Convergence Between Traditional and SDN-based Networks
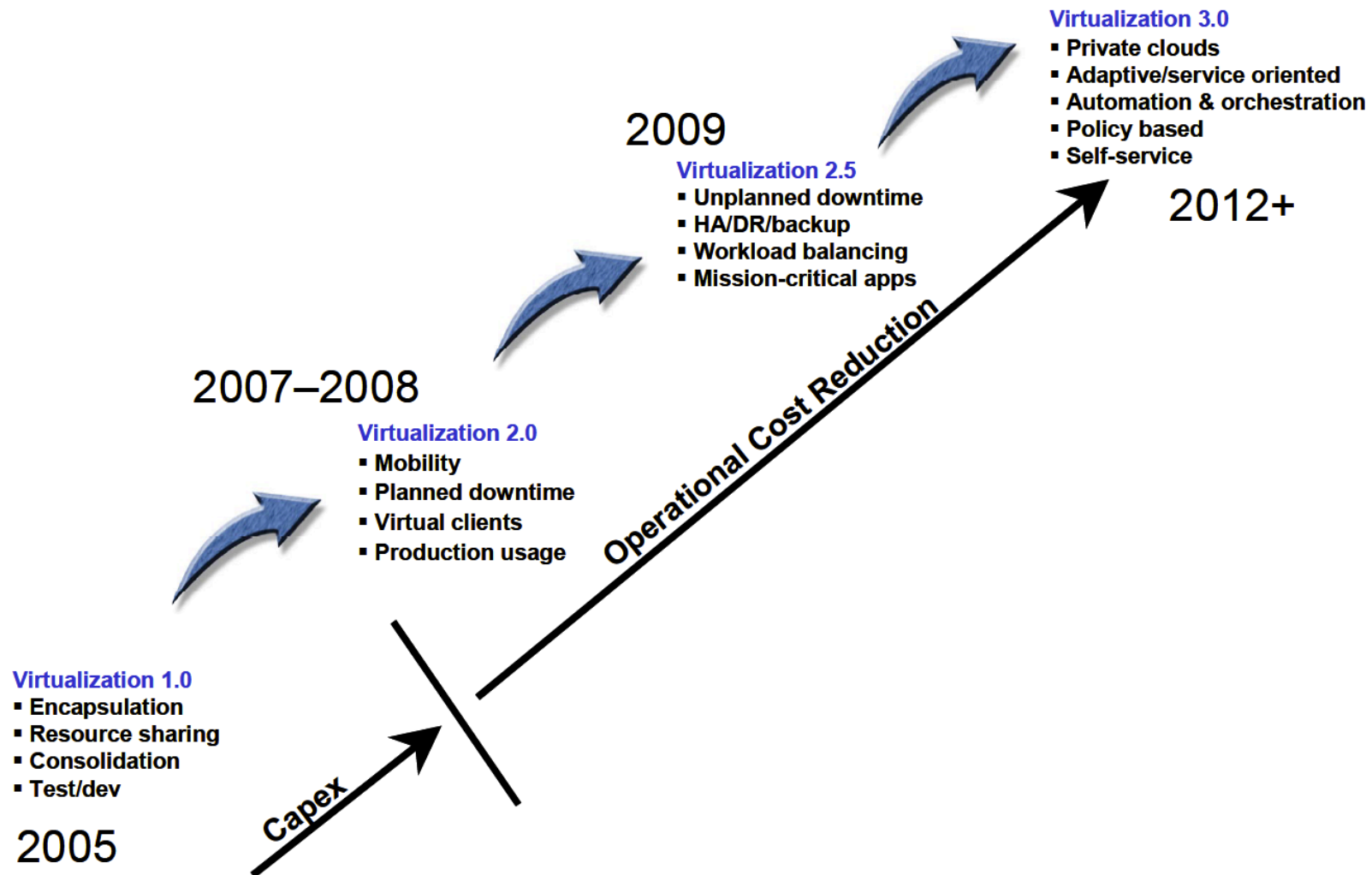
Juha Holkkola

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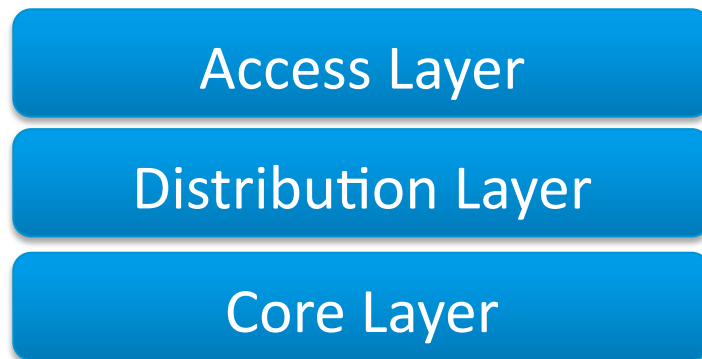
What's Driving the Paradigm Shift in Networking?
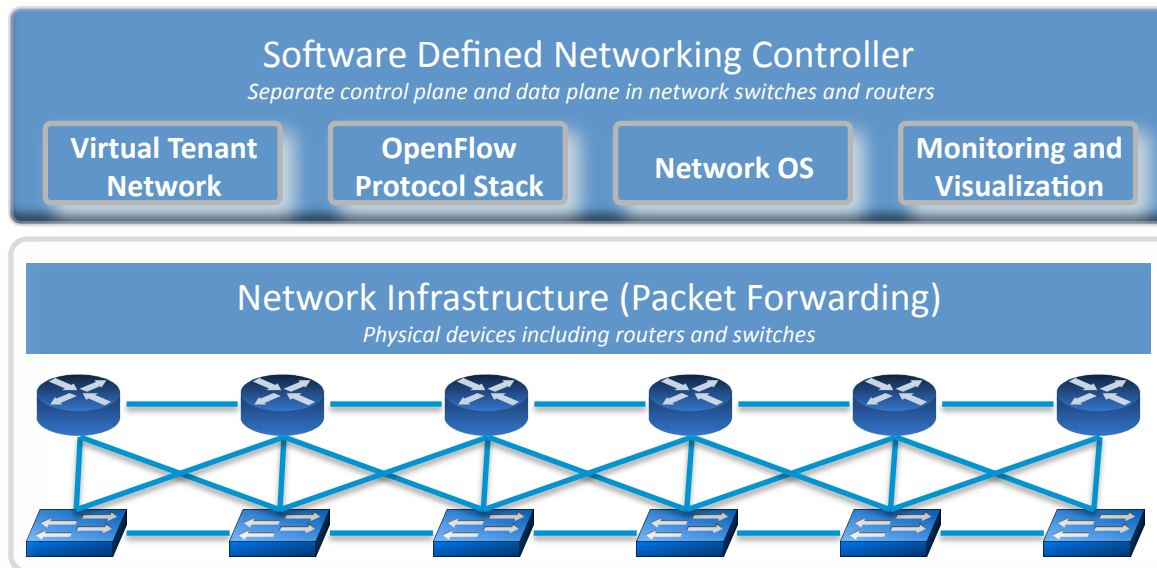

Virtualization 3.0
- Private clouds
- Adaptive/service oriented
- Automation & orchestration
- Policy based
- Self-service

2012+

2009

Virtualization 2.5
- Unplanned downtime
- HA/DR/backup
- Workload balancing
- Mission-critical apps

2007–2008

Virtualization 2.0
- Mobility
- Planned downtime
- Virtual clients
- Production usage

Operational Cost Reduction

Virtualization 1.0
- Encapsulation
- Resource sharing
- Consolidation
- Test/dev

2005

Capex

The Problem with Traditional Networking

- Hierarchical structure of datacenter networks:

- Application density adds East-West traffic:

Access Layer

Distribution Layer

Core Layer

- Connecting everything leads to looping issues.

Software-Defined Networking

Software Defined Networking Controller
Separate control plane and data plane in network switches and routers

| Virtual Tenant Network | OpenFlow Protocol Stack | Network OS | Monitoring and Visualization |

Network Infrastructure (Packet Forwarding)
Physical devices including routers and switches
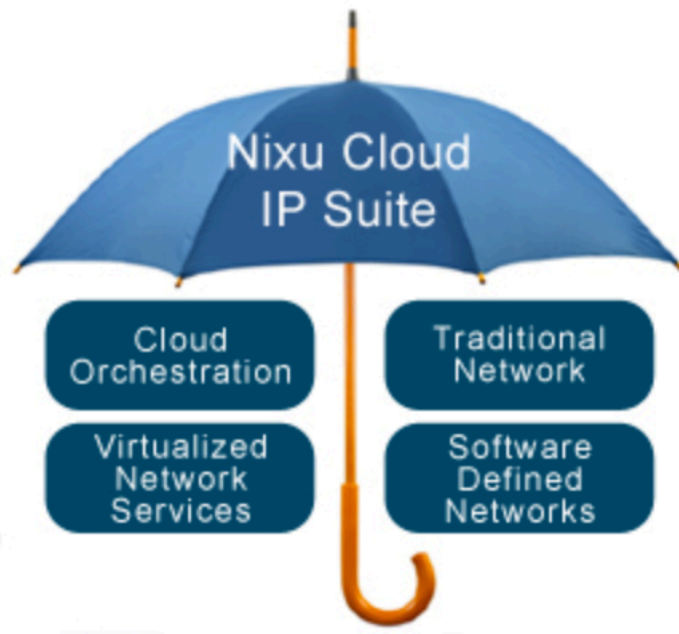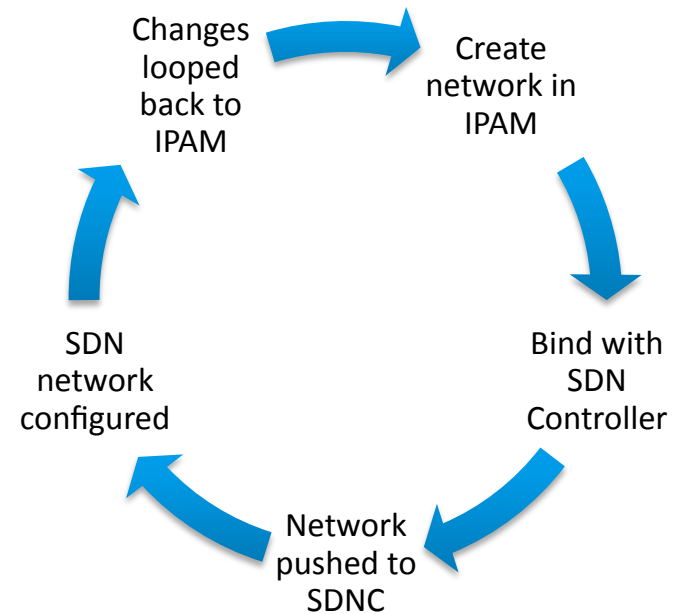
- Separating the control and the data planes:
  - Control and management in virtualized controller
  - Physical devices dedicated to control plane activity

- More efficient, better scalability.

Managing the Transition

- What you need is an umbrella:

Nixu Cloud
IP Suite

Cloud Orchestration

Traditional Network

Virtualized Network Services

Software Defined Networks

- And some automation:

Changes looped back to IPAM → Create network in IPAM → Bind with SDN Controller → Network pushed to SDNC → SDN network configured → (loop back)

Thank you!

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