AADSnet

Ameritech Advanced Data Services regional Internet service

- AADSnet is an IP regional network covering the Ameritech 5-state area and beyond.

- The network provides access in each LATA to multiple Internet network service providers. AADS customers have their choice of primary and backup long-haul providers.

- Access methods include: frame relay, SMDS, private line (DS0, DS1, DS3, ...), ATM (DS3, OC3, ...), dialup PPP, ISDN basic rate.

- AADS supports a range of complimentary services, such as DNS, network time protocol, dialup authentication, site security, billing and CIDR address assignment. In addition, gateways will be supported for various applications.

- The AADSnet supports multiple network layer protocols including IP, IPX, CLNP/OSI, and SNA.

- AADS has submitted a proposal to the National Science Foundation to act as Network Access Point (NAP) manager for the Chicago NAP, as part of the 1993 NSFNET solicitation. The AADSnet will be connected to the Chicago NAP.

- AADSnet supports full and open connectivity to all Internet providers, and will provide equal and non-discriminatory access. AADS will join appropriate consortiums to foster good communication and participation among Internet service providers.

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AADSnet Routing Plan

Equal Access for Carrier Selection/full intra-LATA connectivity

- Customers are physically connected to an Ameritech "LATAnet", providing access to the Internet.

- Each "LATAnet" supports full mesh interconnection at the IP level, or lower layer switched services (eg. SMDS or Frame Relay), allowing within-provider switching in the LATA.

- Network Service Providers act as Inter-Exchange Carriers to carry IP traffic between LATAnets.

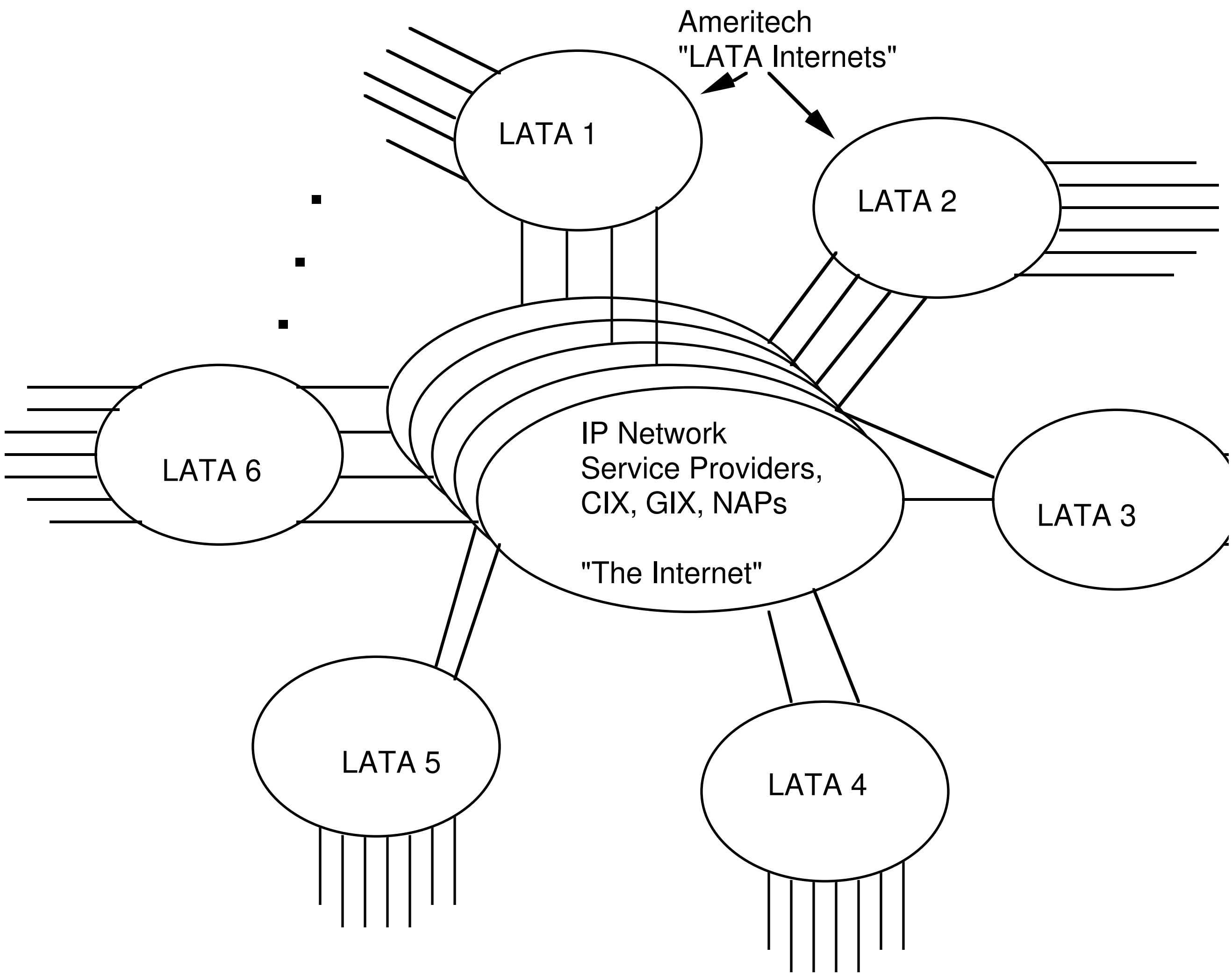
- IP routing announcements are made from the LATAnet to an NSP on behalf of the set of customer networks who have chosen that particular NSP as primary for primary or backup interconnection. This is implemented by dedicating a LATAnet router in an AADSnet POP to a particular NSP. Customers who have selected this NSP will peer with the appropriate AADS router.

- The NSPs will announce full routing information for the Internet into the AADS routers, to maximize connectivity and reliability for full continuous access to the Internet.

- Some customers may have routing policies which allow less than full connectivity to the Internet, e.g. a small group of customer sites within the LATA or on the larger Internet. Such policies for within-LATA connectivity can be implemented either in the AADS switching fabric or at the IP level.

- A Policy Routing Database will be used by AADS to manage customer routing policies and routing announcements for NSPs.

AADSnet Routing Model



AADSnet: The Ameritech regional IP network

provided by Ameritech Advanced Data Services

Routing Plan for Carrier Selection

- AADSnet customers who have chosen provider “NSP 1” will peer with AADS router A (this may mean establishing a FR PVC to router A, or configuring SMDS SNI addresses to communicate with A, etc.).

- Router A will then announce net-prefixes of those customers to the NSP 1 cloud with a metric indicating primary routing.

- The customer would also select provider “NSP 2” as a backup provider--in this case the customer router would peer with AADS Router B, and Router B would announce those customers to the NSP 2 net.

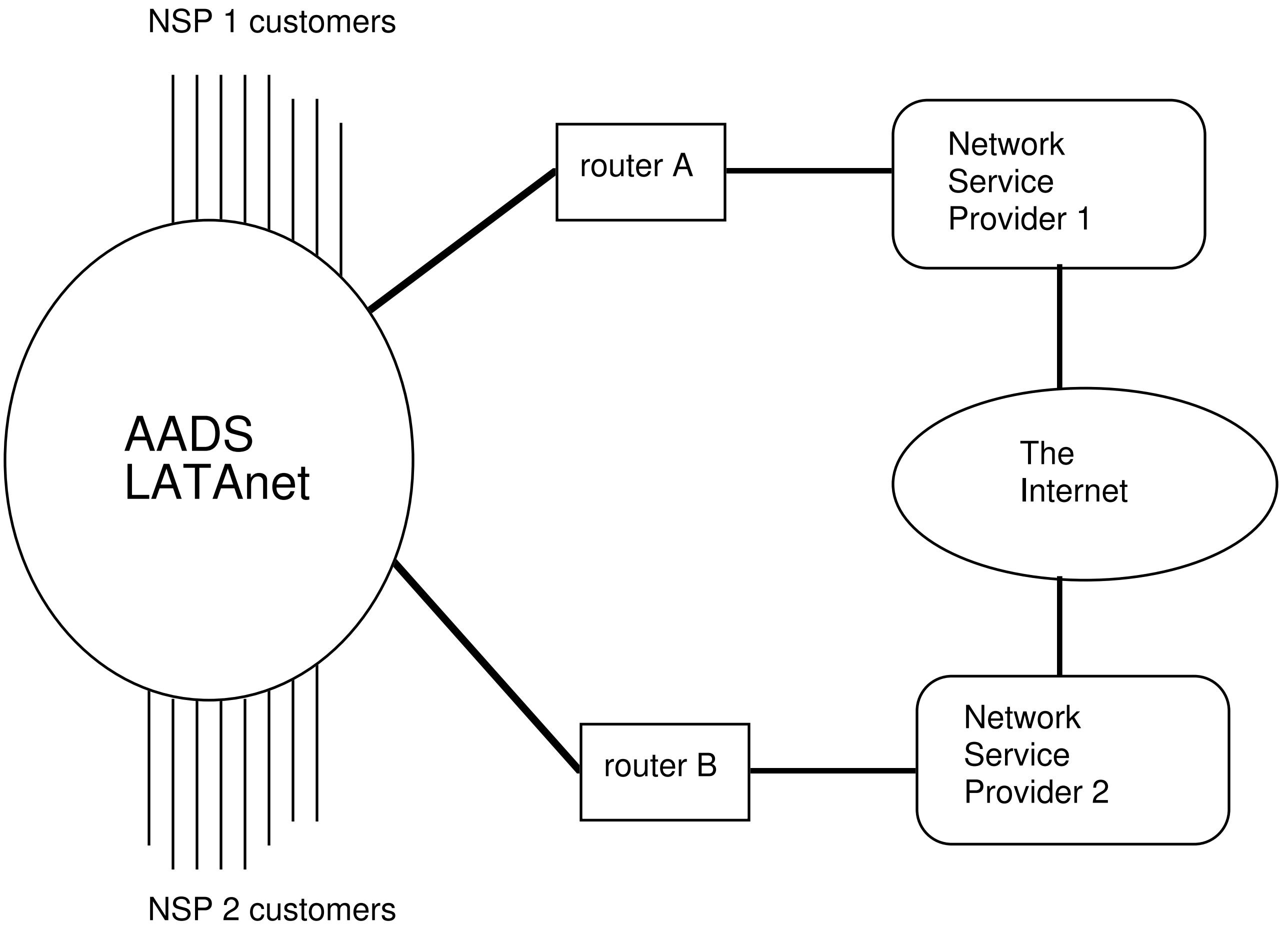
- For customers with private line interconnection, peering and backup routing will work differently. In this case the AADS router may need to peer with more than one NSP with separate metrics in prefix announcements to distinguish customers.

- Each LATAnet is a separate Autonomous System in the Internet.

- See figure, “Carrier Selection” on next page.

- CIDR network number allocation will be preferably based on the primary carrier selection. Alternatively, AADS will obtain a CIDR address block which will be divided up into continguous blocks for each LATAnet, and suballocated to customer networks.

Carrier Selection - Routing Figure



AADSnet Access Methods

AADSnet will support the following access methods:

- Frame Relay Service: 56Kbps or 1.536Mbps access. IP connectivity will be provided via permanent virtual circuits (PVCs) to AADSnet backbone routers which peer with NSPs selected to provide inter-LATA connectivity. An PVC on an existing customer frame relay circuit can be configured to connect to the AADSnet service for public Internet connectivity.

- Switched Multi-Megabit Data Services (SMDS): 56Kbps, 1.17Mbps, 4Mbps, 10Mbps, 16Mbps or 34Mbps access. IP connectivity will be provided via configuration of SNI (SMDS network interface) addresses for NSPs providing inter-LATA connectivity.

- Private (leased) Line: 56Kbps through 45Mbps. Circuits will terminate at an AADS backbone router as appropriate for NSP peering for inter-LATA connectivity.

- Asynchronous Transfer Mode: 45Mbps (DS3) or 155Mbps (OC3). AADS has announced ATM service in several areas. Initially ATM service will be provided using PVCs (see frame relay above), and later switched virtual circuits (SVCs) will be offered to allow dynamic service selection.

- Ameritech LAN Interconnect Service (ALIS): 10Mbps ethernet. ALIS provides a metropolitan area ethernet “LAN” service. There may be restrictions on where this is available. ALIS will allow a direct peer session between the customer router and the AADS backbone router over ethernet.

AADSnet access methods (continued):

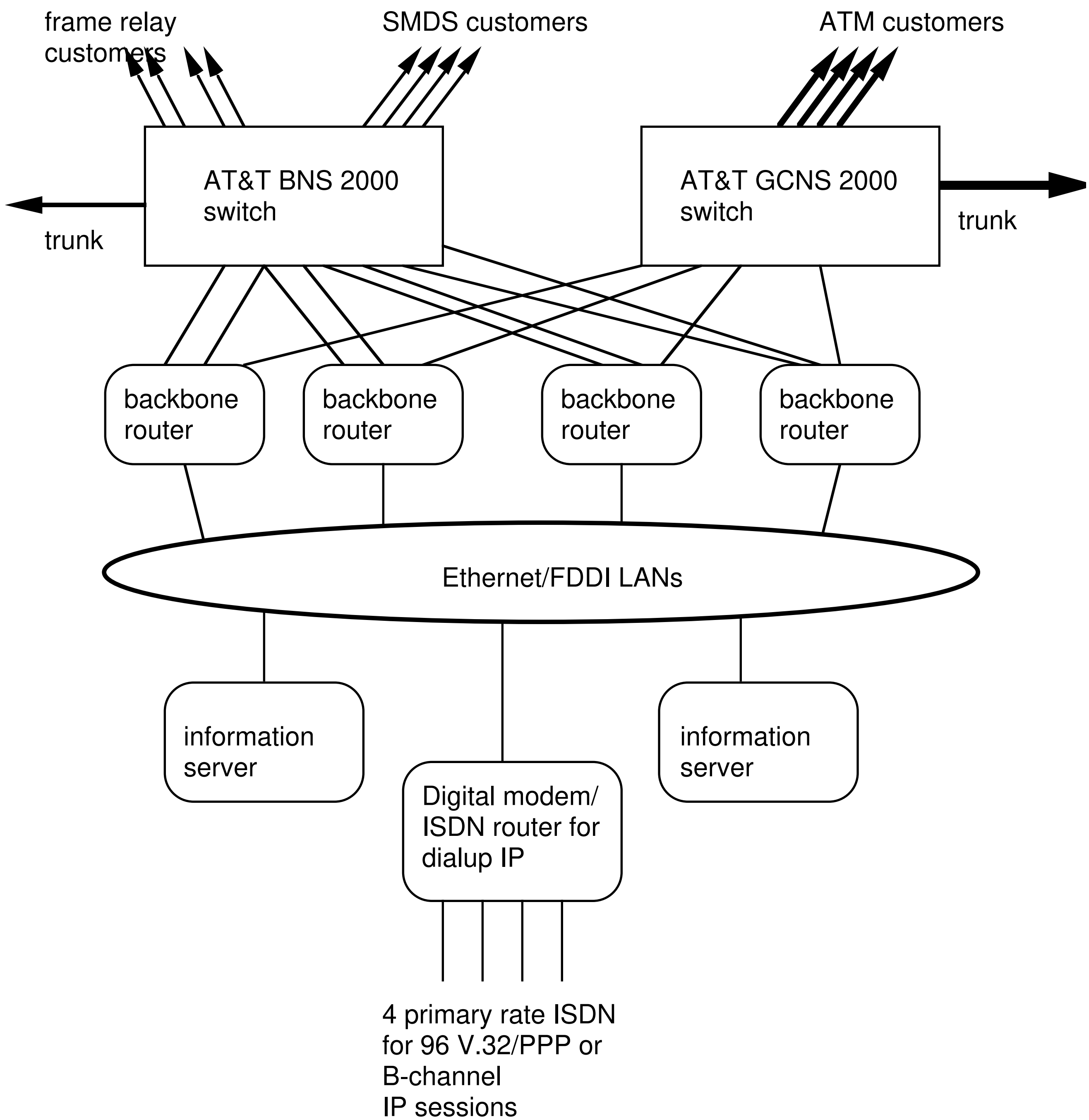
- Integrated Services Digital Network (ISDN): 64Kbps or 128Kbps. Using a basic rate interface (BRI), and an ethernet-to-ISDN router devide, a customer can connect to the Internet over one or both 64Kbps B-channels for IP service. AADS will provide ISDN addresses in each LATA which connect to AADSnet backbone routers. Usage charges for ISDN calls apply, with a minimal per-month charge for Internet access. An inter-LATA IP carrier should be selected by each customer, and individual ISDN addresses will be provided for each carrier.

- Analog modem dial-up: 300bps through 14.4Kbps. Raw telnet as well as Point to Point Protocol (PPP) access will be available. Local dial-up phone numbers will be available in many calling area, with use of “950” numbers (feature group B, “800” (in-WATS) or other means to keep dial costs low. Pricing will depend on area configuration, with a target of complete nationwide availability.

- Both ISDN BRI and modem dial-up will be authenticated services, ie. users will need to obtain an AADSnet user identification logon and password in order to use the network.

AADS POP Configuration

Physical configuration of equipment at AADS switch sites for AADSnet



Regulatory Issues

- Intra-LATA restriction is here for the foreseeable future, however there are several deregulation bills in congress which would un-monopolize the local access market and allow RBOCs to provide long-distance transmission.

- Frame Relay and SMDS are untariffed services offered by AADS. Offering a higher level service such as IP over FR and SMDS has been approved in Ohio and Indiana, and is expected this month in Wisconsin. Legal work is necessary to be completed in Michigan and Illinois, but this is progressing rapidly.

- IP service "trials" can proceed immediately (see next slide), can be done in multiple LATAs, and can last up to 6 months.

- The service must be offered on a "non-discriminatory basis" to customers and to inter-exchange carriers.

- AADS will publicize an open invitation to any IP providers wishing to act as IXCs for the service, under a set of publicized terms and conditions. E.G. a com-priv may be posted, and the terms and conditions document may be available by anonymous FTP.

AADSnet Service Trials

There are two trials being planned for AADSnet:

- In the Detroit LATA, Lawrence Institute of Technology is considering connecting as an AADSnet service trial. They are waiting for pricing and dates before a decision is made.

- In Chicago, the American Association of Higher Education is meeting at the Chicago Hilton (downtown) from March 23-26. Stuart Lynn of Cornell is giving a talk on the Internet. Ameritech is an exhibitor at this conference, and AADS is sponsoring a T1-rate Internet connection to the hotel. CICNet will provide inter-LATA IP connectivity.

- In both LATAs, CICNet has offered to act as IP-IXC. CICNet will set a price to be offered to the customers for IXC services. CICNet will use a T1 access from the closest CICNet site (Argonne in Chicago and UM in Michigan).

Chicago NAP

National Science Foundation will soon announce NAP providers:

- Chicago: Bellcore and AADS
- San Francisco bay area: Bellcore and Pacific Bell
- New York: Sprint
- Washington DC: MFS Datanet (MAE-East evolution)

- For the Chicago and Bay Area NAPs, Bellcore is the lead on the two proposals, with the RBOCs as partners. AADS and Pacbell will be the actual service providers, with Bellcore providing the NSF contact and an additional ATM network management project.
- The Chicago NAP is targeted as a DS3/OC3 ATM system, with the likelihood that a base level service may be requested initially, such as 10Mbps metropolitan area ethernet.
- AADS will meet with network service providers who are likely to connect at the NAP, with Merit/IBM/USC/ISI (the RA), and with MCI/ANS (the vBNS) to help define the initial NAP architecture.
- Our target is May 1, 1994 for service availability (an ATM switch has been received and is waiting to be installed at a site in Chicago).

AADSnet Service Packages: Connectivity options

Basic Connected IP service

router at customer site
switched connection to AADS POP
router "slice" at AADS POP
access to inter-exchange carrier IP (wider Internet)
customer network address assignment and registration
secondary DNS service for forward domain and in-addr
network time protocol distribution

Basic Dial IP service

dialup V.32bis PPP
authenticated login
Internet carrier selection and access
dynamic address assignment

Basic ISDN IP service

64K or 128K ISDN access to AADS router
Internet carrier selection and access
dynamic address assignment

Telnet dialup service

Dial via X.25 PAD or direct to terminal server
authenticated login
interactive access to host using selected carrier

AADSnet Service Packages:

Host Services

Host services (text based)

- Internet "shell" account
- e-mail box
- netnews client
- gopher client
- ftp and disk space
- download staging
- other text-based services

Host services (client/server)

- e-mail server (POP/IMAP)
- netnews server
- gopher server
- WWW server

AADSnet Service Packages:

Application Services

custom services for specific applications

Ford PDGS IP/X.25 gateway
Other community or industry gateways

security services

One-time password systems
Secure Internet daemons
Network authentication

information services

online phone directories,
interactive advertising,
AADS home page for mosaic/WWW,
Internet GEnie,
NOTIS/Dynix library services,

AADSnet Service Packages:

Premises Services

Servers operated by AADS at customer site

- Primary DNS server
- Customer information servers

Security Services

- Firewall gateways
- Encapsulation devices for Internet virtual private networks
- Data encryption