The Changing Nature of Broadband Deployment

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The Growing Capital Intensiveness of Bandwidth Expansion
- First generation (DSL and cable modem) leveraged legacy technologies ($400-$800 per subscriber)
- Current generation requires more capital
  - FiOS ($24 billion/$3000-$4000 per sub; 15% buildout)
  - VDSL ($7 billion/$1100-$1850 per sub; 25% buildout)
  - DOCSIS 3.0 (est. $3 billion/$100 per sub.)
  - LTE (spectrum $19 billion, base station est. $2 billion)
- Key issue is how fast bandwidth demand develops

Implications
- Greater emphasis on price competition and cost
- Pricing is likely to become more complex
- Shift from attracting new customers to delivering more value to customers already in the market
- Greater emphasis on new business models (including strategic partnerships)

Broader Outlook
- Current thinking framed by Internet of mid 1990s
  - End users (numbers and diversity)
  - Applications (amount and intensity of usage)
  - Technologies (networking and devices)
  - Business relationships (pricing and topology)
- Engineering literature notes limits of current network
  - Security, mobility, video distribution, multiple connections
  - Clean slate initiatives (NSF, EU)
Implications for the Network

- Increasingly diverse network topology
- Increasing network diversity/nonstandardization
- Greater demands on data center interconnectivity
- More ubiquitous and reliable access connectivity
- Greater need for identity verification and security
- Migration of certain functions into the network
- Increasing pressure on addressing and routing
- Greater variety in the ways devices use the network