Cisco Cloud Intelligent Network
Cloud Services Router Overview

Extending Enterprise WAN to External Clouds
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

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

Cisco IOS XE Cloud Edition

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

**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

**Enterprise**
- DC
- ASR
- ISR

**Internet**
- Branch

**Cloud Provider Data Center**
- VPC/vDC
- CSR 1000V
- CSR 1000V

**Network Components**
- WAN Router
- Switches
- Servers

**Tunnel Types**
- Public WAN VPN tunnel
- Private address space
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

Benefits
• Simpler app integration
• Dynamic infrastructure
• Consistent management

Solutions
• LISP for VM Mobility
• Routing, NAT, DHCP
• EoMPLS, OTV

Enterprise

Cloud Provider Data Center

WAN

ASR

DC
Use Case: Traffic Control and Management

Comprehensive Networking Services Gateway in External Cloud

**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

Enterprise

Cloud Provider Data Center

Enterprise

Optimized TCP connection
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

<table>
<thead>
<tr>
<th>Self-Managed Environment</th>
<th>Automated Environment</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CSR 1000V</strong></td>
<td></td>
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<tr>
<td>- Cisco Prime</td>
<td>Cisco CSR 1000V RESTful API</td>
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<tr>
<td>- Cisco IOS CLI and SNMP</td>
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<tr>
<td>- Third Party Network Management</td>
<td></td>
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<tr>
<td><strong>Hypervisor</strong></td>
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<tr>
<td>- VMware vCenter Server</td>
<td>VMware vSphere Management API</td>
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<td><strong>Multi-Tenant Environment(^1)</strong></td>
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<tr>
<td>- Cisco VNMC and NSM</td>
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<td>- VMware vCloud Director</td>
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<tr>
<td>- Cisco NSM API</td>
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<td>- VMware vCloud API</td>
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**Notes:**

\(^1\)Multi-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

<table>
<thead>
<tr>
<th>License SKU</th>
<th>Term (Years)</th>
<th>Description</th>
<th>Minimum Hardware</th>
<th>Hypervisor</th>
<th>List Price</th>
</tr>
</thead>
<tbody>
<tr>
<td>L-CSR1KV-ELS-M-1Y=</td>
<td>1</td>
<td>CSR 1000V w/ 50 Mbps throughput</td>
<td>4 GB RAM, 4-core x86 CPU</td>
<td>VMware vSphere 5</td>
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<td>L-CSR1KV-ELS-M-3Y=</td>
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<tr>
<td>CON-SAU-CSR1KV1</td>
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<td>CSR 1000V software upgrades and support</td>
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<td></td>
<td>$500</td>
</tr>
</tbody>
</table>

**Notes:**

1. Recommended Throughput:
   - Max 1 Gbps data (large packets)
   - Max 500 Mbps IPSec (AES, large packets)
   - Up to 100 Mbps w/ IPSec, NAT, FW, ACL

2. Minimum Hardware:
   - One socket
   - No hyperthreading
   - 1.8 GHz Intel Nehalem

3. Hypervisor:
   - 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 Price/Performance Comparison
Providing Flexibility, Elasticity, and Programmability for Cloud Environments

IaaS Cloud
• Flexible deployment
• Elastic performance
• Programmability

With hypervisor and server

CSR 1000V

ISR 1-3xxx

Branch Office
• Rich feature set
• Minimal footprint
• Reliable hardware

ASR 1xxx

DC/Campus Edge
• Performance and scale
• Reliability and availability
• Multi-tenant services

Price

Performance
Cisco Networking and Security Solution for External Cloud
Nexus 1000V, CSR 1000V, ASA 1000V, VSG, and vWAAS Deployment