ATM Application Programming Interface (API)

Raj Jain
Professor of Computer and Information Science

Raj Jain is now at
Washington University in Saint Louis
Jain@cse.wustl.edu
http://www.cse.wustl.edu/~jain/
Overview

- What is an API?
- What is a SAP?
- API Group activities
What is an API?

- API = Set of interfaces to access the functionality of lower level services
- Typically implemented as a function library
- Example: WSAAccept() = Accept incoming connection (in Winsock2)
- Existing APIs: Sockets, XTI (X/Open transport interface), Winsock, Netbios
Service Access Point (SAP)

- SAP is used to distinguish clients of a layer
- Many clients can use a service
- Each client must have its own SAP
- On an outgoing call, destination SAP specifies the ATM address of the remote device + target software in the device
SAP Address

- SAP is expressed as a vector. 
  \{ATM Address, ATM selector, BLLI_id2, BLLI_id3, BHLI_id\}
- BLLI_id2 identifies layer 2 protocol
  - BLLI = Broadband low layer information
- BLLI_id3 identifies layer 3 protocol
- BHLI_id identifies application layer protocol
- Each SAP vector element (SVE) consists of a tag, length, and value field
- A tag can be "Present", "Absent", or "Any"
- Several rules for coding and interpretation of SVEs.
Native Services Reference Model

Applications

Native ATM API

Native ATM Library

Existing Transport APIs

Other API Libraries (Sockets)

Traditional Transport and Network Protocols (TCP/IP)

Other Services (LANE)

Connection and Data Distribution

Native ATM SAP

UNI Services

Data Transfer

SVC

PVC

Local Management

Device Drivers

ATM Adapter Card

The Ohio State University

Raj Jain
API Group Activities

- Specification of Reference API
  - Semantic description includes sequence of events
    - Semantic = meaning = independent of any programming language
    - Provides proper abstraction of relevant ATM procedures and parameters
- Help other organizations to include native ATM applications ⇒ Winsock
State Diagram: Example

A0
- ATM_associate_endpoint

A1
- ATM_prepare_incoming_call

A2
- ATM_prepare_outgoing_call
- ATM_connect_outgoing_call

A3
- ATM_P2P_call_active
- ATM_accept_incoming_call

A4
- ATM_wait_on_incoming_call

A5
- ATM_arrival_of_incoming_call

A6
- ATM_reject_incoming_call
- ATM_P2MP_call_active

A7
- ATM_P2P_call_active

A8
- ATM_call_release

A9

A10

A11
- ATM_abort_connection
ATM API allows applications to exploit ATM.

Services include data transfer, VC setup/release, traffic management, and network management.

Currently specifying a SAP.
References: ATM API

- "Mapping of the ATM Forum SAA/API Semantic Description to the Winsock2 API," ATM Forum/96-00191R1, April 1996.