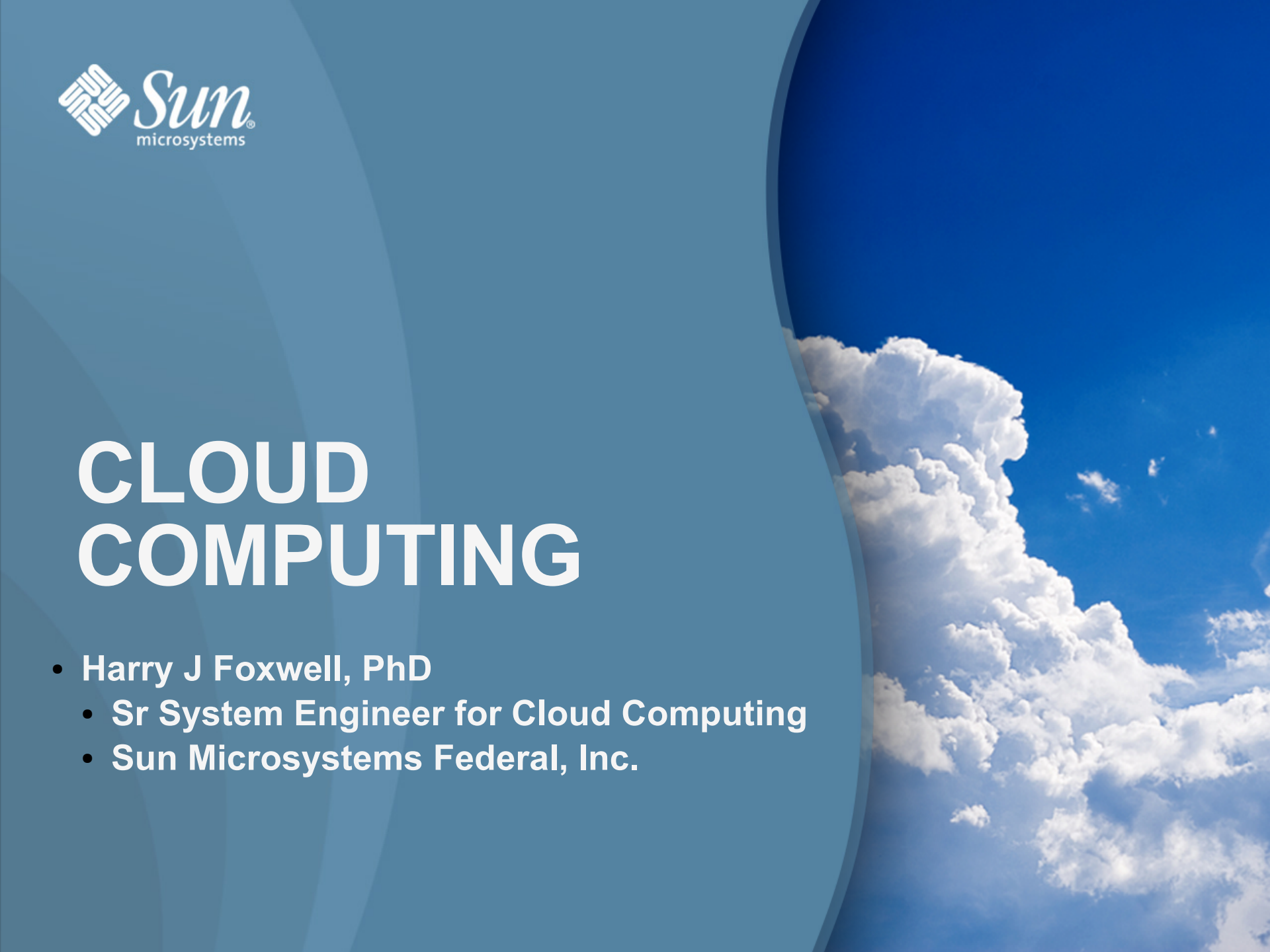
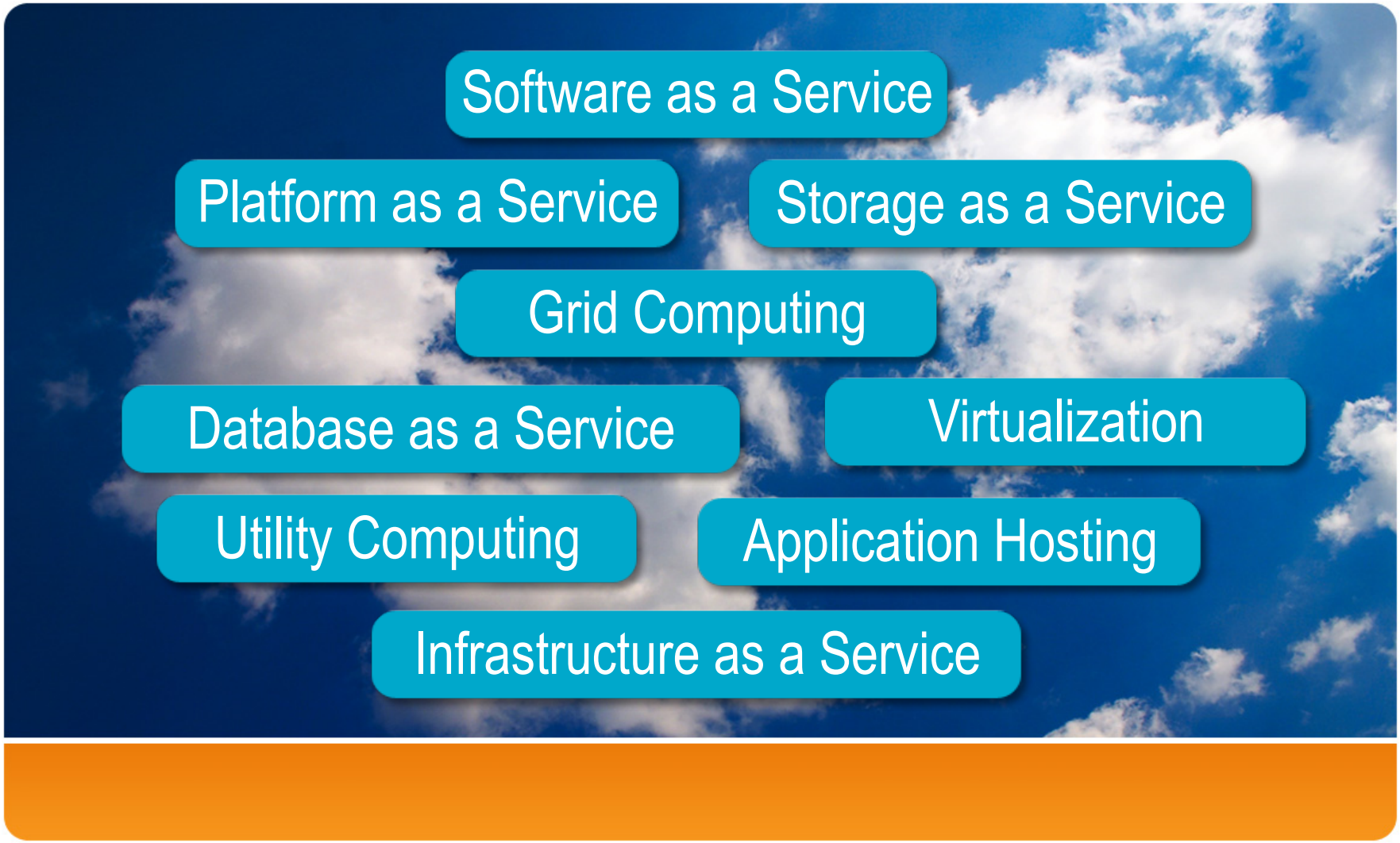


CLOUD COMPUTING

- Harry J Foxwell, PhD
  - Sr System Engineer for Cloud Computing
  - Sun Microsystems Federal, Inc.

Everyone is Talking About Cloud Computing

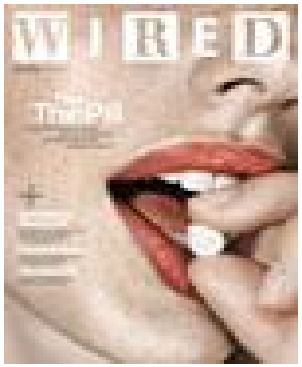


Cloud Computing – "... data is mostly resident on servers '*somewhere* on the Internet' and the application runs on both the 'cloud servers' and the user's browser."

Eric Schmidt

The Information Factories

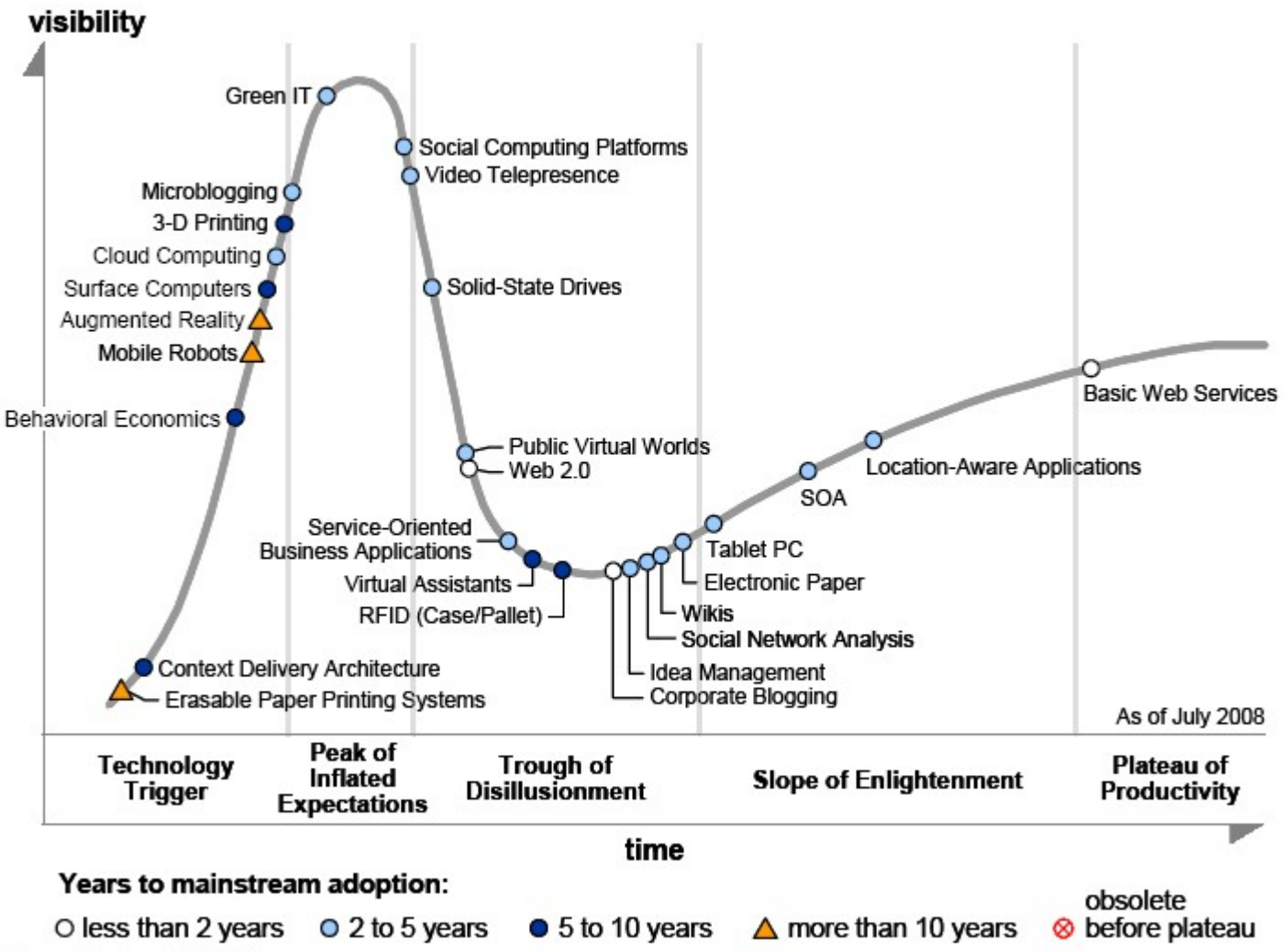
- ***George Gilder***
- *Wired 14.10 2006*



- **The desktop is dead. Welcome to the Internet cloud...**

Locating Cloud Computing in Gartner's Hype Cycle

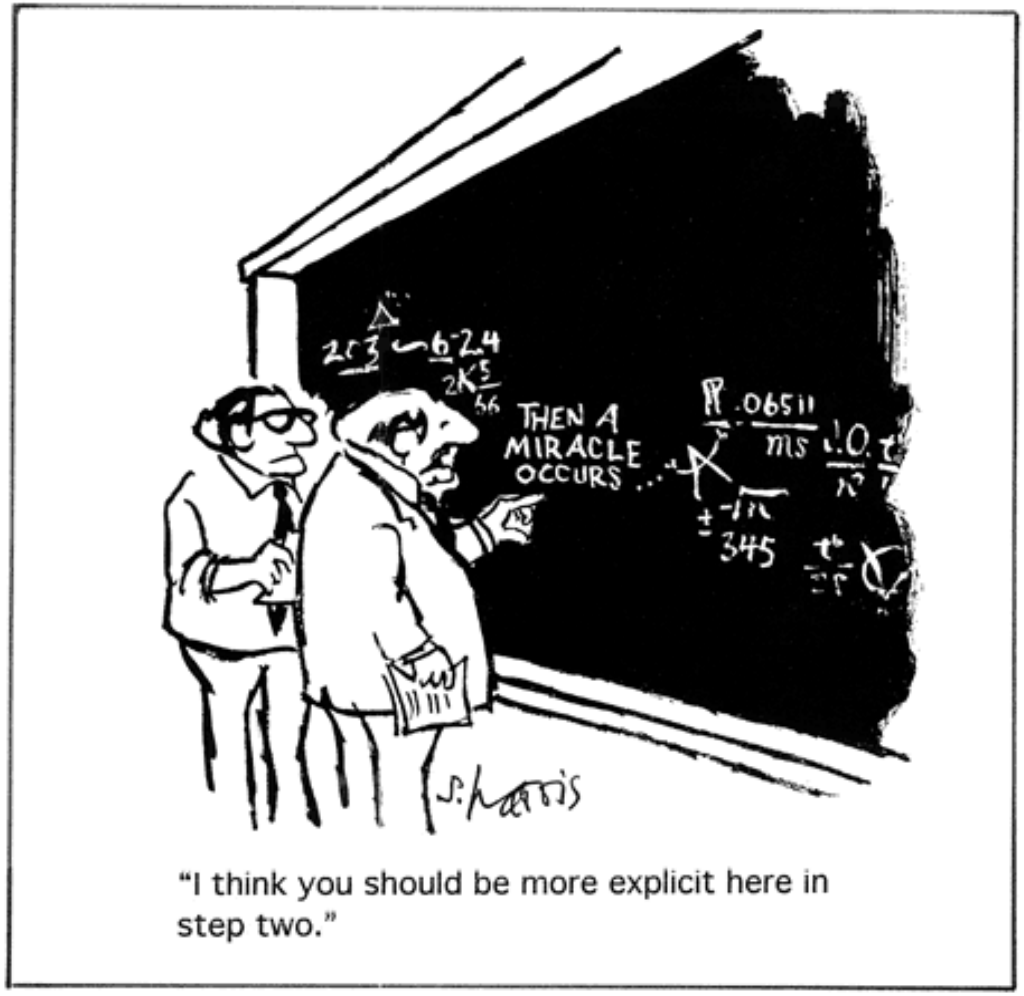
Figure 1. Hype Cycle for Emerging Technologies, 2008



Source: Gartner (July 2008)

Okay, let's build one!

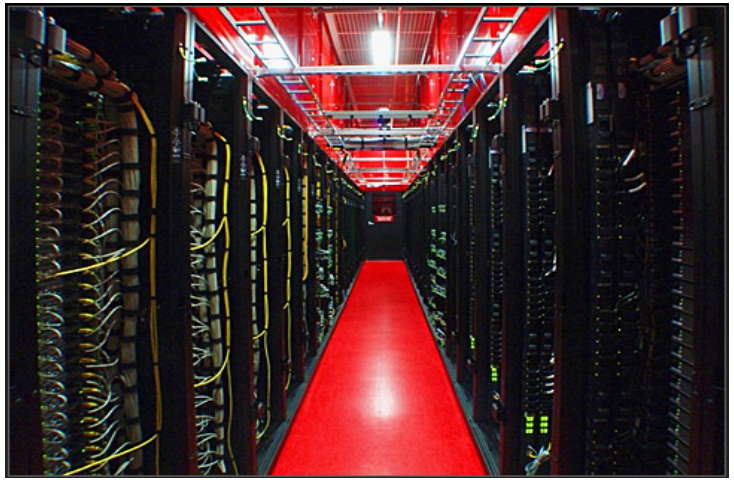
- **1**: Gather *all* your hardware, software and data in one place
- **2**: Make it all work together *seamlessly*
- **3**: *Securely* and *efficiently* deploy applications to *competing customer bases*



Like the “Google Cloud”?

Or like “SuperNAP”?

- 407,000 square feet of space
- 250 MVA Switch owned substation
- 146 MVA of generator capacity
- 84 MVA of UPS supply
- 30,000 tons of system plus system cooling
- 4,500,000 CFM
- 30 cooling towers
- 1,500 watts per sq. ft. density
- 7,000+ cabinets
- ...and that's just the space/power/cooling!
- Tens of thousands of CPUs, TBs of memory, PBs of storage, Thousands of applications, millions of users, ...



Cloud Characteristics

- SLA-based multi-tenant business model for users
- Safe & Secure, on-demand, self-service
- Self-configuring & provisioning, self-healing
- Comprehensive, *open*, standardized APIs for developers
- Fully virtualized and scalable
  - applications, operating systems, network, storage
- Hide the complexity of
  - Create, start/stop, import/export, snapshot, reboot, backup/restore, move, destroy

However...

- As with virtualization today, cloud computing will
  - expose and aggravate organizational issues
    - IT tribalism & territoriality
    - budgetary constraints and decisions
  - conflict with outmoded policies & regulations
- And be careful with your analogies & metaphors...
  - ...bad design decisions can lead to storms and widespread destruction!

Cloud Ownership Models

USE the Cloud *(no datacenter ownerships)*	**LEVERAGE** the Cloud	**BUILD** My Own Internal Cloud	**BE** the Cloud
• Startup • SMB • Research projects	• Temporary on-demand load • Functional off- load	• Enterprise infrastructure grid • Drive internal IT economics • Standardized development environment/ services	• Redefine services • New business offerings • Hosting and operations partners • Software vendors

Sun
microsystems
THANK YOU
www.sun.com/cloud