

Designing ATM Internetworks

This chapter describes current Asynchronous Transfer Mode (ATM) technologies that network designers can use in their networks today. It also makes recommendations for designing non-ATM networks so that those networks can take advantage of ATM in the future without sacrificing current investments in cable.

This chapter focuses on the following topics:

- ATM overview
- Cisco's ATM WAN solutions

ATM Defined

ATM is an evolving technology designed for the high-speed transfer of voice, video, and data through public and private networks in a cost-effective manner. ATM is based on the efforts of Study Group XVIII of the International Telecommunication Union Telecommunication Standardization Sector (ITU-T, formerly the Consultative Committee for International Telegraph and Telephone [CCITT]) and the American National Standards Institute (ANSI) to apply very large-scale integration (VLSI) technology to the transfer of data within public networks. Officially, the ATM layer of the Broadband Integrated Services Digital Network (BISDN) model is defined by CCITT I.361.

Current efforts to bring ATM technology to private networks and to guarantee interoperability between private and public networks is being done by the ATM Forum, which was jointly founded by Cisco Systems, NET/ADAPTIVE, Northern Telecom, and Sprint in 1991.

Role of ATM in Internetworks

Today, 90 percent of computing power resides on desktops, and that power is growing exponentially. Distributed applications are increasingly bandwidth-hungry, and the emergence of the Internet is driving most LAN architectures to the limit. Voice communications have increased significantly with increasing reliance on centralized voice mail systems for verbal communications. The internetwork is the critical tool for information flow. Internetworks are being pressured to cost less yet support the emerging applications and higher number of users with increased performance.

To date, local and wide-area communications have remained logically separate. In the LAN, bandwidth is free and connectivity is limited only by hardware and implementation cost. The LAN has carried data only. In the WAN, bandwidth has been the overriding cost, and such delay-sensitive traffic as voice has remained separate from data. New applications and the economics of supporting them, however, are forcing these conventions to change.