

## Cisco Cloud Services Router 1000v



The Cisco Cloud Services Router (CSR) 1000v is a single-tenant router in virtual form-factor that delivers comprehensive WAN gateway functionality to multi-tenant provider-hosted clouds. Using familiar, industry-leading Cisco IOS Software networking capabilities, the CSR 1000v enables enterprises to seamlessly extend their Wide Area Networks into external provider-hosted clouds and cloud providers to offer enterprise-class networking services to their tenants.

Businesses, small and large, are increasingly virtualizing their data center infrastructures and applications, to save costs and become more agile. Many enterprises have started deploying IT applications in virtualized data centers that are built and managed by third-party service providers. These external data centers, known as provider-hosted clouds, allow enterprises to gain infrastructure and resources on demand and become even more operationally efficient.

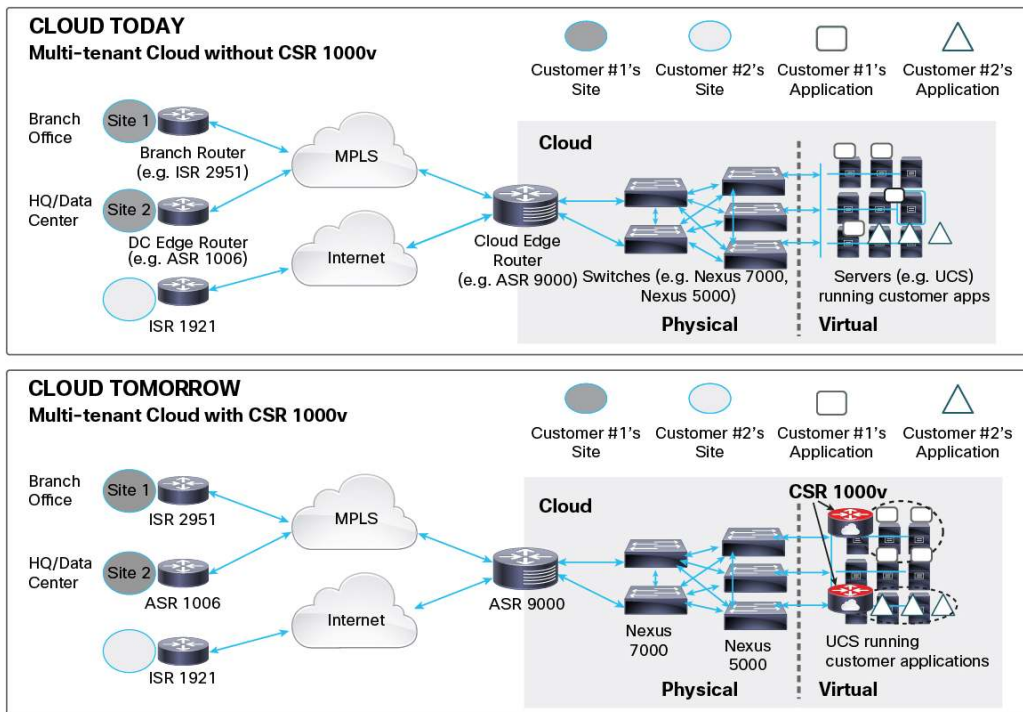
However, the shared-infrastructure shared-resource cloud environment poses networking and security problems to enterprises. First, an enterprise does not have ownership of its cloud connectivity, so cannot extend its network configuration into the cloud. Next, it does not enjoy the same levels of privacy and security for its cloud deployment as it does in its premises. Third, it cannot directly connect its distributed sites to its cloud applications - having to instead backhaul all network traffic through its data center - because it lacks a network-aware endpoint in the cloud. The cloud also presents networking challenges to cloud providers. The primary issue is the scale limitations of the current network switching architecture. The cloud provider also lacks all the components of an end-to-end managed connectivity service offering to its customers, including Quality of Service (QoS), application visibility and Service Level Agreements (SLA).

The Cisco CSR 1000v addresses these cloud-based networking and security constraints. Built on the same proven IOS® platform that is inside the Cisco Integrated Services Router (ISR) and Aggregation Services Router (ASR) product families, it offers a rich set of features, including routing, VPN, firewall, NAT, QoS, application visibility, failover and WAN optimization, empowering enterprises and cloud providers to build secure, optimized, scalable and consistent hybrid networks.

## Product Overview and Benefits

The Cisco CSR 1000v is a software router that an enterprise or a cloud provider can deploy as a virtual machine (VM) in a provider-hosted cloud. It can run on any server that supports VMware ESXi or Citrix XenServer virtualization. It contains IOS networking and security features.

A typical cloud provides IT infrastructure and resources to multiple customers or tenants. The Cisco CSR 1000v primarily serves as a router per tenant. That is, each tenant gets its own routing instance, hence its own VPN connections, firewall policies, QoS rules, access control, and so on.



Following is how the Cisco CSR 1000v could be used in a cloud:

- Secure VPN Gateway:** The CSR 1000v offers route-based IPsec VPNs (DMVPN, EasyVPN, FlexVPN) (and in the future, SSL VPN), along with the IOS Zone-based Firewall and access control, enabling an enterprise to connect distributed sites directly to its cloud deployment.

Customer Problem	Features	Benefits of CSR1000v
<ul style="list-style-type: none"> <li> <b>Enterprise needs to securely connect its premises with its off-premise cloud:</b> A typical large enterprise has a central headquarters, a few regional hubs, a couple or more data centers, and hundreds to thousands of branch sites. The network is either hub-and-spoke or fully meshed. By extending the data center to the cloud, the enterprise would like the cloud to act as another node in its network.         </li> </ul>	<ul style="list-style-type: none"> <li>IPSec</li> <li>DM VPN</li> <li>Easy VPN</li> <li>Flex VPN</li> <li>BGP</li> <li>OSPF</li> <li>EIGRP</li> <li>Zone-based Firewall</li> <li>ACL</li> <li>AAA</li> <li>NAT</li> <li>DHCP</li> </ul>	<ul style="list-style-type: none"> <li> <b>Ownership:</b> An enterprise can deploy a CSR 1000v in the cloud, access its Command Line Interface (CLI), and manage it using the Cisco Prime Network Control System (NCS).         </li> <li> <b>Seamless Connectivity and Enterprise-Class Scalability:</b> With its range of VPN and routing features, the CSR 1000v can fit into any enterprise network topology. An enterprise can directly and dynamically connect its distributed sites to its cloud deployment - avoiding the latency caused by the typical backhaul via the data center while overcoming the management complexity of point-to-point IPsec VPNs.         </li> <li> <b>Consistent WAN Architecture:</b> The IOS-based CSR 1000v complements the widely deployed Cisco ISRs and ASRs. Enterprises can now deploy a Cisco endpoint at every node in their network, allowing for consistent network configuration and security policies across their distributed hybrid network.         </li> </ul>

- **MPLS WAN Endpoint:** The CSR 1000v can serve as an MPLS router that will enable a service provider to offer end-to-end managed connectivity (customer site to customer cloud deployment) with performance guarantees. Also, by extending the MPLS WAN deeper into the cloud network, the service provider can increase network scale.

Customer Problem	Features	Benefits of CSR 1000v
<ul style="list-style-type: none"> <li>• <b>Service Provider needs to extend MPLS connectivity to its customers' cloud segments:</b> Service Providers who offer managed connectivity service to businesses would like to help their customers connect their private MPLS WANs to the edge of off-premise clouds. Moreover, the cloud providers would like to further extend the MPLS networks to the edge of the customers' segments within the clouds.</li> </ul>	<ul style="list-style-type: none"> <li>• MPLS VPN</li> <li>• VRF</li> <li>• BGP</li> <li>• GRE</li> <li>• IP SLA</li> </ul>	<ul style="list-style-type: none"> <li>• <b>MPLS Extension within a Cloud:</b> A service provider can manage the cloud connectivity of its customers and offer performance and reliability guarantees with the help of a dedicated CSR 1000v per customer.</li> <li>• <b>Intra-Cloud Scale:</b> A typical cloud network is highly switched - a router hands off incoming traffic to a switches, which assign the traffic to customer VLANs. In this network architecture, the cloud provider cannot scale beyond 4,096 VLANs per router, limiting the number of customers it can support. The routing technologies of the CSR 1000v can help cloud providers overcome these scale limitations.</li> </ul>

- **Control Point for Networking Services:** The CSR 1000v can redirect traffic to Cisco vWAAS appliances deployed in the cloud. It also offers integrated networking services such as the IOS Zone-based Firewall and HSRP, and in the future, application visibility.

Customer Problem	Features	Benefits of CSR 1000v
<ul style="list-style-type: none"> <li>• <b>Cloud Provider needs to offer enterprise-class networking services:</b> The cloud provider would like to offer networking services that ensure secure access and optimized, uninterrupted delivery of applications to its customers.</li> </ul>	<ul style="list-style-type: none"> <li>• AppNav/WCCP (redirection)</li> <li>• Zone-based Firewall</li> <li>• NAT</li> <li>• LISP</li> <li>• DHCP</li> <li>• HSRP</li> </ul>	<ul style="list-style-type: none"> <li>• <b>Rich Set of Networking Services:</b> The cloud provider can leverage the IOS security, application visibility and performance monitoring, and high availability features to provide each tenant with a comprehensive networking experience.</li> </ul>

## The Cisco IOS-XE Software Advantage

The CSR 1000v contains the same operating system, IOS-XE, which runs inside the ASR 1000 product line. Providing control plane and data plane separation, multi-core forwarding, and a modular architecture that allows for smooth insertion of networking features, IOS-XE is well-suited for dynamic cloud environments. IOS-XE is based on the stable, battle-tested and feature-rich IOS software that has powered Cisco's ISRs and other hardware routers in demanding enterprise, service provider and government networks for over two decades.

The key benefits of IOS-XE are:

- **Proven Functionality:** Industry-leading IOS networking and security features
- **Operational Efficiency:** Rapid integration into any IOS environment (branch office, WAN, data center, cloud)
- **Consistent User Experience:** Same IOS CLI and management tools across all IOS platforms - Cisco ISR, Cisco ASR, Cisco CSR 1000v

## Product Specifications

Features	Description
<b>IOS-XE Version</b>	<ul style="list-style-type: none"><li>• IOS-XE Release 3.8 (CSR Edition, with support for selected features)</li></ul>
<b>Hypervisors Supported</b>	<ul style="list-style-type: none"><li>• VMware ESXi 5.0</li><li>• Citrix XenServer 6.0</li></ul>
<b>Virtual Machine Specifications</b>	The CSR 1000v requires the following from the virtualized server hardware: <ul style="list-style-type: none"><li>• <b>CPU:</b> 4 cores</li><li>• <b>Memory:</b> 4 GB</li><li>• <b>Disk Space:</b> 8 GB</li><li>• <b>Network Interfaces:</b> Up to maximum allowed by hypervisor</li></ul>
<b>IOS Networking</b>	<ul style="list-style-type: none"><li>• <b>Routing:</b> BGP, OSPF, EIGRP, Policy-based Routing, IPv6 Forwarding, VRF-Lite</li><li>• <b>MPLS:</b> MPLS VPN, VRF</li><li>• <b>Addressing:</b> DHCP, NAT, LISP</li><li>• <b>Failover:</b> HSRP</li><li>• <b>Traffic Redirection to Cisco WAAS Appliances:</b> AppNav</li></ul>
<b>IOS Security</b>	<ul style="list-style-type: none"><li>• <b>VPN:</b> IPSec VPN, DMVPN, EasyVPN, FlexVPN, GRE</li><li>• <b>Firewall:</b> Zone-based Firewall</li><li>• <b>Access Control:</b> ACL, AAA</li></ul>
<b>Management</b>	<ul style="list-style-type: none"><li>• <b>VM Creation and Deployment:</b> VMware vCenter, Citrix XenCenter</li><li>• <b>Provisioning and Management:</b> IOS CLI, SSH, Telnet, Cisco Prime NCS, RESTful APIs</li><li>• <b>Monitoring and Troubleshooting:</b> SNMP, Syslog, IP SLA</li></ul>

## Ordering and Support

The CSR 1000v can be purchased as a term-based subscription. Please contact your Cisco sales representative for more information.



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