



Agenda

The Rise of Personal Multimedia Conferencing

- A bit of history
- 4 generations of IP communications revolution
- Next generation personal conferencing
 - Moving to the desktop
 - Reusing the IM-centric comms paradigm
 - Getting personal and presence-aware
- Key IETF SIP & SIMPLE standards at our rescue
- Challenges to make it work
 - Any Network Any Media Any Device Anywhere
 - Middleware for Conferencing Resources Management
 - Architecture & Components
- Conclusion

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A bit of History

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From the early days ...

1920s - Idea to develop a "telephone that could see".

1930s - The first videoconference in New York City using photocells.

1964 - AT&T demonstrated the world's first digital video telephone called the Picturephone at the World's Fair.

1970s - Ericsson used the LME for first transatlantic video telephone demonstration.

1980s - Western Electric introduces a telephone with a TVac.

1990s - IP-based solutions

1990s - ISDN-based solutions

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To today ...

1980 1990 2000

ISDN-based solutions

IP-based solutions

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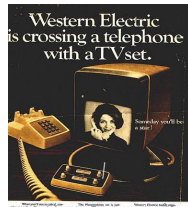
From voice and data to video

- TDM Voice & Voice Conferencing
 - over PSTN
 - On the PBX
- Data Conferencing over IP (WebEx's rise)
 - T.120
 - Web Based Data Conferencing
- Video Conferencing over ISDN

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'Tomorrow's Technology' for a long time ...

Introduced at the
1964 World's Fair



So what went wrong?

- Too expensive...
- Too hard to use...
- Networks not ready
- It just didn't work...

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What Has Held It Back From Going Mainstream?

Price - It costs too much ...

- Original AT&T picturephone service cost \$160 month (1970)
- Usage charges over ISDN can still run hundreds of dollars per month
- Endpoints still cost approx. \$4,000 - \$40,000

Ease of Use - It does not work well enough ...

- Standards have been slow in coming
- Products do not work together smoothly
- Reliability poor

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What Has Held It Back From Going Mainstream?

Network has not been in place...

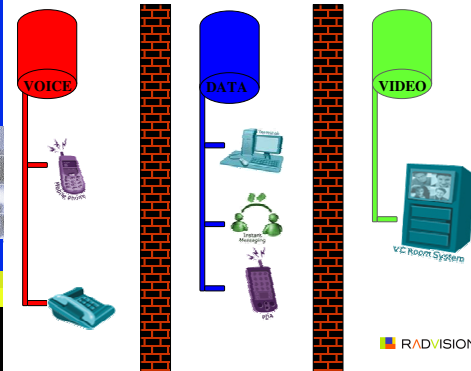
- ISDN never reached widespread deployment
- ISDN is inflexible
 - Not available everywhere, difficult to set up, prone to crashes, costly
- IP Networks are not installed everywhere (mostly missing in WAN) and has security and QoS issues
- Access to homes and SME is not widespread

Many end-users have been hesitant ...

- Partially due to complexity
- Reliability poor

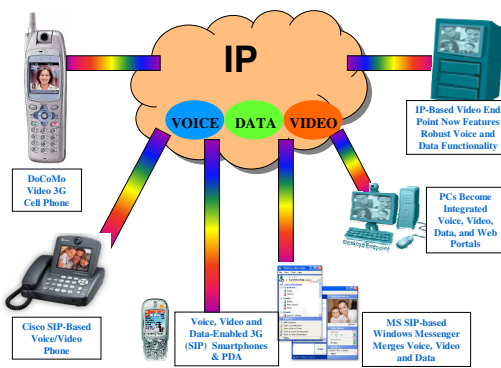
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Old Way of Communicating - Separate Networks and End Points



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Converged Communications - Voice, Video, and Data over IP



The Emergence of IP Is Changing The Story

Price

- Inexpensive, reliable bandwidth

Ease of Deployment

- IP-based conferencing systems - easily integrate into IT networks and IP-PBXs

Network

- The broadband IP Infrastructure is in every enterprise (no need for overlay ISDN network)

User Friendly

- Enables additional IP-based multimedia rich meetings applications (e.g., IM VC)

BUT ...

PSTN will be here for a long time

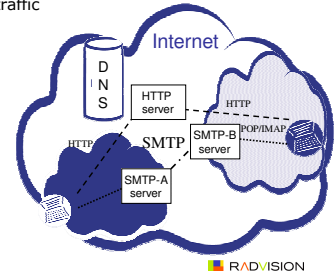
-> key is enabling graceful evolution, not revolution

4 generations of IP communications

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IP Comms - 1st Generation

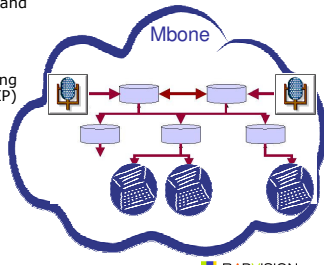
- Non real-time data exchange
- FTP, Email, web traffic



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IP Comms - 2nd Generation

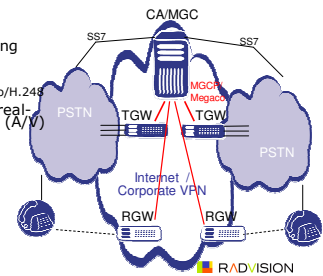
- Multicast real-time voice and video on the Internet
- Experiments, tools and protocols (RTP)
- Internet multicasting (Mbone)
- No or mcast signaling (SAP, SDP, early SIP)



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IP Comms - 3rd Generation

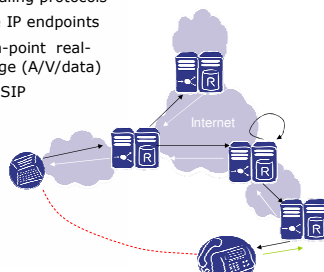
- Connecting telephones/ISDN terminals to the Internet (gateways)
- No intelligence in endpoints
- Master/slave signaling protocols to control gateways
 - SGCP, MGCP, Megaco/H.248
- Unicast, p/m-point real-time data exchange (A/V)



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IP Comms - 4th Generation

- Peer-to-peer signaling protocols
- Intelligent, native IP endpoints
- Unicast/mcast, p/m-point real-time data exchange (A/V/data)
- First H.323, then SIP
- Today SIP era



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Paving the way for personal conferencing

- This 4th generation of real-time IP communications (with H.323 and even more true with SIP) paves the way for personal conferencing:
 - Integrated multimodal communication as part of the same signaling session relationship
 - Packet-based audio, video, gaming, etc any type of data session
 - SIP-based Presence concept applied to any communications, not just for IM!
 - Presence-based audio call, video call
 - Presence-based conference setup triggering
- In parallel, PC processing power and integrated workflow applications have also tremendously progressed
- Personal ad-hoc conferencing is rising and will be big!

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Next generation personal conferencing

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Conferencing is getting personal ...

- Multimedia conferencing is becoming a personal communications tool; just like the cellular phone, instant messaging and email
- Increasingly moving to the desktop and mobile communication IP devices (laptop PCs, 3G mobile video phones)
 - Ultimate personal communication device
 - Powerful resources and integration with business-critical workflow applications and data

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... turning into an essential business productivity tool



Ref: Microsoft

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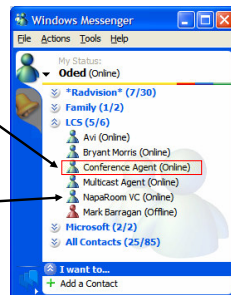
Nextgen ad-hoc personal conferencing - wishlist

- Pure-IP A(V) media mixing, behind both the firewall & the PBX
- True multi-device, multi-network reachability
 - Invite a person, not a device on a network
- Easy and intuitive ad-hoc session setup from presence contact list, both from IP and GSN devices
 - PC-based
 - Voice-dictated on 2G GSN phones and WAP menus on 2.5-3G
- Access/PIN-code less A&A (IP)
- Participants callout (by application server)
- Presence-based conference signaling coordination and routing
- IM broadcast and collaboration tools to session participants
- Session control through IM/DTMF commands (IM agent/ DTMF IVR)
- Uncoupling of application logic and network resources
 - Use of a SIP/SIMPLE conferencing application server
 - Application logic relying on SIP/SIMPLE server components (proxy/registrar, presence, 3PCC)
 - With application-unaware network resources
 - media server (mixer, ivr, vxml browser)
 - SIP-GSTN media gateway

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Wished user experience - Presence list centric operations

- Start an IM conference in the usual way with one or more participants
- "Invite" the **Conference Agent** into the call to put everyone into a virtual conference room
- Add additional conferencing devices as necessary such as room system **H.323 devices**
- Add other participants as necessary



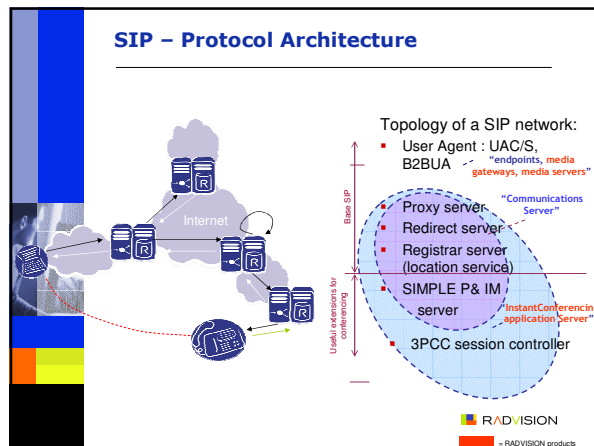
IMfirst™ - multi participant conferencing made simple

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Integration Example



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SIP – Strong standardization (IETF)

- Base spec**
 - RFC 3261: SIP: Session Initiation Protocol
 - RFC 3263: Locating SIP Servers
 - RFC 3264: An Offer/Answer Model with SDP
- Extended Features**
 - RFC 2976: The SIP INFO Method
 - RFC 3262: Reliability of Provisional Responses in SIP
 - RFC 3265: SIP-specific Event Notif.
 - RFC 3311: SIP UPDATE Method
 - RFC 3326: Reason Header
 - RFC 3327: Registering Non-Adjacent Contacts
 - RFC 3428: Instant Messaging
- Security**
 - RFC 3323: A Privacy Mechanism for SIP
 - RFC 3325: Private Extension for Asserted Identity in Trusted Networks
 - RFC 3329: Security-Mechanism Agreement for SIP

Ongoing activity waves:

- SIP working group:** Caller/callee preferences, Session Timers, MIB for SIP, Comm resource priority, Sigcomp ...
- SIPPING working group:**
 - Third-party-call control (3PCC)
 - Basic Network Media Services with SIP (netann)
 - Conferencing framework with SIP
 - Event package for conference state
 - CC Conferencing for SIP user agents

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SIMPLE - Standardization activity (IETF)

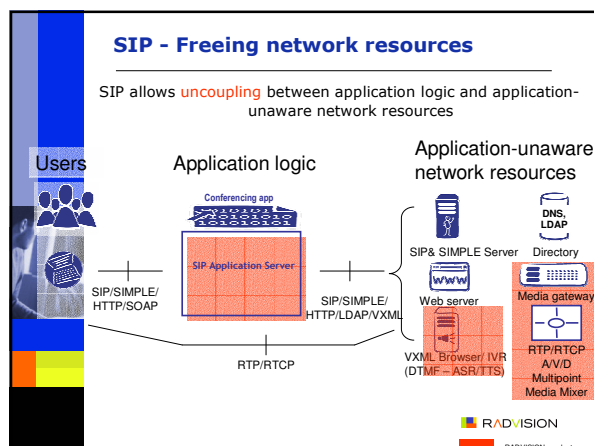
- SIP extension for Presence:**
 - RFC 3265 SIP Events (SUB/NOT)
 - Presence Event Package for SIP, Internet Draft-10;
 - Ongoing activity waves:
 - Presence List
 - Partial Notify
 - Timed Presence extension
 - Presence authorization rules
 - Presence Notification Filters
 - Xcap (Buddy list/Roster management)
 - Rich Presence Information Data Format (RPID)
- SIP extension for IM:**
 - RFC 3428 (paging mode)
 - Ongoing activity waves:
 - MSRP: session mode (Invite bound)

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SIP – Distinctive Strengths

- ✓ Scalability
- ✓ Extensibility
- ✓ Less complexity
- ✓ Agility
- ✓ Call forking
- ✓ Ultimate real-time comms application glue
- ✓ Presence and Instant Messaging extensions
- ✓ Application server decomposition

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SIP application server for conferencing

- Advanced signaling functions for delivering the application:**
 - Ad-hoc setup management
 - Access/PIN code-less AAA
 - 3PCC invitations and SDP bridging
 - Participants' presence collection
 - Presence-based invitation routing
 - Conference info through IM notifications
 - Conference controls through IM commands / DTMF
 - Dynamic VoiceXML dialog scripting for playback and user input collection
- Uncouple application logic from expensive network media resources**
 - Independent selection of media resources
 - Application upgrade/maintenance on appserver only
 - Share same network resources between multiple applications
- Routing and load-sharing over a pool of resources**
- Key part of Conferencing Resource Management Middleware**

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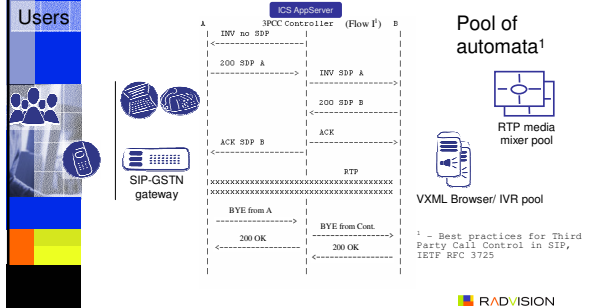
SIMPLE – SIP-based Presence & IM

- Brings exceptional user experience
 - As easy as possible to use
 - Follow IM-centric model
 - 1-click ad-hoc conference setup
 - Possibly initiated from an IM conversation
 - Remove pain to setup multiparty conference
 - Maximum call completion
 - User availability/reachability on different networks/devices
 - Quick, informal messaging
 - Always-on, always there (cf desktop IM)
- Necessity to include a SIMPLE Presence/IM component next to an InstantConferencing application server
 - To act as a Presence Server to collect directly potential participants' presence
 - To re-use/exchange user presence information from existing SIMPLE infrastructure
 - To act as an IM Server to broadcast single IMs from one conference participant to all other participants in-session

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SIP Third party call control (3PCC)

Key application server component for conferencing



SIP and VoiceXML for GSTN users

Proposition:

- Extend the InstantConferencing setup user experience to GSTN users (POTS/ISDN/PLMN)
 - Bring user internet presence to GSTN phones
 - Voice menus to emulate PC desktop presence list and ad-hoc setup experience (read out presence status information)
 - Capability to launch, from GSTN phones, ad-hoc conferences
 - mixing IP (if online) and GSTN endpoints (otherwise) by speaking out names / buddy list row numbers from GSTN phone / DTMF / sending SMS
 - Capability to launch from GSTN phones voice-dictated IMs (online callee) or SMSs (offline callee)

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Challenges to overcome

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Personal Rich-media Conferencing Migration

Offer network infrastructure solutions that supports conferencing:

Over **ANY** protocol...

- SIP
- Traditional IP (H.323)
- Legacy ISDN (H.320)
- 3G broadband wireless

To **ANY** location...

- In the boardroom
- At the employee desktop
- At the home
- On the road (3G wireless)

Using **ANY** End Point...

- Conference room roll about systems
- Desktop systems
- PC-based system & PDA
- Residential set top boxes
- 3G video phones & PDA

With **ANY** Application...

- Microsoft Outlook
- IBM Lotus
- Web base workflow application

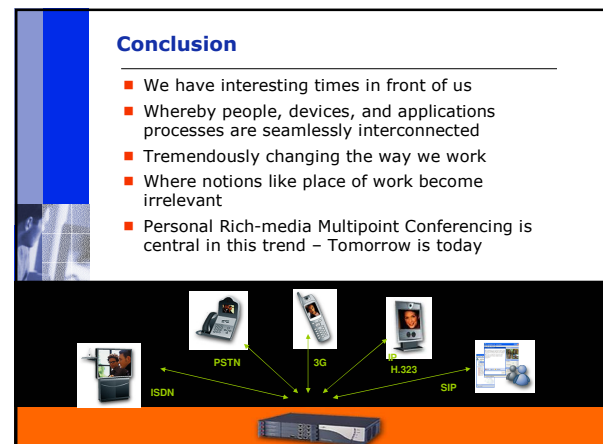
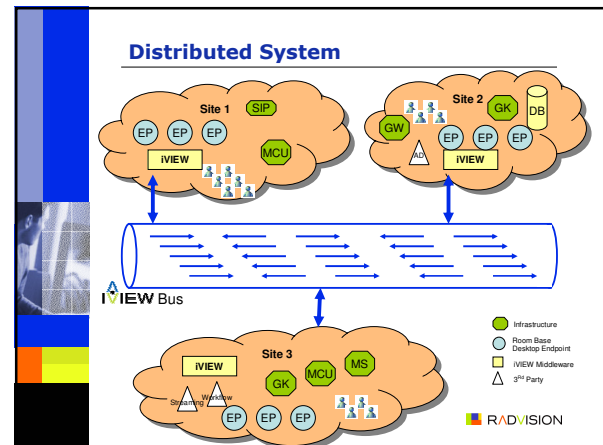
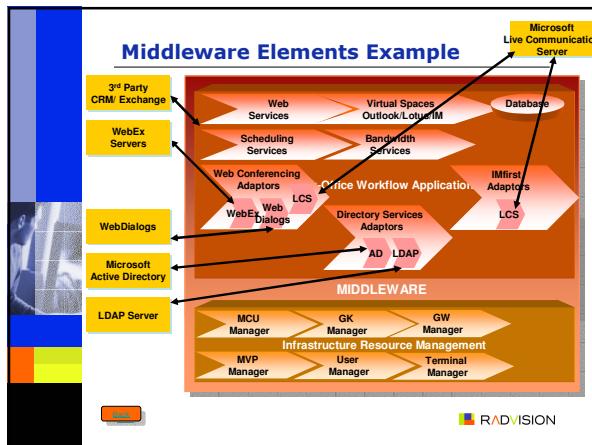
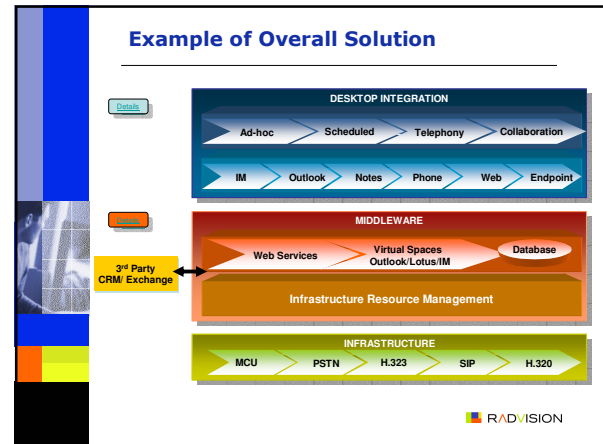
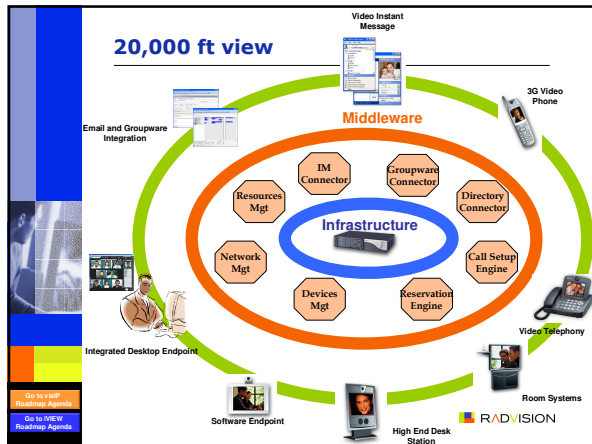
Integrating ALL Multipoint Communications
Video
Voice
Web Conferencing & Data collaboration
And powered by a Presence-aware and IM-centric mode

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Problems which need to be solved

- Need to be as easy as giving a phone call or sending an IM
- Conferencing Network should just work and adapt in all cases
 - Seamless backend conferencing resource management middleware
 - Whatever the network topology, geographic dispersion of participants, available bandwidth of participants, type of device and protocol, overcome QoS issues, transparently resolve multiple NAT & Firewall boundary problems
 - All gatewaying, media server pool management & cascading operations shall be taken care of transparently behind the scenes to interconnect **Any Network** to **Any Device** with **Any Media** **Anywhere**

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RADVISION
Any NETWORK, Any Media, Any Device, ANYWHERE

Contact:
nicolas@radvision.com
www.radvision.com

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The image shows a business card or flyer for RADVISION. On the left side, there is a vertical strip with a blue-to-white gradient at the top, a small grayscale image of a person's face in the middle, and a yellow-to-black gradient at the bottom. The main body of the card is white. The RADVISION logo is centered, with the 'A' in orange and the 'V' in green. Below the logo is the tagline 'Any NETWORK, Any Media, Any Device, ANYWHERE'. Further down, the contact information is listed: 'Contact:', the email address 'nicolas@radvision.com' (underlined and blue), and the website 'www.radvision.com'. At the bottom right, there is a small logo icon followed by the word 'RADVISION'.