COT 4600 Operating Systems Spring 2011

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Office hours: Tu-Th 5:00 – 6:00 PM

Lecture 12 – Tuesday, February 22, 2011

- Last time:
  - Client-server organization
  - Intermediaries; Trusted Intermediaries; Thin clients
  - Issues
    - Heterogeneity; little-endian and big-endian representation
    - Timing, response time.
  - Examples: Event service, X11; Trusted intermediaries: Email, File Systems, Web Today
- Today
  - Peer-to-peer systems
  - Remote Procedure Call
  - Strategies for name resolution
  - Case study: DNS – Domain Name Service
  - Case study: NFS – Network File System
- Next time
  - Virtualization

Peer-to-peer systems

- Decentralized architecture without a trusted intermediary.
- Peers are both suppliers and consumers of resources, in contrast to the traditional client-server model where servers supply, and clients consume.
- Peer-to-peer systems often implement an Application Layer overlay network on top of the native or physical network topology. Such overlays are used for indexing and peer discovery.
- Content is typically exchanged directly over the underlying IP network.
- Anonymous peer-to-peer systems implement extra routing layers to obscure the identity of the source or destination of queries.
- In *structured* peer-to-peer networks, connections in the overlay are fixed. They typically use distributed hash table-based (DHT) indexing, such as in the Chord system developed at MIT
- *Unstructured peer-to-peer* networks do not provide any algorithm for organization or optimization of network connections.
- Advantages
  - use of spare resources at many sites
  - difficult to censor content
- Disadvantage
  - Finding information in a large peer-to-peer network is hard.