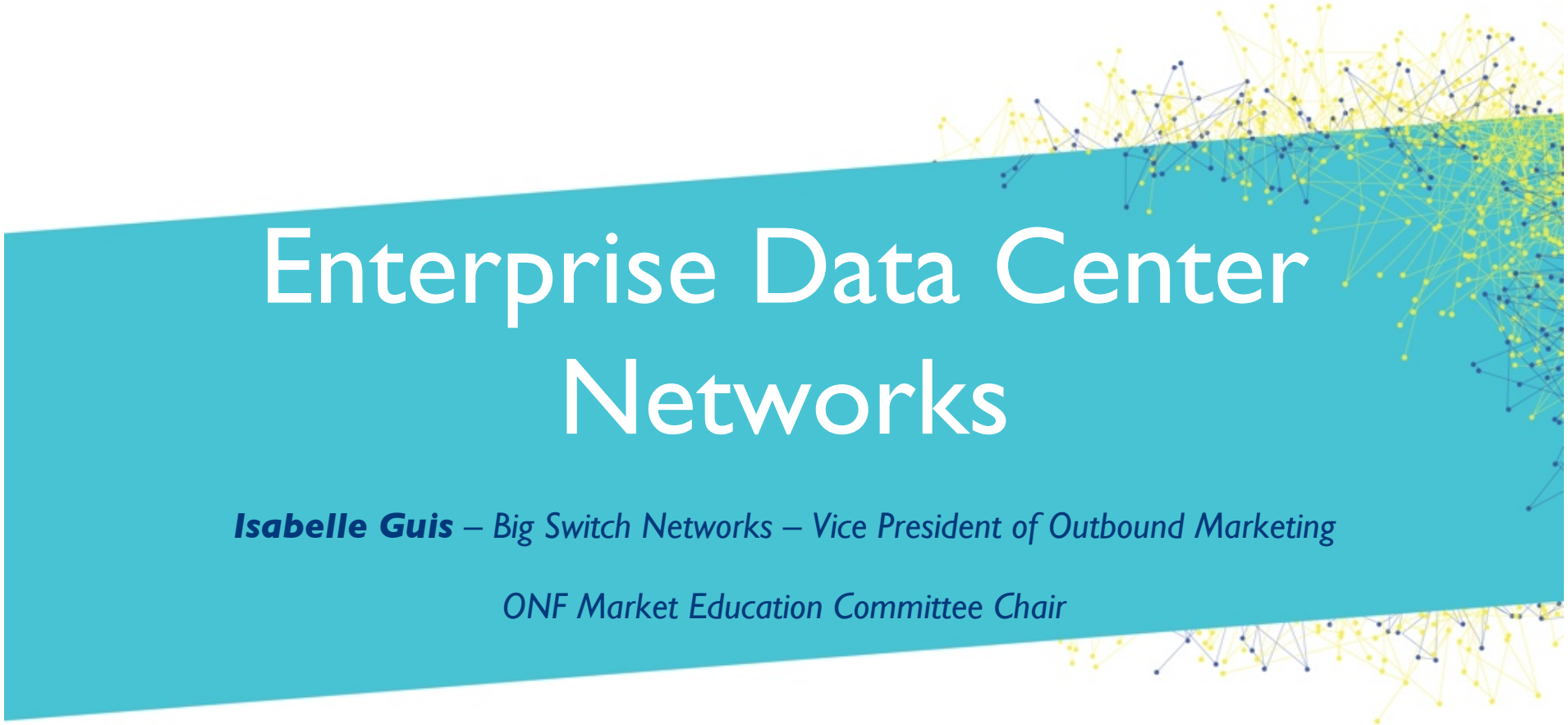


Enterprise Data Center Networks

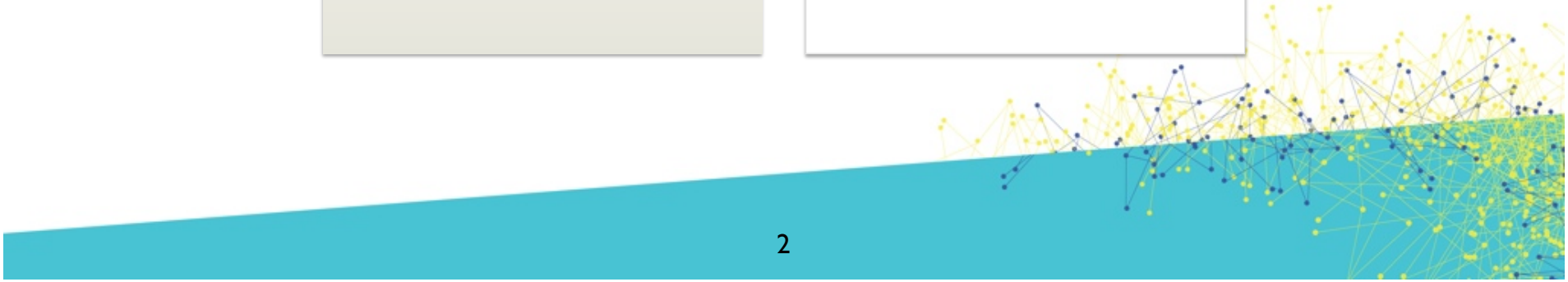
Isabelle Guis *– Big Switch Networks – Vice President of Outbound Marketing*

ONF Market Education Committee Chair

This Session Objectives

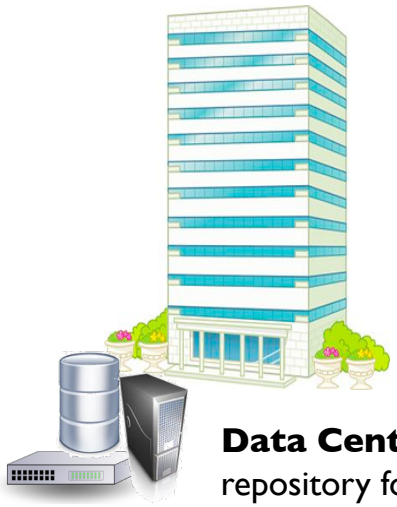
Leave with an understanding of…

- Data Center Market Trends
- Network Challenges Driven By These Trends
- Typical Network Design And SDN Implementation
- Most Frequent Uses Cases
- Associated Benefits



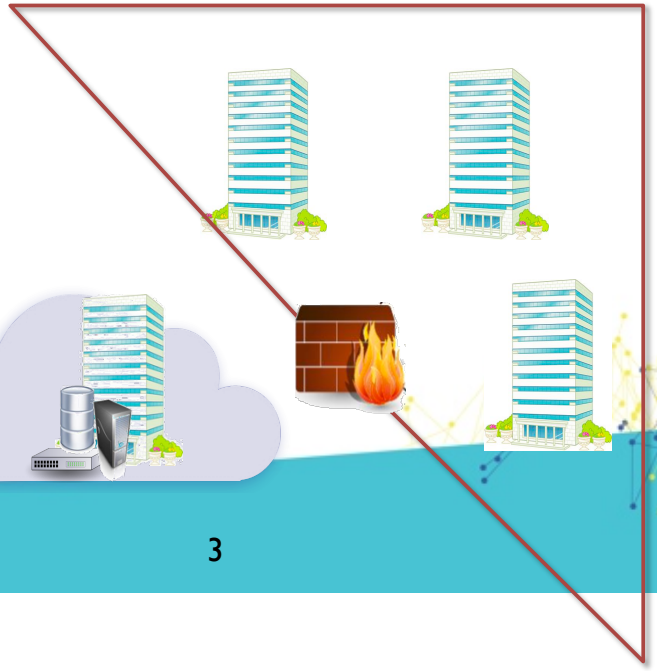
Enterprise Data Center Networks

Definition



Data Center: Centralized repository for compute and storage resources over a network - Physical or virtual

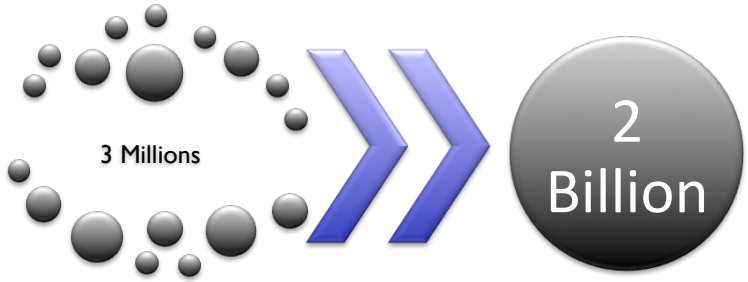
Private Cloud: IT resources providing hosted services to a limited number of people behind a firewall (variables: ownership, maintenance etc.)



Public Cloud: IT resources provided by a service provider to the general public over the Internet

Trends In The Data Center

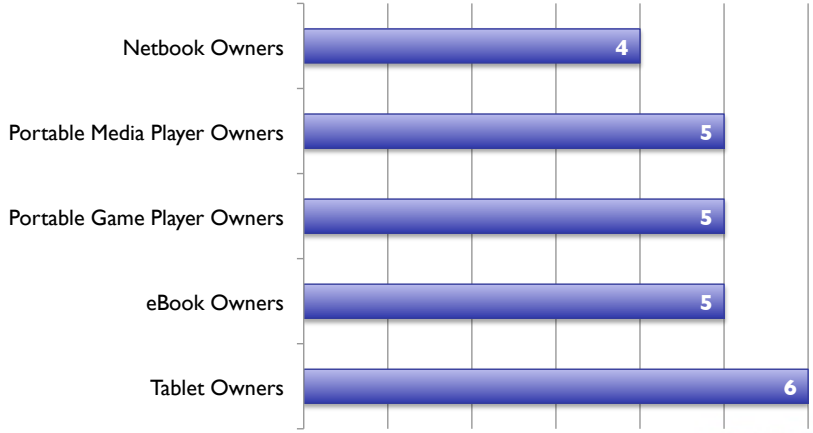
Changes in traffic patterns



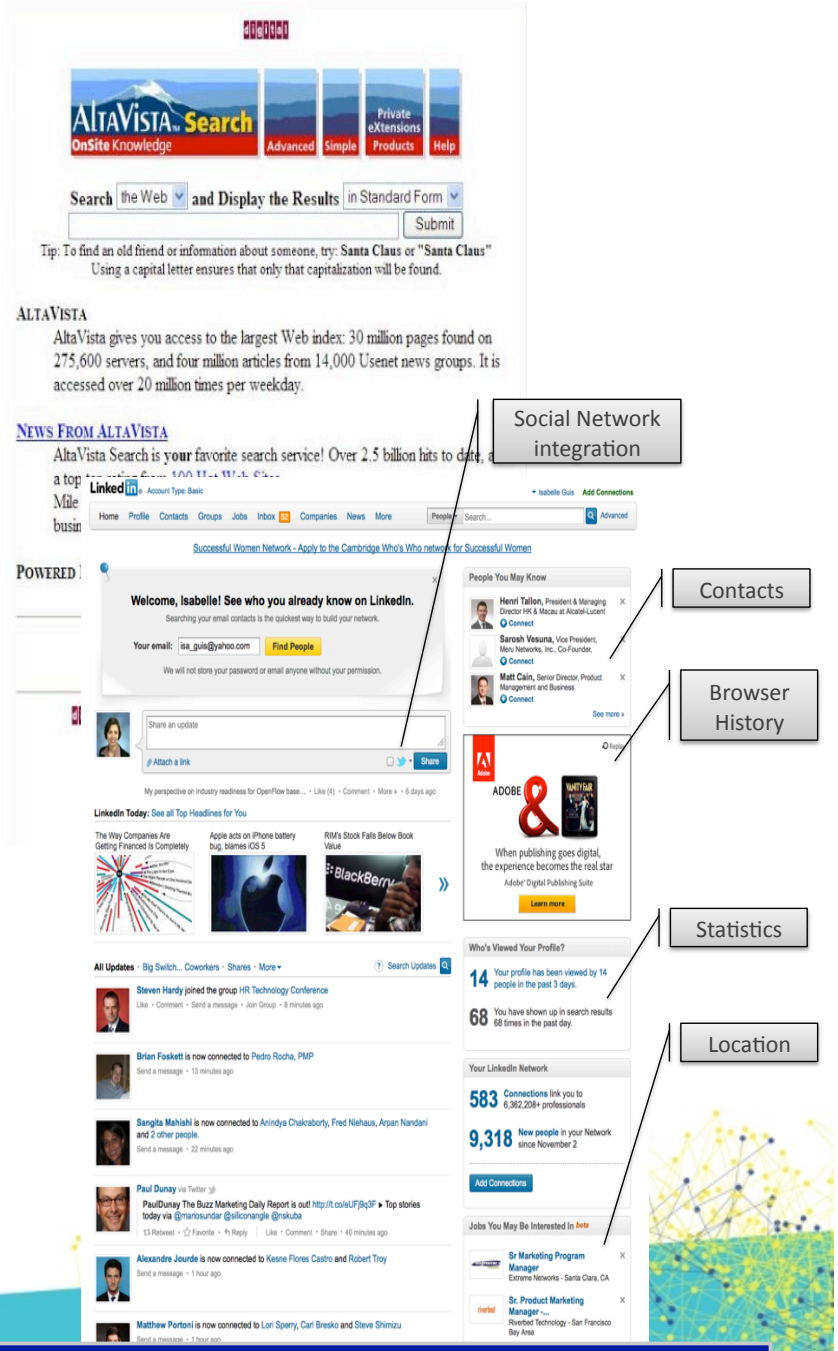
1990 2011

Internet users worldwide

Average Number of Connected Devices



Source:The Nielsen Company – October 2010



North/South Traffic

East/West Traffic

Potential Market Opportunity & Budget Impact

By 2014, 80% of traffic will be East/West

Fluctuations will be 90 times higher than traffic peaks experienced today

2010 Data Center Network Infrastructure Sales

	Rankings	Y-Y Change
DC Ethernet Switching	1	41.1%
DC SAN	2	11.6%
DC Routers	3	1.2%
DC Application Delivery Controllers	4	22.0%
DC Network Security	5	15.9%
DC WAN Optimization Appliances	6	8.0%

In 2010 Data Center Infrastructure $13B

Source: Gartner – Synergy Research Group

Trends In The Data Center

Server, Storage, Network Infrastructure: Modernization Agenda

NETWORK

STORAGE

COMPUTE

Melting Siloes

Workload Virtualization and Mobility

Network Topology Independence

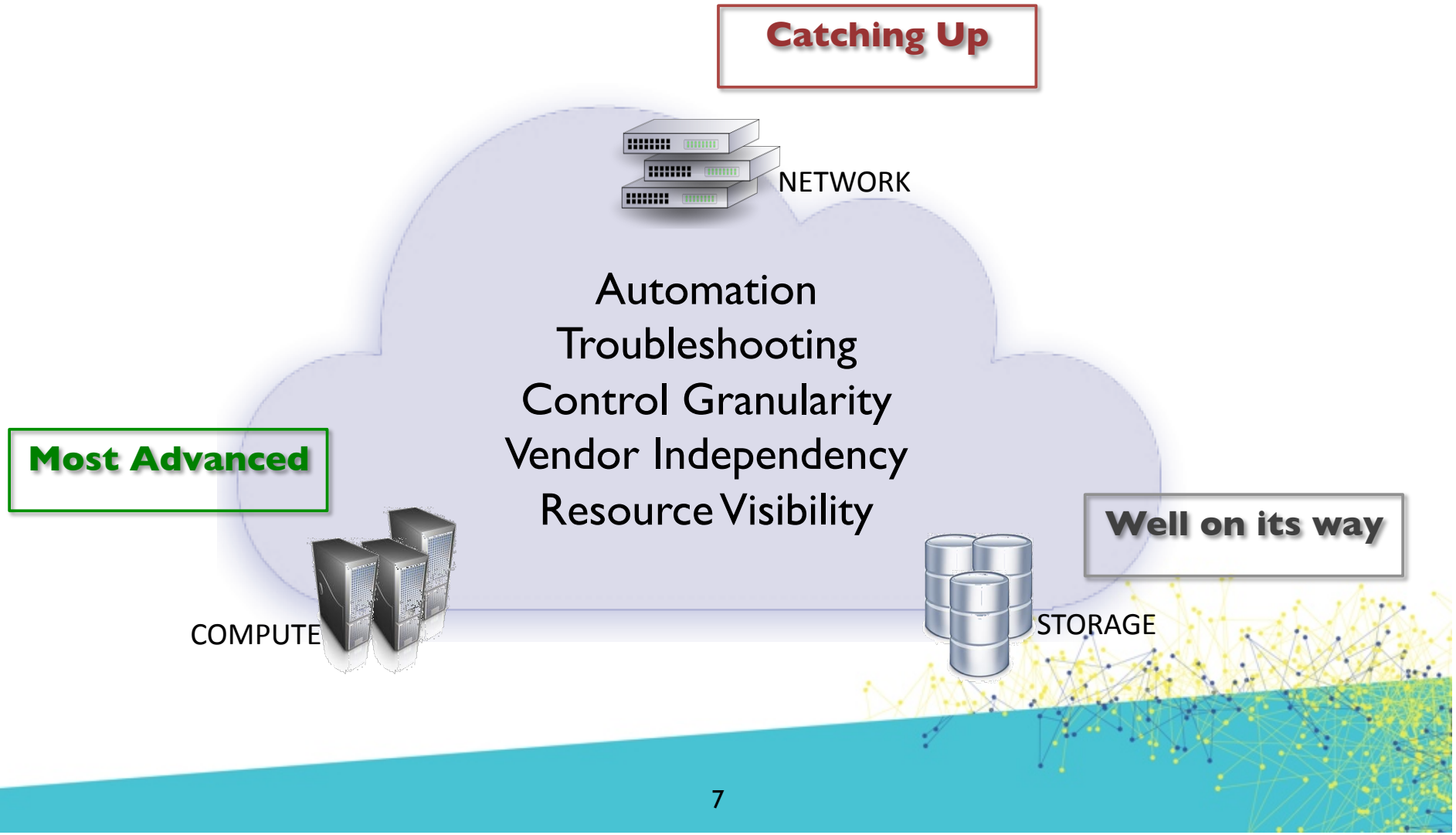
Compute/ Storage/ Network shared pool of resources

Infrastructure Consolidation and Convergence

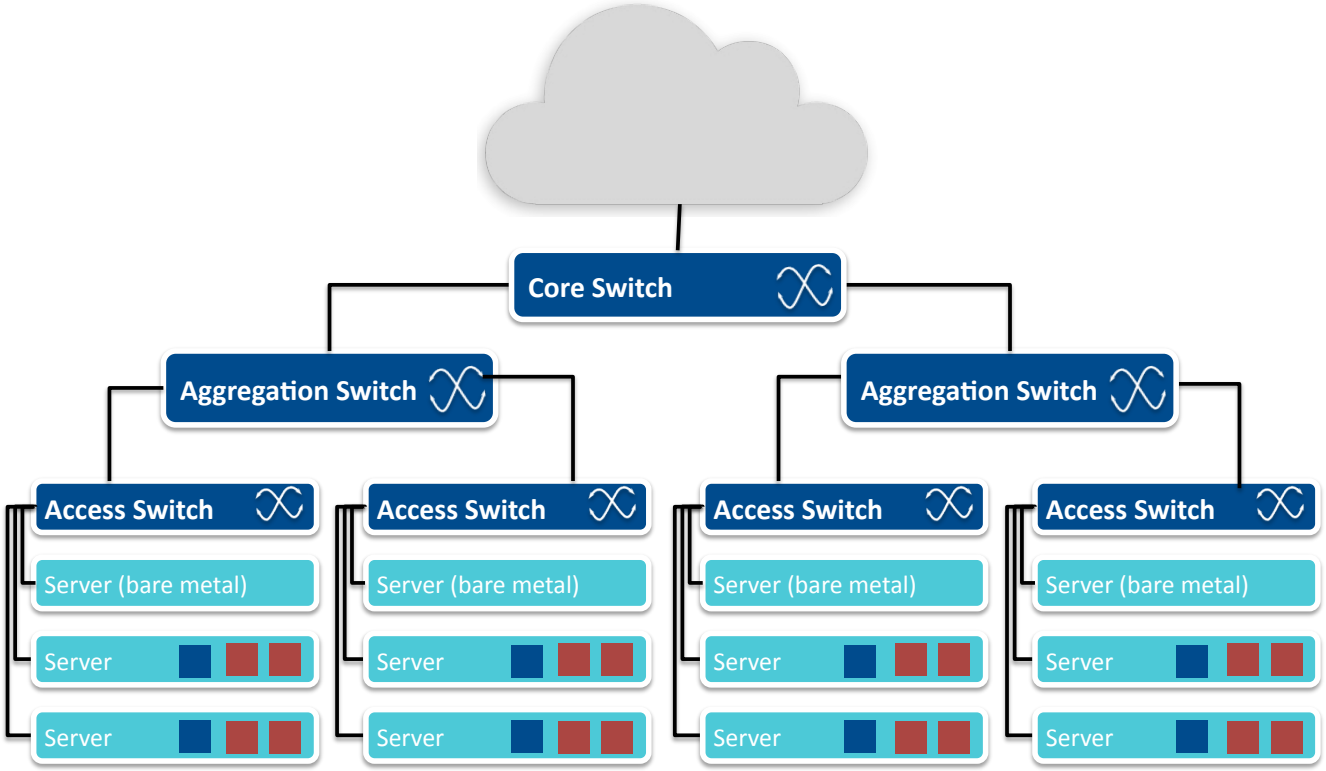
Source: Gartner (February 2012)

Enabling The Cloud

Compute, Storage and Network Are Not Equal



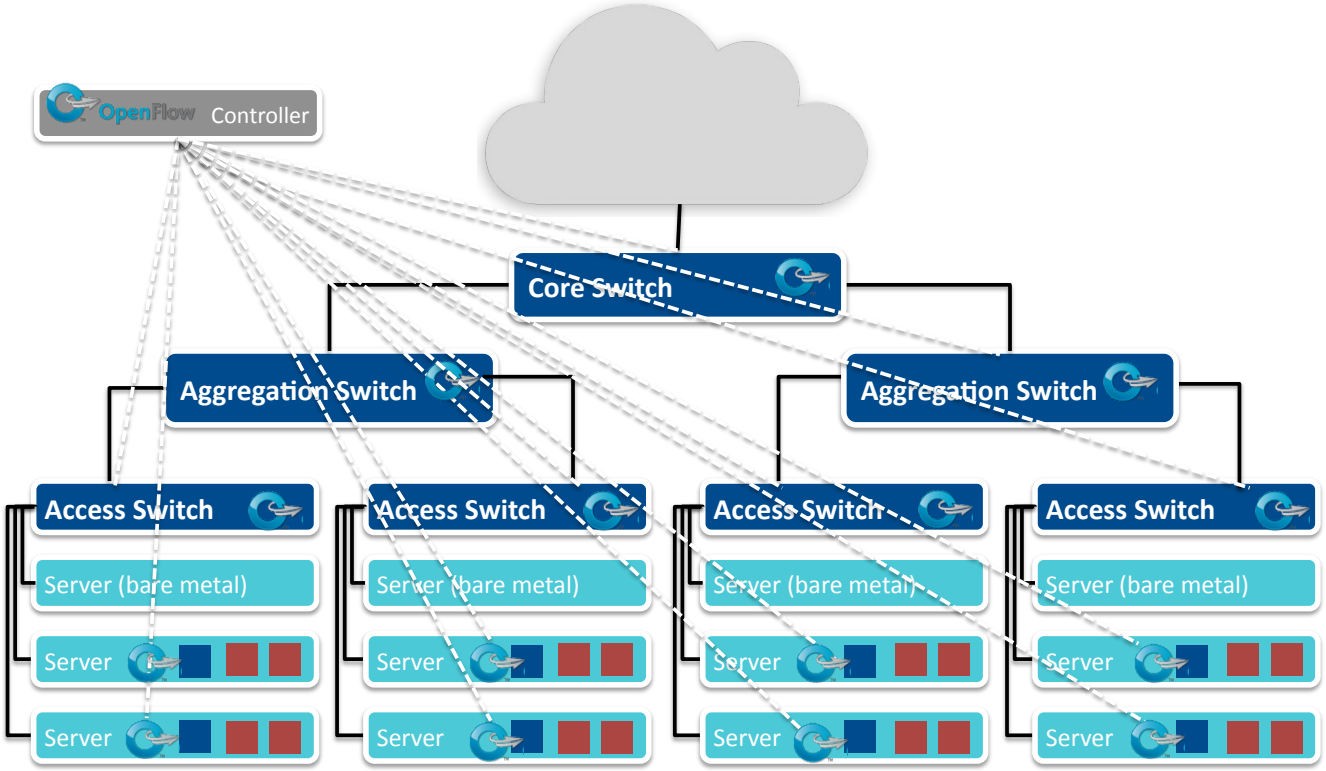
Typical Data Center Network Topology



- Between 20 to 40 servers per rack
- Mix of bare metal and virtualized servers
- Mix of physical and hypervisor-based switches
- ToR deployment (access, aggregation, core)
- Multiple data centers connected via L3

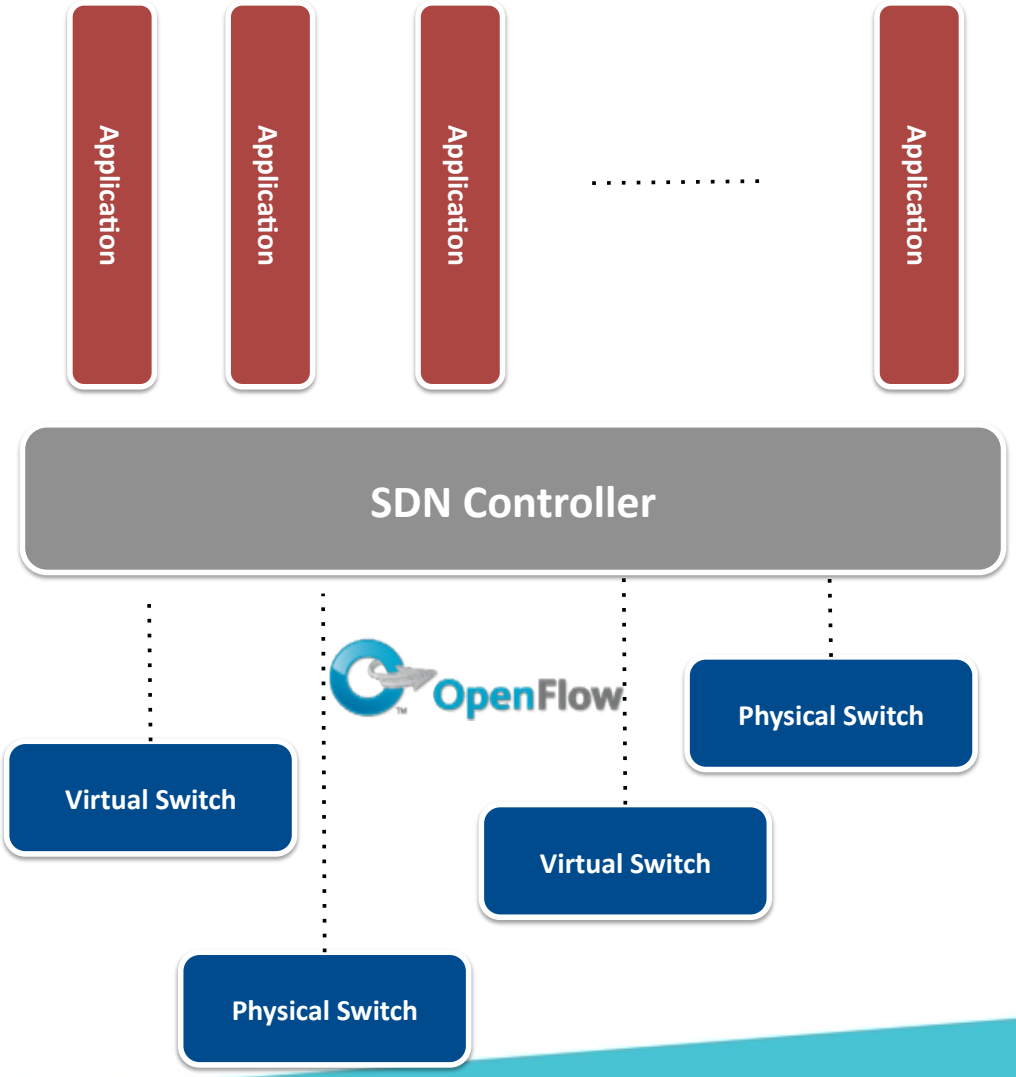
Virtual switch Virtual Machine

SDN Introduction in Data Center



- Introduction of SDN based on OpenFlow
- OpenFlow Controller Software connected over IP to virtual and physical switches

Logical Architecture



Application Layer

Network Services, Orchestration etc.

Control Layer

Virtualization

Data Layer

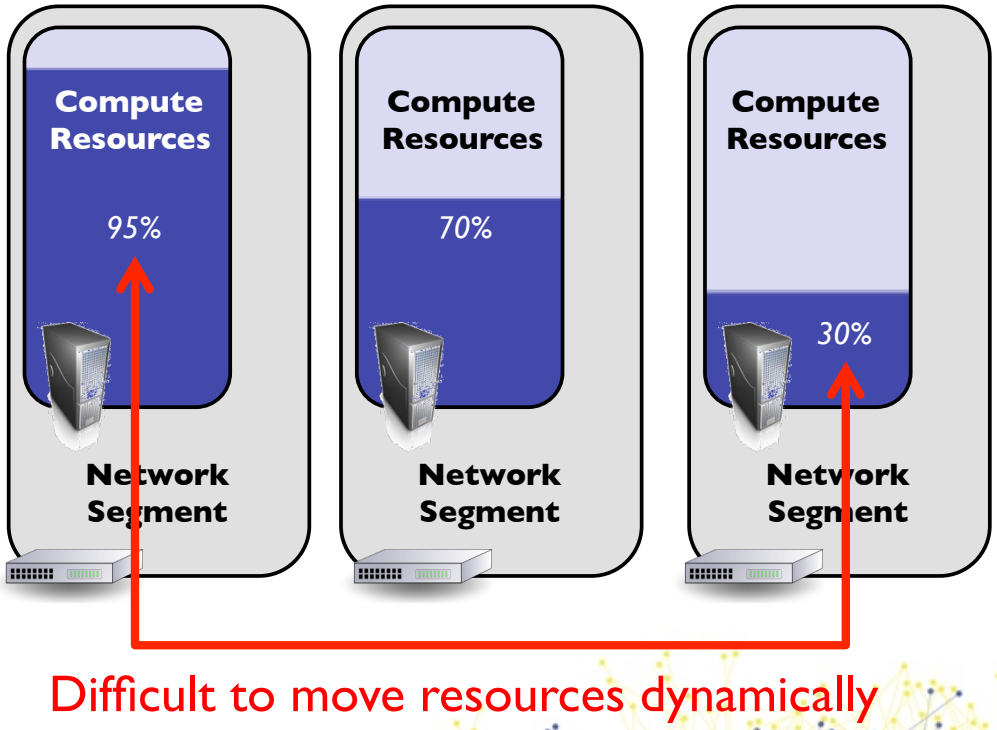
Single pool of network resources

Use Case #1: Resource Optimization

Network Segmentation

- Data Center
- Aggregation Layer / Pod
- Top of Rack Layer
- Host / Virtual Switch
- Workload / VLAN
- Tenant

Implication

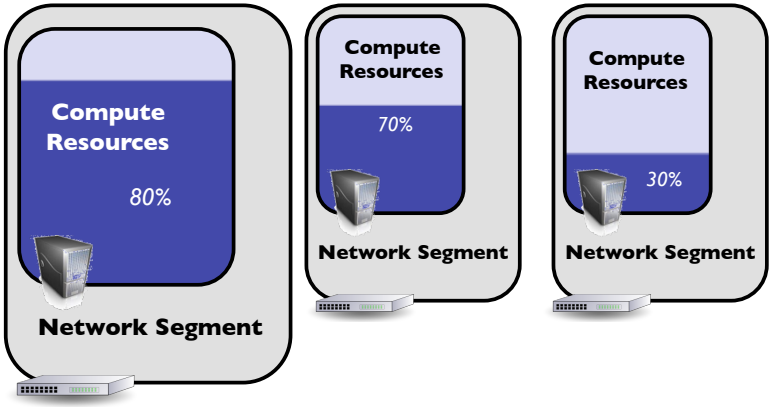


Difficult to move resources dynamically

The Network Gets In The Way

Use Case #1: Resource Optimization

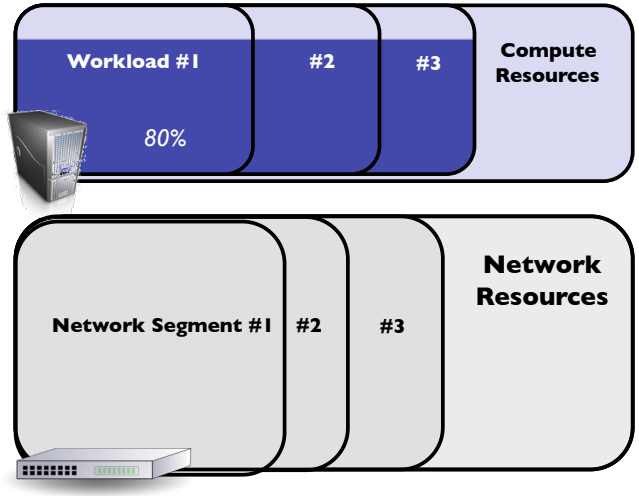
Traditional Solution



Static Design Takes Days/ Weeks and Leads to Overprovisioning of Resources

- ❑ Expensive Equipment
- ❑ Time Consuming
- ❑ Upfront Spending

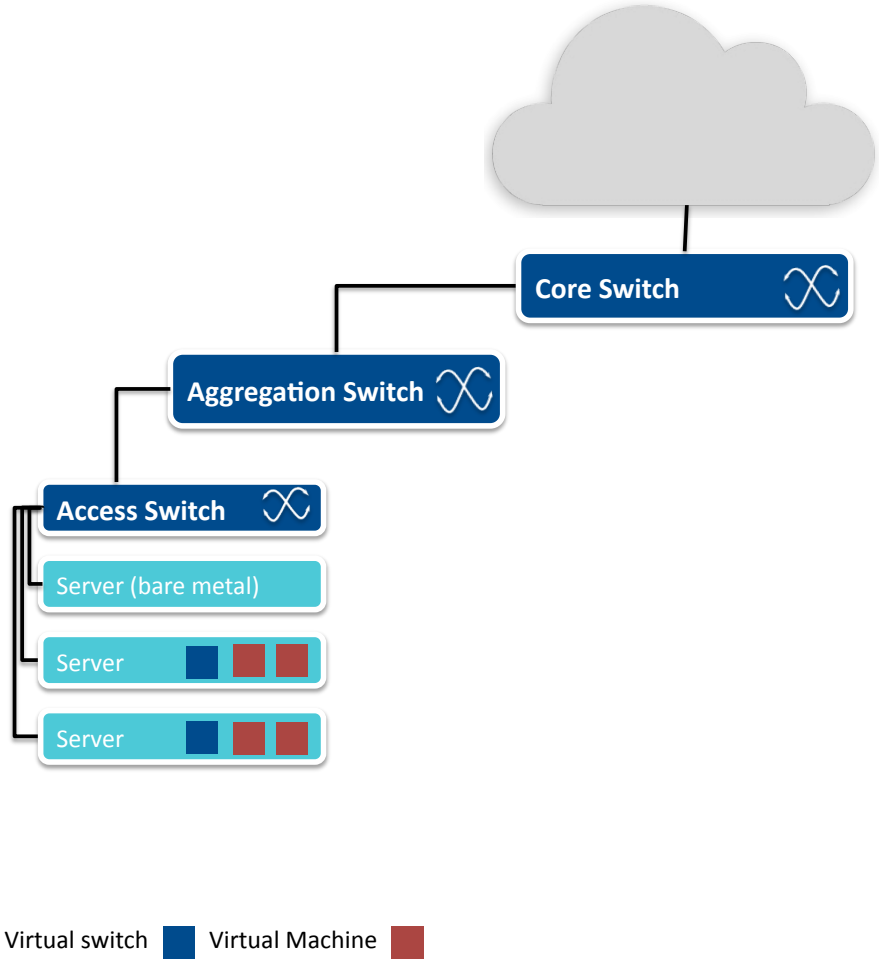
SDN Solution



Reuse Existing Resources With Dynamic Software Optimization

- ❑ Increased Scalability and Efficiency
- ❑ Automation for Easier Integration with Compute

Use Case #2: Complete Network Visibility



Policy Consistency across hosts connected to

- ❑ Virtual Switches
- ❑ Physical Switches (Access, Aggregation)

- ❑ Simplify Troubleshooting
- ❑ Reduce Downtime
- ❑ Allow For Better Traffic Engineering
- ❑ Ease Policy Enforcement

Q&A

THANK YOU