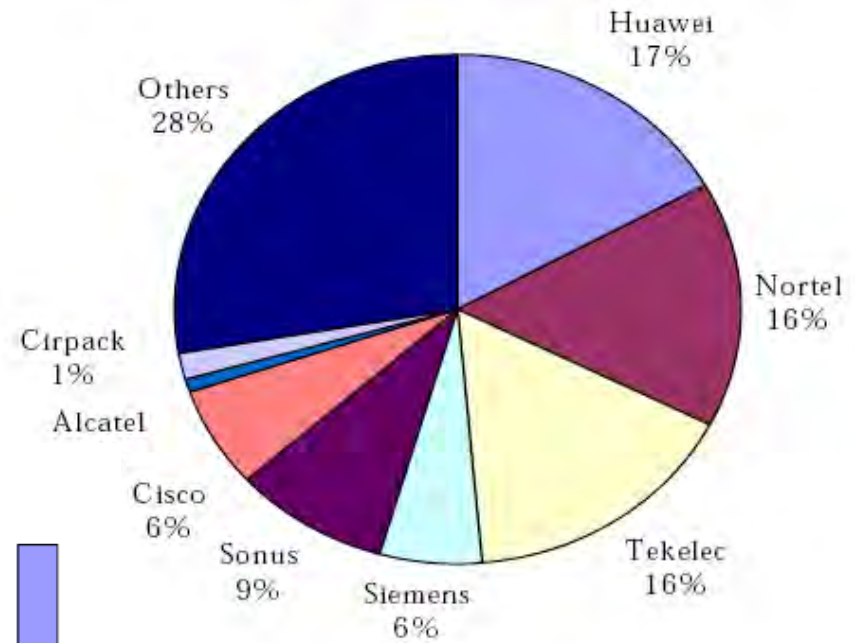
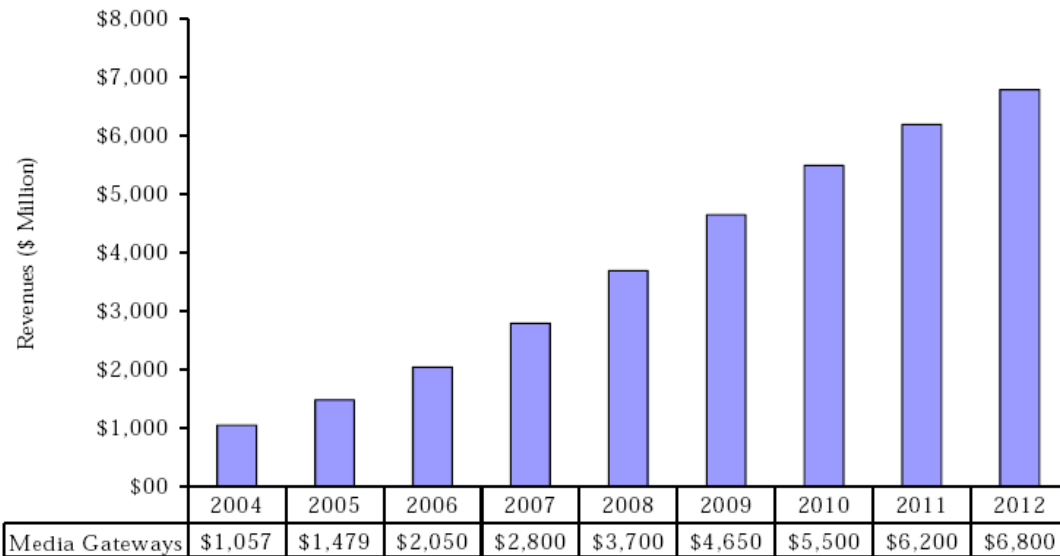
Application Notes

# Media Gateway Development Trends

- » Media gateways are part of the IMS architecture
- » Hardware platforms are shifting from cPCI to ATCA/ $\mu$ TCA
- » Operators require a “Plug & Play” approach
- » i-TDM is defined as a Telephony Bus
- » Number of network types and protocols is increasing

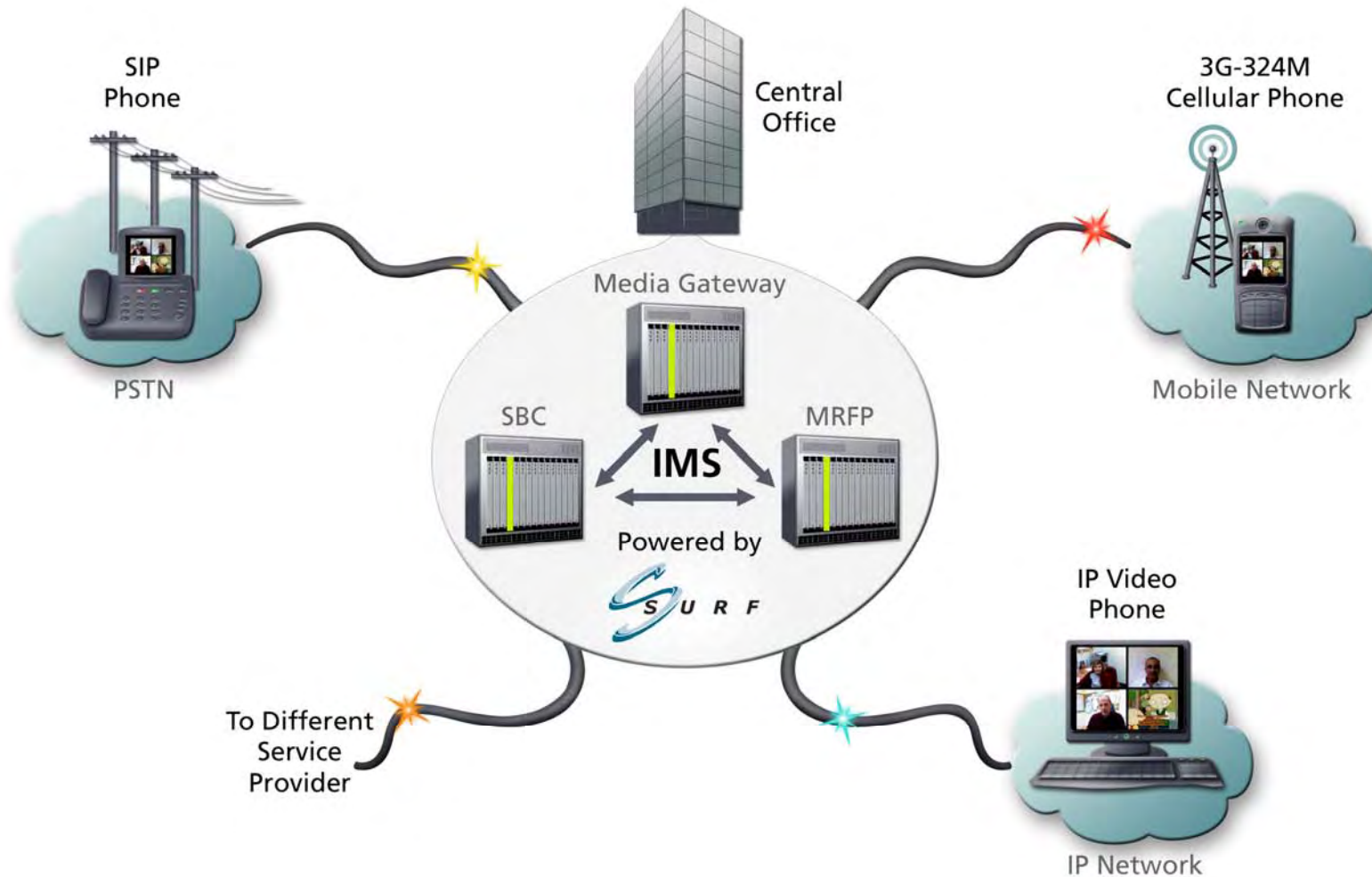


# Market Forecast



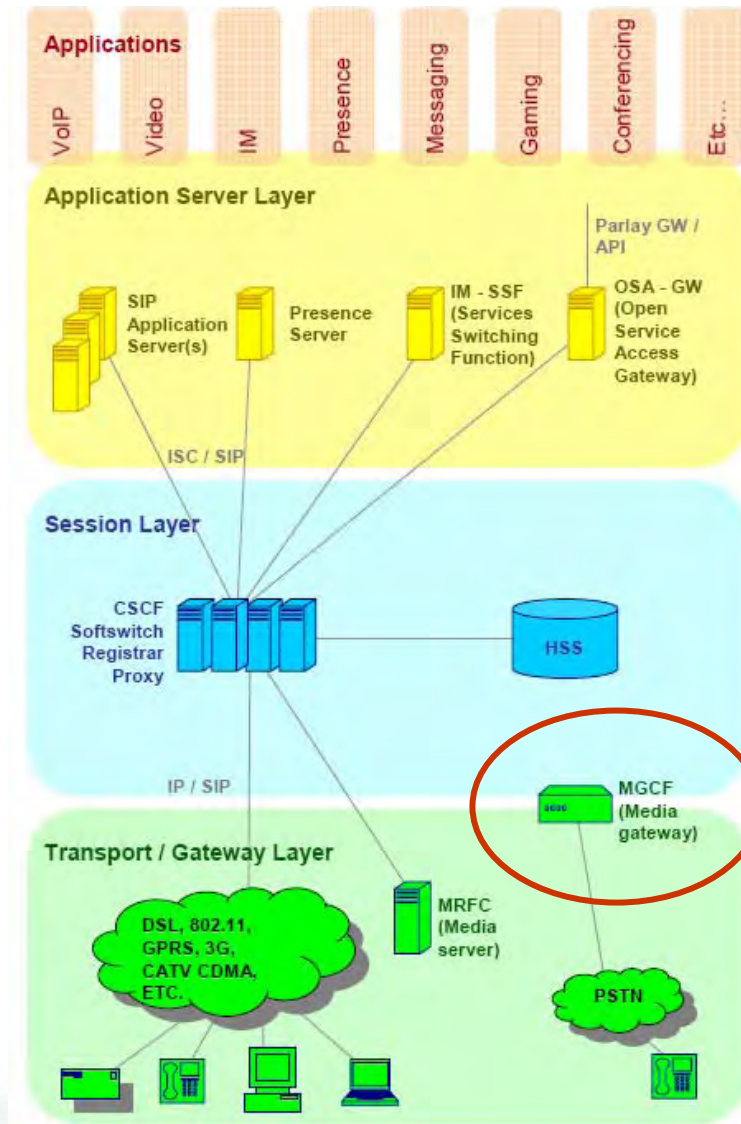
Source: Media Gateway Market - Frost & Sullivan 2006

# Network Diagram





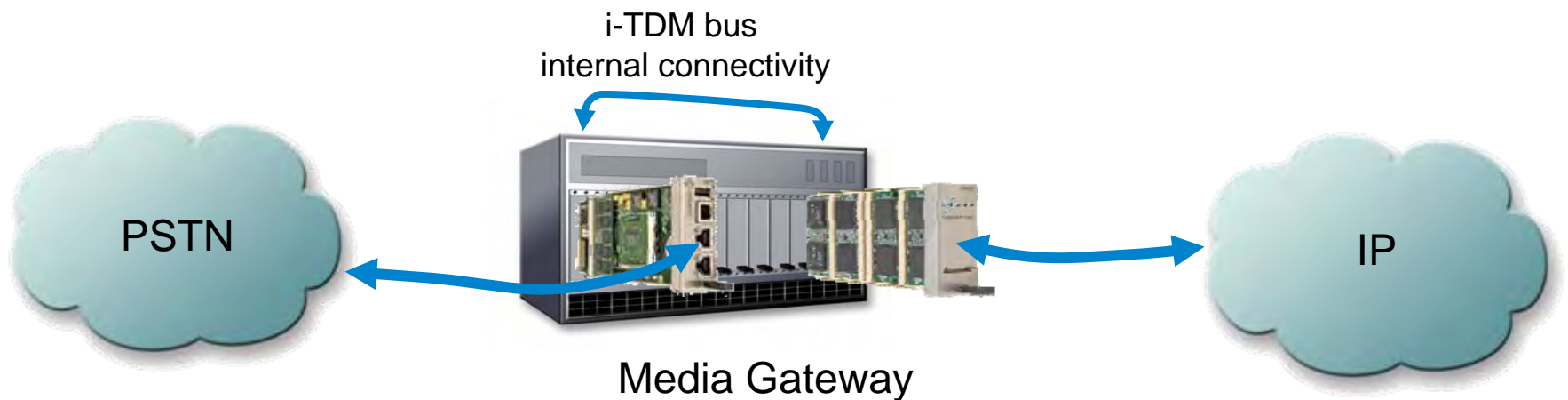
# Media Gateway in an IMS Environment



The Media Gateway connects the "All IP" IMS network to the legacy PSTN network

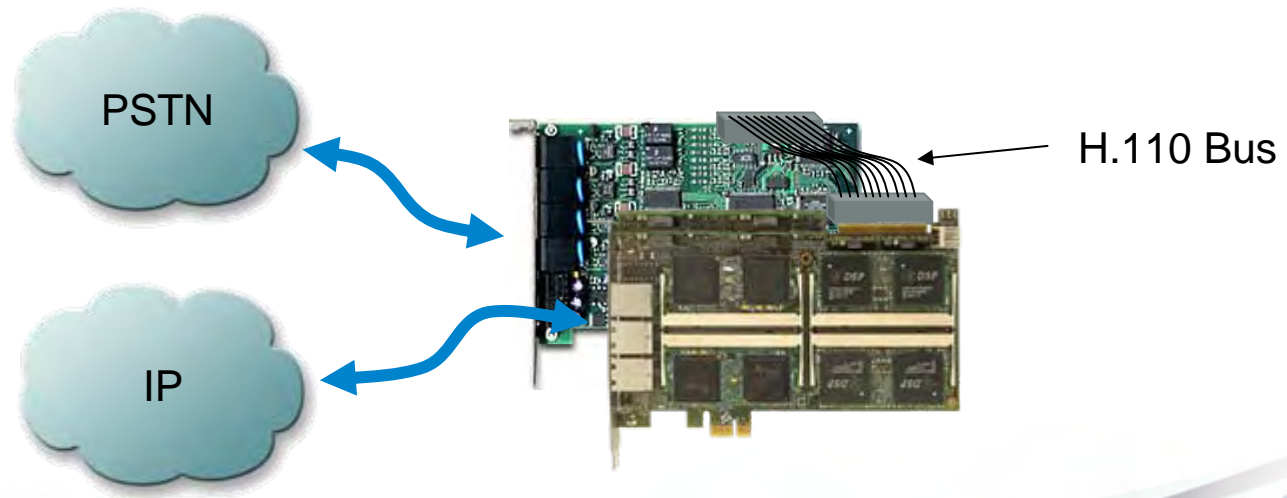
# Carrier-Grade High Availability System

- » Based on i-TDM
  - ▣ Allows true plug and play
  - ▣ Optimal resource usage: DSP horsepower vs. TDM interfaces
  - ▣ Allows for a truly redundant, fault-tolerant system
  - ▣ Scalable system



# Cost-Effective System

- » Based on H.110
  - ▣ Allows true plug and play
  - ▣ Optimal resource usage: DSP horsepower vs. TDM interfaces
  - ▣ Allows for a truly redundant, fault-tolerant system
  - ▣ Scalable system
- » Supports media server functionality for a converged system



# Surf's Unique Features

## » Carrier-grade

- ▣ **Floor space** - AMC form factor for lowest power consumption and floor space
- ▣ **Time to market** - i-TDM connectivity and interoperability test
- ▣ **Best of breed selection** - Integrated with leading interface card vendors
  - » SBS
  - » Interphase

## » Enterprise

- ▣ **Best of breed selection** - H.110 connectivity
- ▣ **Cost-Effective** – High throughput using PCI Express bus interface
- ▣ **Reusability** - Converged media server/media gateway solution



# Surf's Offering



## SurfExpress/PCIe

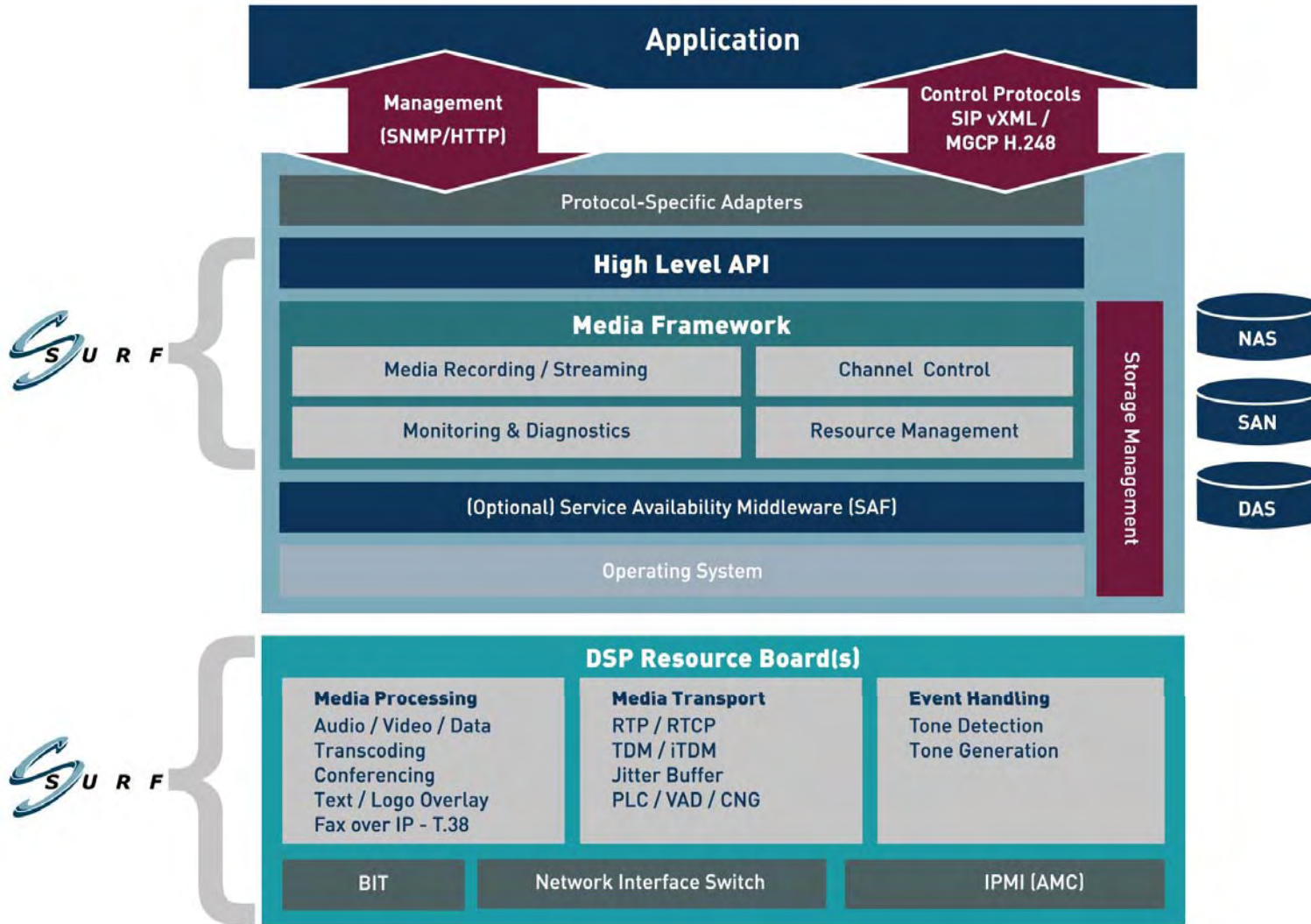
- » Single-lane PCI Express card
- » SurfDock architecture with up to 8 TI C64x family DSPs
- » 2 x 1Gb Ethernet ports
- » H.100



## SurfRider/AMC

- » AMC 2.0 form factor
- » SurfDock architecture with up to 8 TI C64x family DSPs
- » iTDM
- » Pre-integrated with leading xTCA vendors

# Software Architecture



# Mobile Video Features Highlights

- » 3G-324M support
  - ▣ H.324 Annex C
  - ▣ H.223 Annex A & B
- » H.223 running on the DSP for enhanced performance
- » H.245 running on the host
- » High-level 3G-324M APIs
- » MONA\* (H.324 Annex K - fast connect)



\* Roadmap feature

# Video Features Highlights

- » Video Codecs (encode & decode)
  - ▣ MPEG-4
  - ▣ H.263
  - ▣ H.264
  - ▣ WMV9 (decode only)
- » Resolution
  - ▣ Any up to CIF
  - ▣ VGA/D1\*
- » Frame Rate
  - ▣ 1-30FPS
- » CBR and VBR (constant/variable bit rate)
- » Configurable deblocking levels
- » Advanced Video Toolbox
  - ▣ Dynamic Text Overlay (Unicode)
  - ▣ Configurable frame rate
  - ▣ Bit rate change
  - ▣ Any resolution resize
  - ▣ Logo insertion
- » RTP Encapsulation
  - ▣ Multiple destination support
- » Jitter Buffer
  - ▣ Packet rearrangement
  - ▣ Packet loss handling

\* Roadmap feature



# Voice Features Highlights

- » Audio Codecs
  - ▣ G.711
  - ▣ G.726
  - ▣ G.723.1A
  - ▣ G.729AB
  - ▣ iLBC
- » Extended Wireless Codecs
  - ▣ G. 722.2 (WB-AMR)
  - ▣ GSM FR
  - ▣ GSM EFR
  - ▣ GSM NB-AMR
  - ▣ EVRC
  - ▣ AAC\*
  - ▣ WMA9 (decode only)
  - ▣ QCELP\*
- » Echo cancellation
  - ▣ G.168 2002 Echo tail up to 128ms
- » Configurable Packet size
- » VAD, CNG, Packet Loss Concealment
- » RTP/RTCP
  - ▣ RFC 3550, 3551, 3389
- » Fixed/Adaptive Jitter Buffer
  - ▣ Up to 500 ms
- » Caller ID Detect/Generate
- » Tone and Events
  - ▣ Monitoring
  - ▣ Relay (RFC 2833)
  - ▣ Generation
  - ▣ User-defined tones

\* Roadmap feature

# Conferencing & Streaming

## Conferencing

- » Up to 256 TDM or IP audio conferencing participants on a single DSP
- » Dominant speakers detection
- » Up to 100 **active** video participants
- » Up to 16 **displayed** participants
- » Configurable video conference layouts
- » Text & image overlay on conference output

## Streaming

- » Play/Record of any channel from/to file
- » Supported file formats
  - ▣ 3GP
  - ▣ MP4
  - ▣ ASF (WMV9)
  - ▣ AVI\*
  - ▣ SRF (proprietary)
- » Supports more than 1000 concurrent G.711 streams

# Data Features

## » Fax

- ▣ Data Pumps
  - » V.17, V.29, V.27ter, V.21
- ▣ Fax over IP: T.38
  - » FEC/Redundancy
  - » Max Jitter 1 sec
  - » Supported roundtrip delay up to 6 sec
- ▣ T.32
- ▣ IP-Aware Fax
  - » T.32 to T.38

## » Modem

- ▣ Data Pumps
  - » Up to V.92 including V.42/V.42bis
- ▣ Modem over IP
  - » V.8 modem relay as per ITU V.150.1 (contributed by Surf)
- ▣ Connection scenarios
  - » Voice Band Data
  - » MR1



# Customer Benefits

- » **Flexible and scalable** hardware design results in:
  - ▣ **Cost-Effective** solution
  - ▣ **Saves Money** due to reduced R&D efforts
- » **One Stop Shop** for all your needs in multimedia processing
- » **Field-proven:** Surf products are used by many Tier-1 TEMs
- » Built-in diagnostics, providing **easier troubleshooting** and **better application** control
- » Complete SDK and high-level API ensures fastest **Time-to-Market**
- » Dedicated customer service team ensures **smooth development cycle**





**Thank You**  
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