What does the future behold?

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What were the goals?

- The Internet was designed to share resources.
  - Host identifier
  - Point to point communication
- Will this stay forever?

Today

- As of December 2008, the Internet was moving 8 Exabytes/month
- 180 Exabytes of new content was created in 2006

(Andrew Odlyzko, UMN, Minnesota Internet Traffic Studies (MINTS))

John Gantz, IDC (March, 2008). "An Updated Forecast of Worldwide Information Growth Through 2011".

So whats wrong?

- Fundamental mismatch
  - Most users/applications care about “what”
  - Network operates around “who”
- Other issues
  - Support for mobility
  - Accountability
  - Support for evolution

Future Internet Architecture

- Named Data Networking
  - Content, content, content!
- Mobility First
  - Mobility as the norm and not the exception.
- NEBULA
  - Cloud computing centric architecture.
- XIA (eXpressive Internet Architecture)
  - Accommodating future entities.

Content Centric Networks

- Devices express interest in a particular data.
- Any device with that particular data can respond with the content.

Some things to think about

- Challenges
  - Naming
  - Integrity and security
  - Locality
- For your project we had simplifying assumptions
  - But to have a real world network architecture, these issues need to be addressed in a scalable fashion.

Future in 15-441?

- Project 3
  - Bittorrent like file transfer application
  - Implement reliability, congestion control (like TCP) over UDP

TTL based next hop discovery.

- Cool hack!
- Piggy backing on TTL.
  - Assumption: TTL is set to 32.
- Works perfectly fine except when there are node failures.
  - LSA timeouts!
- If you are using Dijkstra's it can be as simple as BFS.

Any questions regarding timeouts?

Questions?