A History of Internet Exchanges

(Lessons learned -- the hard way)

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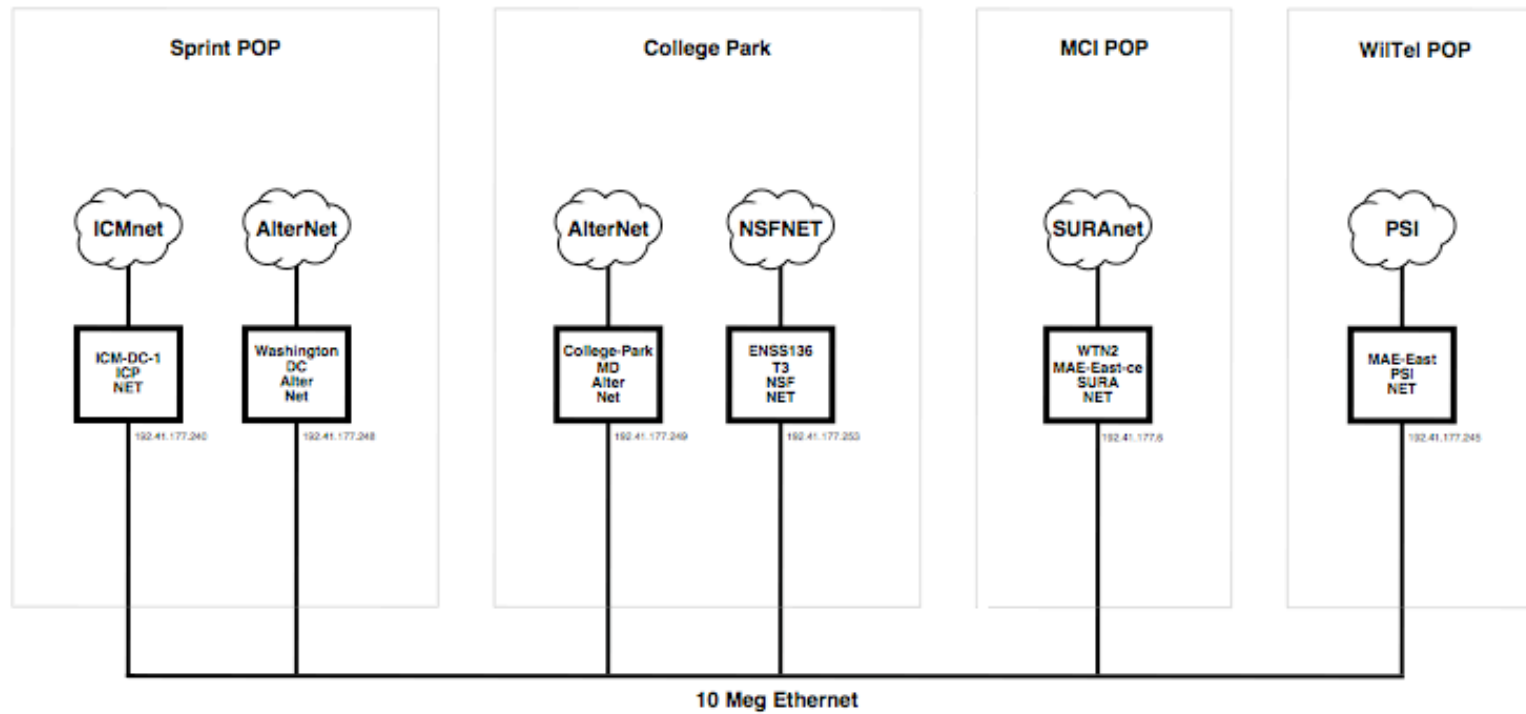
CNET Networks

NANOG

Myth #1: 10 Megabits is Enough

- Original MAE East
  - Distributed around metro Washington, DC
  - Shared 10 megabits/sec
  - Ethernet interface
  - Proprietary DS3 ring structure
  - It worked great -- until it got full.

MAE-East Configuration 2/23/93

Sprint POP

ICMnet

```
ICM-DC-1
ICP
NET
```
192.41.177.240

AlterNet

```
Washington
DC
Alter
Net
```
192.41.177.248

College Park

AlterNet

```
College-Park
MD
Alter
Net
```
192.41.177.249

NSFNET

```
ENSS136
T3
NSF
NET
```
192.41.177.253

MCI POP

SURAnet

```
WTN2
MAE-East-ce
SURA
NET
```
192.41.177.6

WilTel POP

PSI

```
MAE-East
PSI
NET
```
192.41.177.245

10 Meg Ethernet

For more information contact: mae-east@uunet.uu.net
ftp.uu.net:/inet/maps/mae-east/mae-east.ps.Z

Myth #2: Only One Exchange is Possible

- "Global Internet Exchange"
- Reality: BGP works
  - Hot-potato routing
  - Symmetric paths not necessary

Myth #3: IXs Need NSF Blessing

- 1993 NSF NAP solicitation
- Everyone wanted a piece of the pie!
- But:
  - MAE West
  - PAIX
  - Regional exchanges
  - etc.

Myth #4: Join MAE East, Peer With the World!

- Selective peering policies
- Clueless salespeople
- Clueless ISP wannabes

Myth #5: "If You Build It, They Will Come"

- Do you remember MAE New York?
- Or MAE Zurich?

Myth #6: 100 Megabits is Enough

- See Myth #1
- Shared media fills up
- You need an upgrade path!

Myth #7: Peering Means Never Having to Say You're Sorry

- "I'm sorry." -- Stephen Stuart, Digital Equipment Corp, Jan. 1997.
- -- Steve Feldman,
  MFS Datanet, Oct. 1997.

Myth #8: IXs Need Disco Lights!

Myth #9a: ATM Will Fix Everything!
Myth #9b: ATM is Useless!

- ATM-based NAPs took a long time to work out the kinks.

- Some are still successful today.

- ATM is one tool in the toolbox, use it where appropriate.

Myth #10: Layer Two is Easy

- Ethernet
  - Spanning tree
  - Bridging loops
- Virtual circuits (ATM, frame relay, etc.)
  - Asymmetry
  - Policing
- Hybrids: Ethernet over virtual circuits
  - Combines the worst features of both!

Thanks!