

ATM (Asynchronous Transfer Mode)

Sheila Kathleen Donis

Imagine the power and convenience of participating in a videoconference with school superintendents, staff from the Department of Education, teacher colleagues, and college faculty from all across the state, all at your computer workstation. Imagine recording a conference, a demonstration, or class and being able to easily make that recorded information available network-wide. Imagine having one simple, managed connection that allows your users to simultaneously participate in a videoconference and browse the Internet. Imagine chatting with global friends and colleagues. Imagine seeing and speaking to relatives abroad. Imagine your students visiting with another class overseas. The technology is here!

As the need for telecommunications in K-12 schools increases, it is necessary to have high quality transporting systems in place. Switching is needed at high bit rates for lower costs. With ATM, all kinds of data (telephony, speech, full video, and computer) transfer is possible. High speed applications of ATM include: high speed data transfer, HDTV, video-on-demand, distance learning, real-time collaboration, telemedicine and teleconferencing.

DEFINITION

ATM - Asynchronous Transfer Mode is a networking technology for now-generation, multimedia communications. ATM protocols are designed to handle isochronous (time critical) data such as video and telephony (audio), in addition to more conventional data communications between computers. This is a transfer mode in which the information is organized into cells. It is asynchronous in the sense that the recurrence of cells containing information from an individual user is not necessarily periodic.

ATM protocols are capable of providing a homogeneous network for all traffic types. The same protocols are used regardless of whether the application is to carry conventional audio, entertainment video, or computer network traffic over local area networks (LANs), metropolitan area networks (MANs) or wide area networks (WANs).

ATM technology is based on small, constant-sized cells that permit sufficiently rapid switching in which multiple isochronous data can be statistically multiplexed together, along with computer network traffic. The communications channel will not be limited to a fixed data rate. Each application uses only the bandwidth required. Statistical multiplexing provides for "bandwidth on demand".

ATM protocols are standards-based through the ATM Forum.

WHY ATM?

- is proactive in solving problems
- handles all aspects (video, audio, and data)
- provides sufficient improvements in capability
- is standards-based (interoperability)
- has power (access to vast amounts of information with unaccustomed ease)
- is flexible (mix of services with the ability to modify)
- has scalability (enterprise-level of equipment for reliability and stability)
- has reliable routing
- has network management capabilities (one network-all different types of traffic)
- has proven Quality of Service

IP OVER ATM WORKING GROUP BORN

As recently as August 1999, the ATM Forum recognizes the importance of partnering with other technologies; therefore, the Technical Committee is broadening and redirecting their scope in support of IP-based (Internet Protocol) services. This plan is expected to generate a unique opportunity for IP-based applications and services to take advantage of ATM's inherent QoS, security, and management features. IP over ATM provides a transition path to the deployment of ATM enterprise and end-user networks.

ATM BACKBONES — ALIVE AND KICKING!

Keith Pierce, system director of network services for Samaritan Health Systems in Phoenix, uses ATM backbone switches to tie together a 3,000-node campus network linking three hospitals, a corporate center and several clinics.

Pennsbury Schools of Pennsylvania recently launched an ATM metropolitan area network (MAN).

Access Indiana State Backbone Network is a high-speed transport system capable of simultaneously handling data and video. This system is interconnecting colleges and universities, K-12 schools, public libraries, state government offices, and other public sector clients. The overall goal is to facilitate information generation and distribution within the state of Indiana.

EDUCATOR SENSE

Finding sense becomes very difficult. We lose ourselves between vendors, large telecommunications companies and everyday needs of the classroom teachers and students. The new millennium calls for new communications systems. It is crucial that educators and students become part of a global learning community. Authentic student research is nestled in a complex system of information retrieval and

communications.

To accommodate the diversity and complexity of the challenges and dreams of the new millennium, educators must be positioned at the forefront. Very simply, we must demand high quality two-way video. Ask to participate in simulated video-conferencing. Archive anecdotal notes about your hands-on experiences with the multimedia equipment and infrastructure highlighted by vendors. How does it work? How *smoothly* does it work? Does it look good and sound great? Give a call to school corporations who use the technology. Why pay money for mediocre services. We must not accept poor quality video, data or voice into our classroom environments. Set high standards and expectations for the "two-way video" ride of *your* life and the life of your students!