Next generation data centre networks
A platform for innovation

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Mean Time Between Idea and Making Stuff Happen
What’s the DNA of your applications?
Changing Application Models

**Bare metal**
- Server
- App
- OS

**Virtualisation**
- Server
- App
- App
- App
- OS
- OS
- OS
- Hypervisor

**Containers**
- App
- App
- OS

**Monolithic Apps**
- Node 1
- Node 2
- Shared SCSI or fiber channel storage
- Private network
- Public network
- Clients

**Scale out**
- Enterprise Network
- CAS Array
- MEX
- CAS
- MEX
- CAS
- MEX

**Microservices**
- API
- Microservices
- App
- App
- App
Each icon is three to a few hundred instances across three AWS zones.
Shearing Layers

- Site: eternal
- Structure: 30-300 years
- Skin: 20 years
- Services: 7-15 years
- Space plan: 3 years
- Stuff (furniture): constant

"separate that which changes from that which doesn't"

[Roberts & Johnson 1998]
Systems Layers

- Systems of Innovation
- Systems of Differentiation
- Systems of Record
Infrastructure Supports Applications

Traditional Applications
(Systems of Record, Systems of Differentiation)

Enterprise Virtualisation / Bare Metal

Modern Applications
(Systems of Innovation)
Starting tomorrow, our 5 year old virtualization farm will be called a private cloud
Infrastructure Supports Applications

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Enterprise Virtualisation / Bare Metal

Modern Applications
(Systems of Innovation)

- Profile/catalogue driven
- Programmable
- Multi-tenanted
- Tenant portal
- Automated (everything)
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Modern Applications
(Systems of Innovation)

Cloud Management Platform
(OpenStack / AzurePack / CloudStack / Cisco / …)
Infrastructure for Modern Applications

- Application
- Operating System
- Compute / Virtualisation
- Storage

Orchestration

Templates / App Containers

Systems Management

Operating System

Compute / Virtualisation

Storage
Infrastructure for Modern Applications – real example

- **OpenStack** (Nova, Neutron, Cinder, etc.)
- **Puppet**
- **Operating System - RHEL**
- **Heat Templates**
- **Compute/Virtualisation - KVM on UCS**
- **Storage - CEPH**
- **Application - Hadoop**
- **WEB**
- **APP**
- **DB**
- **F/W**
- **ADC**
Infrastructure for Modern Applications – real example

- Application - Hadoop
- Operating System - RHEL
- Compute/Virtualisation – Hyper-V on UCS
- Storage - NetApp
Infrastructure Supports Applications

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Enterprise Virtualisation / Bare Metal

Modern Applications
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Cloud Management Platform
(OpenStack / AzurePack / CloudStack / Cisco / …)
Summary

• Application models are evolving
  • Some will take a long time to evolve (if they do at all)

• Need to support traditional applications and provide agile environment for innovation projects

• Build the right infrastructure so these can converge when needed
Questions?