Internet Hierarchy

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Internet structure: network of networks

- roughly hierarchical

- at center: “tier-1” ISPs (e.g., Verizon, Sprint, AT&T, Cable and Wireless), national/international coverage
  - treat each other as equals

![Diagram of Internet structure showing Tier-1 ISPs and their interconnections.](attachment://internet_structure_diagram.png)
“Tier-2” ISPs: smaller (often regional) ISPs
- Connect to one or more tier-1 ISPs, possibly other tier-2 ISPs

Tier-2 ISP pays tier-1 ISP for connectivity to rest of Internet
- tier-2 ISP is customer of tier-1 provider

Tier-2 ISPs also peer privately with each other.
Internet structure: network of networks

- "Tier-3" ISPs and local ISPs
  - last hop ("access") network (closest to end systems)

Local and tier-3 ISPs are customers of higher tier ISPs connecting them to rest of Internet
Internet structure: network of networks

- a packet passes through many networks!