Asynchronous Transfer Mode: An Introduction

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ATM: What it is

- Asynchronous Transfer Mode
- A low-layer networking technology (aspects of Network/Datalink Layers) based on fast packet-switching of small fixed size packets called *cells*
- ATM provides a single transport mechanism for integrated services traffic: data, voice, video,...
- All statistically multiplexed at ATM layer, with transmission slots assigned on an “on demand” basis

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Asynchronous Transfer Mode (1of2)

- About 20 years old
- Packet-switched network
- Small fixed-size packets (53 bytes)
- Designed for integrated services (voice, video, data, imaging, interactivity,…)
- High speed network technologies (optical)
- Wide range of user and application behaviour
- Bursty, variable bandwidth required per call
- Aggregation of traffic at switches
- Transmission links shared on a stat mux basis

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ATM (2 of 2)

- Connection-oriented
- Allocates a virtual channel (VC) per active call
- End to end path allocation determined at time of call arrival; reserved bandwidth per active call
- All packets travel same path (order preserved)
- Crucial state info in ATM switches
- Bundles of related VC's handled via Virtual Path (VP)
- 5-byte header (VPI and VCI) plus 48-byte payload
- An example of "label switching" at NL/DL layers
- Multiple classes of service (priority levels)
- Offers end to end QOS guarantees (SLAs)

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ATM Cell Format

- 53 bytes
- 5 byte header
- 48 byte payload (data)
- Virtual Path Identifier (VPI)
- Virtual Channel Identifier (VCI)
- Simple control fields

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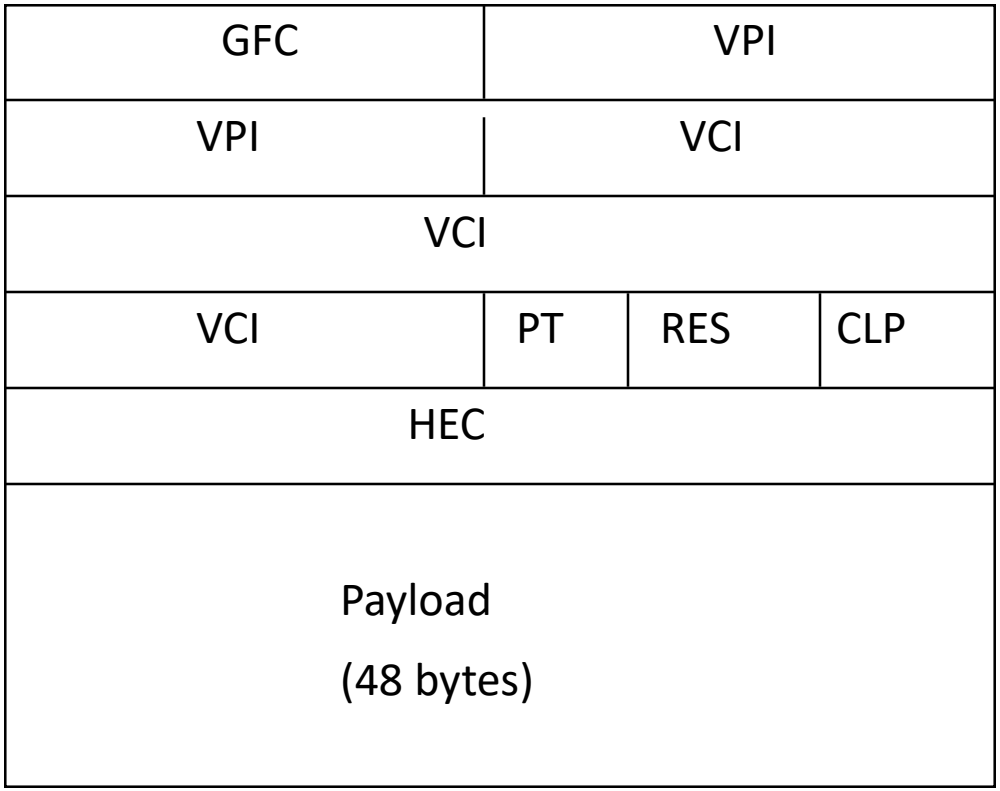
ATM Cell Format



ATM UNI Cell Specification