

BRINGING NETWORKS TO THE CLOUD ERA

SDN enables new business models

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SOFTWARE DEFINED NETWORKING (SDN), JUNIPER NETWORKS

CIO DILEMMA

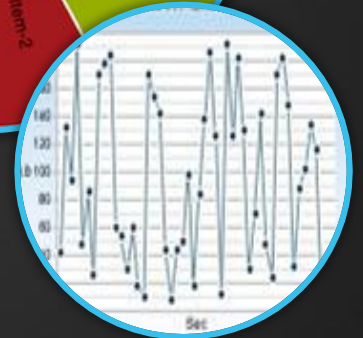
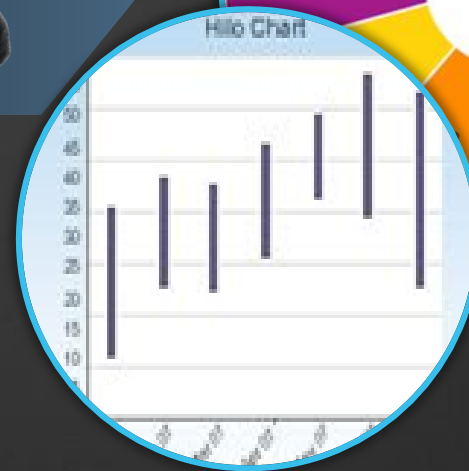
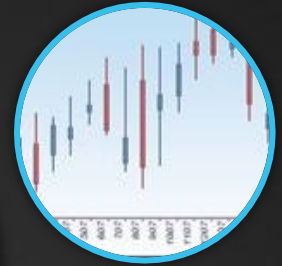
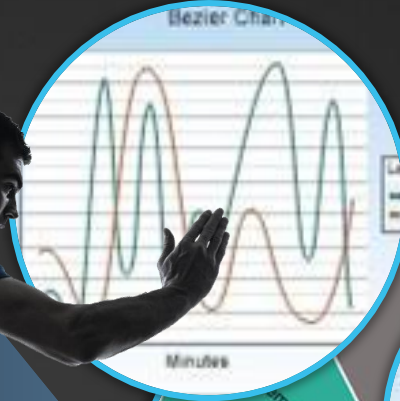
IT viewed as
cost center

Line of
business
owner needs
agility

Transform IT from cost center to profit center & create value



Power of CIO



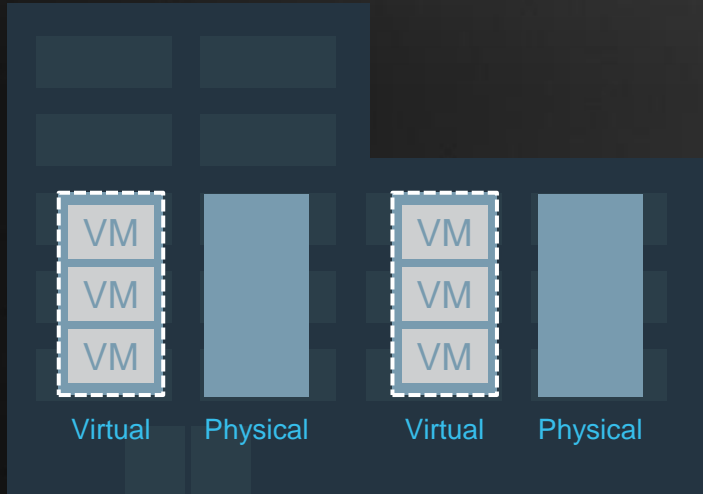
CLOUD DRIVES AGILITY

PRIVATE CLOUD

72%



Only 11% no plans to
deploy private cloud**



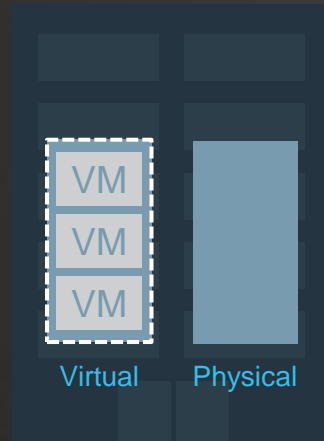
My on-premises
data center

APPS IN THE CLOUD

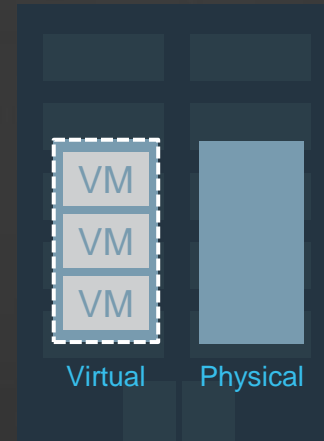
\$54.5B



19% CAGR*



My managed
service provider



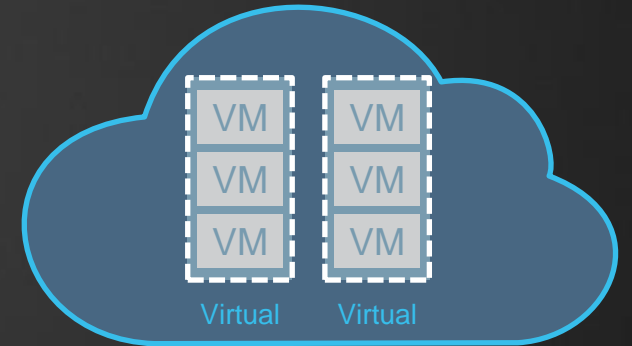
My hosted
service provider

PUBLIC CLOUD

\$131B



17% CAGR*



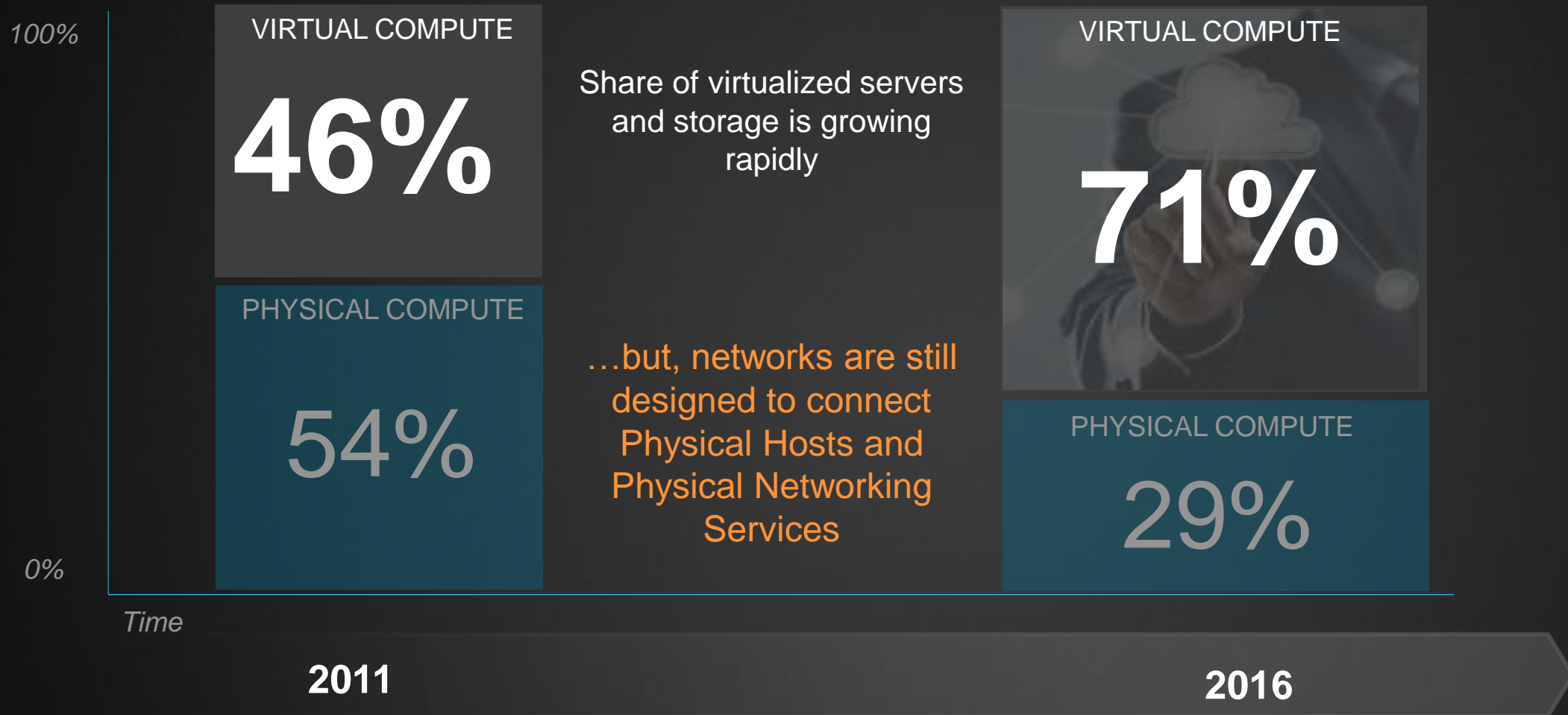
My cloud
service provider

NEW ENTERPRISE APPS - NEW ARCHITECTURE

Technology architectures must better support increasingly dynamic operational and business processes

	SILOS	SCALE UP	SCALE OUT
APPLICATIONS	Tightly coupled Client/server	App performance	Big data, real-time analytics Self-service
COMPUTE	Specialized hardware	Virtualization, automation	Large & dynamic workloads, VM mobility
STORAGE	Storage tied to physical infrastructure	SAN/NAS Converged Network	Distributed storage
NETWORK	Closed, Proprietary	Physical network Integration with cloud, mgmt tools	Dynamic network, Automation, x-domain virtualization
	Last 10 years	Last 3 years	Now and future

NETWORK WAS NOT DESIGNED FOR CLOUD



LIMITATIONS OF CURRENT APPROACHES TO NETWORKING IN THE CLOUD



SCALABILITY

Tying per-tenant information to physical network restricts scale



PROGRAMMABILITY

No programmatic API at the network level for integrated orchestration



SERVICE INSERTION

Appliance-based network functions limits service velocity

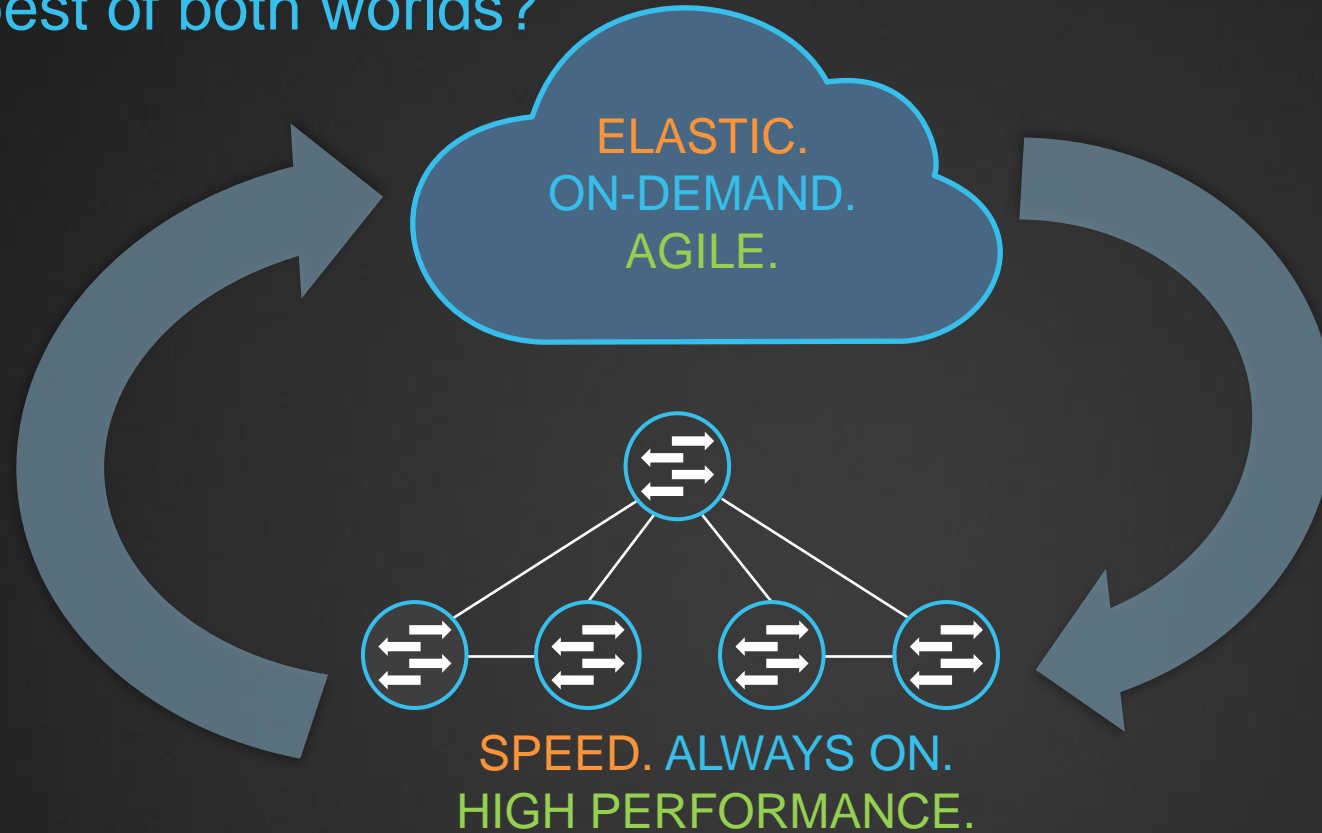


INTER-CLOUD ORCHESTRATION

Inability to orchestrate multi-cloud/hybrid cloud environments

THE QUESTION

How to get the best of both worlds?



How to increase the agility of the network, without breaking what is good?

EVOLUTION OF NETWORK VIRTUALIZATION



**VLAN
APPROACH**



**OPENFLOW
REACTIVE APPROACH**



**PROACTIVE
SOFTWARE OVERLAY**

Manual End-to-End

Reactive End-to-End

Virtual Network Overlays

VLAN configured
on physical
switches

Requires
programming
of flows

No impact
to physical
network

NETWORK VIRTUALIZATION JOURNEY

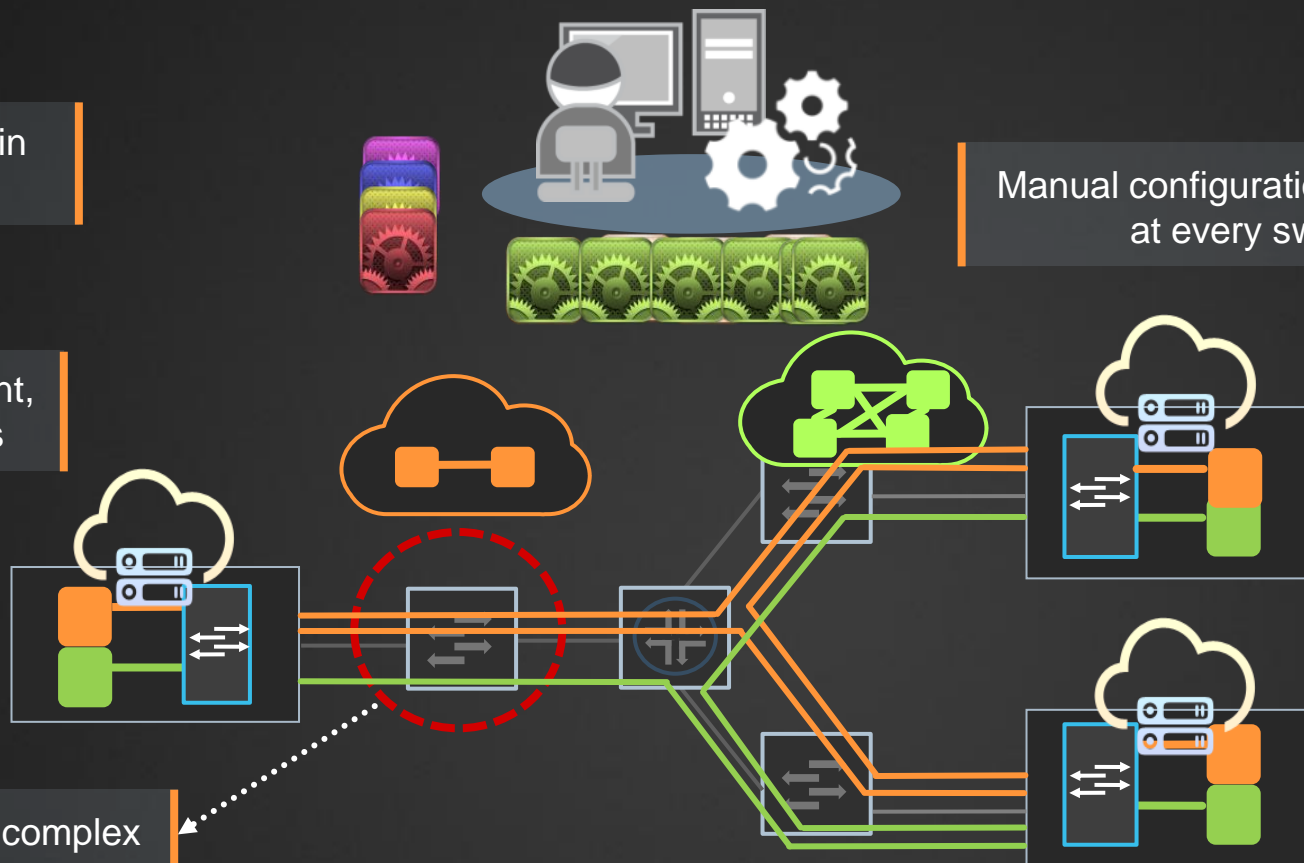
VLAN

Tenant state embedded in the physical network

Manual configuration of VLANs at every switch

Performance Management,
Scale - 4096 Tenant IDs

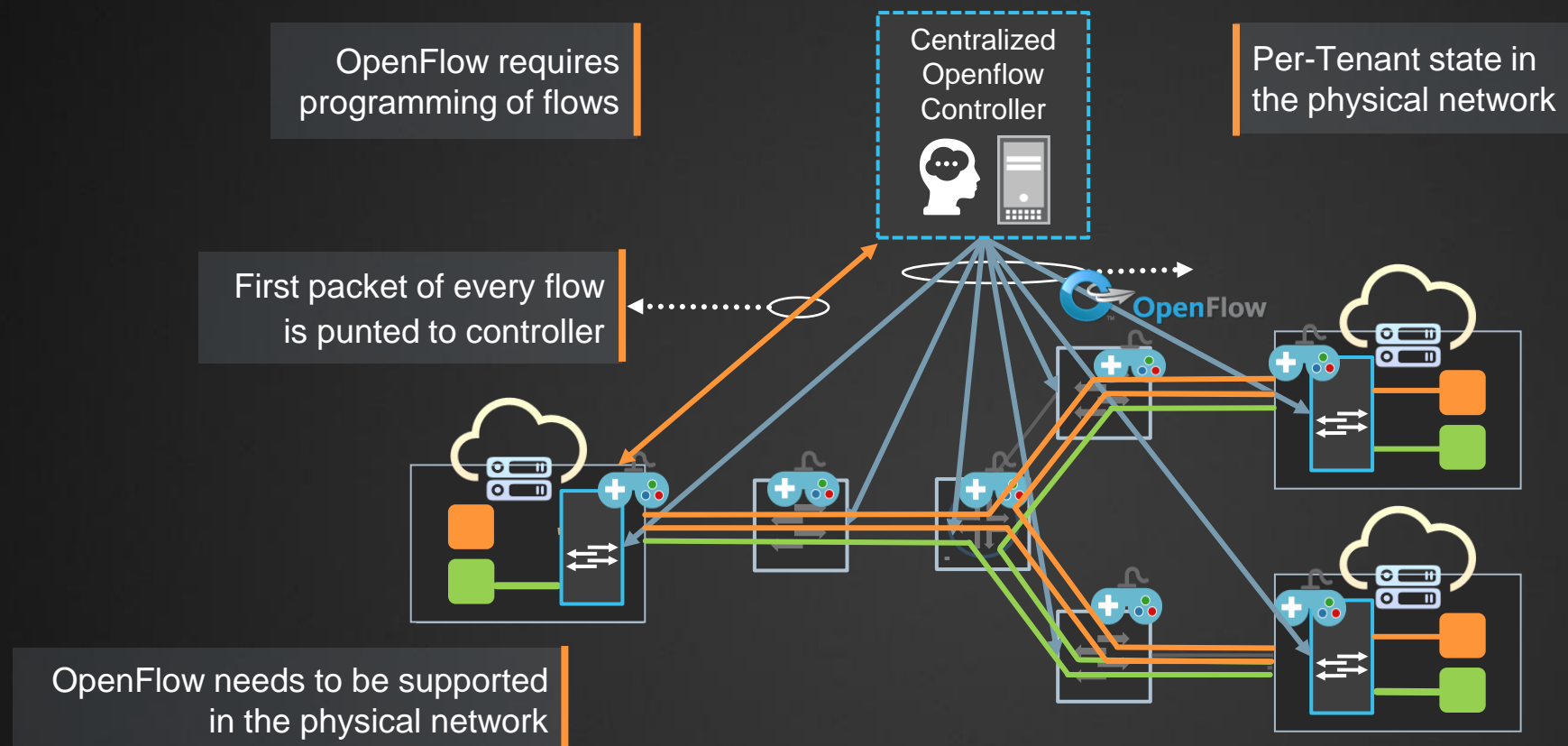
Service insertion is complex



MANUAL. INEFFICIENT. LOW SCALABILITY.

NETWORK VIRTUALIZATION JOURNEY

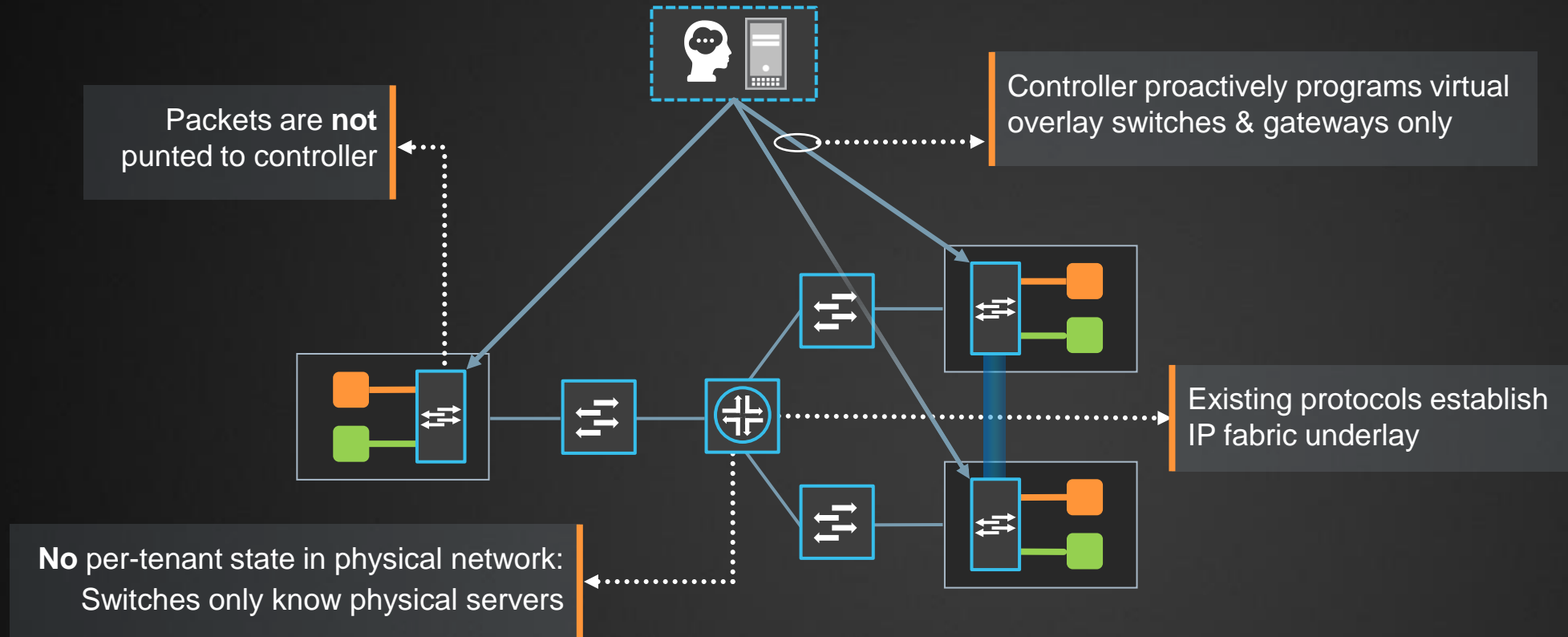
Reactive OpenFlow Approach



HIGH LATENCY. LOW SCALABILITY. NEW FAILURE MODE. FORK-LIFT UPGRADE.

NETWORK VIRTUALIZATION JOURNEY

Proactive Overlay Networks



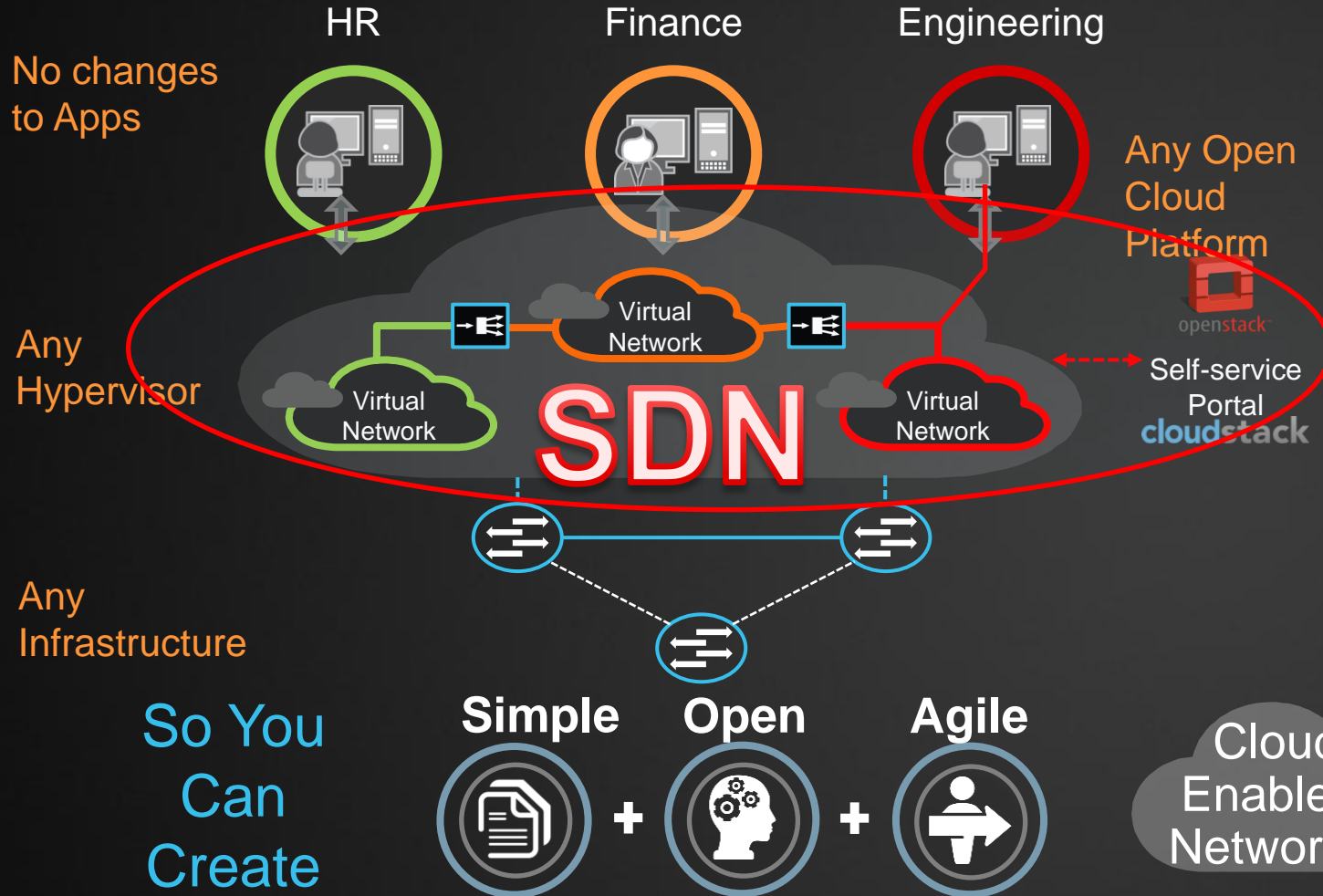
LOW LATENCY. HIGH SCALABILITY. ROBUST. EVOLUTIONARY.

CONTRAIL

- SDN controller - Network software overlay

CONTRAIL – SDN CONTROLLER

Proactive virtual software overlay network which enables cloud



1 **Dynamic Service Chaining**

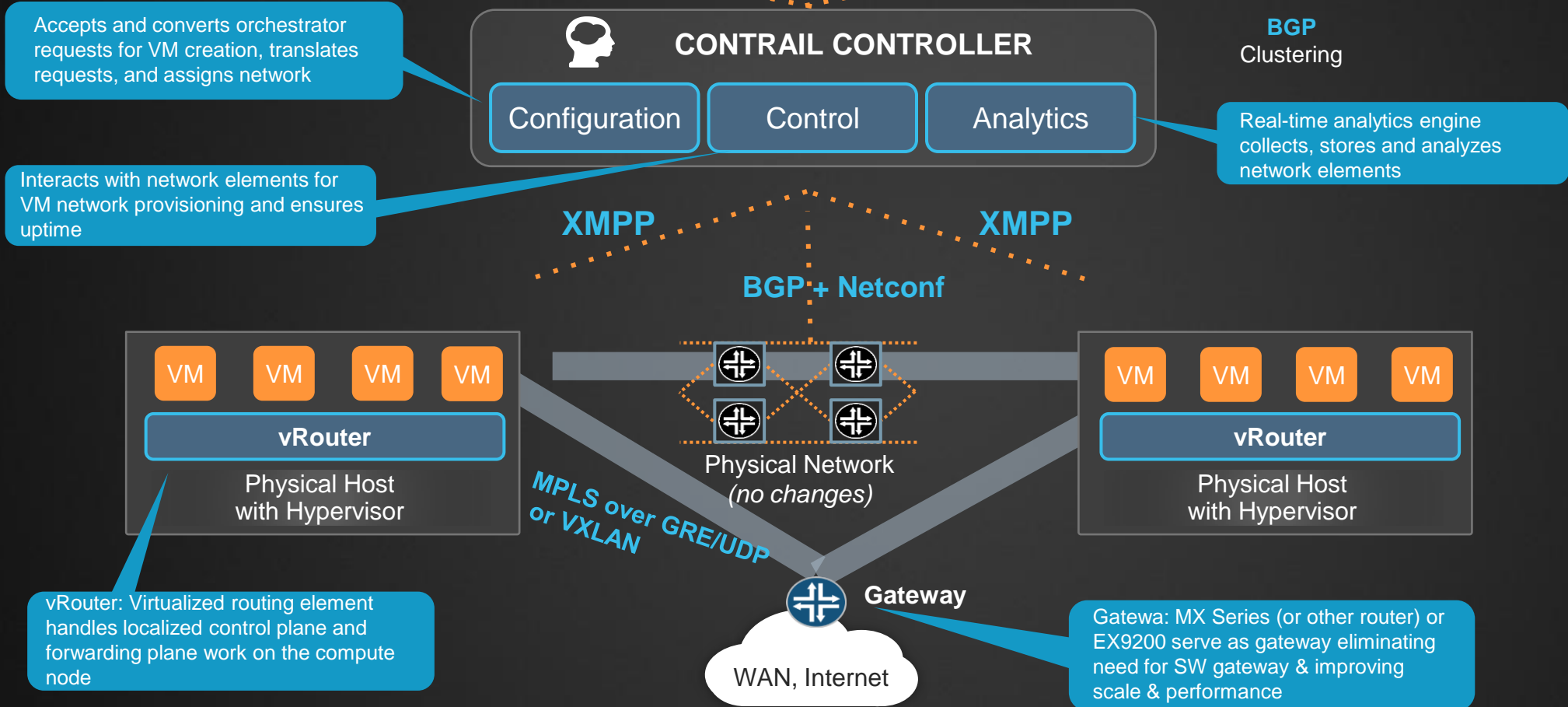
2 **Inter-cloud orchestration**

3 **Interoperability**

4 **Programmability**

5 **Real-time analytics**

CONTRAIL COMPONENTS



CONTRAIL - FEATURES

cloudstack

ANY Open Cloud Platform



CONTRAILCONTROLLER – VIRTUAL NETWORK OVERLAY



Routing
Switching



IPAM,
Virtual DNS



Load
Balancing



Security



Elastic,
Resilient VPN



Gateway
Services



Rich
Analytics



Service
Chaining



High
Availability



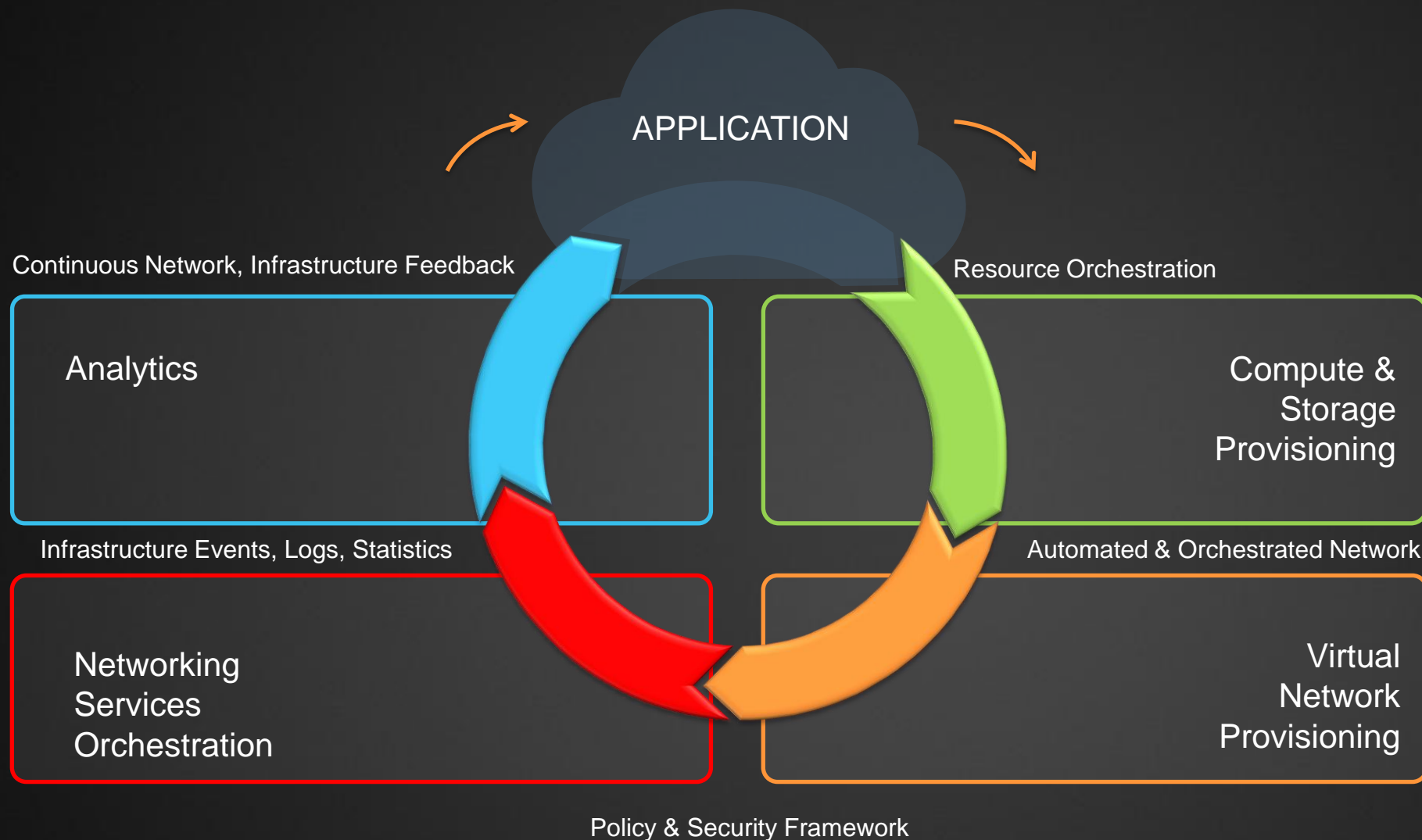
REST API

ANY Hypervisor

ANY Physical Network

VIRTUAL NETWORK

NETWORK RESPONDS TO APPLICATION





Get the code at www.opencontrail.org

Production-ready; open networking standards based controller

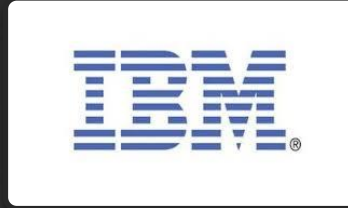
Open Source SDN Controller

Available via Apache 2.0 license

CLOUD ORCHESTRATION PARTNERS



Cloudstack, CCP



SmartCloud
Orchestrator



Redhat Openstack
(RHOS)



OCS Openstack



Mirantis Openstack,
Fuel



UnitedStack
Openstack

2014

vmware®

Microsoft®
System Center
Orchestrator

SUMMARY: WHY JUNIPER SDN SOLUTIONS?

SIMPLE



- Virtual Overlay Contrail seamlessly integrates with **ANY physical networks**
- Physical network supports **any Controller, open server management tools**
- Service chaining for **simple provisioning** and management

OPEN



- Open architecture **easily integrates** with **ANY open cloud platforms**
- Build on **standards protocols** and supporting **ANY Hypervisors**
- Ultimate transparency and openness with **OpenContrail.org**

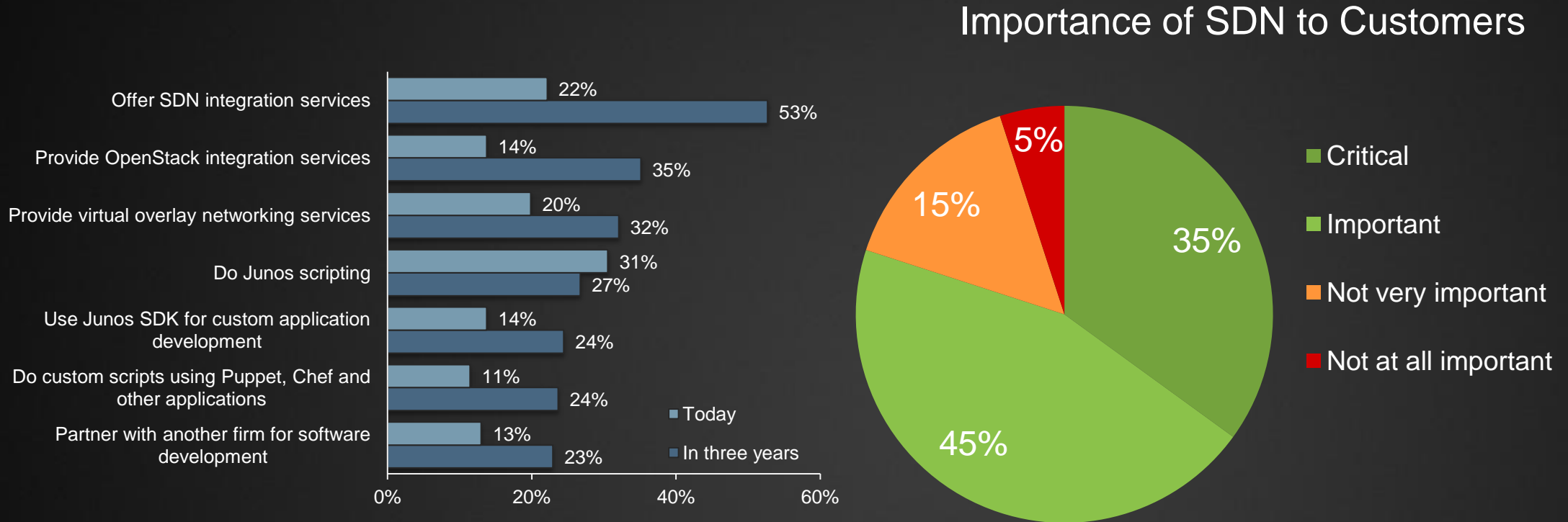
AGILE



- **Automated** provisioning and creation of virtual and physical networks
- Enables **workload mobility** between private, public and hybrid clouds
- Unique **analytics** capabilities for planning and modeling

**WHAT DOES IT MEAN
TO YOU AS A
PARTNER?**

SDN IS RAPIDLY BECOMING CRITICAL TO SUCCESS



The number of partners offering SDN integration services will more than double in 3 years

80% of juniper partners believe SDN will be important or critical to customers in 3 years

PARTNER ADVANTAGE – CLOUD SPECIALIZATION

3 Types of Cloud Partner

Cloud Infrastructure Partner (CIP)

Sells Cloud solutions based on Juniper SW and Hardware products

Cloud System Integrator (CSI)

Implements and delivers Cloud systems including Professional Services to CSPs or private cloud providers

Cloud Service Partner (CSP)

Sell and provisions cloud based or managed services based on Juniper SW and hardware products

2 Selling Motions

Cloud

Service based, leverages centrally based shared infrastructure

Cloud MSP

Service based CPE services leveraging dedicated customer infrastructure

RESOURCES

If you are interested in partnering with us on offering SDN services, Please reach out to:

Aruna Ravichandran, Vice President, Marketing and Strategy

Email: aravichandran@juniper.net

Follow on twitter: aruna13

SDN at Juniper IS transforming Networking & Business Forever

Bringing networks into the cloud era

 SevOne


Think fast.


Dorado
SOFTWARE


Gigamon





 sandvine[®]
Intelligent Broadband Networks


MIRANTIS



cloudscaling





 cedexis

 Check Point[®]
SOFTWARE TECHNOLOGIES LTD.




Availability Services

CONTRAIL CUSTOMERS AND PARTNERS