

ICNRG IAB Review

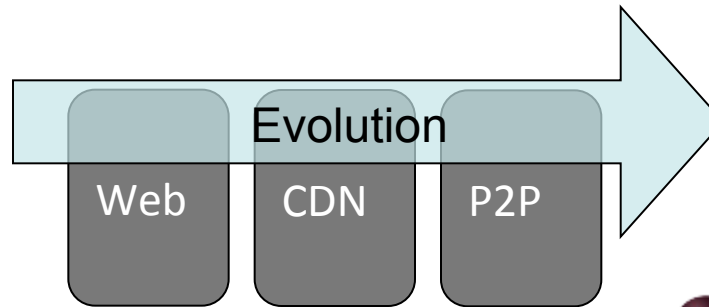
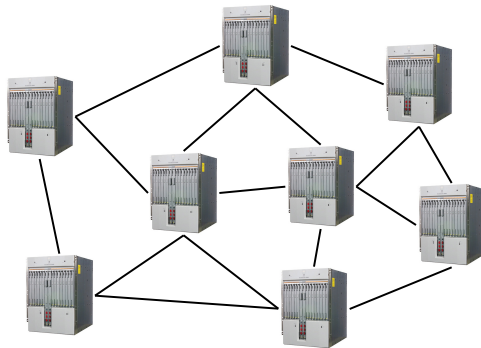
IETF–86
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Information Centric Networking (ICN) Background

Today's Internet

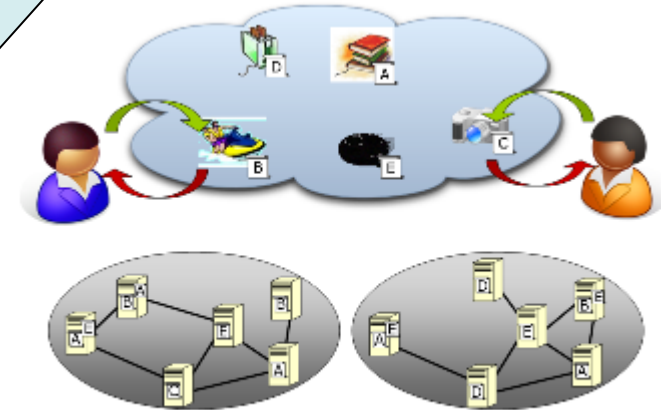
Focus on
nodes



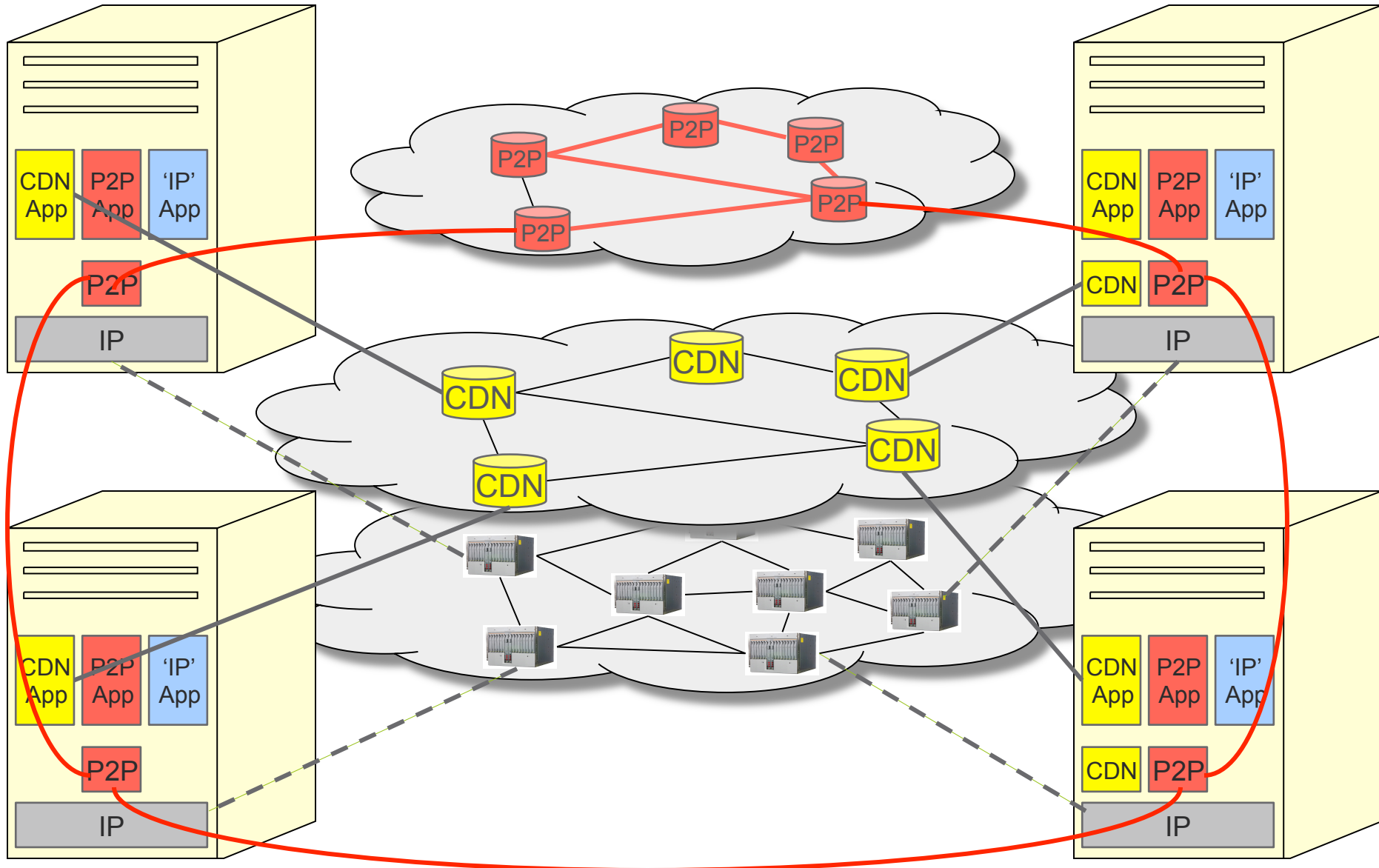
In today's Internet,
accessing information is
the dominating use case!

Future Information Centric Network

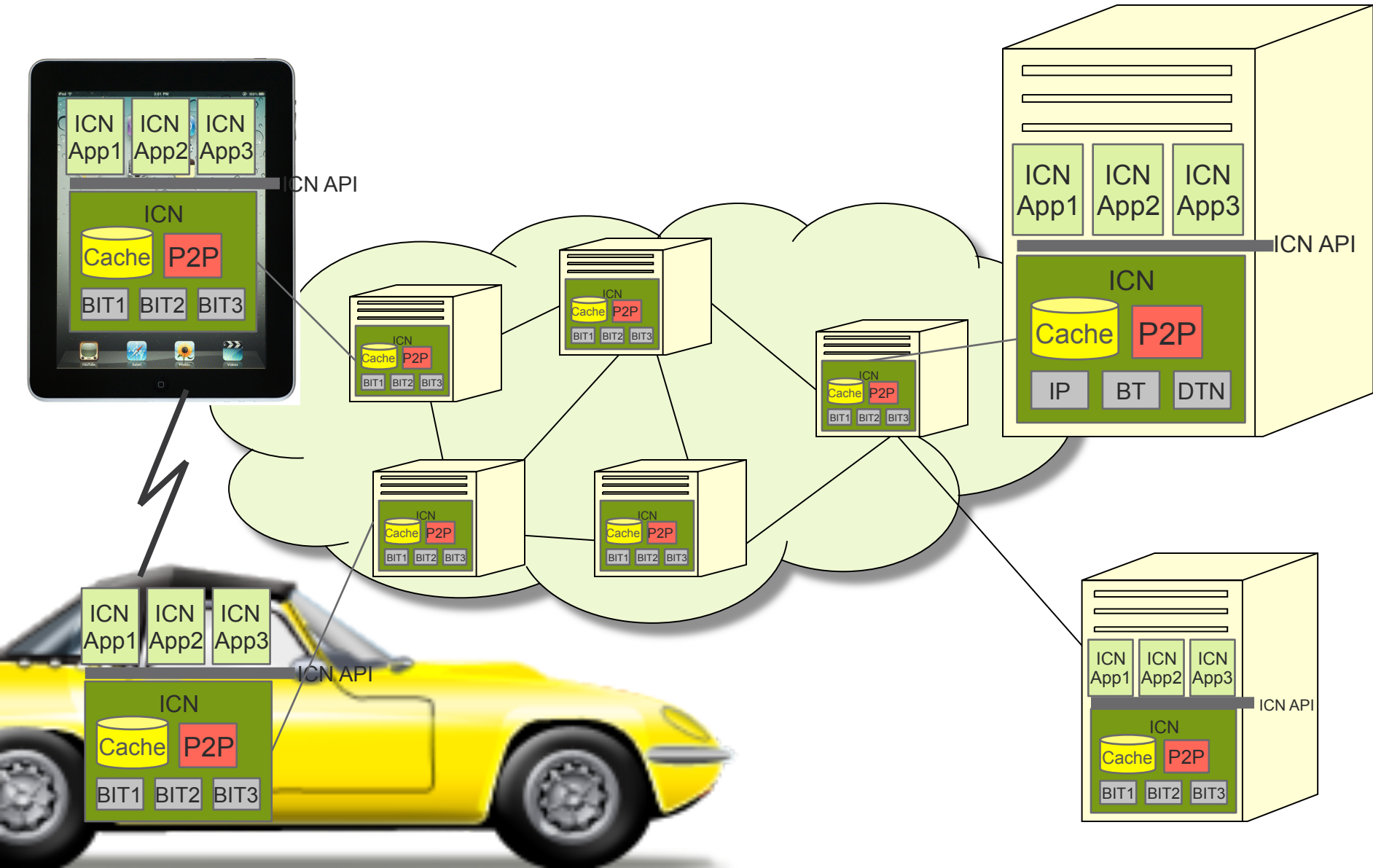
Focus on
*information objects and
real world objects*



Host-centric networking

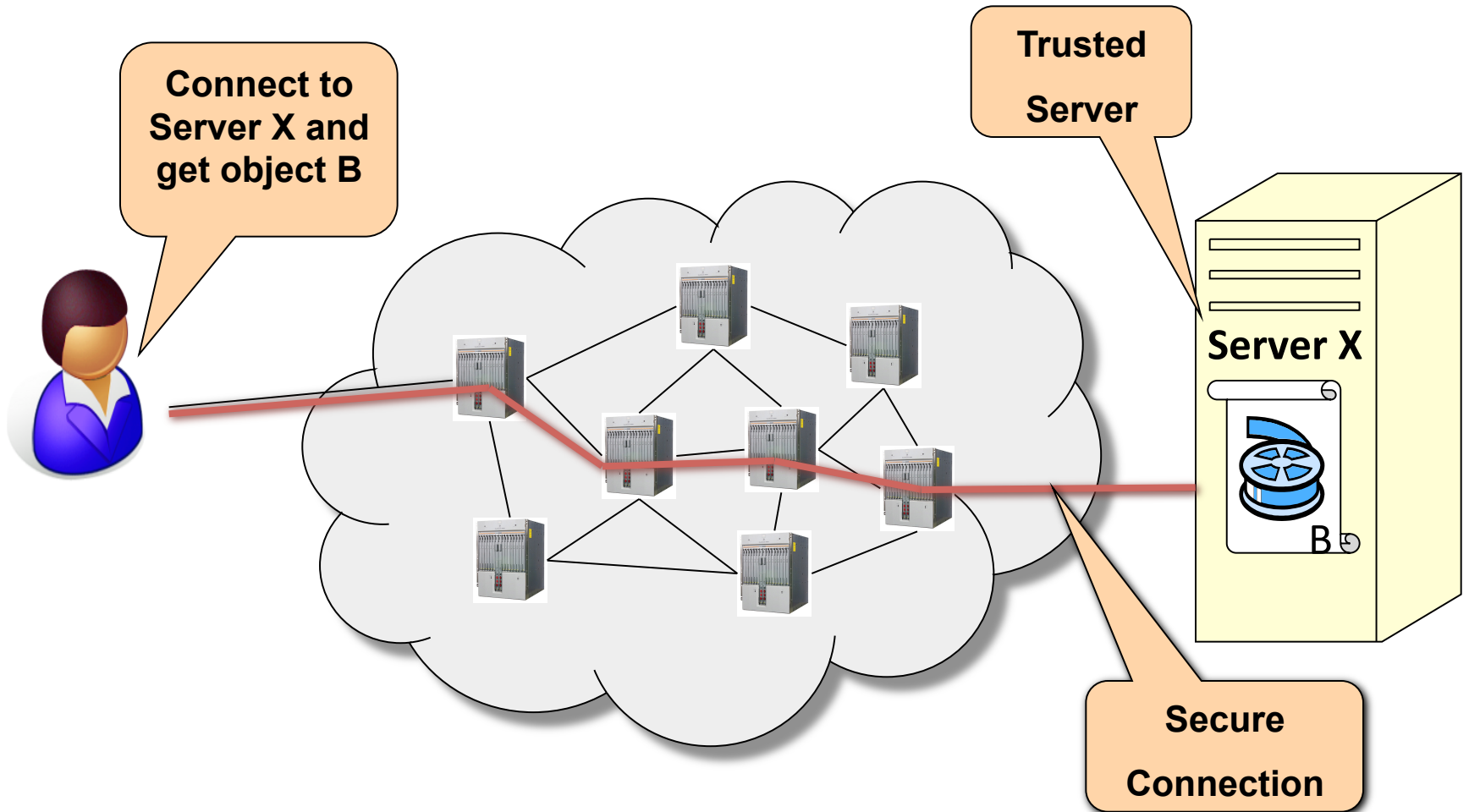


Information-centric networking



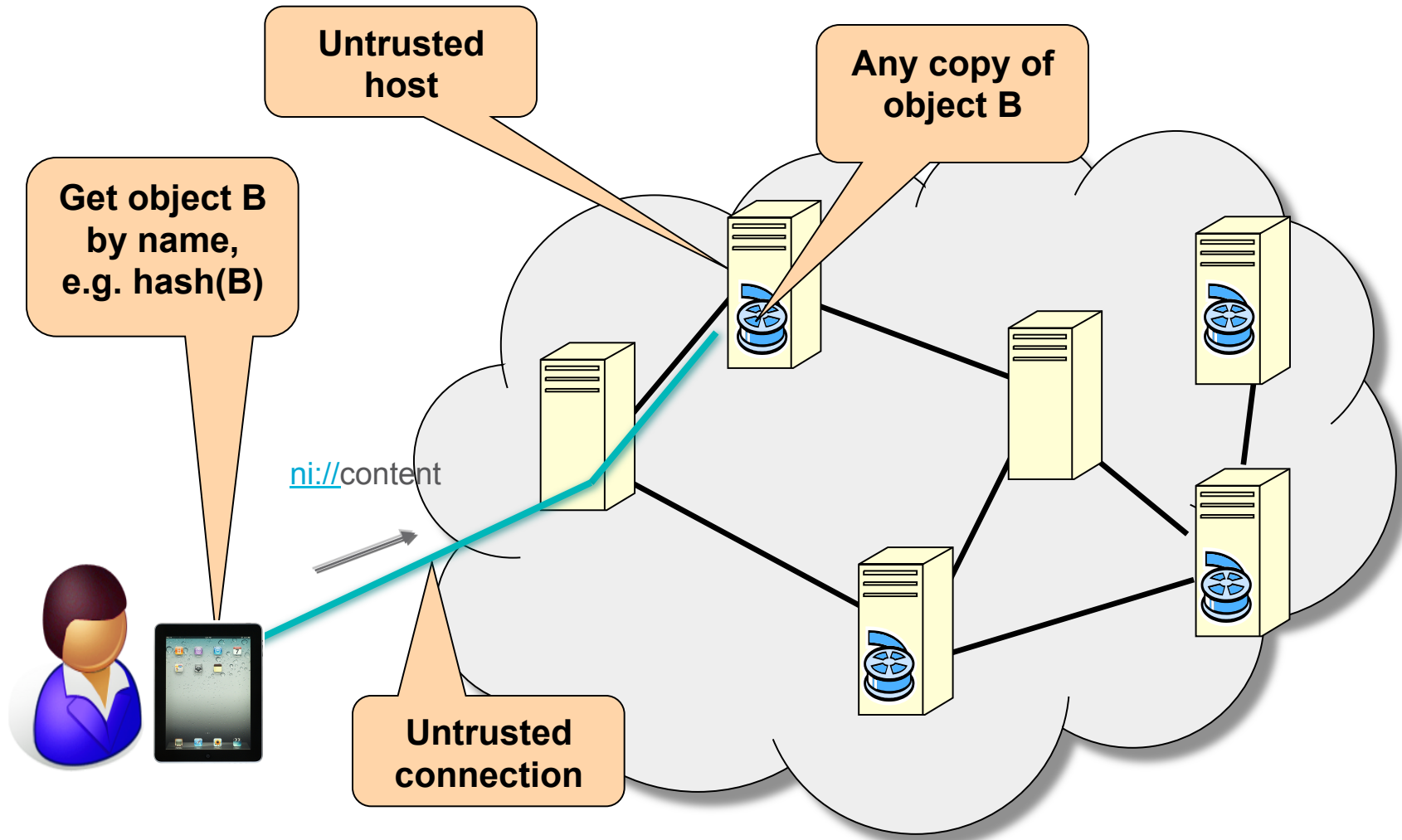
Host-centric networking

- security model: trust and secure tunnels

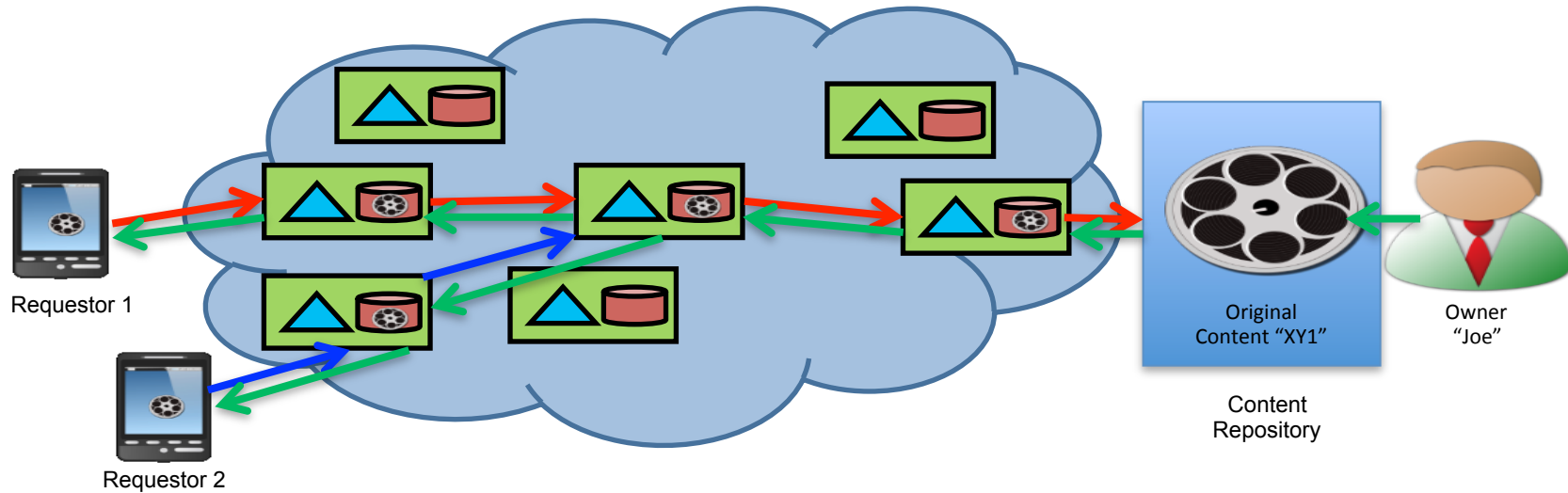


Information-centric networking

– security model: name data integrity



ICN Core Properties



- › Named Data Objects the primary network component
- › All copies are equal
- › Request aggregation
- › Name data integrity

ICN & ICNRG

history and major events

- First bar-bar-BOF at IETF80 in Prague
- First meeting as an official IRTF RG at IETF84 in Vancouver
 - Around 80 participants at ICNRG meetings
- ICNRG Interim meeting Stockholm February 14-15, 2013
 - Hosted by Ericsson & ICT Labs
 - About 30 participants
- ICN established as research field
 - › Workshops on ICN
 - › SIGCOMM 2011, 2012 & 2013
 - › Infocomm 2012 & 2013
 - › Dagstuhl seminars 2010, 2012 & 2014
 - › Preparing for stand alone ACM conference on ICN in 2014
 - › ICN as feature topic in the July 2012 and December 2012 issues of IEEE communications magazine
- Standardization
 - ni naming – standard for naming data objects with hashes
 - Approved for becoming standards track RFC (in the RFC editors queue)
 - Adopted by the IETF core WG

ICNRG Objectives

(condensed version)

- Main objective: **Advance the state of ICN research**
- Forum for **exchange** and analysis of **ICN research ideas** and proposals
- Provides **guidelines for experimental activities** to be able to **compare alternative solutions consistently**.
- Investigate components of a **common protocol framework for ICN**, aiming to identify key **architecture invariants** across different specific approaches and protocols for future standardization.
- **Foster the development of ICN testbeds** for performing experiments with running code.
- Initiate discussions about **ICN interfaces** to the **application layer**, from network **management** systems, etc.
- Resulting in a **common protocol framework** for standardization. These protocols may or may not re-use existing IETF protocols.

ICNRG documents

- ICNRG is currently working on three documents
 - Survey
 - Research challenges
 - Scenarios and evaluations

ICN Survey document

- Document Purpose
 - A survey about possible directions for the evolution of ICN solutions.
 - Reach a general consensus about the nature of the ICN paradigm
 - what are ICNs
 - what should ICNs be and who are the stakeholders
 - Analyze major architectural approaches for the instantiation of the ICN paradigm, ending up with the identification of several design choices.

ICN Survey document

- Table of Contents

- 1 Introduction
 - 1.1. Scope
 - 1.2. Related effort
 - 1.3. Notation
- 2 Information-centric Networking Paradigm
 - 2.1. What are ICNs?
 - 2.2. What should ICNs be?
 - 2.3. Who should the stakeholders be?
- 3 Information-centric networking approaches
 - 3.1. Focus on the what: Declarative networking approach
 - 3.2. Focus on the how: Internetworking approach
- ICN architectural design choices
- Conclusion

Research challenges document

- Document Purpose
- WHY
 - Problems and pain points in today's networks
- HOW can ICN help
 - Fundamental ICN concepts
- WHAT to do in ICNRGB
 - Research challenges, important topics
- Possible RESULTS
 - Impact on IETF work

Challenges document

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ICN Baseline Scenarios document

- Establish a common understanding about potential experimental setups (testbed and simulation)
- Provide equal ground for comparison, an agreed framework
- Scenarios should be general enough and “technology agnostic”
 - Scenario detail may vary
- Aim to get feedback from implementers, both on the scenario definition and level of detail
- All approaches need not implement all scenarios
 - but all scenarios should end up illustrated in a real demo

ICN Baseline Scenarios document

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ICN Baseline Scenarios document

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