

ATM AND BROADBAND CELL NETWORKING

Packetizing information for distant transport has become an important technology in telecommunications industry. Standardization and simplification of packetization technology have been developed since ATM Forum was formed in 1988. The course starts with the discussion of the reason why ATM is the most important information packetization technology used for modern telecommunications. The ATM layered model is described. The basic technology of ATM standard will be discussed in detail, including ATM cell creation, switching and transport. ATM services and associated protocols, quality of service (QoS), and ATM management are also discussed.

Audience:

This course is important for managers, sales forces and technical persons in the telecommunications field to become familiar with the digital communication systems and networks. This course is basically designed for technical persons, however, it can be easily modified and tailored for managers and sales and marketing persons.

Prerequisites:

There are no prerequisites for this course.

Objectives:

At the conclusion of this course the student will be able to describe the:

- Rationale for ATM technology
- Concepts of virtual path and virtual channel
- ATM services, QoS, and traffic parameters
- ATM cell creation/formation
- ATM cell transmission
- ATM switching and signaling
- ATM network management

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COURSE OUTLINE

Day 1

1. Information Transfer Modes

- Various transfer modes
- Why packetization for data transport?
- TDM vs. statistical multiplexing
- Implementation of statistical multiplexing

2. What is ATM?

- Traditional vs. fast packet switching
- ATM characteristics
- Connectionless vs. connection-oriented

3. Why ATM?

- Multimedia Services
- Multiplexing Efficiency
- Generic Transport Infrastructure

4. ATM Network

- ATM network building blocks
- ATM channels
- VPC vs. VCC
- ATM provisioning

5. ATM Cell Structure

- ATM cell size
- ATM header structure
- Header function overview

6. ATM Layered Model

- Layers
- Layer Functions

7. ATM Connection

- Switched Virtual Connections
- Permanent Virtual Connections
- Attributes

8. ATM Applications and Services

- ATM Applications
- Carrier Services
- Service Examples

9. Quality of Service (QoS)

- QoS parameters
- Traffic parameters
- Service specifications

10. ATM Interworking

- Network Interworking
- Service Interworking

11. ATM Traffic Characteristics

- Constant Bite Rate (CBR)
- Variable Bite Rate (VBR)

Day 2

12. ATM Service Functional Requirements

- AAL Mapping
- ATM Physical Layer Issues

13. Potential ATM Transmission Media

- Over Framed Transport Signal
- Over Unframed Transport Signal
- 100 Mbps cell-based signals
- 155.52 Mbps cell-based signals

14. ATM Signals Characteristics

- Rate insensitivity
- Signal scrambling
- Cell delineation
- Header error control
- Cell rate decoupling

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15. ATM Switching

- ATM switch vs. STM switch
- Requirements and Architecture
- ATM switch implementation examples

16. ATM Management

- Physical Layer Management
- Upper Layer Management

17. Conclusion