Introduction To TCP/IP and The Internet

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TOPIC AND SCOPE

Internetworking: an overview of concepts, terminology, and technology underlying the TCP/IP Internet protocol suite, and the architecture of the Internet.

Roadmap

- Introduction to Internetworking
- Internet Model and the Basics Of Internetworking
- Protocol Layering and Network Level Services
- Application Level Services and Protocols

Part I

Introduction to Internetworking and Review of Basics

What is Internetworking ?

- Highly successful new technology
- Software, not hardware
- Universal interconnection
- Protocol standards
- Services
  - Application level
  - Network level
- Large, working demonstration

Goal of Internetworking

To maximize interoperability of distributed computations across vendors and products.

An Internetwork (Internet)

- Collection of interconnected, cooperative networks
- Uses common protocols
- Acts like a single network system

Local and Global Use of TCP/IP Technology

- In a local environment
  - — on a single machine for inter–process communications
  - — among some of the machines on a local net
  - — among machines at multiple sites within a given organization
- In a global environment
  - — to connect machines at a given site to the rest of the world

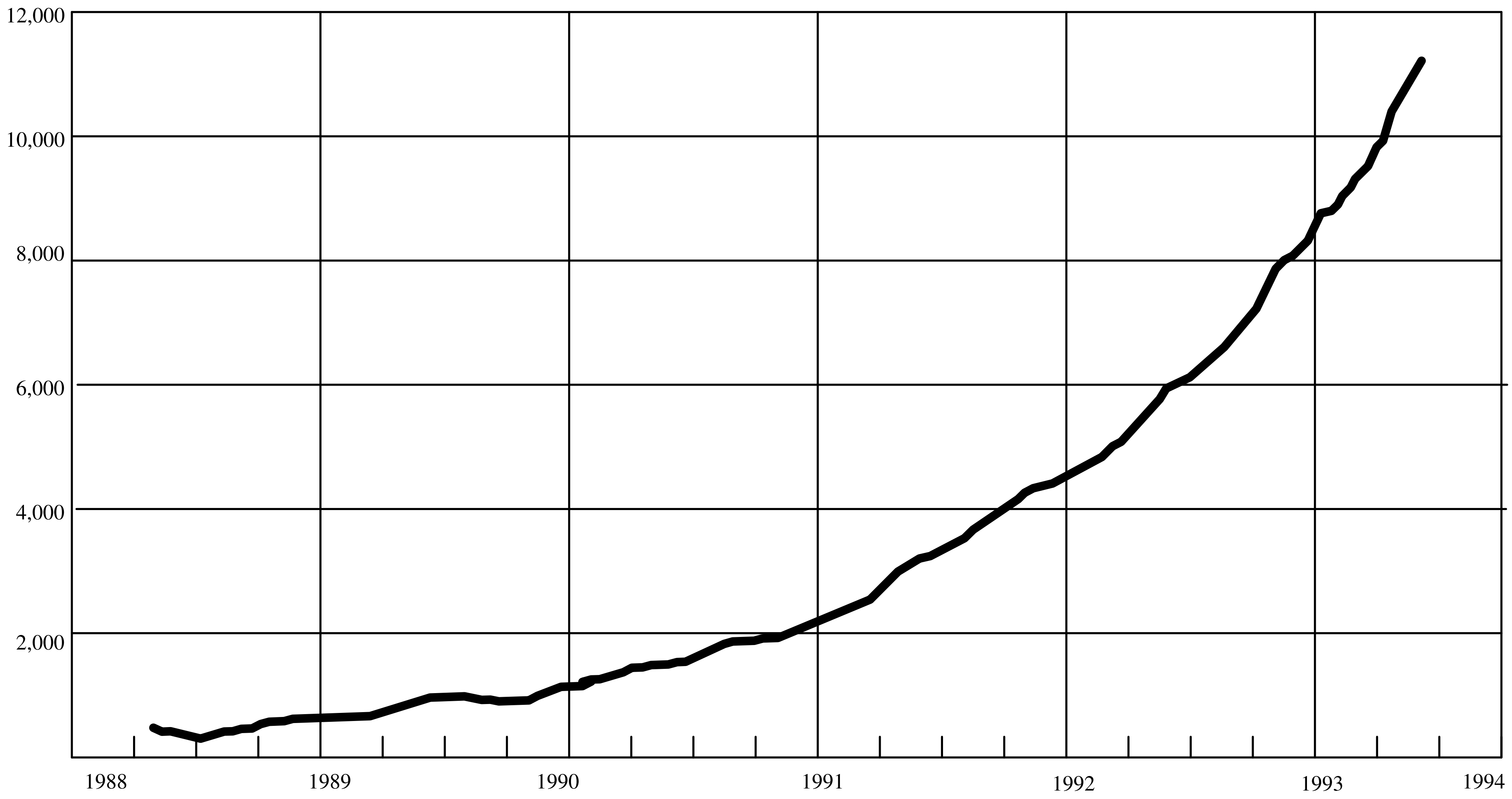
The Connected TCP/IP Internet

- Large internet that includes:
  - University campuses
  - Industrial sites
  - Government laboratories
  - Military installations
- Original R&D funded by Defense Advanced Research Project Agency (DARPA)

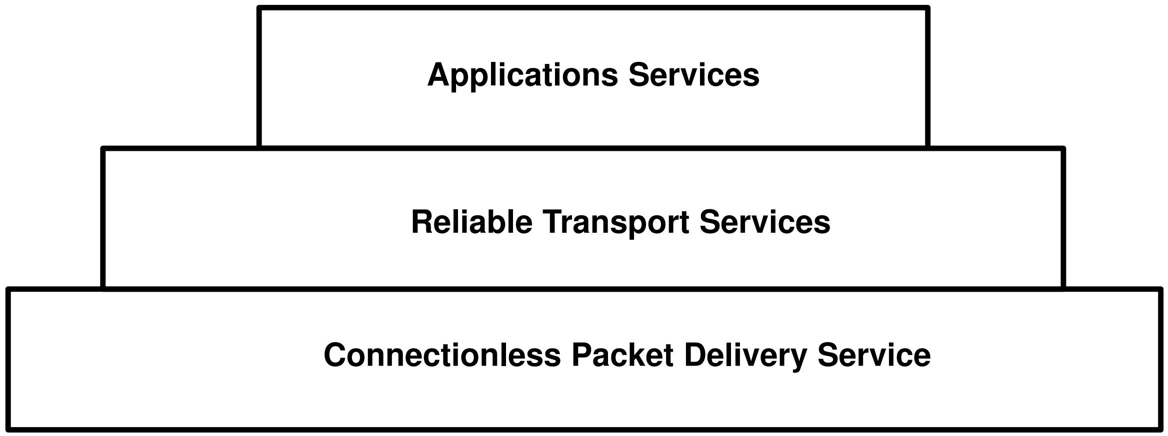
Current TCP/IP Internet

- Over 150,000 individual host computers
- Over 10,000 active networks
- Growth between 10% and 15% per month
- Current research support
  - NSF
  - DARPA
  - NASA
  - DOD
  - others

INTERNET GROWTH



Services the Internet Provides



Networking–Level Internet Services

- Lowest Level (packet delivery)
  - connectionless
  - unreliable
- Transport Level (stream transport)
  - uses virtual circuit connections
  - reliable delivery
  - flow control

Application–Level Internet Services

- Electronic mail
- File transfer
- Remote login
- Remote interactive execution
- Remote job entry
- Directory services
- Information archives