Instant messaging (XMPP)

The Extensible Messaging and Presence Protocol is the first effort in creating an open standard for instant messaging. The base protocol has been specified in the IETF, and subsequent work on numerous extensions called Jabber Enhancement Protocols (JEP) is coordinated by the Jabber Foundationn.

P. Saint-Andre, Streaming XML with Jabber/XMPP, IEEE Internet Computing, vol. 9, no. 5, 2005.

"Extensible Messaging and Presence Protocol (XMPP): Core, RFC 3920, Oct. 2004.

RFC 3922: Mapping the Extensible Messaging and Presence Protocol (XMPP to Common Presence and Instant Messaging (CPIM), P. Saint- Andre, October 2004.

RFC 3921: Extensible Messaging and Presence PRotocol (XMPP), P. Saint-Andre, October 2004.

+ JEP-dokkarit http://www.jabber.org/jeps/

IRC (Instant messaging esi-isä)

The grand father of all instant messaging and chat is the Internet Relay Chat (IRC). The specifications date from the early 1990's but the system is still very popular, and a revised specification was issued in 2000.

[1] RFC 1459, Internet Relay Chat Protocol, J. Oikarinen , D Reed, May 1993 [2] RFC 2810, Internet Relay Chat: Architecture, C Kalt, April 2000 [3] RFC 2811, Internet Relay Chat: Channel Management, C Kalt, April 2000 [4] RFC 2812, Internet Relay Chat: Client Protocol, C Kalt, April 2000 [5] RFC 2813, Internet Relay Chat: Server Protocol, C Kalt, April 2000

SIP

The Session Initiation Protocol (SIP) is the primary protocol for the management of all kinds of session-based communications over the Internet, including Voice-over-IP, video calls, and instant messaging and presence. SIP also supports user mobility.

J. Rosenberg et al, SIP: Session Initiation Protocol, RFC3261, June 2002.

A. B. Roach, Session Initiation Protocol (SIP)-Specific Event Notification, RFC3265, June 2002.

B. Campbell et al, Session Initiation Protocol (SIP) Extension for Instant Messaging, RFC3428, December 2002.

H. Schulzrinne, J. Rosenberg, The session Initiation Protocol: Internet-Centric Signaling, IEEE Communications Magazine, pp. 134-141, October 2000

Also: http://www.cs.columbia.edu/~hgs/papers/Wedl9908_Mobility.pdf

Stateless Quality of Service

The Type of Service (TOS) field in the IP-protocol header was originally meant to be used by applications to indicate to the network the type of data transfer in use, so that the network could provide the right kind of service. In the late 1990's the TOS-field was redefined and used as the fundamental building block in a new stateless Quality of Service architecture called the Differentiated Services architecture. This new architecture makes it possible to give higher priority, and, thus, higher quality service, to certain transfers.

K. Nichols, et al., "Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers, RFC 2474, December 1998.

S. Blake, et al., "An Architecture for Differentiated Services", RFC 2475, December 1998.

Quality of Service through signaling

The Integrated Services architecture and the Resource Reservation Protocol (RSVP) are the most well-known schemes to provide dedicated resources to certain data transfers in an otherwise best-effort packet-switched network. RSVP can be used to ask for resources, e.g., bandwith, from network routers on the end-to-end path.

Braden, R., Clark, D., and S. Shenker, "Integrated Services in the Internet Architecture: an Overview", RFC 1633, June 1994.

Braden, R., Ed., Zhang, L., Berson, S., Herzog, S. and S. Jamin , "Resource ReserVation Protocol -- Version 1 Functional Specification", RFC 2205, September 1997.

Wroclawski, J., "The Use of RSVP with IETF Integrated Services", RFC 2210, September 1997. RSVP

Wroclawski, J., "Specification of Controlled-Load Network Element Service", RFC 2211, September 1997.

Shenker, S., C. Partridge and R. Guerin, "Specification of Guaranteed Quality of Service", RFC 2212, September 1997.

Chord

Chord is a distributed lookup protocol for peer-to-peer network. Chord provides support for just one operation: given a key, it maps the key onto a node. Data location can be easily implemented on top of Chord by associating a key with each data item, and storing the key/data item pair at the node to which the key maps. Chord adapts efficiently as nodes join and leave the system, and can answer queries even if the system is continuously changing.

E.g. http://pdos.csail.mit.edu/papers/chord:sigcomm01/

IETF IMPP Framework for Instant Message and Presence Services

Instant messaging protocols started to become popular in the mid 1990's. From the beginning, there were several protocols, which were totally incompatible. The IETF started to work on a common specification, which resulted in several documents discussing the requirements of instant messaging and presence protocols, and architectural considerations.

Y. Kohda, H. Sugano, and S. Okuyama, IMPP: A New Instant Messaging Standard and Its Impact on Internet Business, in Fujitsu Scientific and Technical Journal, 36(2), Dec. 2000, pp. 147153.
Available: http://magazine.fujitsu.com/us/vol36-2/paper06.pdf

S. Aggarwal, M. Day, and J. Vincent, Instant Messaging / Presence Protocol Requirements, Request for Comments 2779, Internet Engineering Task Force, Feb. 2000.

M. Day, J. Rosenberg, and H. Sugano, A Model for Presence and Instant Messaging, Request for Comments 2778, Internet Engineering Task Force, Feb. 2000.