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Chapter X

Interactive Video on Enterprise Networks

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Historically, interactive video has been reserved for circuit-switched networks (e.g., ISDN) using the H.320 standard protocol for video signaling, encoding, decoding and media synchronization. Due to the high costs and complexity of bringing ISDN to individual users or facilities in certain regions of the world, the desire to leverage an expanding IP infrastructure, and to take advantage of the new management features in the latest interactive video servers, many network managers are planning to deploy multimedia over IP.

Network architects recognize that multimedia over IP implementation details will vary from site to site, depending on a combination of internal business requirements and the unique conditions in a network at the time multimedia communications support goes in. This chapter will assist those who seek to introduce interactive video to their corporate IP network users as a first step towards network convergence. It will give the reader the benefit of lessons learned in past tests and trials, on howto deploy a network with state of the art technologies, capabilities that match user needs and the ability to evolve over time as user needs change.

Following the guidelines put forth in this chapter, institutions will approach video over IP implementation in five stages. Specifically, they will:

1. Analyze needs and locate the most multimedia-hungry applications in the enterprise, establish which type of video is needed and where, and then develop a deployment plan accordingly.
2. Examine and address weaknesses in all or selected network segments identified by the needs analysis to do the following:
   - Rework topology and accommodate the increased bandwidth for business-quality video to selected locations;

This chapter appears in the book, Enterprise Networking: Multilayer Switching and Applications by Vasilis Theoharakis and Dimitrios Serpanos.

- Provide QoS guarantees to interactive audio and video traffic without shortchanging data-only applications; and
- Monitor and control network utilization by application.

3. Select the endpoints and servers that best match the application requirements and the network.
4. Address user-to-user and business-to-business connectivity issues.
5. Refine the total solution to the evolving needs of users and customers.

NEEDS ANALYSIS

A multidisciplinary team will want to perform a needs analysis prior to planning a deployment. In this process, it will be important to distinguish clearly the level of interactivity users expect to have with their multimedia content. Users will have applications that warrant the following:

- control over one-way (broadcast or on-demand) video streaming from a server;
- an asymmetrical bit rate but highly responsive level of speaker/audience interaction; and
- two-way interactive video (videoconferencing).

Furthermore, an analysis will differentiate between applications that enhance communications within one facility, between remote offices of the same enterprise, and with partners, suppliers and customers (B2B and B2C).

In the analytical phase, the business process managers will also identify the applications that will best leverage a common voice or video service in the local (LAN) or wide area networks (WANs). A "service" in the present paper is defined as a network-based, managed capability that provides value to the day-to-day operations of a group of people. The service can be embedded in the infrastructure (routers and switches) or ride above. This chapter is about the implementation of interactive (two-way) video-rich service and is not intended to cover all aspects of service provisioning/delivery through service-specific environments or facilities.

At the end of the needs analysis phase, the team will communicate its findings and recommendations, including measurable objectives and a target list of sites for the first-phase implementation, to a deployment team. The deployment plan will reflect the level of interactivity the applications will require. The challenge for communications professionals is to select the optimum level of interaction between the audience or viewer and the content source.

In the case of management reviews, collaborative design meetings, sales calls and other forms of communication in which participants are both content sources and viewers, interactivity must be at its highest. Anything less than full interaction compromises the very objective of the session. Two-way or "fully" interactive video, otherwise known as videoconferencing, requires services that most data networks were not designed to offer.