Residential access: cable modems

- HFC: hybrid fiber coax
  - asymmetric: up to 30Mbps downstream, 2 Mbps upstream
- network of cable and fiber attaches homes to ISP router
  - homes share access to router
- deployment: available via cable TV companies
Residential access: cable modems

Diagram: http://www.cabledatacomnews.com/cmic/diagram.html
Cable Network Architecture: Overview

Typically 500 to 5,000 homes
Cable Network Architecture: Overview

cable headend

server(s)
cable distribution network

home
Cable Network Architecture: Overview

cable headend

cable distribution network (simplified)

home

Set-Top Box

Coax

Splitter

Coax

Cable Modem

10 Mbps Ethernet

PC

Home Environment

TV
**Cable Network Architecture: Overview**

FDM (more shortly):

- Cable headend
- Cable distribution network
- Home

Channels:

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FDM (Frequency Division Multiplexing) allows multiple channels to be transmitted over a single cable by dividing the cable into frequency bands and assigning each channel to a specific band.
Company access: local area networks

- company/univ local area network (LAN) connects end system to edge router
- Ethernet:
  - 10 Mbs, 100Mbps, 1Gbps, 10Gbps Ethernet
  - modern configuration: end systems connect into *Ethernet switch*
Wireless access networks

• shared wireless access network connects end system to router
  – via base station aka “access point”

• wireless LANs:
  – 802.11b/g (WiFi): 11 or 54 Mbps

• wider-area wireless access
  – ~1Mbps over cellular system (EVDO, HSDPA)
  – WiMAX (up to 100 Mbps) over wide area
Typical home network components:

- DSL or cable modem
- router/firewall/NAT
- Ethernet
- wireless access