



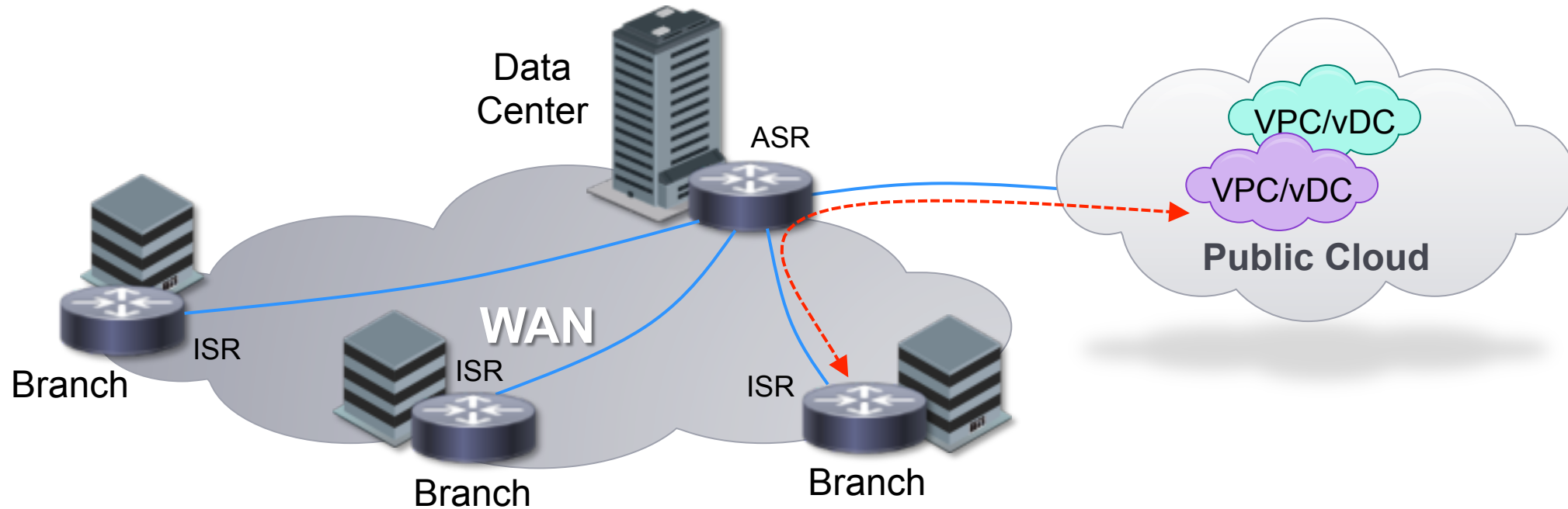
Cisco Cloud Intelligent Network Cloud Services Router Overview

Extending Enterprise WAN to External Clouds

Updated: Aug-31-2012

External Cloud Networking Challenges

Lack of Consistency Creates Barriers to Adoption



Security Risks

- Inconsistent VPN policies
- Limited connection reliability
- Error-prone topology changes

Integration Issues

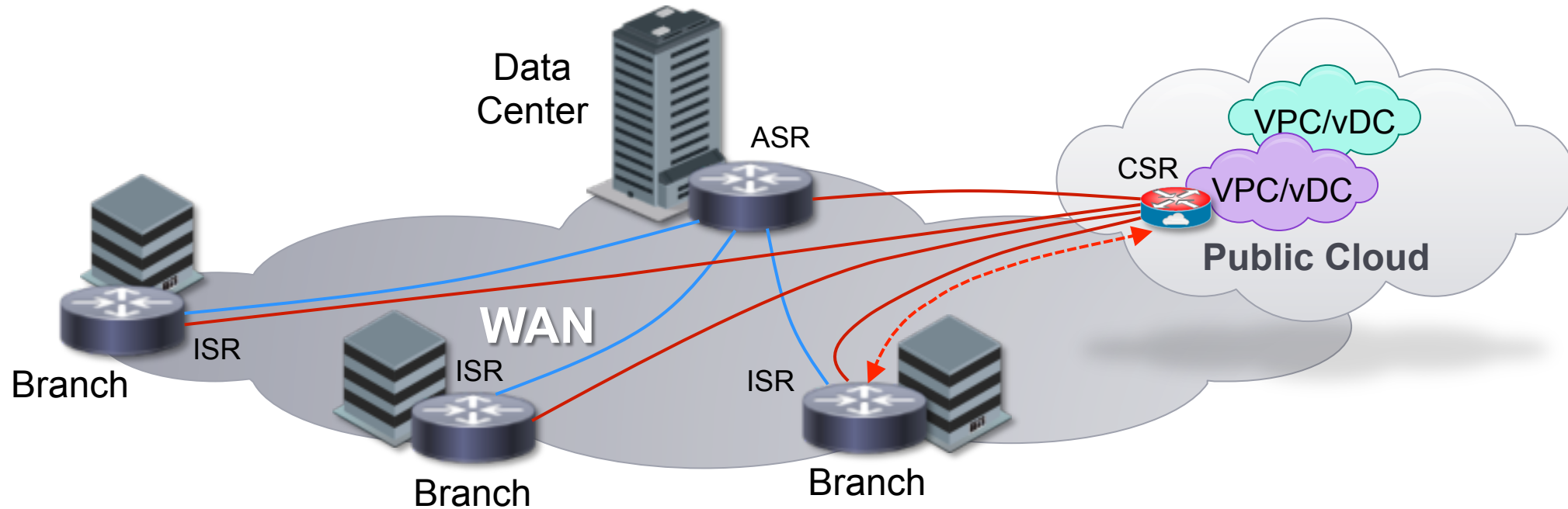
- Incompatible IP addressing
- Incomplete network services
- Different management tools

User Experience

- Indirect traffic path through DC
- Few WAN optimization options
- Inability to prioritize traffic

Cisco Cloud Services Router (CSR) 1000V

Extending Enterprise WAN to External Clouds



Secure Connectivity

- Globally uniform VPN policies
- Scalable and reliable VPNs
- Automatic topology updates

Network Consistency

- Datacenter to Cloud IP mobility
- Full range of network services
- Familiar management tools

Traffic Control

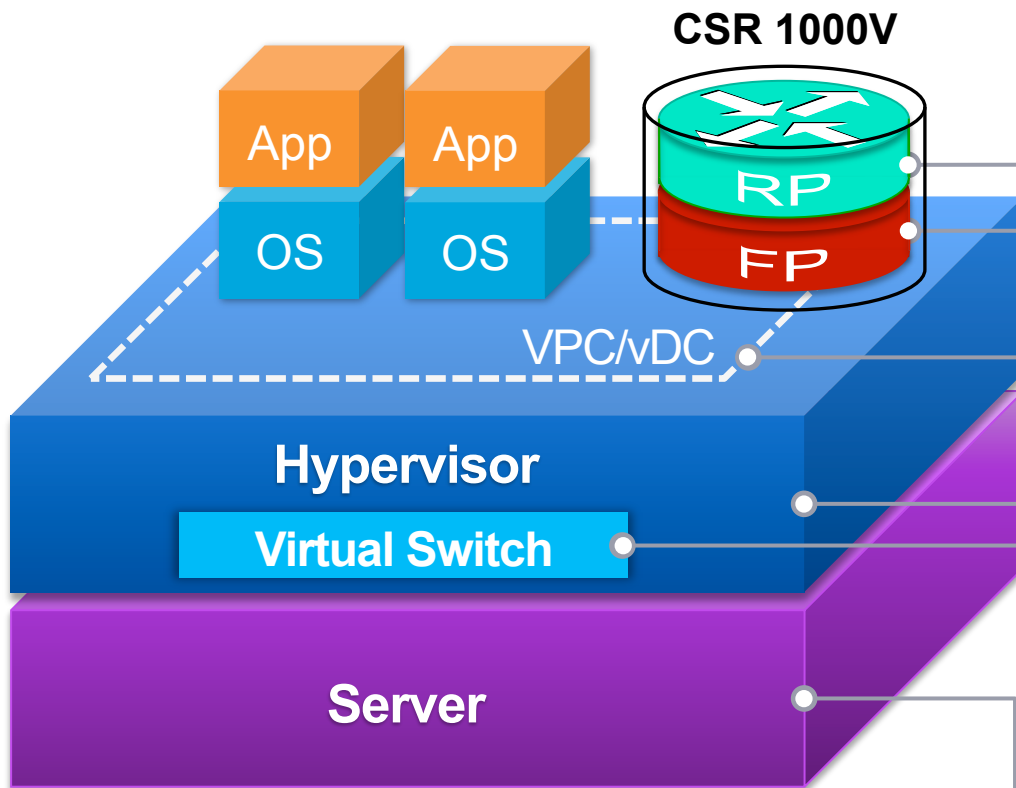
- Shortest path from any location
- Interception and redirection
- Classification and prioritization

Cisco CSR 1000V

Cisco IOS Software in Virtual Form-Factor



Grand Prix



Cisco IOS XE Cloud Edition

- Selected feature set of Cisco IOS XE
- Virtual Route Processor (RP)
- Virtual Forwarding Processor (FP)

Virtual Private Cloud/Data Center Gateway

- Optimized for single tenant use cases

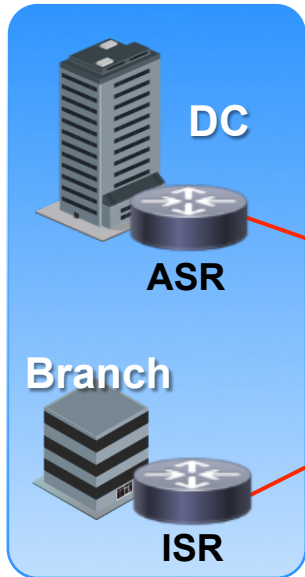
Agnostic to Other Infrastructure Elements

- Hypervisor agnostic
- Virtual switch agnostic
- Server agnostic

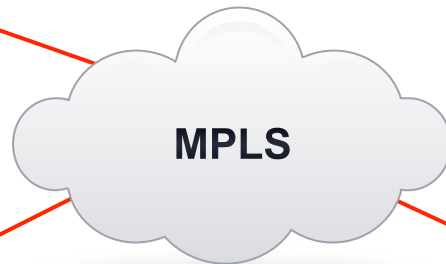
Cisco CSR 1000V Deployment in External Cloud

Single Tenant WAN Gateway for Shared Infrastructure Environments

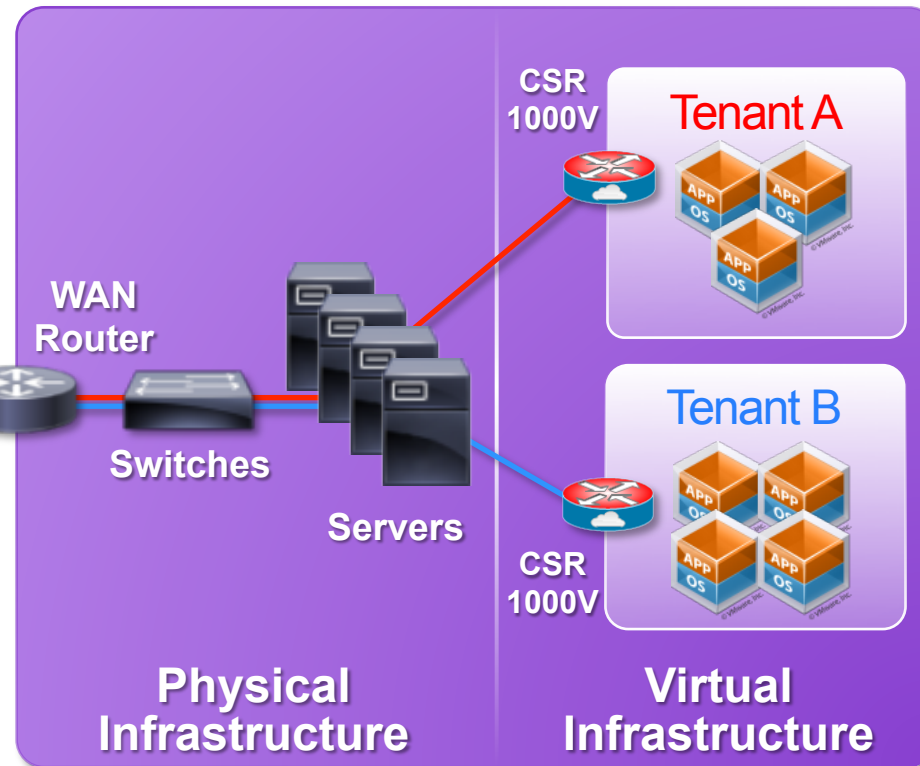
Enterprise A



Enterprise B



Cloud Provider Data Center



Flexible

- Infrastructure agnostic
- Term-based licensing

Automated

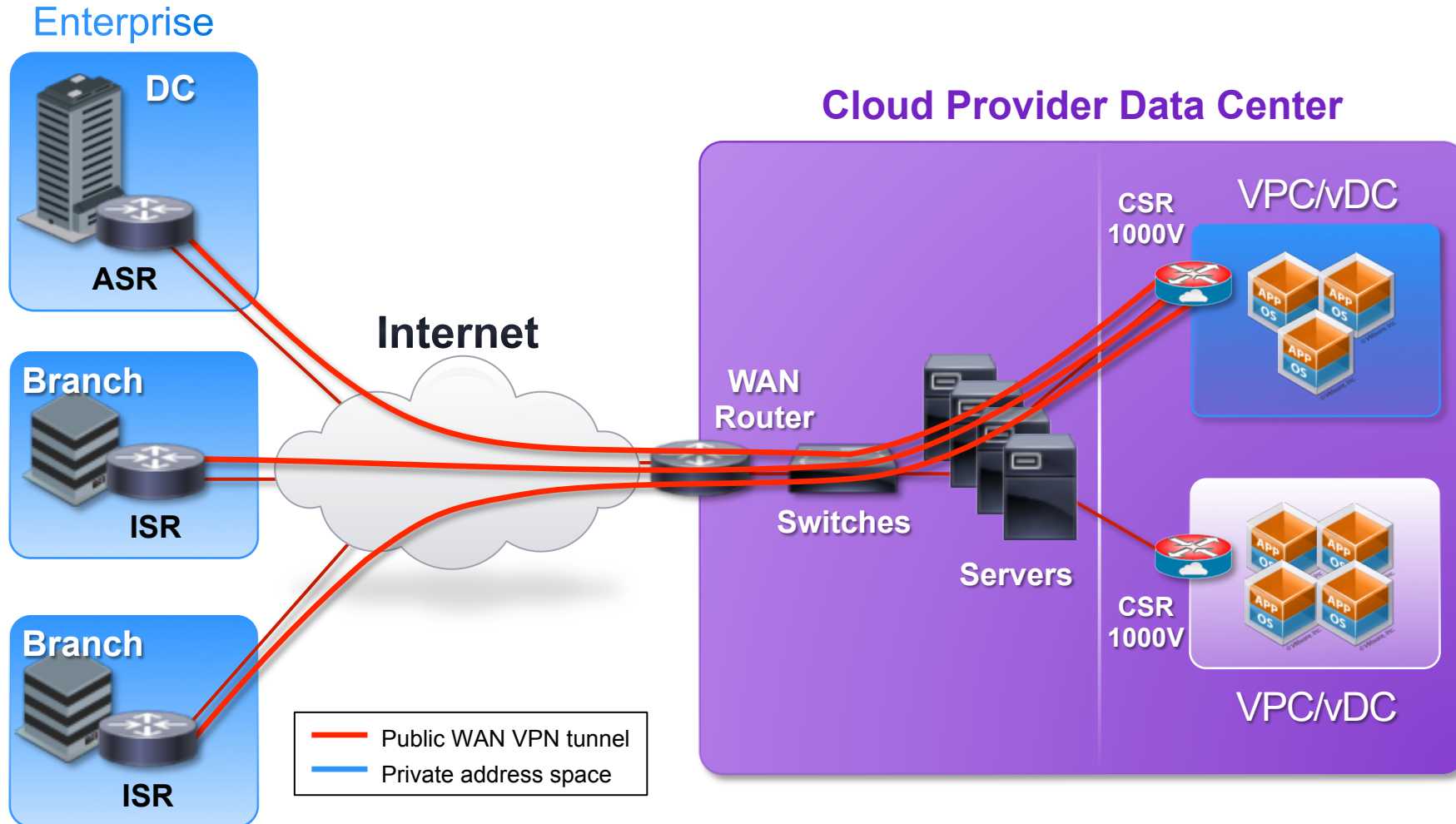
- Rapid deployment
- RESTful API

Elastic

- Vertical scaling
- Horizontal scaling

Use Case: Secure VPN Gateway

Scalable, Dynamic, and Consistent Connectivity to External Cloud



Challenges

- Inconsistent security
- High network latency
- Limited scalability

Solutions

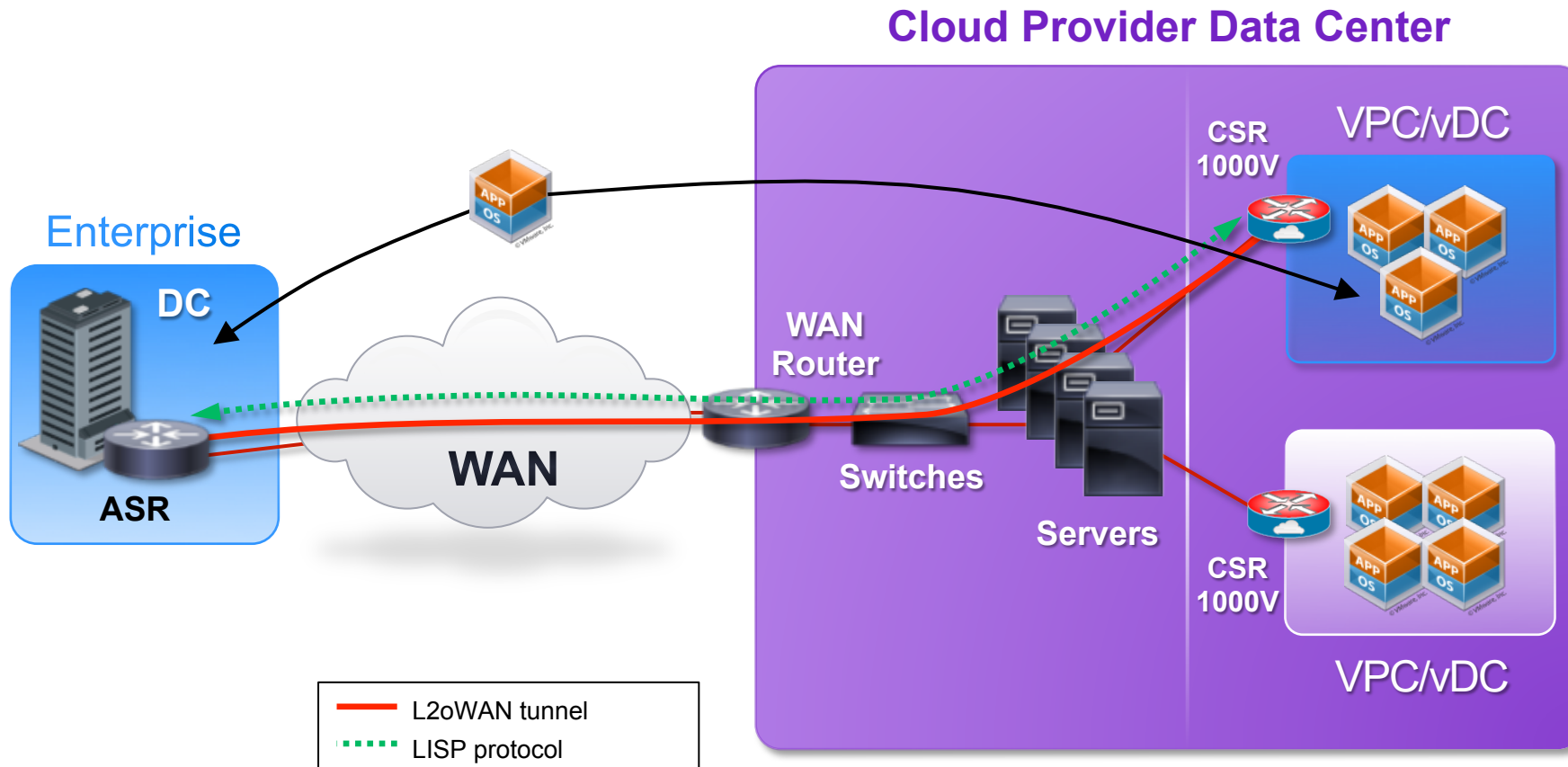
- IPSec VPN, DMVPN, EZVPN, FlexVPN
- Routing and addressing
- Firewall, ACLs, AAA

Benefits

- Direct, secure access
- Scalable, reliable VPN
- Operational simplicity

Use Case: Data Center to Cloud IP Mobility

Simplified Application Deployment to External Cloud



Challenges

- Simple, fast, transparent application onboarding
- Consistency with DC network features

Solutions

- LISP for VM Mobility
- Routing, NAT, DHCP
- EoMPLS, OTV

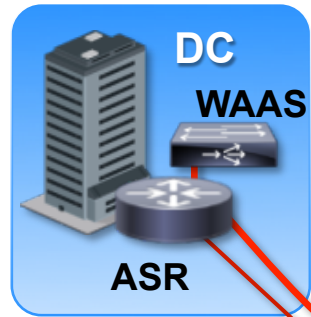
Benefits

- Simpler app integration
- Dynamic infrastructure
- Consistent management

Use Case: Traffic Control and Management

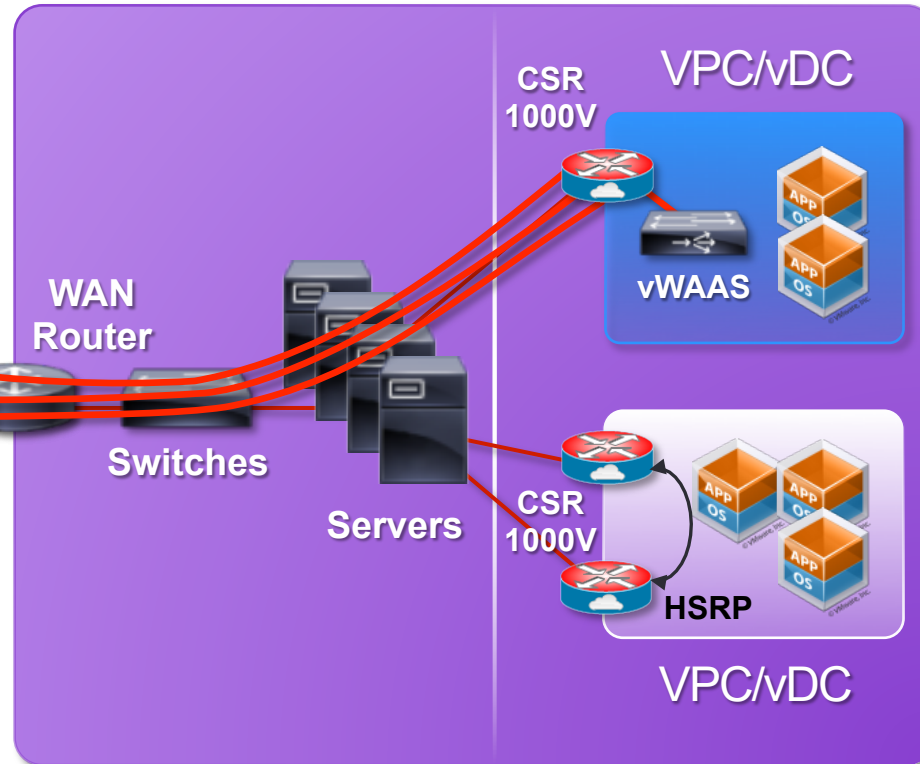
Comprehensive Networking Services Gateway in External Cloud

Enterprise



— Optimized TCP connection

Cloud Provider Data Center



Challenges

- Response time of apps
- Resource guarantees
- Resilient connectivity

Solutions

- AppNav for WAAS
- QoS prioritization
- HSRP VPN failover

Benefits

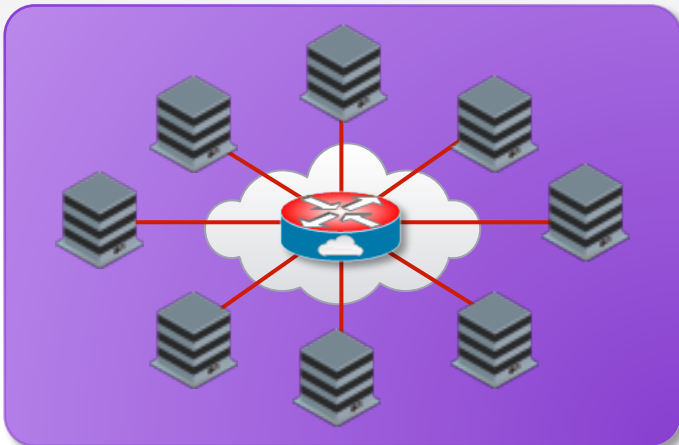
- Rich portfolio of network features and services
- Single point of control

CSR 1000V Benefits

Reducing Barriers to IaaS Adoption in External Cloud

Secure Connectivity

- Reduce security vulnerabilities with uniform VPN access policy
- Eliminate operational overhead with dynamic VPN scalability
- Facilitate network evolution with dynamic routing protocols



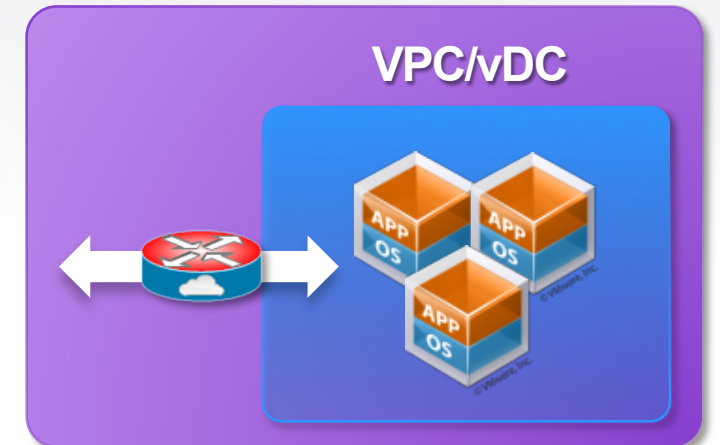
Network Consistency

- Remove integration barriers with uniform network services
- Prevent connectivity issues with holistic WAN architecture
- Extend operational practices into cloud with familiar IOS



Traffic Control

- Improve user experience with WAN optimization and QoS
- Increase service availability with granular resiliency control
- Minimize risk of threats with granular inspection policies



CSR 1000V Management

Familiar Management Tools and API Support

	Self-Managed Environment	Automated Environment
CSR 1000V	<ul style="list-style-type: none">• Cisco Prime• Cisco IOS CLI and SNMP• Third Party Network Management	Cisco CSR 1000V RESTful API
Hypervisor	VMware vCenter Server	VMware vSphere Management API
Multi-Tenant Environment ¹	<ul style="list-style-type: none">• Cisco VNMC and NSM• VMware vCloud Director	<ul style="list-style-type: none">• Cisco NSM API• VMware vCloud API

Notes:

¹Multi-tenant management options available in phases

Additional hypervisor options will be available in the future

CSR 1000V Offering – Nov 2012 (Controlled Availability)

Term-Based Licensing Model with Integrated Technical Support

License SKU	Term (Years)	Description ¹	Minimum Hardware ²	Hypervisor ³	List Price
L-CSR1KV-ELS-M-1Y=	1	CSR 1000V w/ 50 Mbps throughput	4 GB RAM, 4-core x86 CPU	VMware vSphere 5	\$2,500
L-CSR1KV-ELS-M-3Y=	3	CSR 1000V w/ 50 Mbps throughput	4 GB RAM, 4-core x86 CPU	VMware vSphere 5	\$6,500
L-CSR1KV-ELS-M-5Y=	5	CSR 1000V w/ 50 Mbps throughput	4 GB RAM, 4-core x86 CPU	VMware vSphere 5	\$10,000
CON-SAU-CSR1KV1	1	CSR 1000V software upgrades and support			\$500

Notes:

¹Recommended Throughput:

- Max 1 Gbps data (large packets)
- Max 500 Mbps IPsec (AES, large packets)
- Up to 100 Mbps w/ IPsec, NAT, FW, ACL

²Minimum Hardware:

- One socket
- No hyperthreading
- 1.8 GHz Intel Nehalem

³Hypervisor:

- Citrix Xen available for evaluation

Additional capacities and minimum hardware options will be available in the future

Software (IOS XE for CSR) available for download from CCO with free two-month evaluation license

CSR 1000V Roadmap

November 2012

March 2013

July 2013

November 2013

IOS XE Release



Committed



Committed



Review



Radar

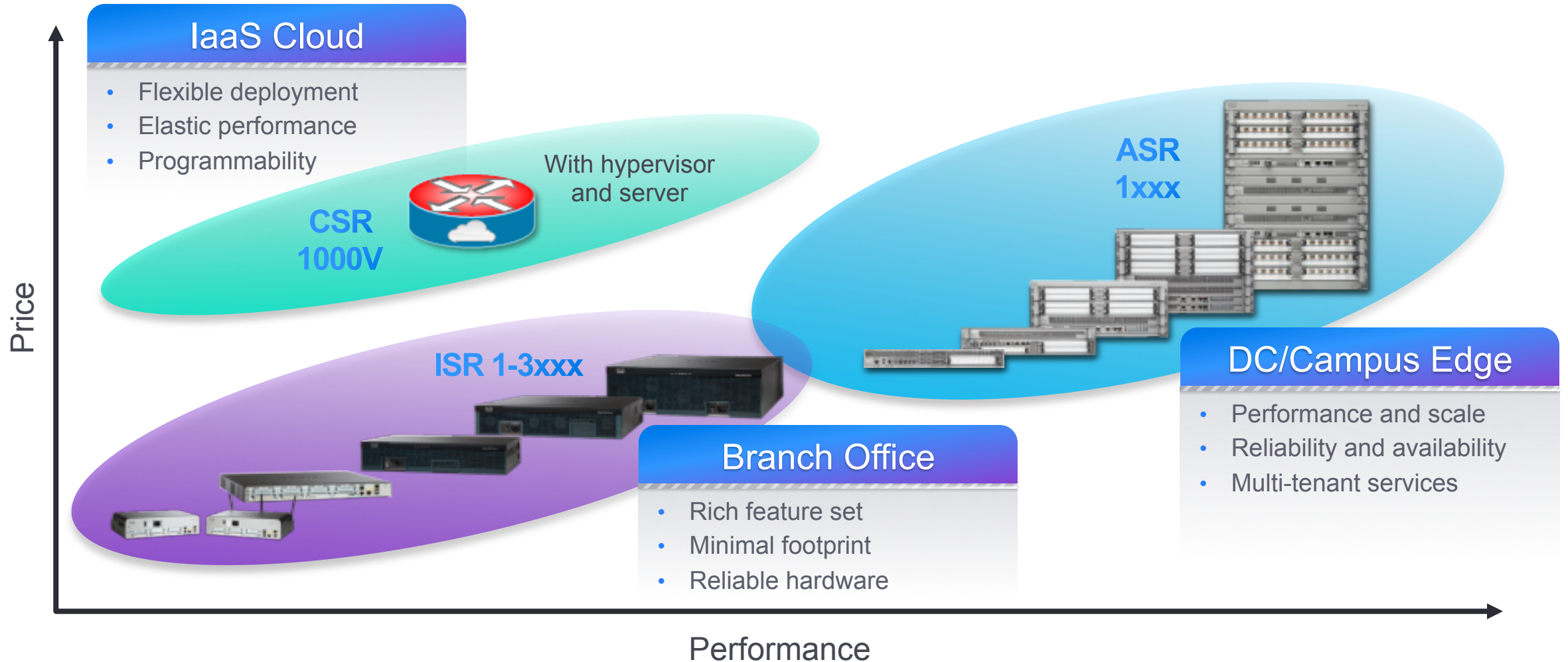
	November 2012	March 2013	July 2013	November 2013
Features	Routing, NAT, DHCP, IPSec, DMVPN, FlexVPN, HSRP, AppNav, FW, MPLS,, LISP	QoS, Multicast, OTV	AVC, Full IPv6, GETVPN, SGT	SSLVPN, HA Features, FIPS, Suite-B
Virtualization	VMware vSphere Std.	VMware vSphere Ent. Citrix Xen (EFT)	Xen, Amazon (AMI), KVM (EFT), VXLAN Gateway	KVM, Microsoft Hyper-V (EFT)
Management	Cisco Prime NCS VMware vCenter	VMware vCloud Director	Cisco VNMC and NSM Citrix XenCenter	Apache CloudStack OpenStack
API		License, Interface, IPSec, Routing, FW, NAT, DHCP	DMVPN, GETVPN, EZVPN, FlexVPN	QoS, HSRP, Multicast, OTV, MPLS, ..
Elasticity	Cloning	2-core/4-vCPU/4-GB 10/25/50 Mbps	1-core/2-vCPU/2-GB vRAM Upgrades	vCPU Over-provisioning vCPU Over-subscription
Licensing	1, 3, 5 year Subscription	Capacity Upgrades License Re-hosting	Additive Subscriptions	Usage-based

Controlled Availability

General Availability

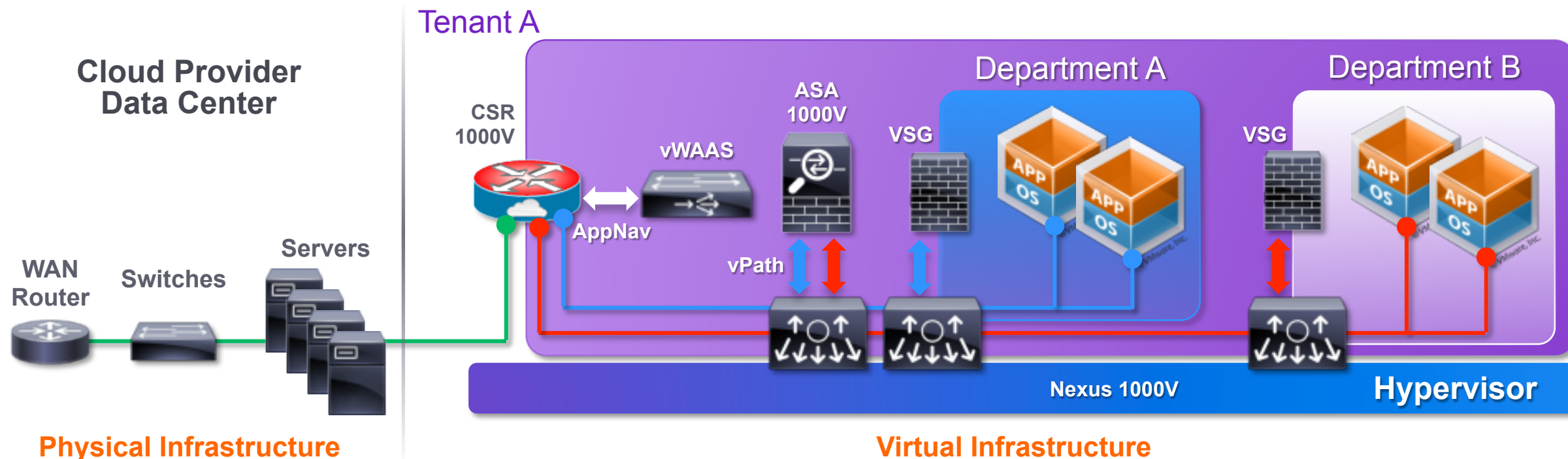
CSR 1000V Price/Performance Comparison

Providing Flexibility, Elasticity, and Programmability for Cloud Environments



Cisco Networking and Security Solution for External Cloud

Nexus 1000V, CSR 1000V, ASA 1000V, VSG, and vWAAS Deployment



Physical Infrastructure

Virtual Infrastructure

CSR 1000V

- WAN gateway
- Routing and VPN

vWAAS

- WAN optimization
- Application traffic

ASA 1000V

- Edge firewall
- WAN-to-LAN traffic

VSG

- Inter-VM firewall
- Intra-LAN traffic

Nexus 1000V

- Distributed switch
- LAN connectivity

