Multimedia on the Internet

Pallavi Shah, Sun Microsystems

Sun is a strong supporter of open standards and therefore believes in cross-platform interoperability. The web is the universal interface to world's digital library. The biggest component of multimedia is video. Compliance of video with international standards based on ISO/MPEG specifications is very important in terms of facilitating interoperability. The standardized universal interface provides broadcast capability: publish once, reach millions. For worldwide interoperability of video communication, it is essential that there is a strict adherence to the profile architecture that has been developed by the MPEG Requirements Committee.

Today's multimedia applications require reliable, on time delivery of data to one or more hosts simultaneously. In order to provide this capability, multicasting and quality of service guarantees must be incorporated into the network infrastructure. RSVP (ReSerVation setup Protocol) is a network control protocol that allows internet applications to obtain special Quality-of-Service(QoS) for their dataflows. This will generally (but not necessarily) require reserving resources along the datapaths and providing some mechanism for packet scheduling in the routers. RSVP is a component of the future "integrated services" Internet, which will provide both best effort and real-time qualities of service. When an application in a host (end system) requests a specific QoS for its datastream, RSVP is used to deliver the request to each router along the path(s) of the datastream and to maintain router and host state to provide the requested service. Although RSVP was developed for setting up resource reservations, it is readily adaptable to transport other kinds of network control information along data flow path. Thus, RSVP supports multicast or unicast simplex data delivery and handles heterogeneous receivers. Network vendors, therefore, can deliver increased bandwidth in a scalable fashion for new multimedia applications. Such Quality-of-Service will ensure the multi-vendor interoperability.

In addition, there is a need for end-to-end network transport functions for real time data delivery services such as interactive audio, video and other data in order to assure maximum interoperability. RTP (Real Time Transport Protocol) is the internet protocol which can support the transport of MPEG and other form of real-time data over multicast or unicast network services. RTP provides services such as payload type identification, sequence numbering, time stamping and delivery monitoring. RTP is designed to be independent of the underlying transport and network layers. Applications typically run RTP on top of UDP to make use of its multiplexing and checksum services; both protocols contribute parts of the transport protocol functionality. RTP does not address resource reservation and does not guarantee quality-of-service for real time services, but relies on lower services to do so. Although RTP is primarily designed to satisfy the needs of multiparticle multimedia conferences, it can be easily applicable to storage of continuous data, interactive distributed simulation, and other control and measurement applications.

In conclusion, there is a need for standards that allow delivery of multimedia across different platforms as well as across different networks to ensure interoperability.