



2013 ONS Tutorial 2: SDN Market Opportunities

Sizing the SDN Market Opportunities

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SDN Market Overview

- SDN Opportunity is “Unlimited”:
Challenge is in the Execution
- Wide variance in possible scenarios
- SDN will change the competitive landscape:
Start-ups, network incumbents, IT providers
- “Feet on the street” required

**“We overestimate the impact in the near term,
underestimate in the long term”**

Agenda

- Forecasting Markets
- Enterprise vs. Cloud vs. Telecom
- Layer 2/3 vs. Layer 4-7
- Hardware, Software, and Services
- Verticals
- Market Assumptions and Forecast
- Recommendations for Buyers and Suppliers

Forecast Variables



- Definitions Likely to **Evolve**
- Wide range of hardware (L0-7) in scope
- **Immaturity** of network software market
- Ability of EN and Telco to **transform** their networks
- **Framework** for asking the “right” questions

Micro-economics as the “dismal science”

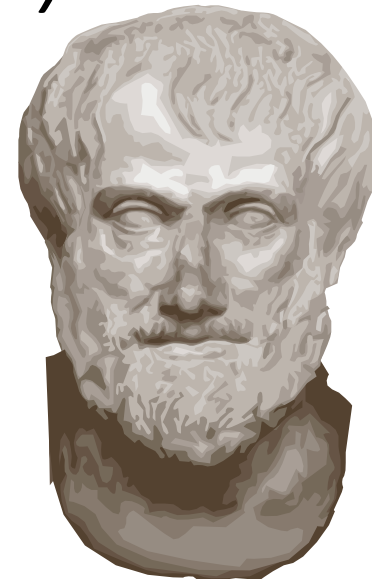
Market Correlation: Influencers

- Growth in **Public Cloud** services and related infrastructure
- Migration to **Private Cloud** and architecture
- Enterprise Networks
- Telecom Equipment – HW and Software
- Network **security** and management
- Network Functions Virtualization (**NFV**)

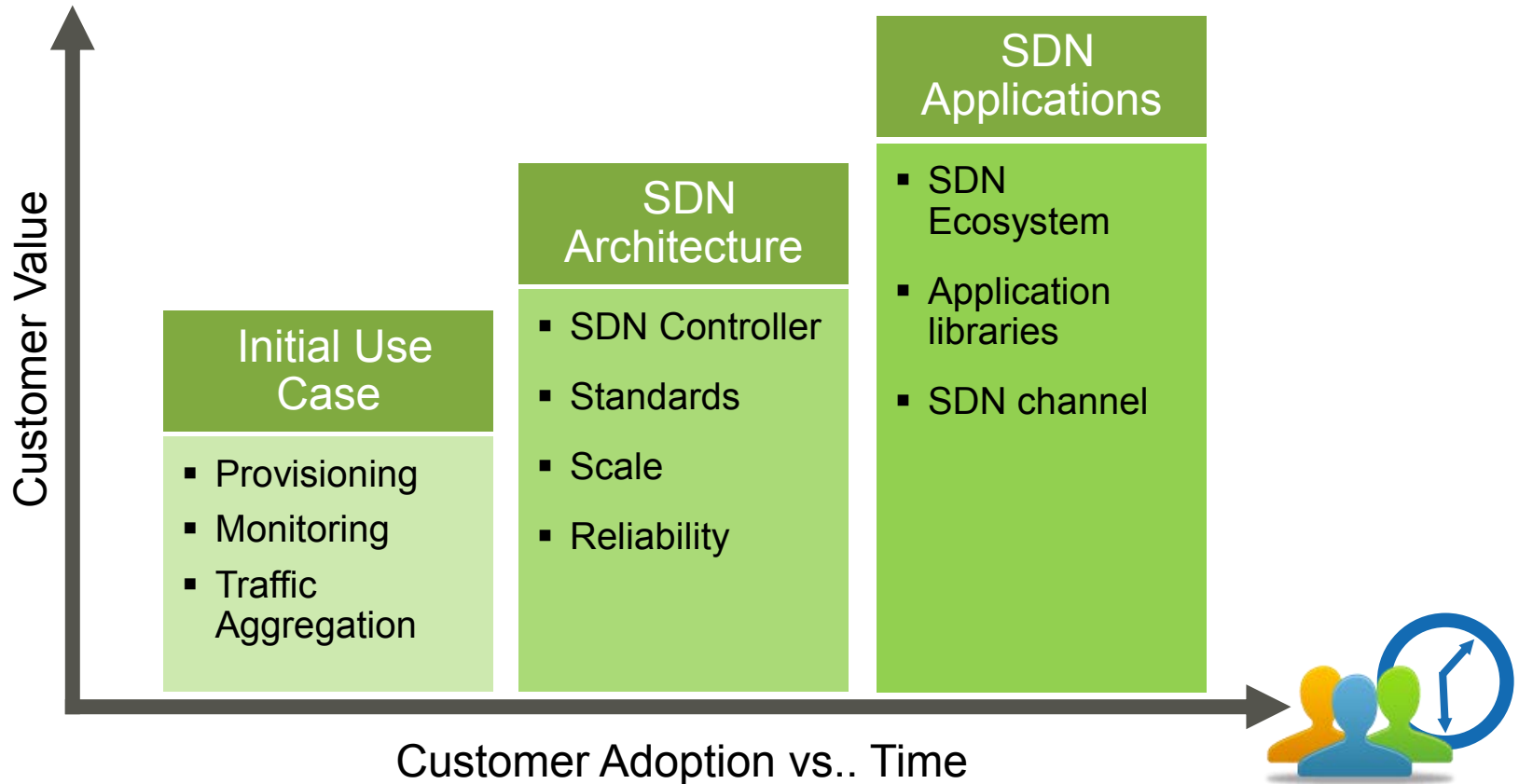


Learning from the Past

- LANs and ethernet (*late 1980's, early 1990's*)
- WAN and rise of Cisco (*mid-late 1990's*)
- Internet bubble (*late 1990s, early 2000s*)
- Linux (*late 1990s+*)
- Server and Storage virtualization (*2004+*)
- Public Cloud (*2007+*)



SDN Adoption Timeline

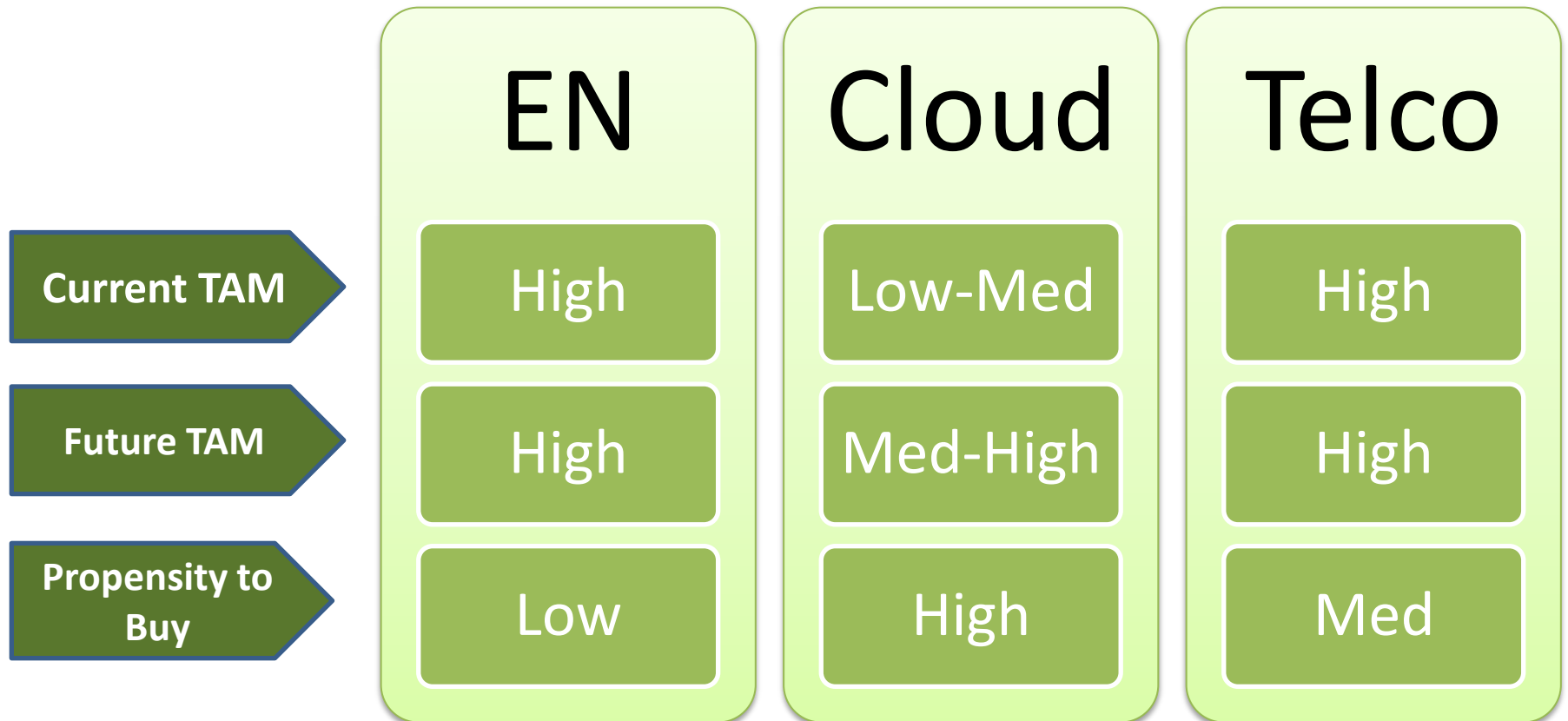


SDN Use Cases

- Public Cloud
- Private Data center
- Wide area network
- Campus slicing
- Management/monitoring
- Security
- Others?



SDN Addressable Market (TAM)



Leading Enterprise Verticals

Enterprises Where The Network Is Critical

- Financial Services (ONUG)
- Research and Development
- Education
- Retail – WAN
- Manufacturing
- Energy



SDN in the Telecom Carrier

- Large Market (\$80B+)
- Concentrated market share
- LTE and beyond
- Links to OSS/BSS
- Limited ISV ecosystem (beyond incumbents)
- Impact of NFV?



**Key Variable: CSPs Ability to Rapidly
Change the Way They Build Networks**

SDN L2/3

Impact on Traditional Ethernet Switch and Router Markets

- Large market (\$30B+), high margins
- Huge legacy installed base (Cisco)
- Specialized ASICs drives performance
- White box products
- CAPEX vs. OPEX

SDN Impact on L4-7

- Large (~\$10B), diverse set of services
 - Server load balancers
 - WAN Optimization
 - Firewalls
 - IP VPNs, IDS/IPS
- SDN has the potential to enlarge this market
- And, change the market dynamics (e.g. more software)
- Too specialized to be consolidated?

COTS Technology is Ready

- Advances in **x86** and NPU (e.g. Cavium)
- Availability of high speed **switching** (40GB moving to 100Gb)
- Improved network intelligence via **DPI**
- **Virtualization** and DC convergence
- High Availability (**HA**) software
- COTS **adoption** in application/control layer today

***COTS= Commercial off the shelf technology**

SDN as a Network Operating System

- What is the market for an independent SDN control layer?
- OpenFlow
- Standards
- Applications
- Links to physical network

New Market Opportunity

SDN Applications and Ecosystem

“Promise” of SDN is Vibrant Market for Applications

- Standards (north and south bound)
- Impact of Open Source
- Ecosystem of ISVs
- Application libraries
- Network Management

Breaking with the Past

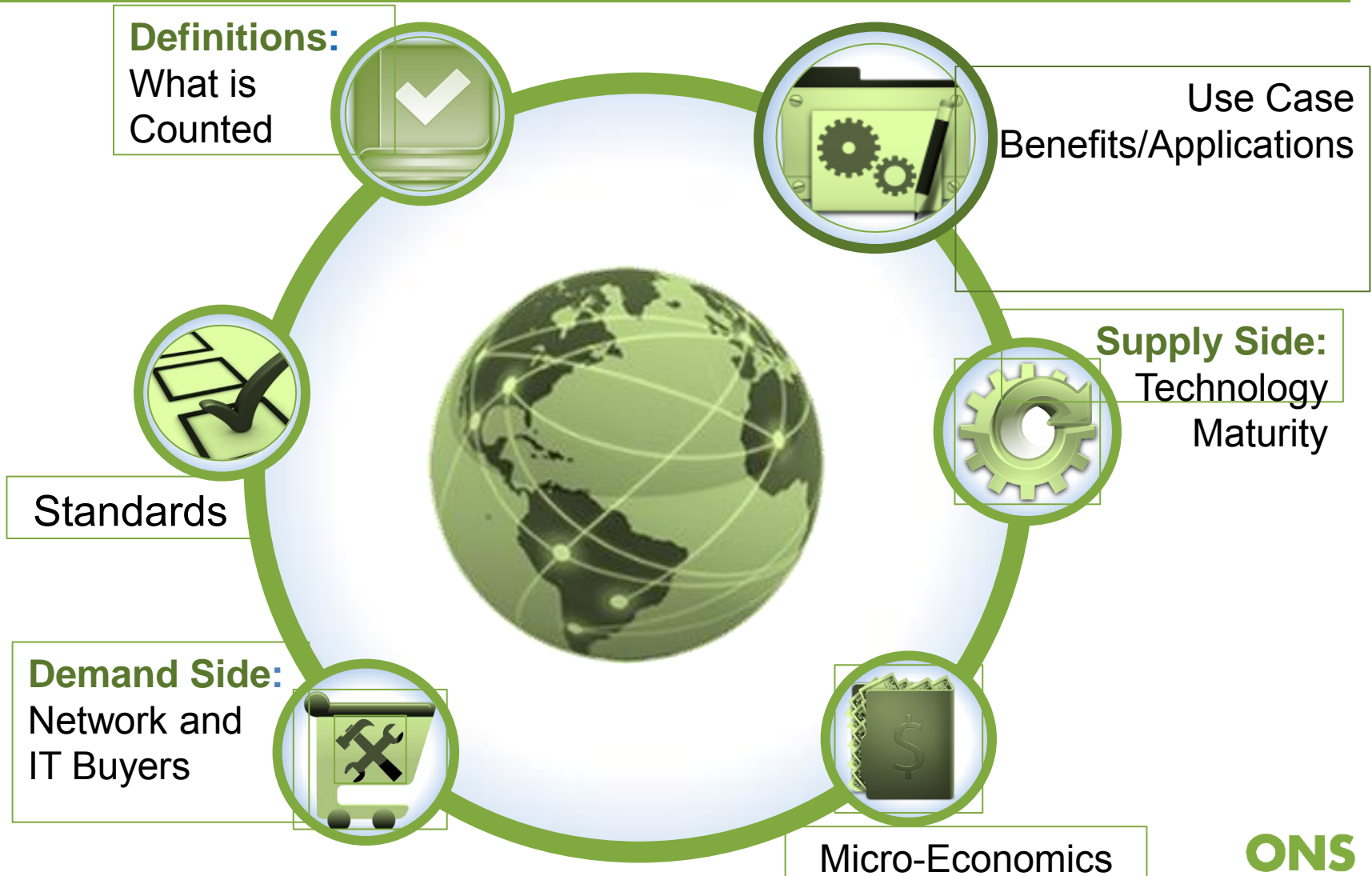


SDN Channel and Services

- SDN adoption beyond SPs and bleeding edge **enterprises** is critical
- Selling of SDN requires “feet on the street”
- Network and data center channel **partners**
- System Integrators and **OEMs** both large (e.g. IBM, HP, DELL, ACC) and small

Critical to expand the market beyond Direct Sales

Methodology

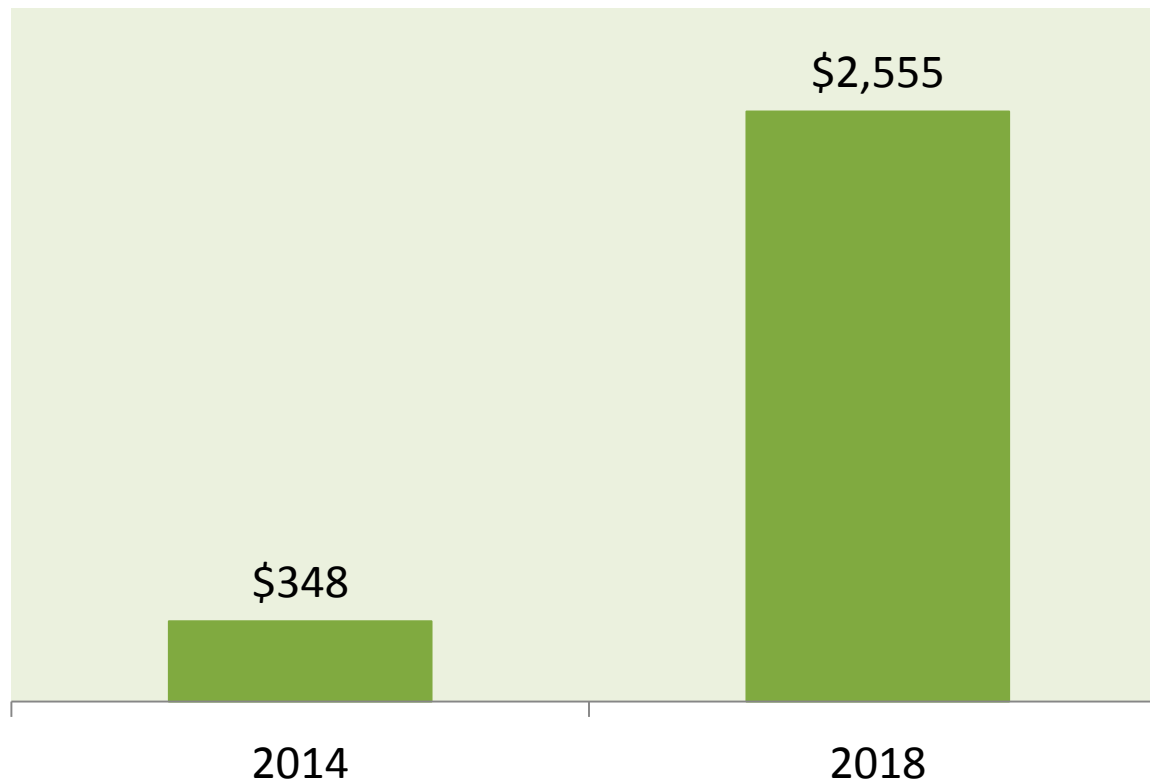


Forecast Assumptions (Selected)

- Early SDN adoption will occur in hyper-scale **data centers**
- Growth in **private cloud** drives need for enterprise SDN
- SDN use cases emerge in **WAN**, monitoring, **security**, etc.
- SDN **start-ups** will continue to have good access to funding
- SDN market will develop an ecosystem of management, security, and application software that improves **SDN ROI**
- Dominant **IT providers** will incorporate SDN as a standard offer in their data center and network solutions
- Wireless and Wireline Carriers move to leverage SDN as part of their **transport network**
- Ability of organizations to **transform** their network remains a key variable

SDN Forecast, Worldwide 2014 & 2018

Worldwide SDN Forecast 2014 and 2018, \$ Millions



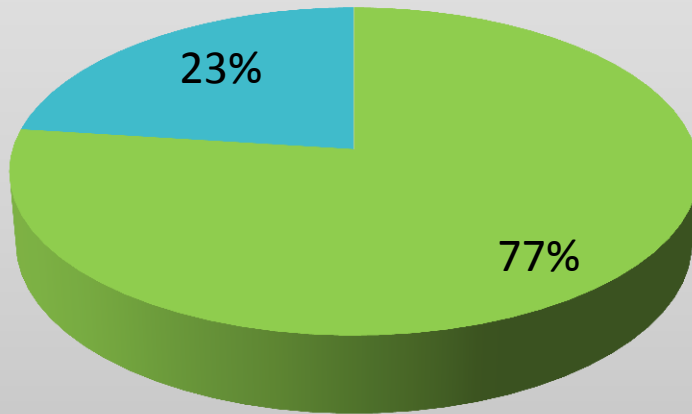
Forecast includes hardware and software end-user revenues across Layers 0-7, including enterprise, cloud SP, and telecom buyers.



SDN Forecast, HW vs. SW split, 2014 & 2018

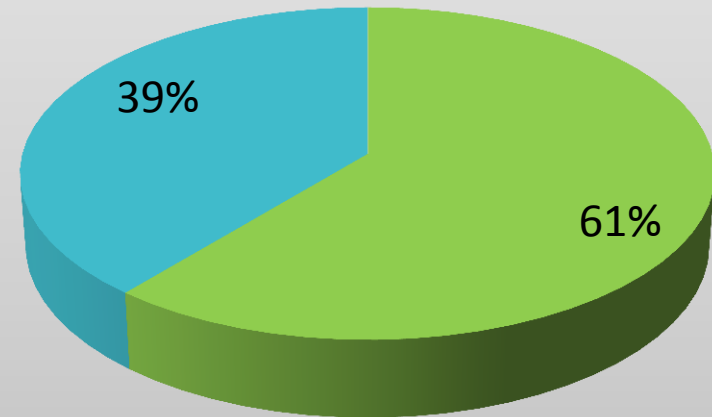
2014

Hardware Software



2018

Hardware Software



Buyer Recommendations

- Have a **Clear Vision** of SDN benefits
- Identify a specific **initial use case** for SDN
- Understand the impact of SDN on your **IT organization** - e.g. cross-functional teams
- Think about SDN **implementation challenges**
 - Legacy network migration
 - Security and management implications
 - Layer 4-7 services integration

Supplier Recommendations

- **Year 0** for the SDN Market
- Multi-vendor and **interoperability** are key values
- Demonstrate **ROI** of SDN technology
- Speak in **Business Value** terms (not technology terms)
- The majority of IT buyers want **Solutions** – not APIs.
- Don't (just) target the **bleeding** edge
- Utilize **channels, ISVs, partners** to reach the broader business market

Questions

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Thank You

