ITU-T e-FLASH

Telecommunication Standardization Sector

Helping the world communicate

International Telecommunication Union

Issue No. 19 **September 2005**

For more news, visit the Lighthouse — A New Communications Centre for ITU-T

http://www.itu.int/ITU-T/lighthouse/index.phtml

Firewall Traversal Problem Solved

Standards that may accelerate the adoption of VoIP in corporate environments and resolve an issue that has slowed down the adoption of videoconferencing have been completed by ITU-T.

The standards from ITU-T's multimedia Study Group (Study Group 16) provide a robust and easy to implement solution that will allow any H.323-based system communicating on an IP network to communicate more easily across the boundary imposed by NAT or firewalls (FW).

Videoconferencing and VoIP have long been plagued with problems when trying to work across network address translation (NAT) and firewall boundaries. Despite previous attempts to address the issue, no standardized way of dealing with the problem has emerged until now.

Without the ITU solution many network managers and operators have found that the only way to allow inbound VoIP calls in a firewall-protected environment is to leave a permanent hole from the outside world, open a range of port numbers for VoIP use, or locate devices outside of the firewall. Clearly, these solutions violate even the most basic security policies.

Recommendation H.460.18 enables H.323 devices to exchange signalling and establish calls, even when they are placed inside a private network behind NAT/FW devices. These extensions, when used together with Recommendation H.460.19, which defines NAT/FW traversal for media, enable upgraded H.323 endpoints to traverse NAT/FW installations with no additional equipment on the customer premises. Alternatively, the H.460.18 and H.460.19 functionality may be implemented in a proxy server, so that unmodified H.323 endpoints can also benefit from it.

Work on the related Recommendation H.248.37 was also finished at the Study Group meeting. Session border controllers (SBCs) are becoming an important part of the Internet infrastructure, and some SBCs are being split into media gateway controller (MGC) and media gateway (MG) components. One important function of a SBC is to perform network address and port translation (NAPT). H.248.37 allows the MGC to instruct a MG to latch to an address provided by an incoming Internet Protocol (IP) application data stream, rather than the address provided by the call/bearer control. This enables the MG to open a pinhole for data flow, and hence allow connections to be established.

As well as these ITU-T Recommendations, Study Group 16 will shortly publish two technical papers on the topic: *The Requirements for Network Address Translator and Firewall Traversal of H.323 Multimedia Systems* and *Firewall and NAT traversal Problems in H.323 Systems*.

CMIP Offers Users Greater Control

The Focus Group on next-generation networks (FGNGN) has recently completed a technical report that will hand back some elements of network management to the customer.

The document is an approved deliverable of the group that will be submitted to FGNGN's parent within ITU-T, Study Group 13, for further consideration as a candidate ITU-T product (e.g. Recommendation, supplement, handbook, etc.). It outlines a framework for customer manageable IP networks (CMIP).

CMIP will give end users the ability to manage network elements and resources, such as bandwidth and storage.

Using a menu driven system CMIP will allow end-users to split bandwidth, dedicating, for instance, 1 Mbit/s to file sharing, .5 Mbit/s to instant messaging and e-mail, and .5 Mbit/s to web browsing.

Service providers will benefit by being able to offer this ability as value-add to their Internet service offerings, and will also be able to better provision network resources for services, such as web browsing, VoIP, and peer to peer (P2P), given the increased knowledge of exactly how users are using their bandwidth.

JPEG Meeting held in Geneva

ITU-T hosted the 36th JPEG Meeting, Geneva July 18-22. The Joint Picture Experts Group (JPEG), formed many years ago by both ITU-T Study Group 16 and ISO/IEC JTC1 SG 29, is best known for its JPEG and JPEG-2000 image compression standards.

In ITU-T, Study Group 16 is home to all media coding work, such as the H-Series of Recommendations, and includes work done together with ISO/IEC's JPEG, and JPEG-2000 groups in image compression, as well as work done with MPEG in developing video compression standards such as H.264. ISO/IEC JTC1 SG 29 is the focal point in ISO/IEC JTC1 for image, video and audio compression standards.

The meeting surveyed the progress of technologies broached in the previous JPEG meeting, held in Lisbon in March 2005, including image security in JPEG-2000 which is being addressed by JPEG's JPSEC ad hoc group. The group is developing a standard that will enable protected images to retain JPEG-2000 system features, such as scalability. This new feature within JPEG images will allow international distribution of digital images containing encrypted content, while still retaining the ability to adaptively deliver content for a wide variety of devices with varying display capabilities.

The meeting also followed up on JPEG's Digital Cinema ad hoc group and its advances in developing profiles for JPEG-2000 digital cinema applications. The Digital Cinema Initiatives (DCI) organization has adopted JPEG-2000 for future distribution of digital movies to theatres. JPEG is working closely with the Society of Motion Picture and Television Engineers (SMPTE) to standardize aspects of this future architecture.

The Video and Image Coding and Applications (VICA) workshop, 22-23 July 2005, which followed the ITU-T-hosted JPEG meeting, aimed to build upon the presence of JPEG and ITU-T SG 16 experts (who met July 26 — August 5 this year). The workshop reviewed existing video and image compression standards, their current applications, and future directions in the field. See related news for more details on the workshop.

Workshop Reviews Video Coding Standards

In conjunction with ISO/IEC's Joint Picture Experts Group (JPEG), ITU-T's Study Group 16 hosted a workshop on Video and Image Coding and Applications (VICA) at ITU headquarters in Geneva, 22 to 23 July.

Key experts joined users to review the development, assessment and application of video and image coding and to discuss and start work on an action plan and a roadmap for VICA standardization.

Introducing the workshop, Houlin Zhao, director of TSB, emphasized the importance of video and image compression not only from a telecommunication perspective, but also for consumers. He highlighted ITU-T's extensive and constructive partnerships with both MPEG, and ISO/IEC's Joint Photographic Experts Group (JPEG), which have achieved practical and innovative results. He also highlighted the importance of the work from universities in the field.

The workshop introduced topics including the history and challenges of video and image compression up to the development of ITU-T Recommendation H.264, and of the JPEG-2000 family of standards. It looked at how these standards will be applied to current and future technologies surrounding television, computers, videoconferencing, home networking and mobile phones, and how VICA standards are affected by the evolution of multimedia services and applications.

Presentations also stimulated discussion on how standards work in the field, including how next-generation networks (NGN) can support the development of so-called ubiquitous networks — any device, anytime, anywhere. Current work on home network environments was also taken into account.

Following the event, Study Group 16 met from 26 July to 5 August and further discussed the results of the workshop in order to continue to develop standards that will improve the quality of service and ubiquity of telecommunication technologies and facilitate the global dissemination of multimedia content.

Security for IP Media Reviewed

A suite of ten new standards that provide security for IP media communications such as VoIP or videoconferencing got an update at the last meeting of ITU-T's Study Group 16.

The security framework outlined in the H.235 series of ITU-T Recommendations provides the protocols necessary for these media to be authorized and routed. Equipment using these standards can deliver connectivity without compromising security.

With the help of the Recommendations, users communicating through IP media are authenticated and authorized so that their communications are protected against various security threats. Real-time multimedia encryption adds a further layer of security, protecting against call interception. The security countermeasures are designed to thwart service fraud, avoid service misuse and detect malicious message tampering. H.235 also gives the ability to provide a greater level of security using public key infrastructure (PKI) certificates.

Additionally, two new security profiles were added to provide [H.235.8] key exchange using the secure real-time transport protocol (SRTP) in H.323 networks and [H.235.9] to allow discovery of security gateways in the signalling path between communicating H.323 entities, in order to preserve signalling integrity and privacy.

Video Call Setup Time Shortened

ITU-T has agreed to a revision of a Recommendation that experts say is an important step towards solving the problem of lengthy call setups in 3G video telephony. Seen as a key issue to address, the resolution of this issue may help accelerate the market for 3G.

According to SG 16 sources the standard has been successfully tested in products and many mobile operators and handset manufacturers have started implementation.

The revised ITU-T Recommendation H.324 speeds the initiation of 3G video sessions through the streamlining of the call set-up signalling that is necessary to establish the connection between two handsets and between a handset and a media server.

Previously setting up a typical video session required each end to send up to ten messages to the other terminal, each time waiting for a message to be received and acknowledged before sending the next one. And, if a message was not received, the sending device had to wait and finally time out before retransmitting. The delay introduced in this process led to long video call set-up times.

The new method eliminates the message queuing and time out issues. Now, all signalling is sent as a single batch to be processed by the receiving device. Missed messages, due for example to network errors, are immediately detected by the receiving device and retransmission requests are spontaneously generated. This leads to much quicker call setup times, bringing video connectivity close to the same level of service as traditional telephony.

Key for many operators is that implementation will not require manufacturers to recall phones, also meaning that services may work on existing devices. Other advantages of the new approach include the fact that it is protocol and network independent, enabling connectivity with any other device, even if it is IP-based (e.g. IP video streaming server or a PC-based video terminal) and meaning that it does not interact with underlying network protocols or codecs, enabling devices using the standard to operate even when roaming in other mobile networks.

Standard Gives Increased Location Information

Recommendation H.460.20 consented at the last Study Group 16 meeting solves the problem of how to provide location information in calls generated to/from H.323 systems. The Recommendation allows these systems — such as VoIP or videoconferencing — to convey information that could be a URL, an e-Mail, a postal code, or a mobile telephone number. This is much more than can be achieved with a traditional public switched telephone network (PSTN) call.

Currently calls generated or terminated in H.323 systems do not carry — end-to-end — details of where that call is coming from. This information is needed by the public switched telephone network (PSTN) for emergency services, more accurate billing and for routing the call. Additionally it is useful, for instance, in applications such as telemarketing where calls can be routed according to their origin.

Technically H.460.20 gives H.323 the ability to convey the location number present in ISUP — the system that determines the set-up, coordination and taking down of calls. Without this ability, location information is lost at the interworking edge between the IP network and the PSTN. An additional benefit is that it simplifies interworking with the session initiation protocol (SIP).

Upcoming Events

- **ITU-T Meetings:**

  - **29 August-9 September 2005**
    Study Group 13 — Next-Generation Networks, Geneva
  - **5-9 September 2005**
    Study Group 11 — Signalling requirements and protocols, Geneva
  - **5-9 September 2005**
    Study Group 19 — Mobile telecommunication networks, Geneva
  - **12-16 September 2005**
    Study Group 3 — Tariff and accounting principles including related telecommunication economic and policy issues, Geneva
  - **20-30 September 2005**
    Study Group 4 — Telecommunication management, Geneva
  - **5-14 October 2005**
    Study Group 17 — Security, languages and telecommunication software, Geneva
  - **17-21 October 2005**
    Study Group 9 — Integrated broadband cable networks and television and sound transmission, Geneva
  - **17-21 October 2005**
    Study Group 12 — Performance and Quality of Service, Geneva

- **Workshops and Seminars:**

  - **12-14 September 2005**
    Mobile Telecommunications and Fixed/Mobile Convergence: the realities going forward, Kyiv, Ukraine
  - **3-4 October 2005**
    Workshop on New Horizons for Security Standardization, Geneva
  - **13-14 October 2005**
    Opportunities and Challenges in Home Networking, Geneva