



International Telecommunication Union

H.323 for Telemedicine

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What is H.323?

- o H.323* is the international standard for multimedia communications over packet-based networks, including the convergence of **voice, video, and data communications**

* H.323 is “ITU-T Recommendation H.323: Packet-based multimedia communications systems”

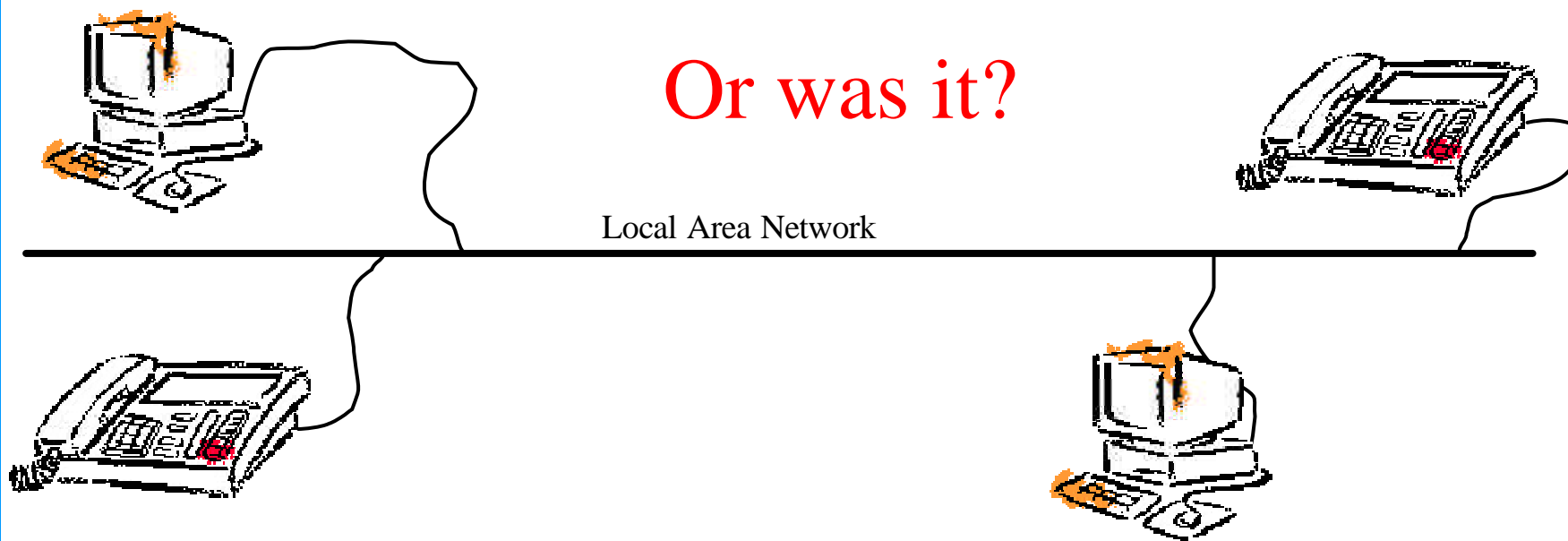


Where did H.323 Come From?

- Recommendation H.323 is a standard published by the International Telecommunications Union Telecommunications Sector (ITU-T)
 - Formerly known as CCITT
 - Refer to <http://www.itu.int/ITU-T/>
 - A permanent organ of the United Nations System (refer to <http://www.unsystem.org/>)

A Little About the Origins...

- o H.323 was originally scoped to be a protocol for the Local Area Network (1996)



Or was it?

Local Area Network

Origins (cont.)

- o The first thing people tried to do was use H.323 in wide area networks, large private VoIP networks, and over the Internet

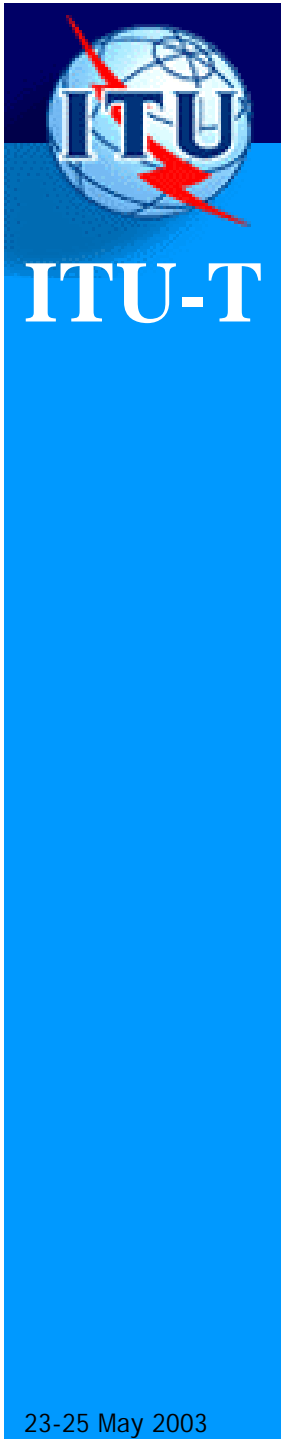
And it worked!!!



Origins (cont.)

- H.323 was an early adopter of such IETF protocols as RTP, which proved its ability to carry real-time audio and video over IP networks that span the globe
- Indeed, H.323 was much more than a LAN protocol





Origins (cont.)

- o Recognizing that H.323 was much more than a LAN protocol, evolution and improvement of the H.323 protocol continued (and is continuing) within the ITU-T

H.323 versus H.320

- H.320 is similar to the H.323 protocol in that it provides voice, video, and data communications
- H.323 differs in that it is designed for communication over a packet-switched network, such as the Internet, an enterprise LAN, or other IP-based network, whereas H.320 is designed for use over ISDN
- Why H.323 over H.320?
 - “ISDN is inexpensive to own, but expensive to use... The availability of flat-rate pricing for IP videoconferencing, on the other hand, allows calls at bandwidths too expensive for ISDN, including some IP calls up to 2 Mbps and beyond.” - “Frequently Asked Questions About Voice and Video over IP Networks”, Wainhouse Research and Margalla Communications (January 2003)
 - An IP network in the enterprise may be utilized for voice, video, and data, thus potentially lowering the overall communications (both capital expenses and operational expenses)
 - H.323 equipment can utilize existing IP-based services, including IP-based voicemail services, LDAP directories, DNS, web-based collaborative tools, etc.



Evolutionary History of H.323

- H.323 version 1 was first approved in 1996, with a focus on enterprise voice, video, and data collaboration
- H.323 version 2 was approved in 1998, with a focus on “Internet Telephony”
- H.323 version 3 was approved in 1999 with incremental improvements
- H.323 version 4 was approved in 2000 with major enhancements focused on the requirements of service providers
- H.323 version 5 (scheduled for approval in May 2003) focuses on maturity and stability



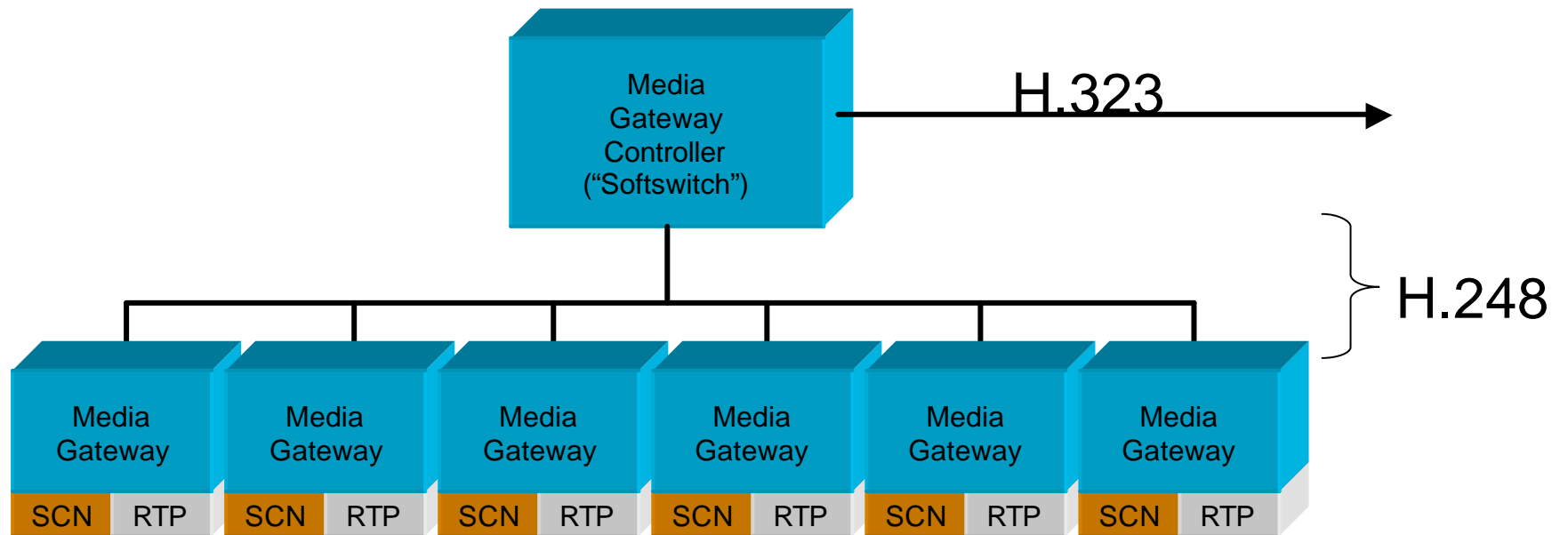
Version Interoperability

- While H.323 has been revised a number of times, focus has always remained on backward compatibility
- Each new major version introduced a number of new features, but did not sacrifice interoperability
- Even so, interoperability events have been necessary to ensure vendor interoperability, with output of those meetings going as input into the SG16 process
- At every meeting, an updated H.323 Implementers Guide is published to provide corrections and guidance to implementers of the protocol

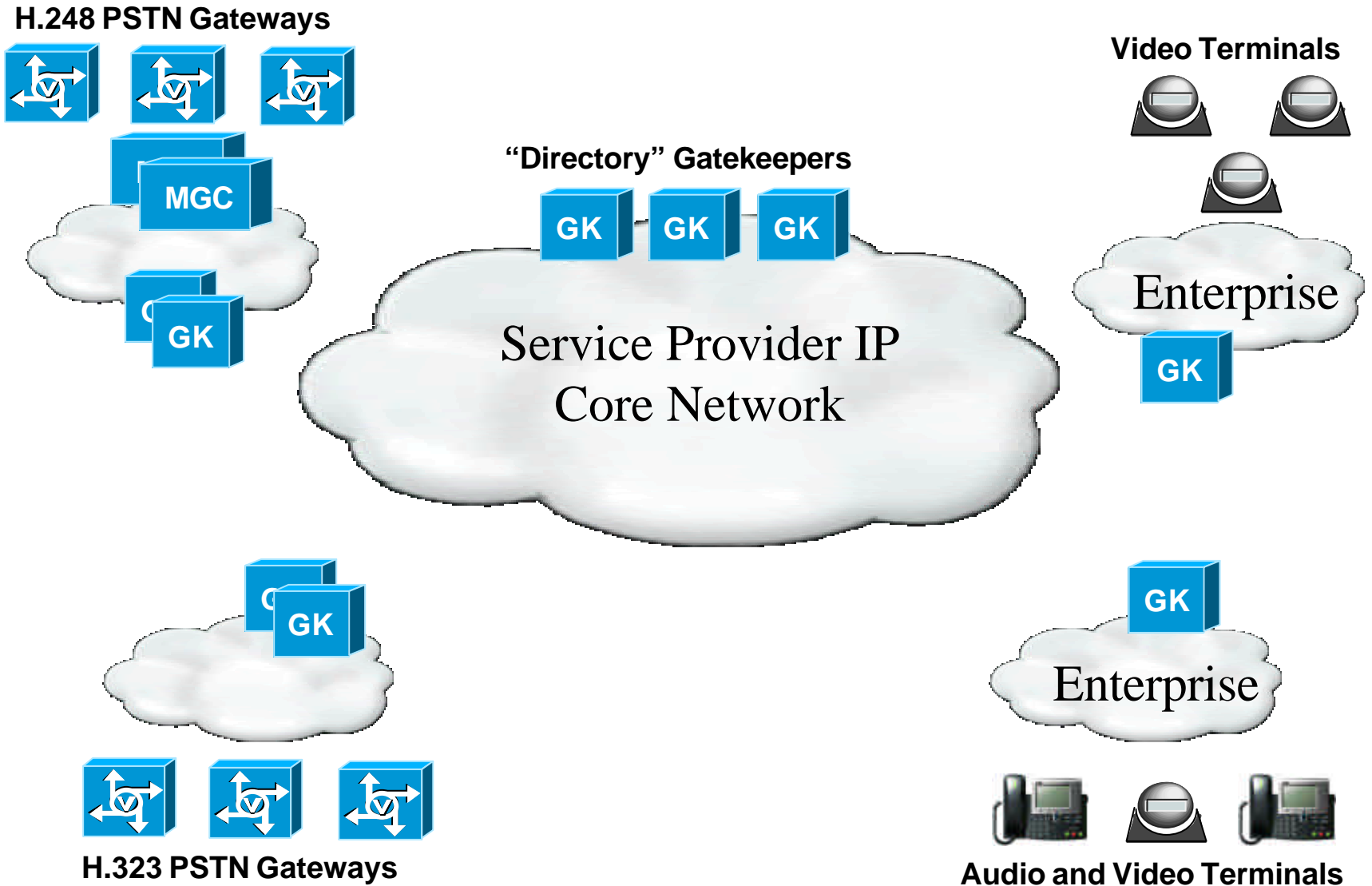
A Cry for Stability... Heard

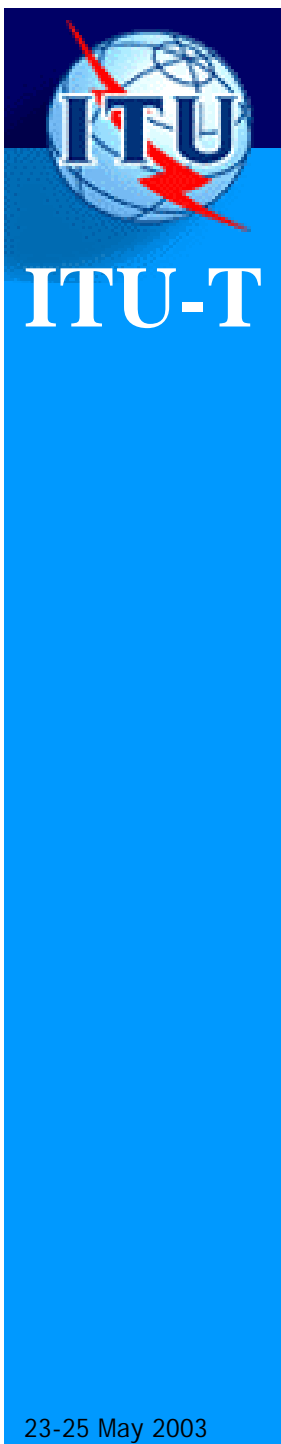
- Enterprise and service providers have requested “stability”, citing a real need for a mature protocol that is not a “moving target”
- H.323 version 4 introduced a new extension mechanism, referred to as the “Generic Extensibility Framework” (GEF) that facilitates the addition of new features without making changes to the core standards
- All new features that are not considered horizontally useful are being added as separate, optional extensions via the GEF mechanism

H.248: Scalability of the Gateway



Today's H.323 Network Topology





Ongoing Work

- o LDAP schema specifications
- o Definition of usage of the H.323 URL, allowing the use of DNS and ENUM with H.323
- o Enhanced third-party call control
- o Quality of Service
- o Scalability and robustness enhancements
- o Short message service



Voice, Video, and Data Communications from Day 1

- o H.323 was designed to be a “multimedia communications” protocol from the outset and not limited only to audio
- o As such, H.323 provides very tight integration of audio, video, and data communications functionality

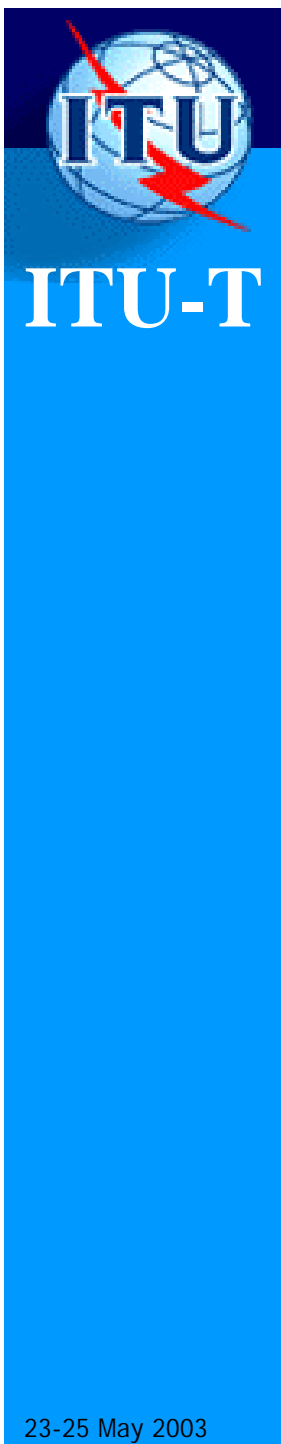


Where We are Today

- Voice, video, and data conferencing capability
- T.38 fax support
- Modem over IP support
- Many supplementary services defined
- Strong interoperability with other H.32x systems, including H.320 (ISDN) and H.323M (3GPP mobile wireless)
- Specification of media gateway decomposition (via H.248)
- Support for signaling and media security
- User, terminal, and service terminal mobility
- Support for emergency services signaling

Where We are Today (cont.)

- Extremely wide deployment
- Billions of minutes of traffic per month worldwide (counting public networks only)
- More than 90% of all voice over IP traffic today is H.323
- Nearly 100% of the video over IP traffic today is H.323



Where is H.323 Used?

- o Wholesale transit
- o Calling Card
- o Voice Conferencing
- o Voice VPNs
- o Unified Communications
- o IP-PBX
- o PC-to-phone
- o Video conferencing
- o Distance Learning
- o Call center
- o IP-Centrex
- o Mobility services
- o Custom news / info
- o Voice/Data/Video Collaboration
- o Broadband residential
- o More...

Industry Support

- Hundreds of service providers and equipment manufacturers supporting H.323
- H.323 market still growing strongly
- “Voice over IP” has been the market driver in recent years
- “Video over IP” is now becoming more popular than ever, with deployments in several service providers

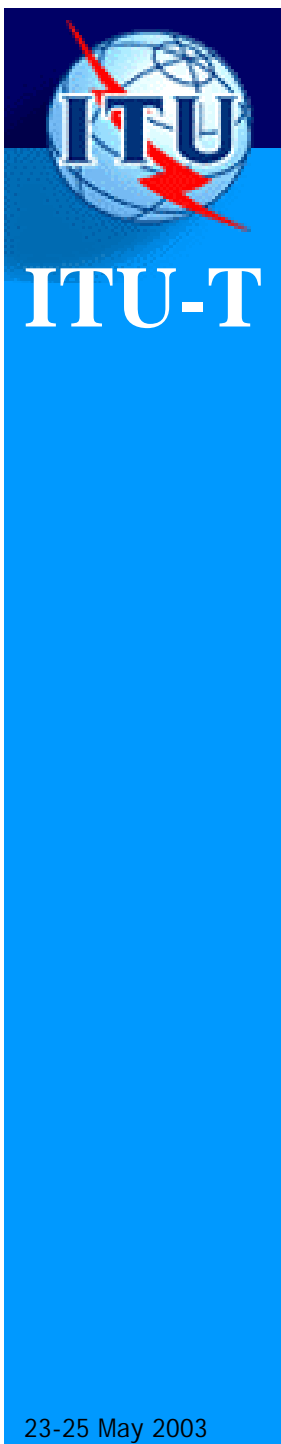
H.323 Forum

- The H.323 Forum was founded in 2002
- Sponsored by the International Multimedia Telecommunications Consortium (IMTC)



H.323 Forum Activities

- **Equipment certification requirements**
- Live conferences (two or three per year)
- Video conferences (three or four per year)
- Strategic press releases
- Organized presentations at other conferences



Notable H.323 Forum Events

- January 2002: IMTC approves the formation of the H.323 Forum as a part of its organization
- May 2002: H.323 Forum “kick-off” in Geneva and a web site
- June 2002: H.323 Forum at Collaborative East
- August 2002: Certification levels 1a/1b defined
- September 2002: First worldwide H.323 Forum video conference was held
- October 2002: H.323 Forum at VON
- October 2002: ETSI and OSP users group support H.323 Forum
- November 2002: H.323 Forum at Collaborative West
- November 2002: First H.323 Forum industry conference
- March 2003: Second worldwide H.323 Forum video conference was held

Additional Information



- o Packetizer
<http://www.packetizer.com/>



- o H.323 Forum
<http://www.h323forum.org/>



- o OpenH323
<http://www.openh323.org/>