

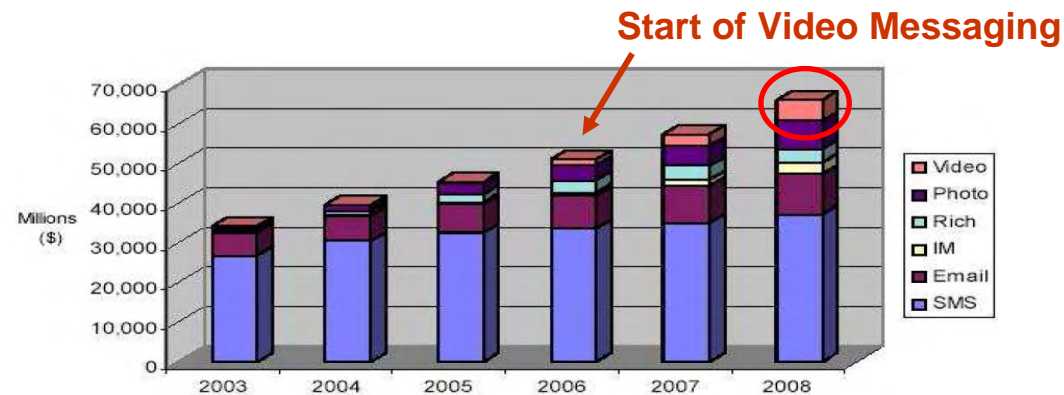


Mobile Video Messaging

Application Notes

Multimedia Messaging

- » Critical mass of video-enabled phones has been reached
- » Interoperability between handsets is a must (note SMS lesson)
- » Video content is easy to create and meaningful
- » A vehicle for other services: commercials, movie trailers, news...
- » Video transcoding should be accelerated to reach an acceptable cost-effective solution



Source: Strategy Analytics 2005

Messaging Applications and Services

» MMS

- ▣ For subscribers: gives the ability to create compelling content and share it
- ▣ As service:
 - » News and sports clips
 - » Commercials
 - » Sponsorships for subscriber messaging

» Video Mail

- ▣ The natural evolution from Voice Mail

» Other

- ▣ Personalized / location based e-Commerce
- ▣ Events promotions and multimedia newsletters
- ▣ Receive video clip directly to cell phone via email

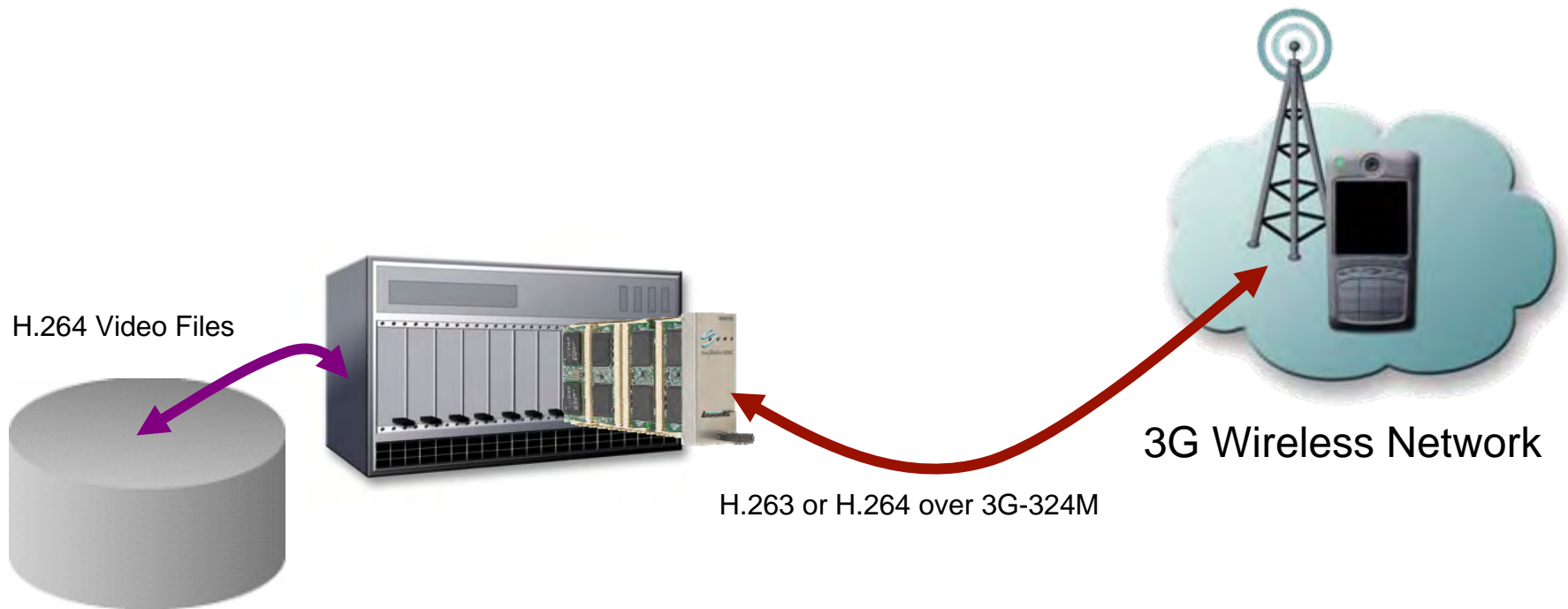
MMS Content Adaptation Requirements

- » File-based
 - ▣ Transcode video content (H.263, MPEG-4, H.264)
 - ▣ Resize to fit to any screen size
 - ▣ Down sampling of frame rate and bit rate
 - ▣ Support for 3GP, and MPEG-4 file format
 - ▣ Run to completion: Adopt content as fast as possible
- » Streaming
 - ▣ Support for on-the-fly video conversion
 - ▣ Single file to multiple destinations in various formats
 - ▣ Support QoS, RTP, RTCP, RTCP-XR
- » High availability, scalable, accelerating solution
- » Integration of new and proprietary codecs
- » Native support for YUV-based stream

Video Mail Requirements

- » Support for Voice & Video Interactive Response menu system (IV²R)
- » File-based
 - ▣ Transcode video content (H.263, MPEG-4, H.264)
 - ▣ Resize to fit to any screen size
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 - ▣ Run to completion: adapt content as fast as possible
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 - ▣ Support for on-the-fly video conversion
 - ▣ Single file to multiple destinations in various formats
 - ▣ Support QoS, RTP, RTCP, RTCP-XR
- » Mobile
 - ▣ Support for 3G-324M
- » High availability, scalable, accelerating solution
- » Integration of new and proprietary codecs

AdvancedMC or PC-based System



Unique Features of Surf Offering

- » **Manageability** – Single API and same resources for voice & video
- » **Performance** - “Run to completion” mode for a shorten processing time
- » **Cost-Effective** - High Storage ⇔ DSP throughput – over 1000 G.711 streams
- » **Differentiation** - Seamless integration of new codecs
- » **Reusability** - Easy migration path to advance platforms (μTCA, ATCA)

Surf's Offering



SurfExpress/PCIe

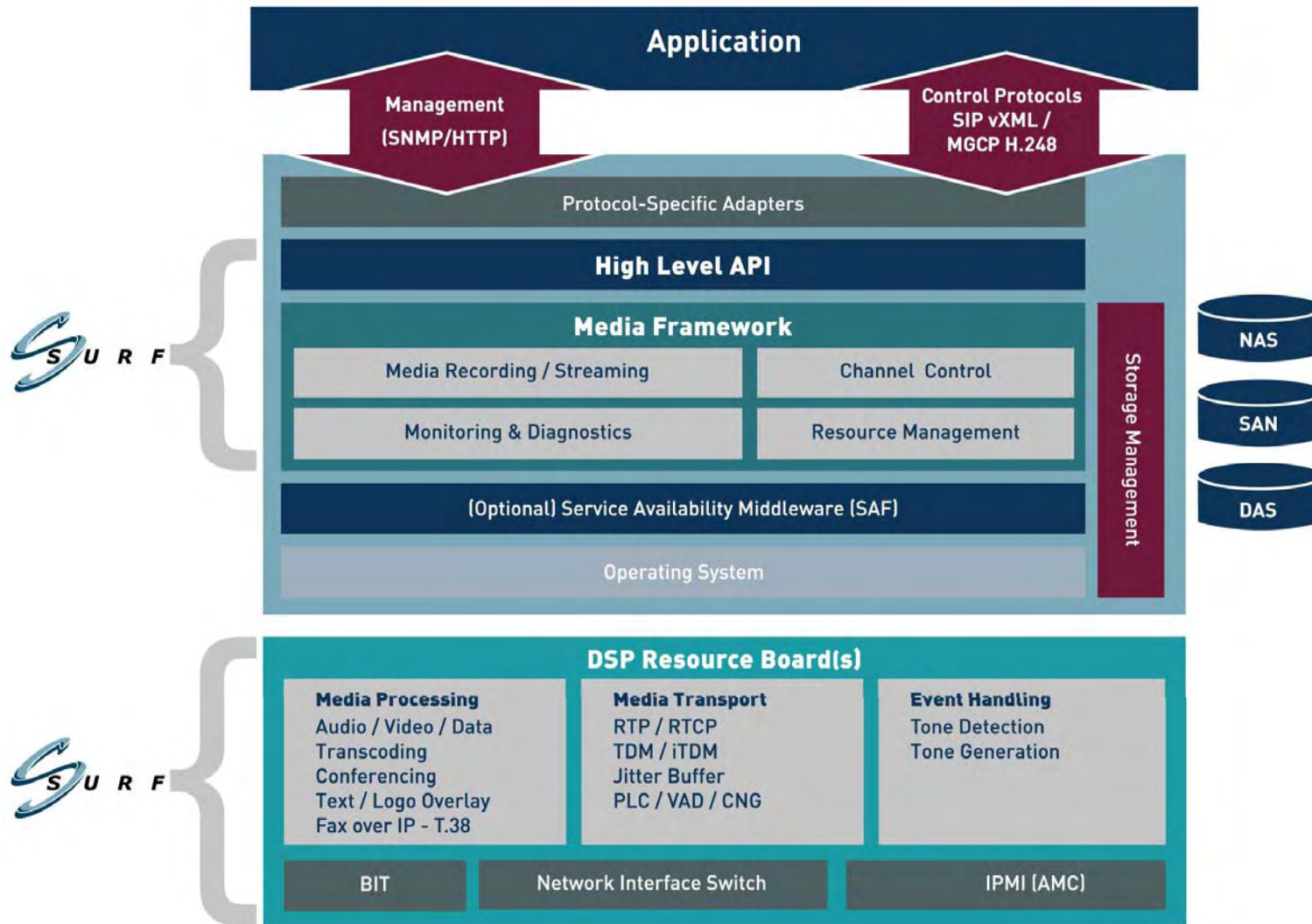
- » Single-lane PCI Express card
- » SurfDock architecture with up to 8 TI C64x family DSPs
- » 2 x 1Gb Ethernet ports
- » H.100



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

* Roadmap feature

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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