Software Defined Networking

THAT’S THE ANSWER
WHAT’S THE QUESTION?

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Level Setting
Software Networking Definitions

SOFTWARE DEFINED NETWORKING

Programmatic

Still Don’t kNow

NETWORK FUNCTIONS VIRTUALIZATION

Not For eVeryone

Still Don’t kNow

Not For eVeryone
Network Design for the New Era
Ok, Now What?
Network Virtualization with Overlays

- NV is an approach which provides a flexible virtual network atop an existing physical network infrastructure using an overlay technology.
- NV helps automate network configuration while provisioning applications/tenants.
- NV provides a scalable, multi-tenant virtual network via overlay technology.
Network Automation & Orchestration

Cloud Management Platforms

Infrastructure Provisioning

Tenant Provisioning

Native Fabric
- Yang Model-NetConf
- CLI

Vendor provided Solutions
- Yang Model-RestAPI
- Python
- Puppet

Cloud
- OpenDaylight
- Brocade SDN Controller
- VMware NSX

Controller-based Architecture

Homegrown Scripting
- CLI Scripting

REST API

Homegrown Scripting
- CLI Scripting

Vendor provided Solutions
- Native Fabric

Cloud Management Platforms

Controller-based Architecture
- OpenDaylight
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Network Programmability

- Sample Traffic and Stats
  - Core and Leaf/Spine devices
  - sFlow-RT samples and ACL stats

- Post Analysis
  - Analyze DC L2-L4 usage/reporting
  - Adhoc Troubleshooting
  - Identify reliability issues due to mis-configurations (storms)

- Reporting/Trigger based use cases
  - Drop, Re-direct or Replicate
  - OpenFlow 1.3 (Upto 128K flows per device)
Intelligent Flow Management

Solution Benefits

• Firewall Bypass
  – Provide high performance file transfers for trusted research traffic directly to Internet 2

• Brocade SDN Controller
  – OpenDaylight software supported by Brocade
Network Functions Virtualization

Management: CLI, GUI, SNMP, Syslog, RESTful API, Netconf/Yang
Platforms: VMware, KVM, Hyper-V, Xen, x86
Network Functions Virtualization in the DC
The Road to Nirvana

- **Hardware Underlay**
  - Majority of infrastructure not SDN capable
  - Move from legacy 3 tier to Ethernet Fabric in DC

- **Orchestration**
  - First step in the journey of SDN for many
  - Software skills are extremely critical for success

- **Programmability**
  - Use case scenarios will vary by each environment
  - Apps emerging that address specific needs

- **Policy Driven**
  - A true paradigm shift in how networking is implemented
  - Silos broken down to support a horizontal focus
Who Would You Rather Be?

Old School

The New IP
Thank you