



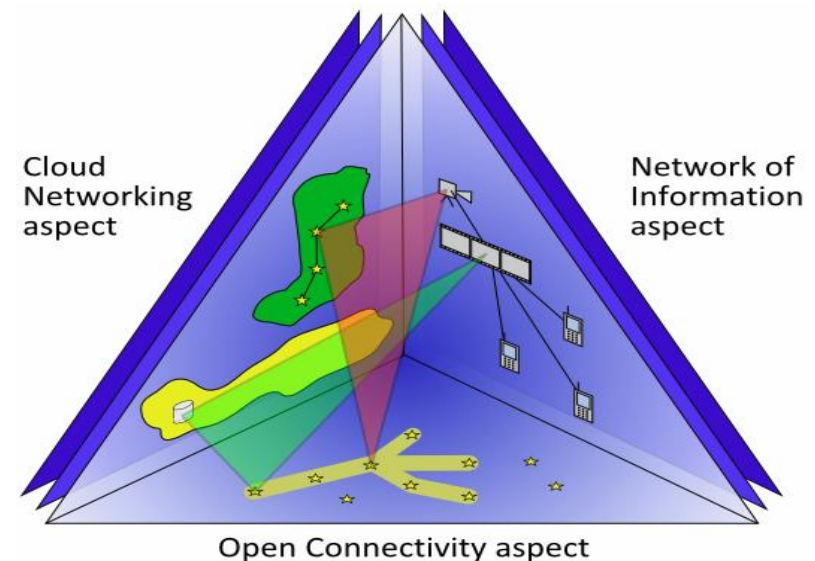
Scalable & Adaptive Internet Solutions (SAIL)

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Scalable Adaptive Internet Solutions

On-demand usage of network resources

- **Cloud Networking:** Tying Cloud Computing and Network Virtualization together
- **Network of Information:** Shift of focus from network nodes to information objects
- **Open Connectivity:** Efficient use of multi-path, multi-protocol and multi-layer networking – over any fixed and mobile networks



Why SAIL ?

Challenges/trends driving requirements for future networking

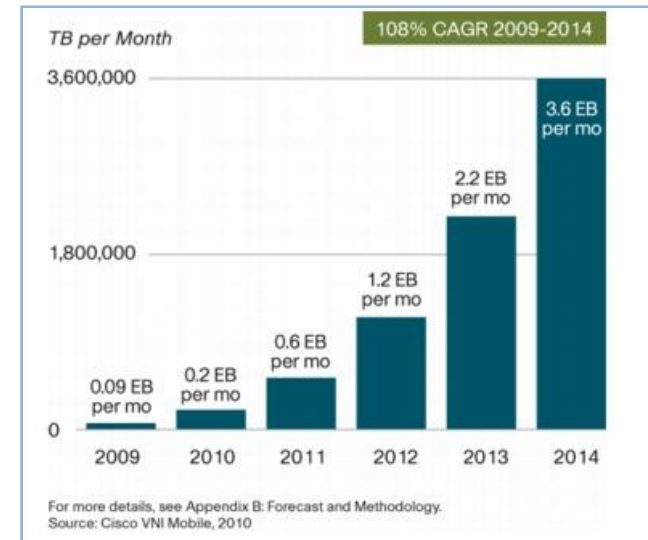
- Explosion of user-generated content in the network
 - Paradigm shift from consumers to "prosumers"
- Increasingly heterogeneous connectivity and complex interaction patterns
- Service agility: quick launching and provisioning of increasingly complex services

→ Application paradigms drive network research

Trends



- Imminent traffic volume explosion
 - Video distribution as (literally) a killer application
 - Resource management issues unsolved today
- Information-centric communication is applied to individual applications
 - CDNs: transparent redirection of requests to topologically close servers
 - P2P: location-agnostic exchange of content chunks
 - Machine-to-Machine Communication
- Information-centric research activities
 - 4WARD NetInf: Information-centric networking with a flat naming scheme
 - CCN: Content-centric networking with a hierarchical naming scheme
 - PSIRP: Publish/subscribe for Internet level communication
 - DTN: Delay-Tolerant Networking based on Bundle protocol



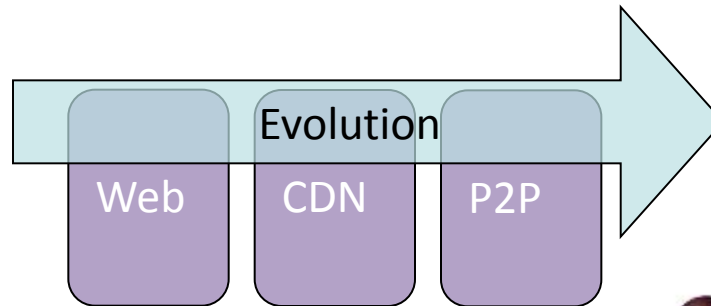
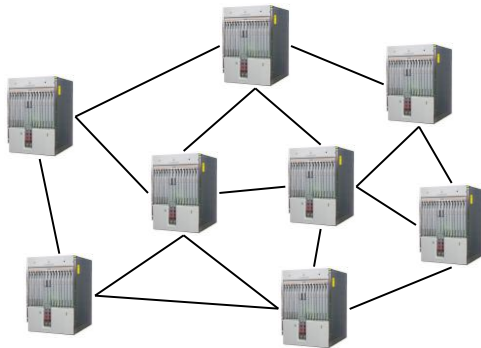
Cisco Forecasts 3.6 Exabytes per Month of Mobile Data Traffic by 2014

Network of Information



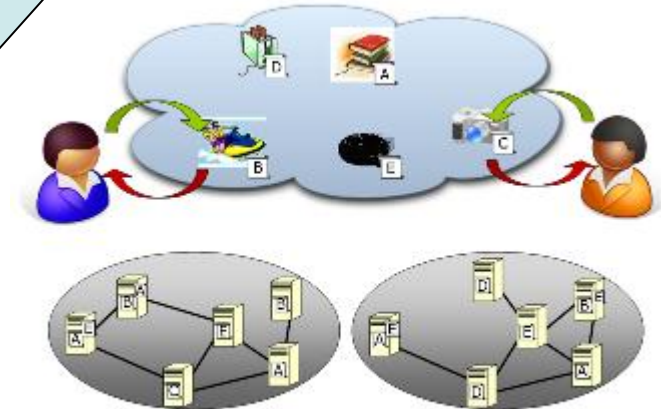
Today's Internet

Focus on
nodes



Future
Information-centric Network

Focus on
*information objects and
real world objects*

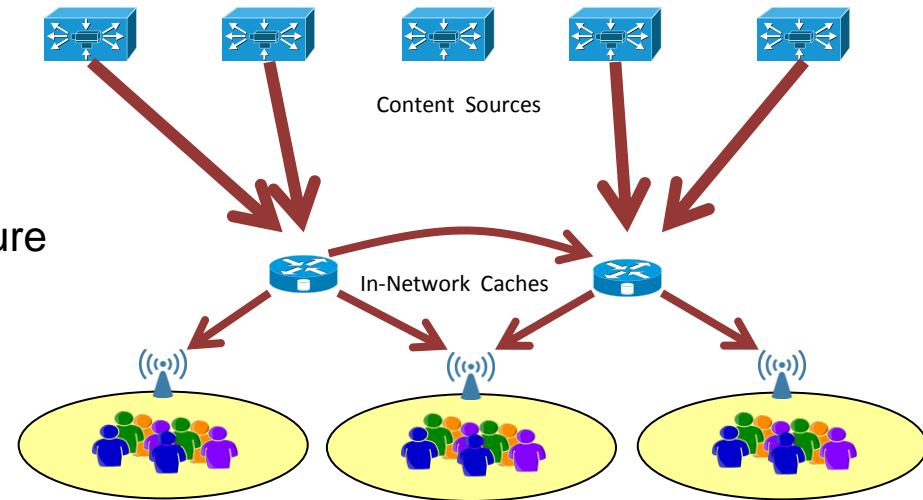


In today's Internet,
accessing information is
the dominating use case!

Network of Information



- Take information-centric networking to the next level
 - General-purpose information-centric architecture
 - Generalize CDN and P2P benefits to be integral part of network services
 - Commoditize application level content distribution
 - ...for a broad range of applications
- Concrete benefits
 - A natural solution for today's eminent applications
 - An efficient and cost-effective infrastructure for the next wave of Internet adoption
 - Enabling new types of applications and interaction forms
- Making a difference
 - NetInf protocols specifications and system implementations
 - Standards and deployment aspects
 - Interoperating with existing networks and services



Conclusion



- The NetInf approach can be seen as
 - Evolutionary: a generalized version of P2P, CDN, M2M
 - Radical: replacing IP with a Information-centric architecture
- NetInf is a basic, global information infrastructure for many applications and usage scenarios
 - Bring the right information to the right place at the right time
 - Computation can be performed on that information at many places in different ways
 - Results of number crunching is fed back into the Network of Information
- Relies on ID/Locator split (address information/content rather than network nodes or location of content)
- First IETF activities in DECADE WG
- Upcoming events
 - ACM SIGCOMM Workshop on Information-centric Networking, Toronto
 - SAINT Workshop on Information centric networks, Munich



S A I L

SCALABLE & ADAPTIVE INTERNET SOLUTIONS

