



AdvancedTCA™ and its role in Enhanced Services

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Agenda

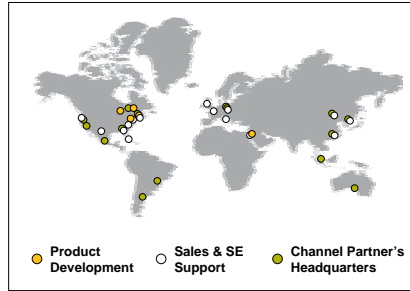
- **About NMS**
- **Network Applications**
- **Network Platforms for Enhanced Services**
- **Enhanced Services platform requirements**
- **Service Execution Platforms**
- **Media Servers based on AdvancedTCA**
- **Conclusion**





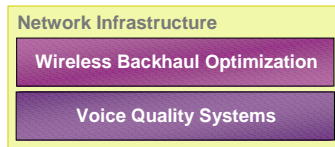
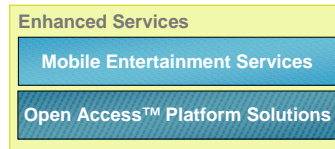
NMS at a Glance

- Communications technologies and solutions
- Founded in 1983, publicly traded since 1994
- 2003 revenues of \$87 million
- 320+ employees
 - 130+ in R&D; 90+ sales & spt
- Products deployed in 90 countries



Enhanced Services, Efficient Networks

- 20+ years technology leadership
- Strong core business
 - Platform solutions
 - Voice quality systems
- New market initiatives
 - Mobile entertainment services
 - Wireless backhaul optimization
- Strategic network of partners
 - Technology, applications, content, integration, channel, supply chain
- Solid, diverse industry experience
 - All the top 100 mobile operators and landline carriers
 - Every major network equipment manufacturer



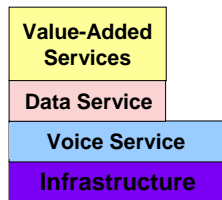


Network Applications

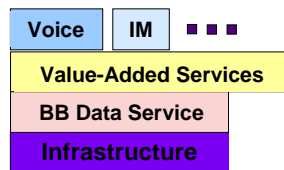
- **Mature**
 - V-mail, UM, UC
 - Call Centers
 - PSTN Conferencing
 - Announcements
 - Prepaid
 - Fax Services
- **Growing**
 - IP Conferencing
 - Ring Back
 - SMS, MMS
- **Emerging**
 1. **Consumer VoIP**
 2. **Speech Applications**
 3. **Mobile Video**
 4. **Ad-hoc Conferences**
 5. **Collaboration**
 6. **IM Telephony**
 7. **Wideband Audio**
 8. **3G IMS Services**
 9. **Hosted services**
 10. **Multi-modal**



1. Consumer VoIP



Traditional Telecom Model



New Model

- **Yahoo Broadband VoIP services taking off in Japan**
- **Vonage, SIPphone, Free World Dialup, Skype, ...**
- **In US: AT&T, Verizon, MCI, and BellSouth offering VoIP services or making consumer VoIP announcements**

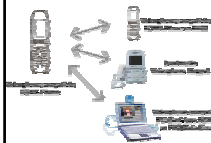


2. Speech Applications

- **Enormous performance improvements**
 - Clearly works well in many applications
- **Dialog design**
 - Significant human factors
 - Opportunity for rich interactions
 - personality, music, audio icons
 - Instrumented dialogs and iterative design
- **Long way to go**
 - Recognition accuracy less than perfect
 - Natural language understanding – very early days
- **Still limited deployments**
 - Zelos Group study shows most companies have only implemented speech in a few programs
 - ... despite significant ROI ...



3. Mobile Video Services



- ✓ Primary Target
- ✓ 3G-324M to SIP G/W
- ✓ NEBS, MSC deployment
- ✓ Turnkey through SI
- ✓ Base Video Portal

- ✓ Primary Target
- ✓ Partner with SI's & App. Developers
- ✓ Deliver Video Servers
- ✓ Video portal differentiation



SIP to Mobile Video G/W's

Streaming



- ✓ Secondary Target
- ✓ NRE driven
- ✓ Partner to integrate
- ✓ Established competition
- ✓ Part of Video Portal

Video Messaging

Video Conferencing

- ✓ Secondary Target
- ✓ NRE driven
- ✓ Partner to Market
- ✓ Established competition
- ✓ Part of Video Portal





4. Ad Hoc Conferences

- **Instant conference — no reservation required**
 - One-click web interface; one-button phone interface
- **a.k.a. “Virtual Bridge” in softswitch / IP-PBXs**
 - Conferencing inherently available with every call
- **Push-to-talk services**
 - Groups = inherent conferences
- **Instant messengers**
 - New paradigm...



Rethinking Conferencing

- **Office workers use multiparty meetings, but ~ 1% of phone calls are multi-party**
 - Traditional conferencing is inconvenient
- **Web, IM and VoIP are forces of change**
 - Provide opportunity to rethink how we collaborate
- **Long term**
 - Voice (including conferencing) integrated into IT apps: ERP, CRM, content management, ...
 - Voice (incl. conf.) integrated into desktop apps: calendaring, IM, MS Office



5. Collaboration



6. IM Telephony

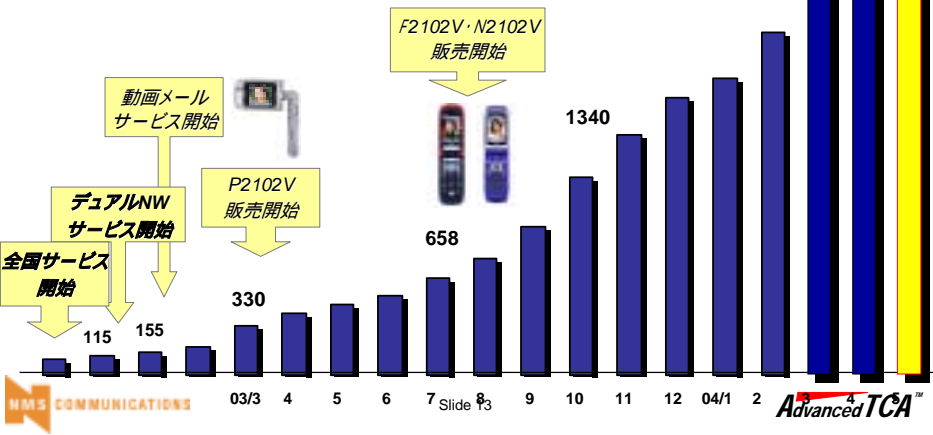
- Presence — you know who's available
- AOL, MSN, ICQ & Yahoo all adding audio and video to Instant Messengers
- Skype providing VoIP telephony with an IM interface and voice conferencing





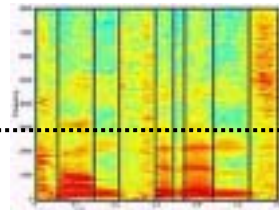
NTT DoCoMo's FOMA 3G Service

Subscriber growth soars to over 4M as of May 31, 2004



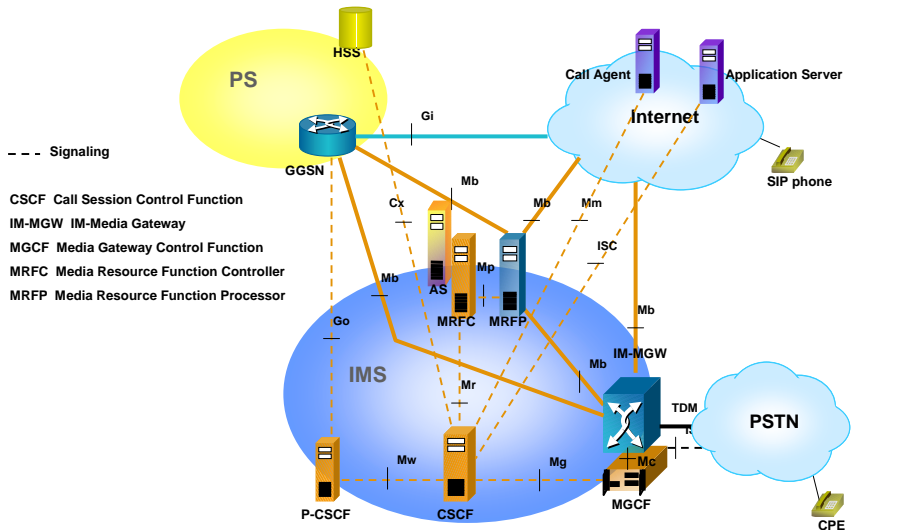
7. Wideband Audio

- VoIP can be better than PSTN quality
 - Dramatically improve quality of conversation
 - Improved intelligibility, reduced fatigue, easier to understand accented speech
- Also improves speech reco
 - Help for letters: “c”, “e”, “g”, ...
- Emerging today
 - Selected IP phones from Siemens, Cisco, snom, 3Com and others
 - Voice Instant Messengers
 - Skype





8. 3G IMS Services

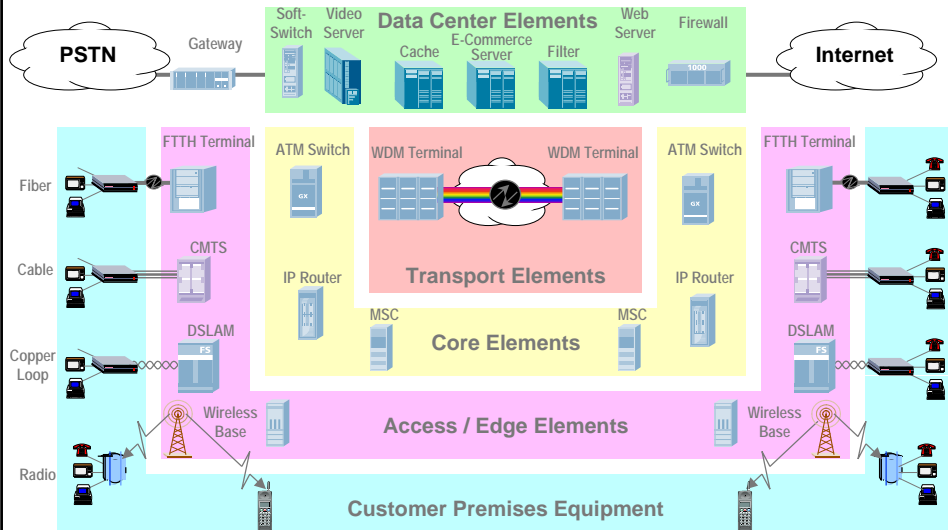


9. Hosted Services

- **Centrex vs PBXs**
 - Centrex typically captured 11% to 18% at most
- **IT out-sourcing historically closer to 50%**
- **With adoption of IP-PBXs and IP Call Centers hosting/ outsourcing will rise to IT levels**
- ***I.e., Dramatic growth in hosting***



Network Architecture Today



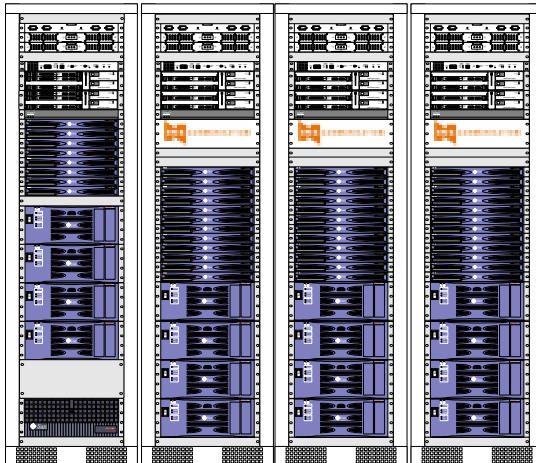
Source: Chuck Byers, Lucent Technologies

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Voice Portal (Speech-Enabled Ports)

HearSay 1.1, today
2016 ports



HearSay on ATCA
2016 ports

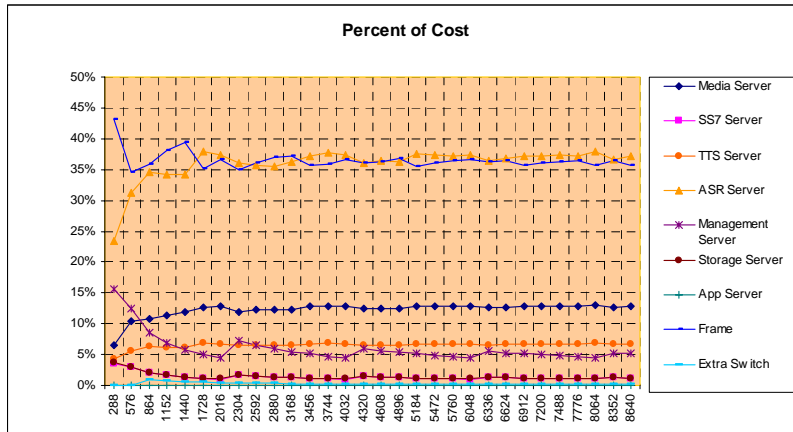


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Voice Portal



Frame and ASR Servers are 70% of COGS



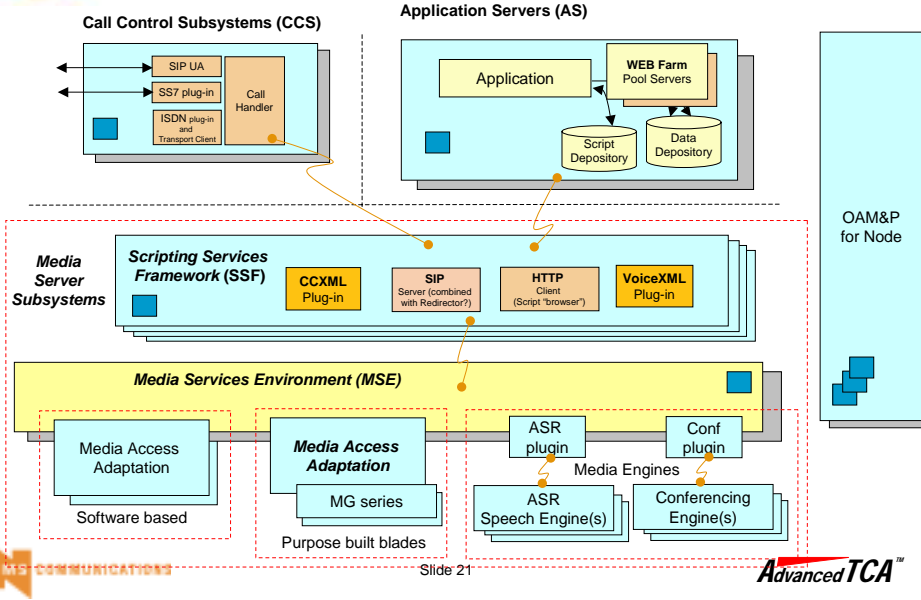
Why AdvancedTCA?

- **Significant reduction in cost**
 - Partly due to architecture enhancements and Sparc/Solaris to Linux/Intel transition
- **Significant reduction in space (> 6x)**
- **Meets network infrastructure requirements**
 - High levels of service availability (99.999% or more)
 - Scalable performance and capacity
 - Wireless, wireline and optical network elements
 - Edge, core and transport, as well as data center
- **Dynamic vendor market**
 - Open and Standardized

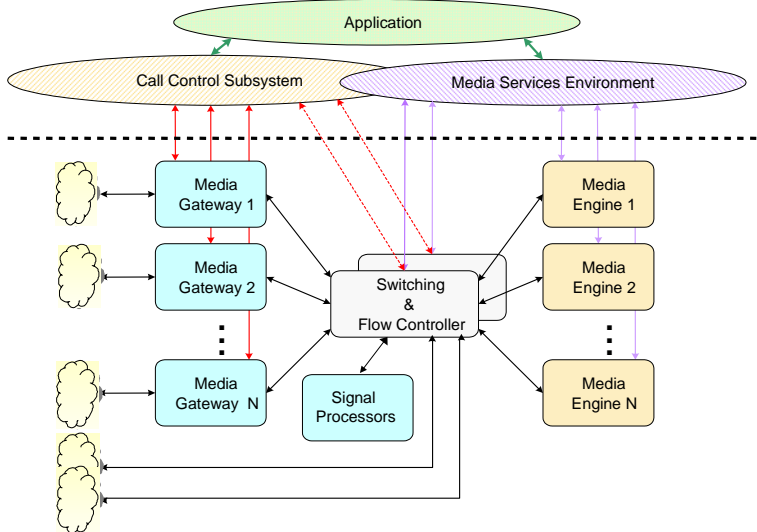
AdvancedTCA will dominate CO deployments



Service Execution Platform

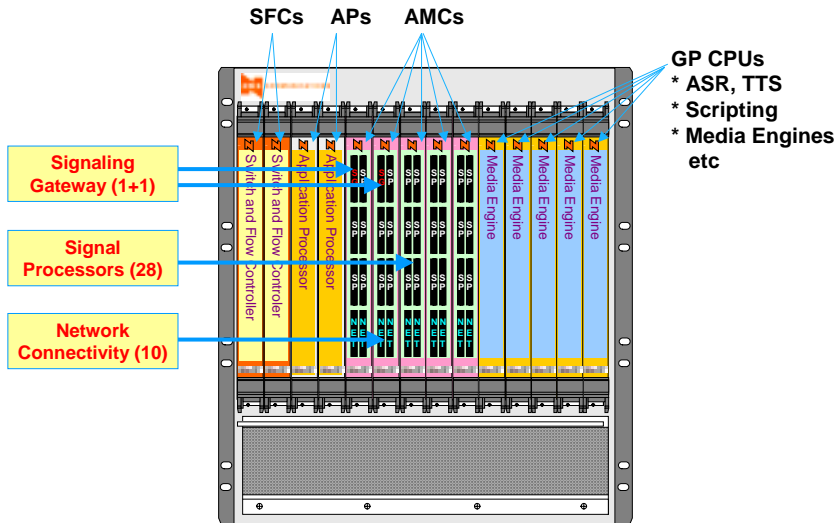


Scalable Enhanced Services Architecture

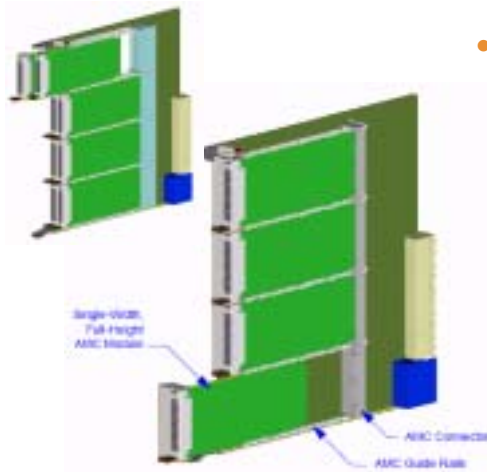




Media Server: 2,000-10,000 Ports



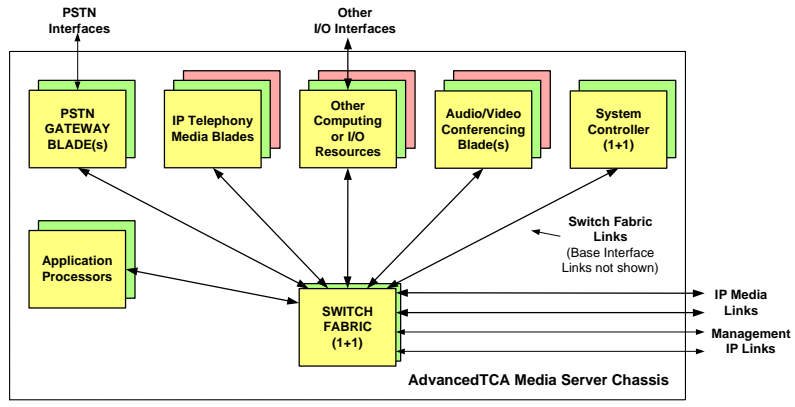
AMC Modules on ATCA Carrier



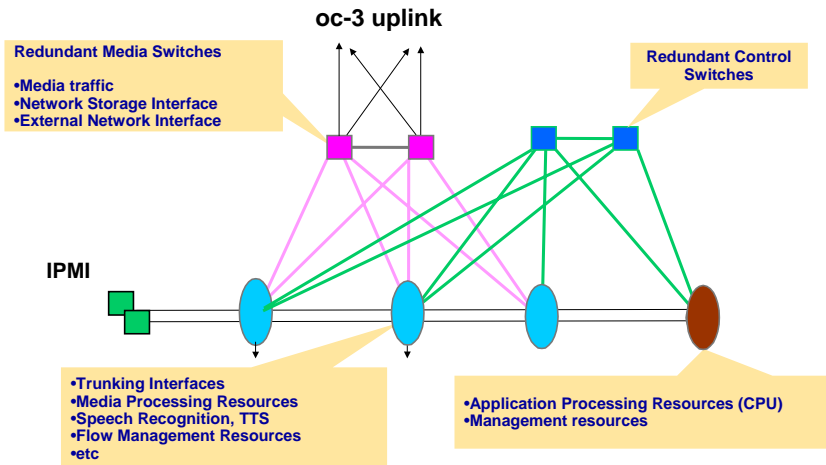
- **Single width modules are 73.5 mm x 181.5 mm (including connector)**
 - Roughly 3" x 7" (2.89" x 7.15")
- Half-height is 13.88 mm**
 - Up to 11.58 mm for components
- Full-height is 28.95 mm**
 - Up to 17.91 mm for components on front 100 mm and 15.85 mm on rear 73 mm



Blades/Technologies needed



Performance/cost Fabric





AdvancedTCA Future Data Points

- **\$20B by 2007 overall, \$4B in Enhanced Serv.**
 - Indicated by Crystal Cube Consulting and Metz International
- **70+ products available today**
 - From more than 28 companies
- **Vendor Interoperability**
 - June 2004: PICMG-hosted 8th interop workshop
 - Sept 2004: NMS-hosted 9th interop workshop
 - Inteop workshops every 3-4 months!

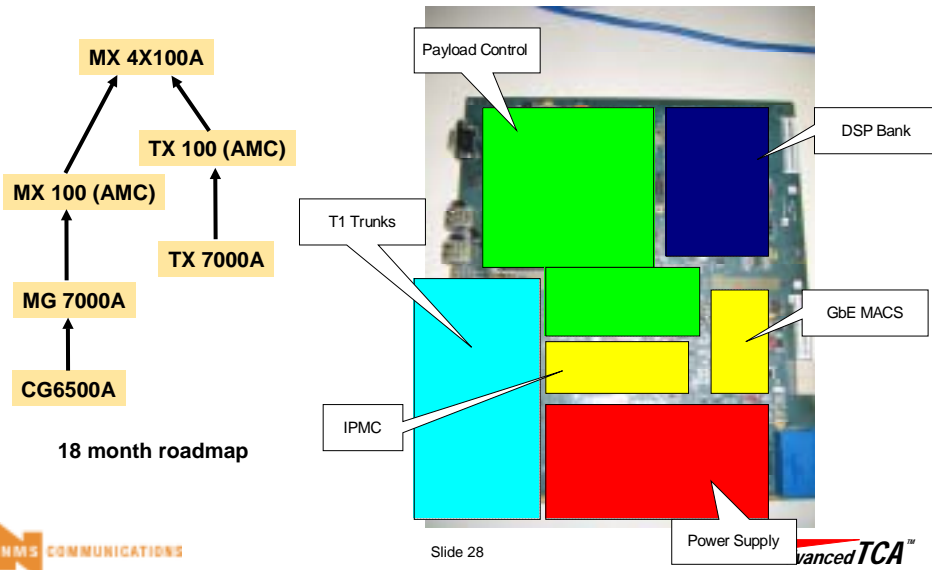
Source: RHK Inc. Oct. 2003



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Product Direction



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Conclusion

- **AdvancedTCA is the ideal platform for Enhanced Services**
- **Multiple vendors already producing interoperable hardware and software**
- **For more information, see**
 - <http://www.advancedtca.org>
 - <http://www.NMSCommunications.com> and search for AdvancedTCA (multiple white papers and presentations)

Thank you!

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