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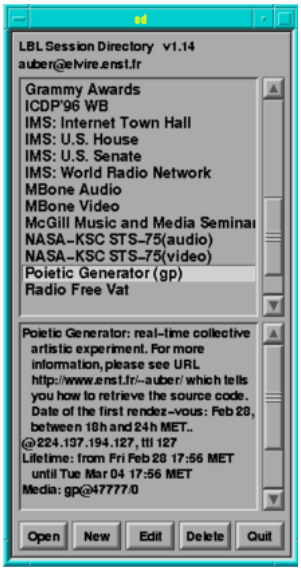
Mbone

Mbone (short for "multicast backbone") was an experimental backbone and virtual network built on top of the Internet for carrying IP multicast traffic on the Internet. It was developed in the early 1990s and required specialized hardware and software.[1] Since the operators of most Internet routers have disabled IP multicast due to concerns regarding bandwidth tracking and billing, the Mbone was created to connect multicast-capable networks over the existing Internet infrastructure.[1]



Mbone session directory (sd), February 1996

Contents

History

Mbone was created by Van Jacobson, Steve Deering and Stephen Casner in 1992 based on a suggestion by Allison Mankin.[2]

On June 24, 1993, the band Severe Tire Damage was the first to perform live on the Mbone.

A November 1994 Rolling Stones concert at the Cotton Bowl in Dallas with 50,000 fans was the "first major cyberspace multicast concert." Mick Jagger opened the concert by saying, "I wanna say a special welcome to everyone that's, uh, climbed into the Internet tonight and, uh, has got into the M-bone. And I hope it doesn't all collapse."[1]

A year later the Mbone was used, this time symmetrically (simultaneous transmission and reception without hierarchy among participants), for a first experience of real-time graphical interaction without the intermediary of any Center (Poietic Generator[3][4]).

By 1995, there were M-bone links in Russia, as well as at the McMurdo Sound research station in Antarctica.[1]

Mbone was used for shared communication such as video teleconferences or shared collaborative workspaces. It was not generally connected to commercial Internet service providers, but often to universities and research institutions. Some other projects and network testbeds, such as Internet2's Abilene Network, made Mbone obsolete.

A "virtual room video conferencing system" (VRVS) started operation in 1997 using the Mbone, and was in operation through 2008.[5]

Details

The purpose of Mbone was to minimize the amount of data required for multipoint audio/video-conferencing.[1]

Mbone was free and it used a network of routers that support IP multicast, and it enables access to real-time interactive multimedia on the Internet. Many older routers do not support IP multicast. To cope with this, tunnels must be set up on both ends: multicast packets are encapsulated in unicast packets and sent through a tunnel. Mbone uses a small subset of the class D IP address space (224.0.0.0–239.255.255.255) assigned for multicast traffic. Mbone uses 224.2.0.0 for multimedia conferencing.

Characteristics

- topology: a combination of mesh and star networks
- IP addresses: 224.2.0.0
- routing schemes: DVMRP, MOSPF
- session registration: IGMP
- traffic requirement: audio 32-64 kbit/s, video 120 kbit/s

Mbone tools

- Videoconferencing: vic -t ttl destination-host/port (supports: NV, H.261, CellB, MPEG, mJPEG)
- Audioconferencing: vat -t ttl destination-host/port (supports: LPC, PCMU, DVI4, GSM)
- Whiteboard: wb destination-host/port/ttl
- Session Directory: sdr

See also

- CastGate—an attempt at providing connectivity to the multicast network for hosts which have none

References

1. Lewis, Peter H. "Peering Out a 'Real Time' Window" (https://www.nytimes.com/1995/02/08/business/business-technology-peering-out-a-real-time-window.html). *The New York Times*, 8 February 1995. Retrieved 26 August 2009.
2. Casner, Stephen; Deering, Stephen (July 1992). "First IETF Internet Audiocast". *ACM SIGCOMM Computer Communications Review*. **22** (3): 92–97. doi:10.1145/142267.142338 (https://doi.org/10.1145%2F142267.142338).
3. "gp" IP Multicast version of the Poietic Generator, developed for the Internet Mbone (1995): (Telecom ParisTech server (http://www.infres.enst.fr/~dax/guides/multicast/mdownload.html))
4. Announcement of a session on the Mbone (February 1996). Screenshot of the "session directory" (Lawrence Berkeley National Laboratory): (https://en.wikipedia.org/wiki/Poietic_Generator#/media/File:Annonce_d%27une_session_Poietic_Generator_sur_le_Mbone_(_f%C3%A9vrier_1996)
5. "VRVS Frequently Asked Questions" (https://web.archive.org/web/20080222145753/http://www.vrvs.org/Documentation/faq.html). Archived from the original (http://www.vrvs.org/Documentation/faq.html) on February 22, 2008. Retrieved May 25, 2013.

External links

- *MBONE: Multicasting Tomorrow's Internet (http://www.savetz.com/mbone/)*: Classic book about MBONE, by Kevin Savetz, Neil Randall, and Yves Lepage, complete on-line
- IETF MBONE Deployment working group (http://tools.ietf.org/wg/mboned/)
- How to connect to the MBone (http://www.live555.com/mbone/)
- AccessGrid.org (http://www.accessgrid.org/)—
- Making the MBone Real (http://www.isoc.org/inet95/proceedings/PAPER/227/html/paper.html)—Ajit S. Thyagarajan, Stephen L. Casner, and Stephen E. Deering, Proc. INET '95. Internet Society. May 10, 1995

Historical clients

- LBNL's tools (http://www-nrg.ee.lbl.gov/)
- MICE's tools (https://web.archive.org/web/20100615053705/http://www-mice.cs.ucl.ac.uk/multimedia/software/)
- OpenMash (http://www.openmash.org)
- Telecom Paristech (ex-ENST Paris) (http://www.infres.enst.fr/~dax/guides/multicast/mdownload.html)