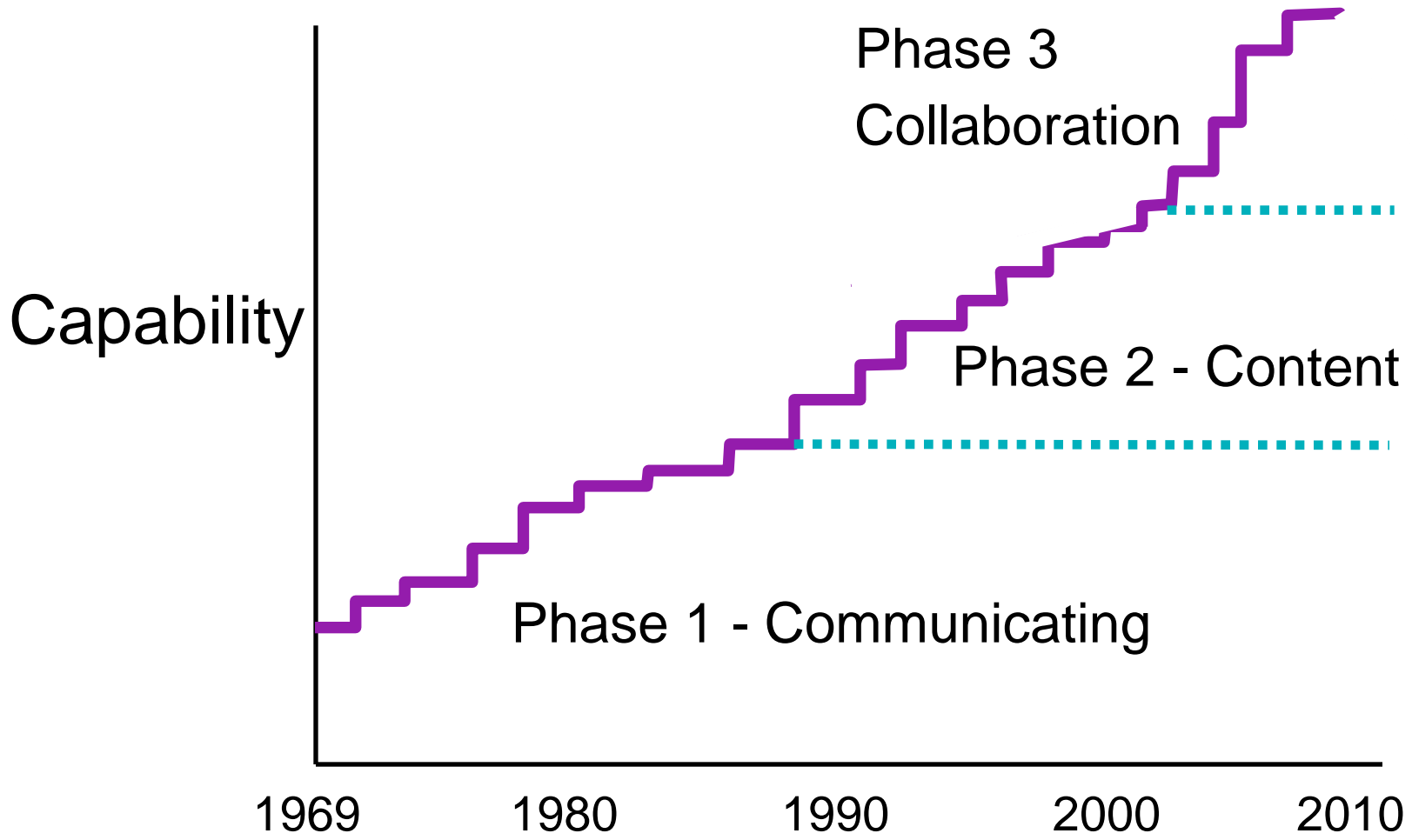


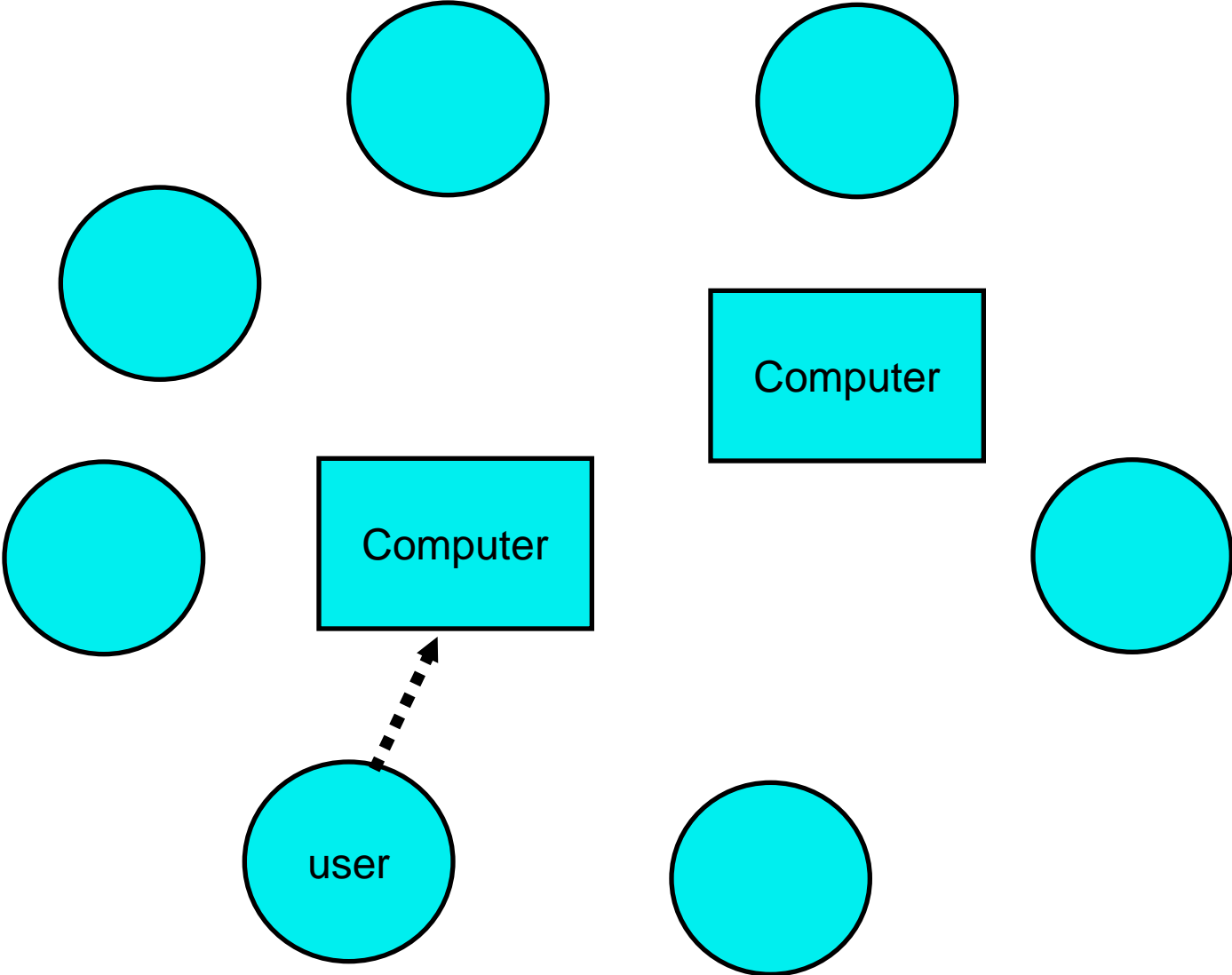
Cloud Computing: The Big Picture

Michael R. Nelson
Visiting Professor, Internet Studies
CCT Georgetown University
Washington, DC

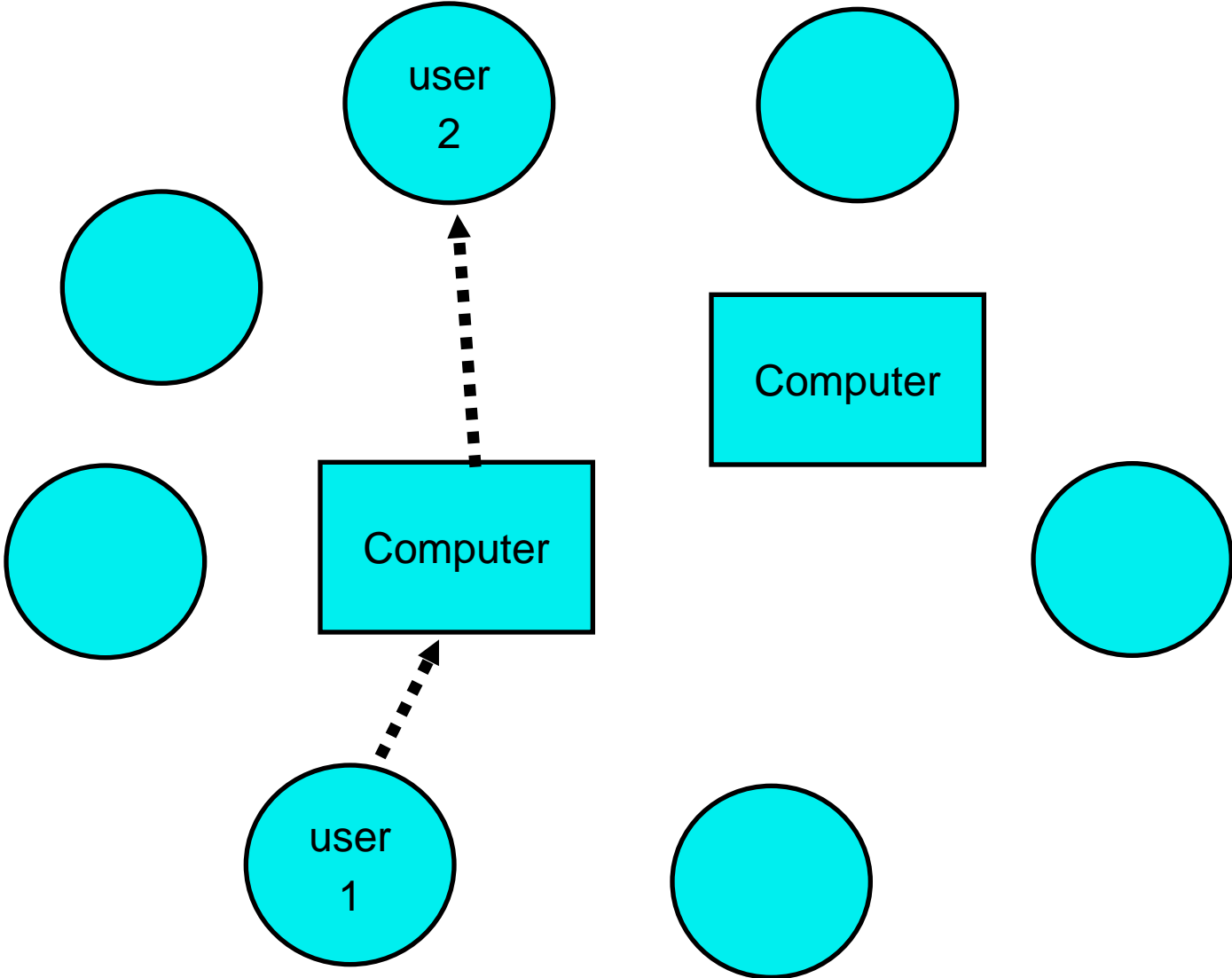
The Third Phase of the Internet



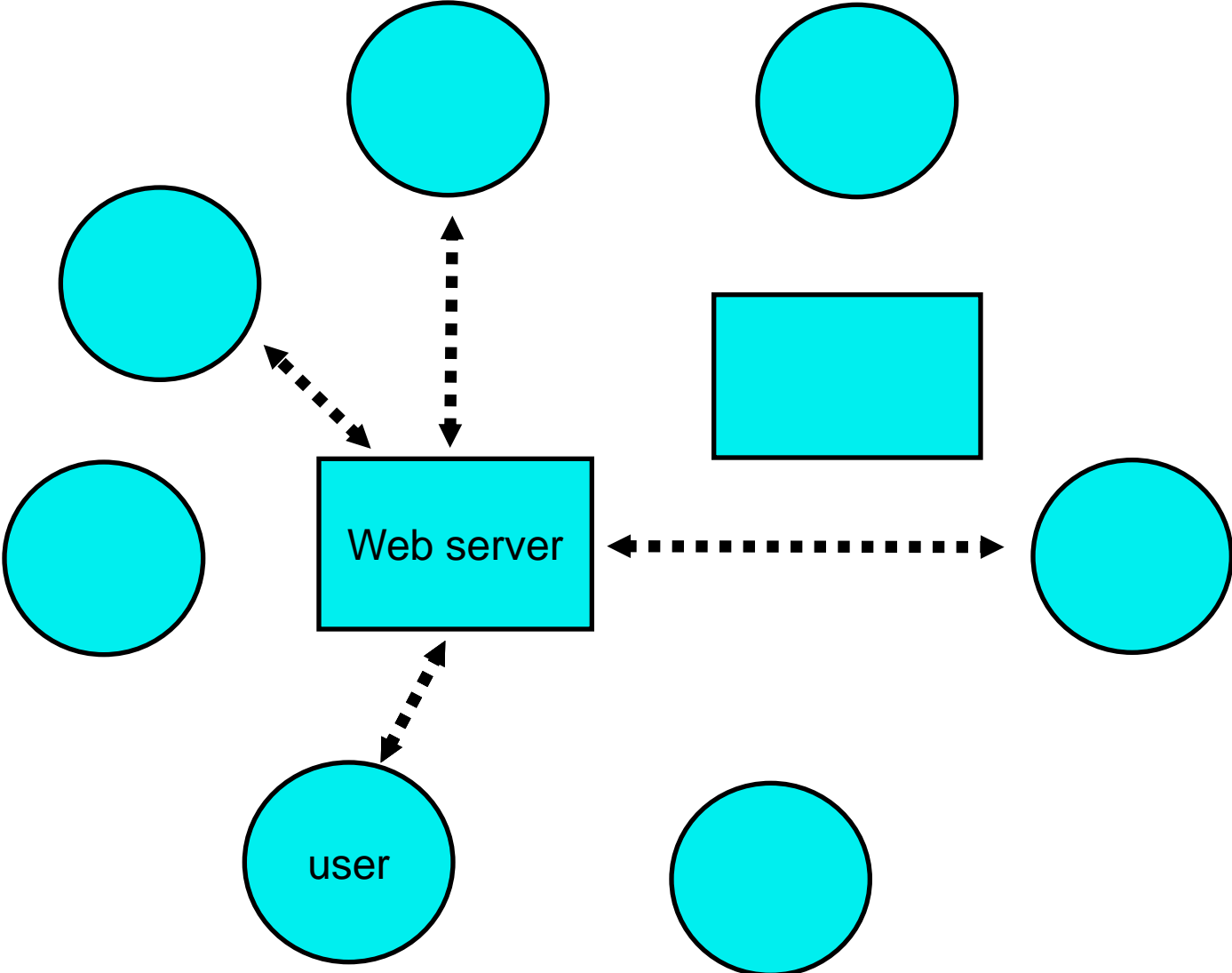
Phase 1 -- Remote Log-on



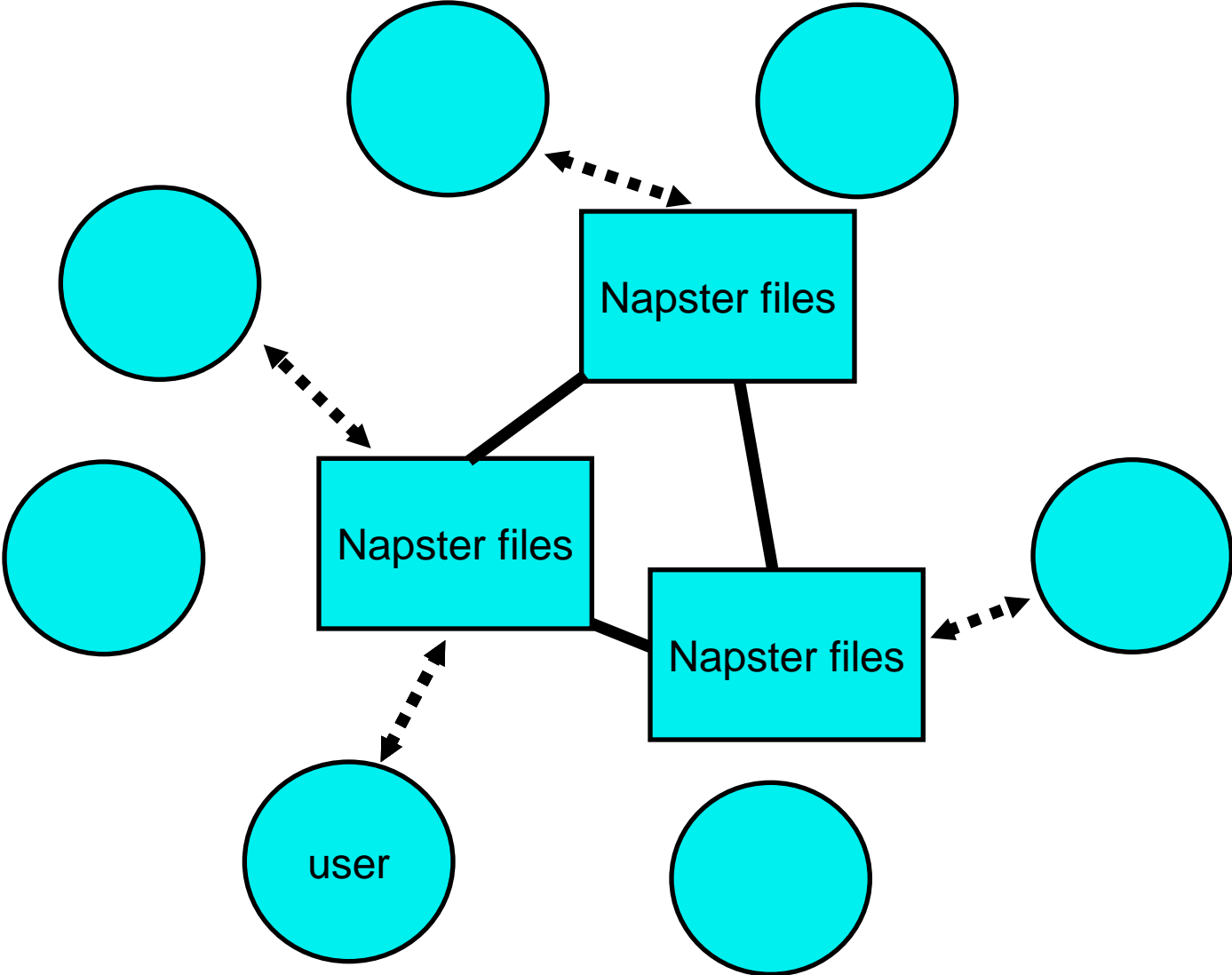
Phase 1 -- E-mail - one-to-one



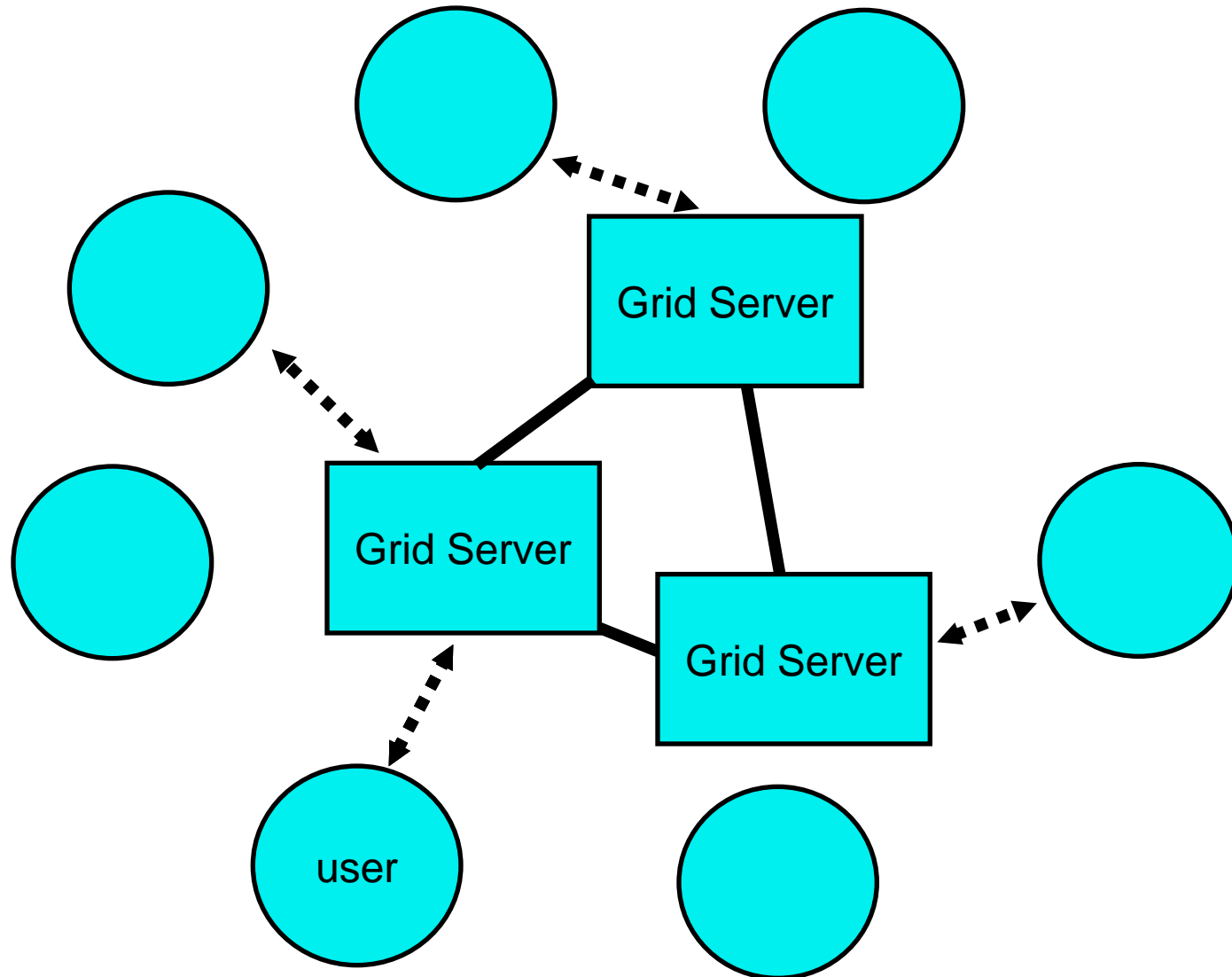
Phase 2 -- The Web -- one-to-many



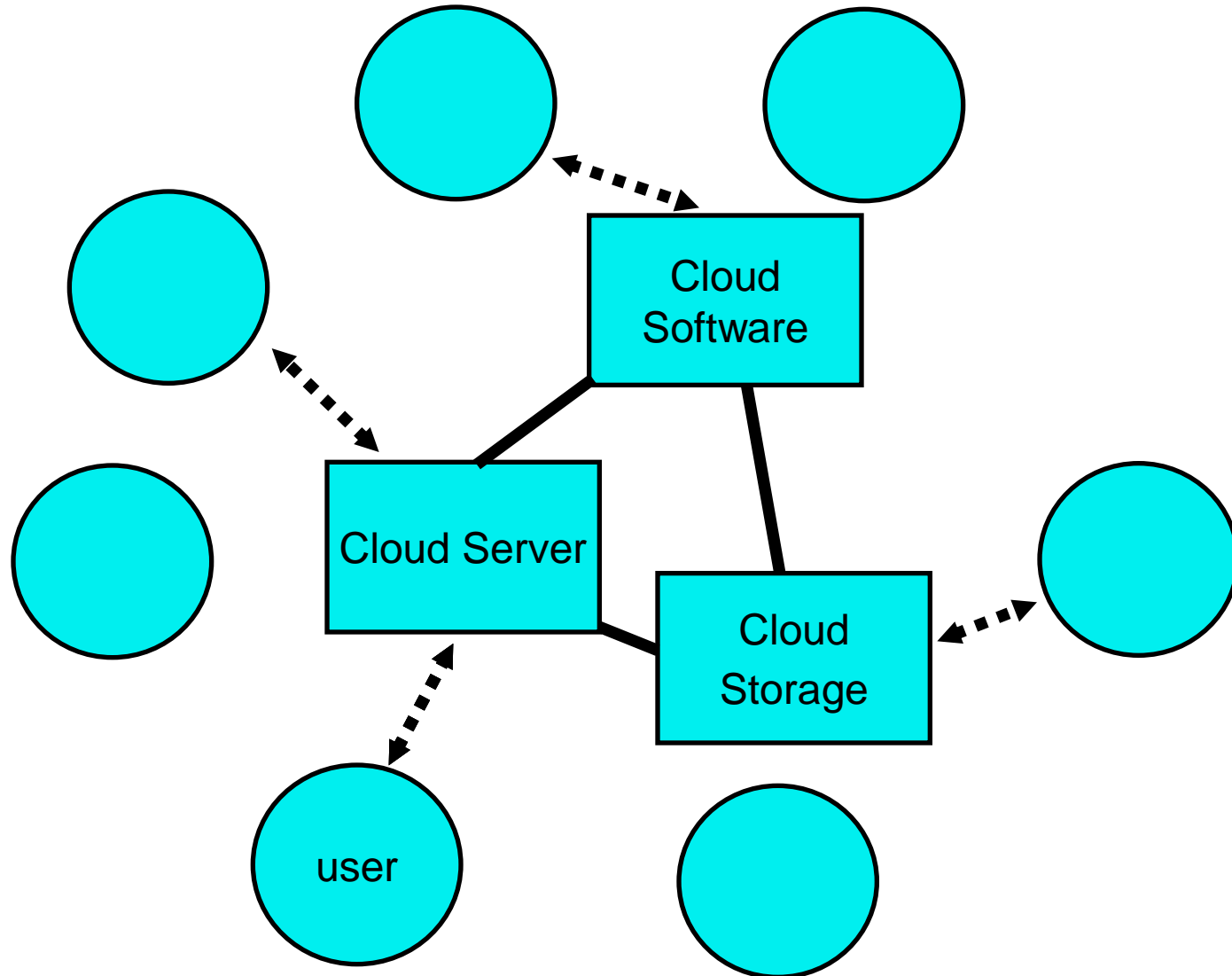
Phase 3 -- Distributed storage -- many-to-many



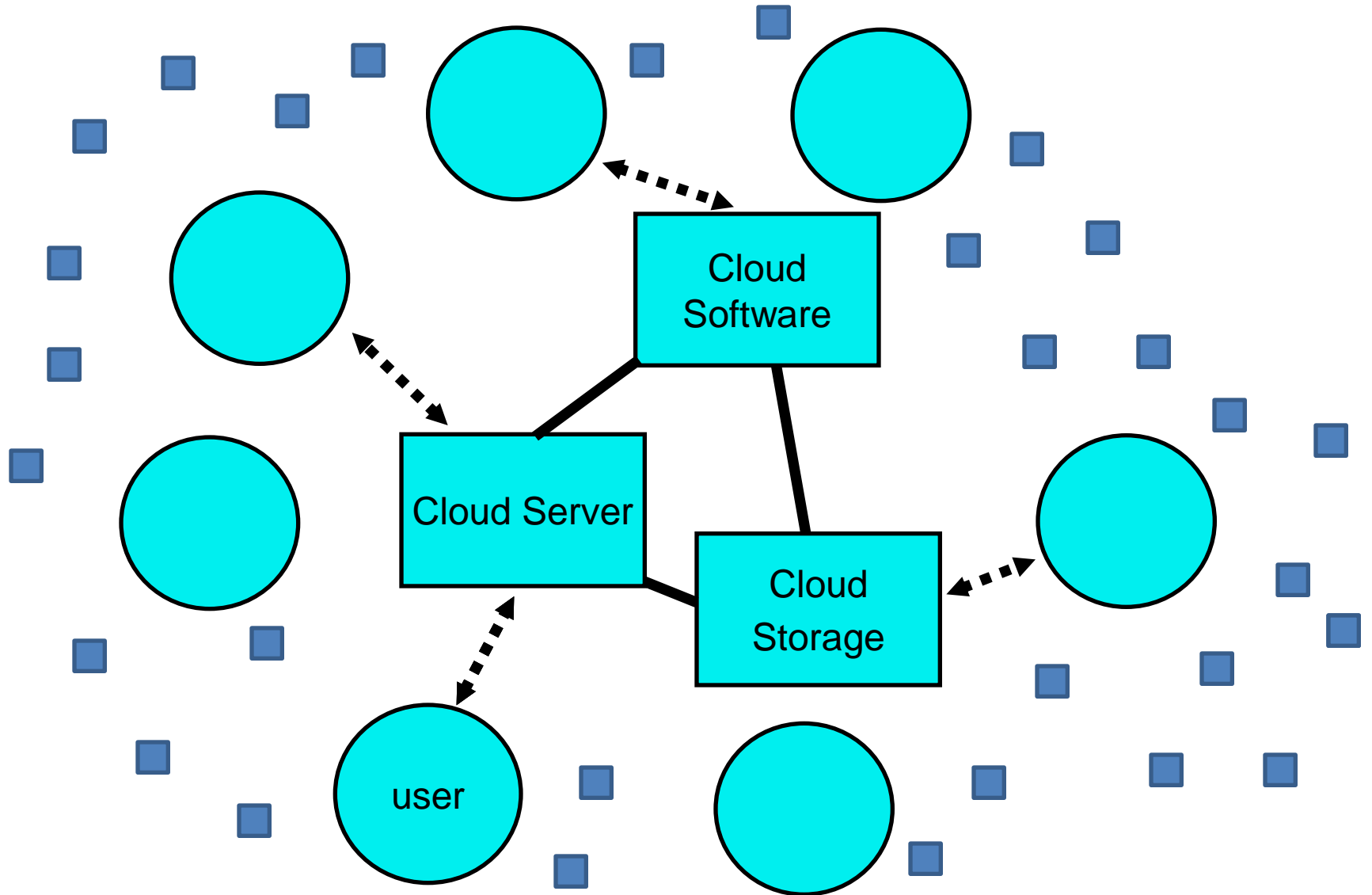
Phase 3 -- Distributed Computing -- many-to-many



Phase 3 -- Distributed Computing -- many-to-many



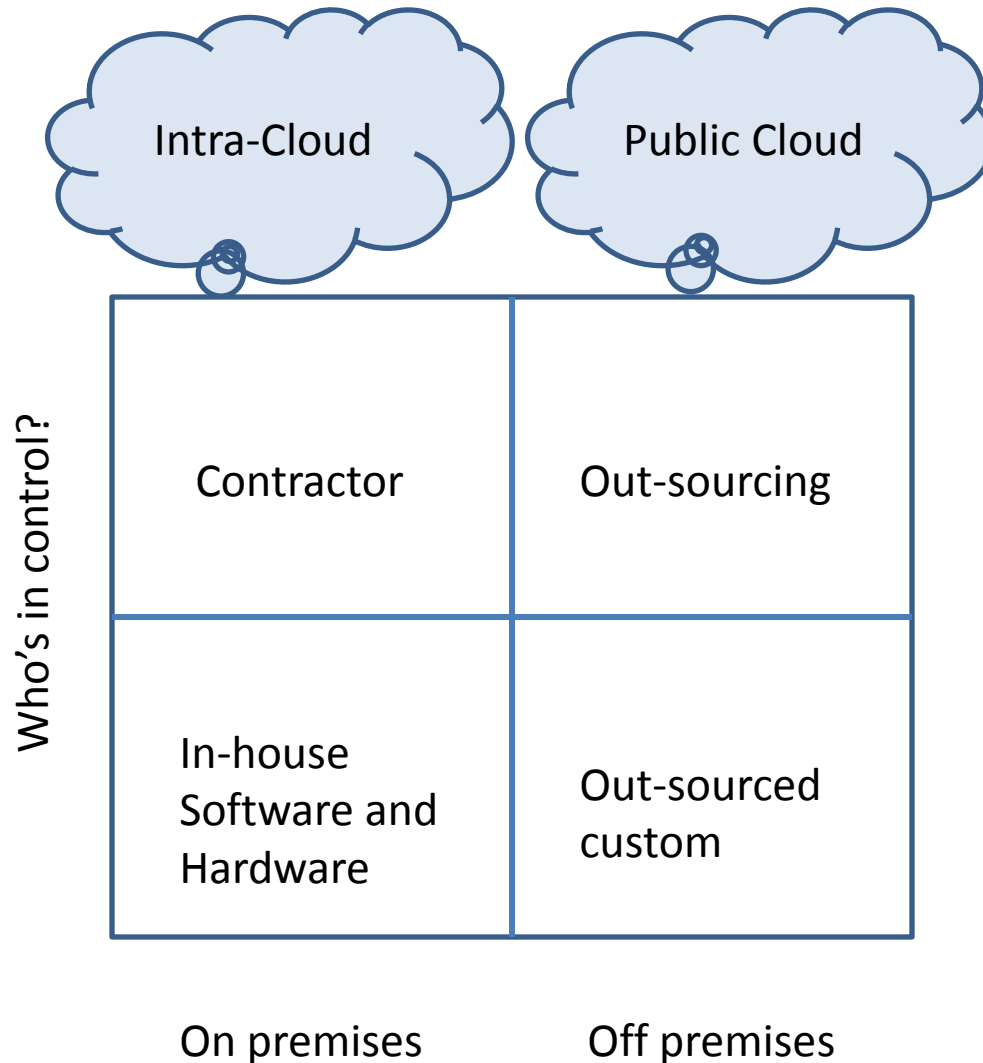
Phase 3 – Cloud + Internet of Things = Many³



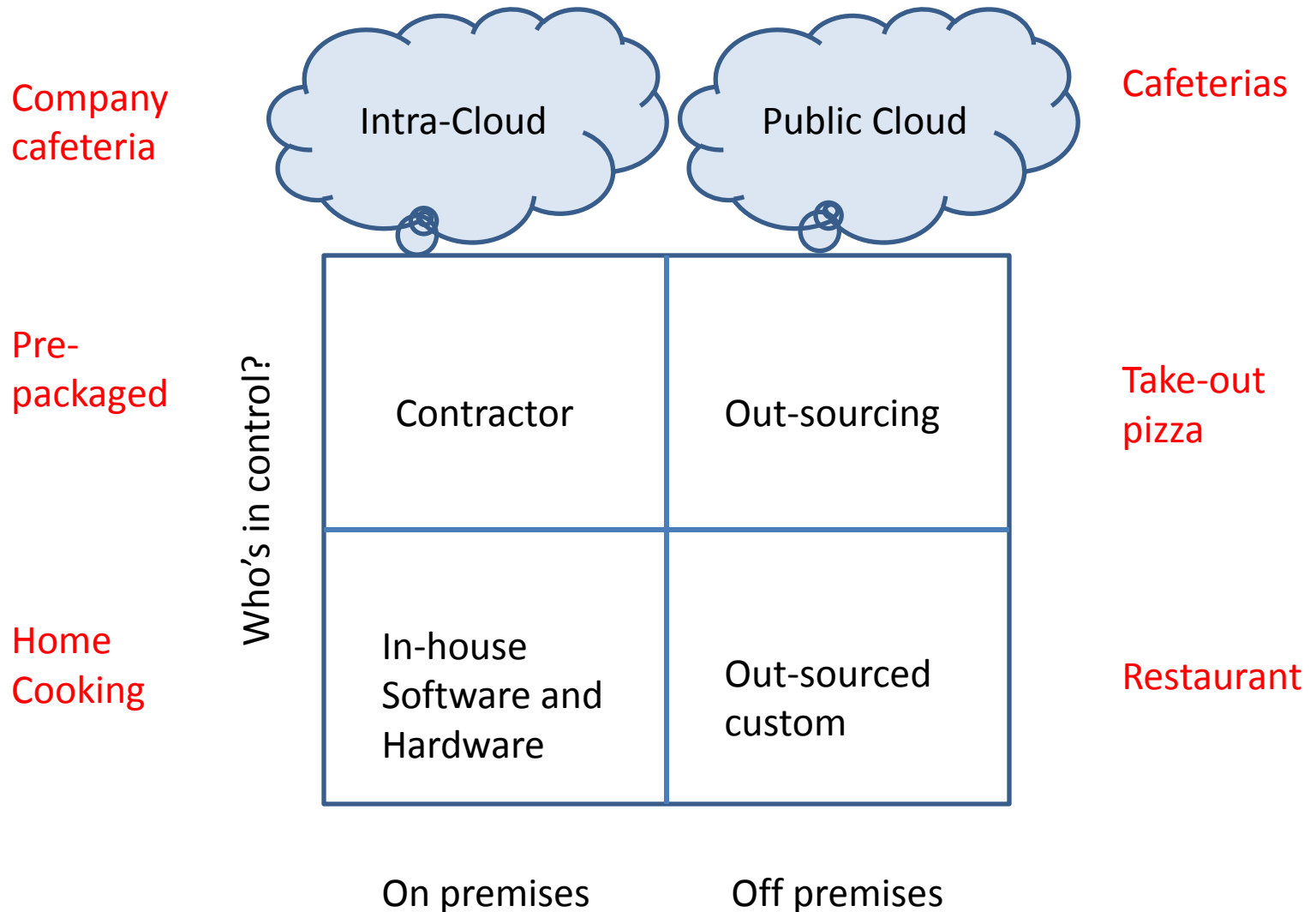
Cloud Computing doesn't replace everything

| | | |
|-------------------|--------------------------------|--------------------|
| Who's in control? | Contractor | Out-sourcing |
| | In-house Software and Hardware | Out-sourced custom |
| | On premises | Off premises |

Cloud Computing doesn't replace everything



Cloud Computing doesn't replace everything



Why the Cloud matters

- Huge cost savings
- Easier maintenance
- Increased reliability and back-up (if done right!)
- More rapid development
- Surge capacity
- Collaboration and mash-ups

What Could Slow It Down

- Proprietary approaches that aren't interoperable.
Open vs. closed Clouds
- IT staff and inflexible management mindsets
- One-to-one policies applied to many-to-many medium:
 - Privacy and Security
 - Access to and price of ubiquitous networking
 - Liability
 - Protectionism
 - Intellectual property protection
 - Wiretapping
 - Consumer protection
 - Competition policy
 - Government procurement

Bottom line

- With the Cloud, we face many familiar policy challenges,
 - But they are at least twice as difficult
 - And at least five times more important

Reading List

Let IT Rise, special survey, The Economist, Oct. 2008

The Berkeley View of Cloud Computing

Building the Open Cloud, Science, July, 2009

NIST definition of cloud computing, www.nist.gov

Cloud Computing, A Collection of Working Papers
by Thomas Winans and John Seely Brown