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# The Potential Benefits of Network Management



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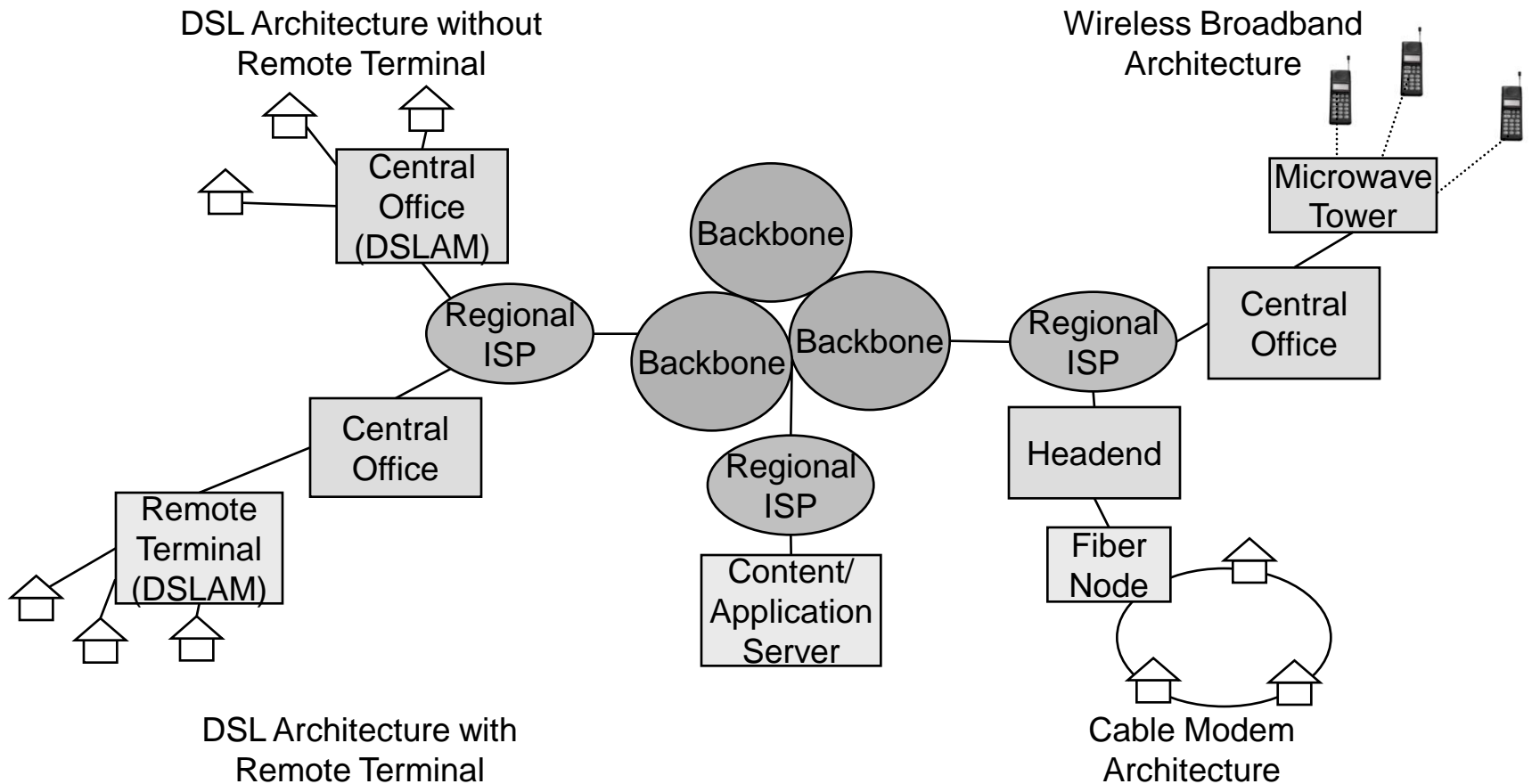
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# The challenge of building the Internet of tomorrow

- The uncertainty surrounding network growth
  - Traffic is growing, but by how much? Exaflood or not?
  - Variations in time and place matter
  - Downloads (YouTube) vs. peer-to-peer (BitTorrent)?
- Differences in transmission technologies

# Differences among transmission media



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# Network management as an alternative to capacity

- Prioritization as an alternative to adding capacity
  - Facilitates broader buildout by reducing capital costs and breakeven number of subscribers
  - Provides backup plan in case of underestimation
- Examples of prioritization/network management
  - NSFNET during the advent of the personal computer
  - Prioritization of voice over data in wireless networks
  - Public safety spectrum in the 700 MHz D block

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# The limitations of alternative solutions

- Building more bandwidth
  - Relying exclusively on excess capacity to protect quality of service is expensive
  - Some errors in demand forecasting is inevitable
- Metered pricing
  - Congestion is a function of timing as well as volume
- Time-of-day pricing/peak-load pricing
  - Local measured service has shown that imperfections in implementation can dissipate all of the consumer benefits

# The limitations of peak-load pricing

