

# Cisco SD-WAN

Securely connect any user to any application across any platform, all with a consistent user experience.

## Introduction

Moving applications to the cloud requires faster, more reliable connectivity. The Internet of Things (IoT) demands even more performance as connected consumer endpoints multiply, taxing bandwidth and exposing sensitive networks to threats and vulnerabilities. Meanwhile, your workforce is becoming more mobile, demanding optimal performance wherever they go.

It's an arduous landscape for a business to manage, but it can be navigated with confidence when using Cisco® SD-WAN. Combining software-defined efficiency with the Cisco platforms you have come to trust, Cisco SD-WAN provides unparalleled visibility across your WAN, optimal connectivity for end users, and the most comprehensive security platform to harden your network.



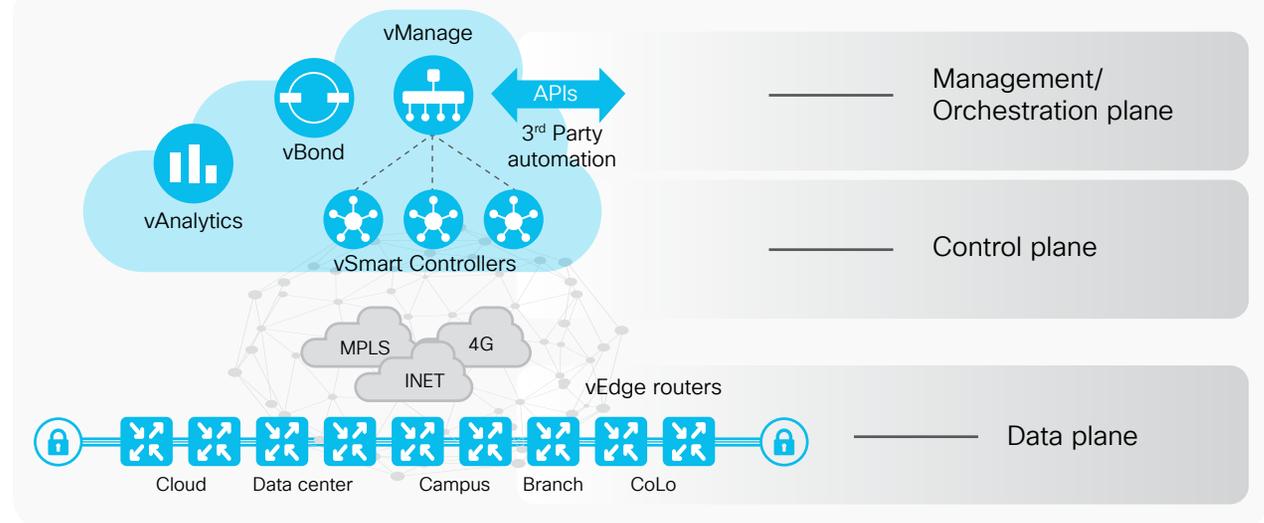
## Licensing

Cisco DNA for WAN gives you the flexibility to consume SD-WAN either from the cloud or on-premise without having to manage disparate licenses and terms. Available as either 3 or 5-year subscriptions, customers can choose from a variety of Cisco DNA license packages that include:

- Cisco DNA Essentials, enabling basic connectivity, SD-WAN, security and application visibility.
- Cisco DNA Advantage enables flexible connectivity, advanced SD-WAN, advanced security, assurance and application-driven policy.
- Cisco DNA Premier enables advanced SD-WAN, advanced security, application driven policy, network analytics and full WAN optimization.

## Overview

Figure 1. The Cisco SD-WAN Fabric



Through the Cisco SD-WAN vManage console, you can quickly establish an SD-WAN overlay fabric to connect data centers, branches, campuses, colocation facilities, and clouds to improve network speed, security, and efficiency. After setting your preferred templates and policies, Cisco SD-WAN identifies connectivity and contextual issues to determine optimal paths for users to get to their destination, regardless of the connectivity they are using.

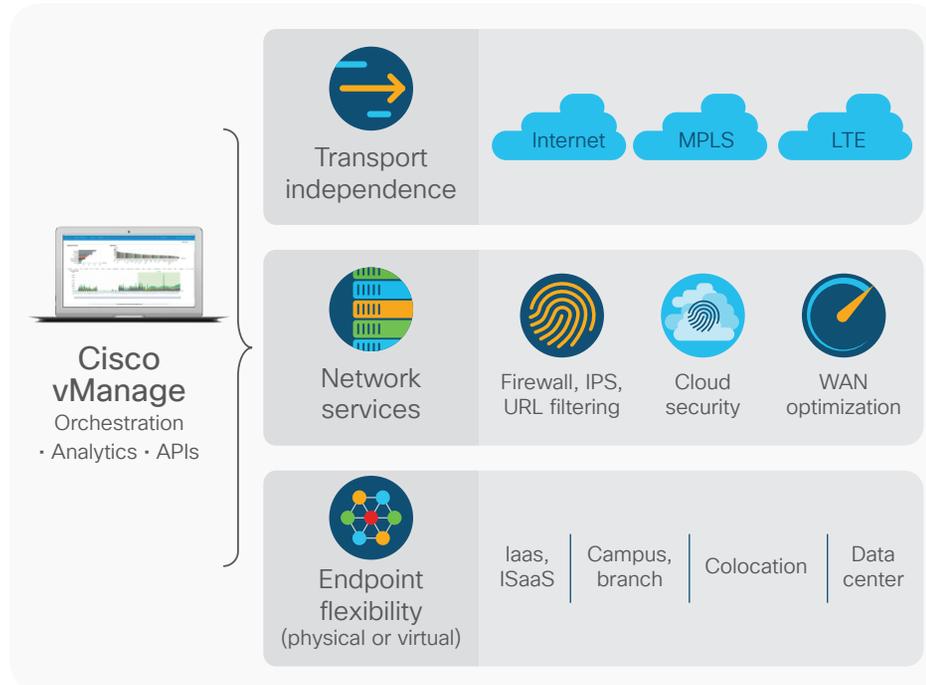
Whether hosted in the cloud or on-premises, Cisco vBond and vSmart orchestration and controller platforms authenticate and provision network infrastructure, making certain that the devices connecting to your SD-WAN are authorized. Once connected, the SD-WAN platforms find the best path to bring users closer to the applications they need, managing overlay routing efficiency, adjusting in real time to reflect policy updates, and handling key exchanges in Cisco's full-mesh, encrypted delivery.

Cisco SD-WAN supports third-party API integration, allowing for even greater simplicity, customization, and automation in day-to-day operations. In addition, Cisco SD-WAN includes the common routing protocols that are critical for all enterprise SD-WAN deployments, such as Border Gateway Protocol (BGP), Open Shortest Path First (OSPF), Virtual Router Redundancy Protocol (VRRP), and IPv6.

Through a single dashboard called vManage, Cisco SD-WAN provides:

- **Transport independence:** Supporting zero network downtime, Cisco SD-WAN automates application flexibility over multiple connections, such as the Internet, Multiprotocol Label Switching (MPLS), and wireless 4G LTE.
- **Network services:** Rich networking and security services are delivered with a few simple clicks. WAN optimization, cloud security, firewalling, intrusion protection (IPS), and URL filtering can be deployed wherever needed across the SD-WAN fabric from a single location.
- **Endpoint flexibility:** Cisco SD-WAN can simplify connectivity across branches, campuses, data centers, and cloud environments, extending the SD-WAN fabric wherever you need it to go. Whether physical or virtual, the wide variety of Cisco SD-WAN platforms gives you unparalleled choice, helping ensure that your specific business needs are accommodated.

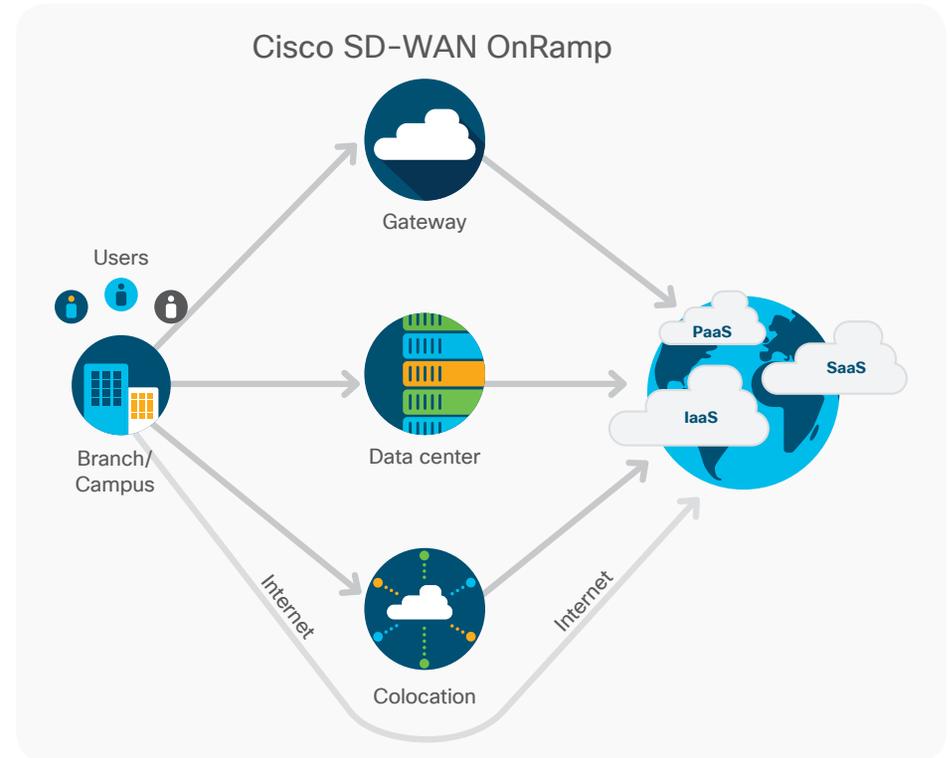
Figure 2. Cisco vManage



## Unique features and benefits

### Cloud first architecture

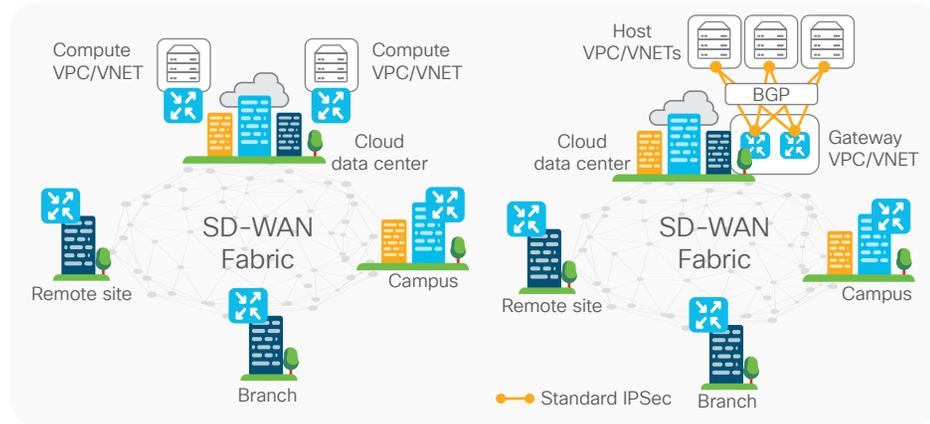
Figure 3. Cisco SD-WAN OnRamp



Cisco SD-WAN gives users the ability not only to manage connectivity across their WAN from a single dashboard, but to connect to cloud platforms with greater speed, reliability, and efficiency.

In the Cisco SD-WAN vManage console, you can easily automate virtual private gateway deployment in Infrastructure-as-a-Service (IaaS) and Platform-as-a-Service (PaaS) environments. Cisco SD-WAN OnRamp brings your applications closer to customers securely, adjusting your IPsec route as needed to help ensure service delivery and performance while monitoring the hosting infrastructure for anomalies.

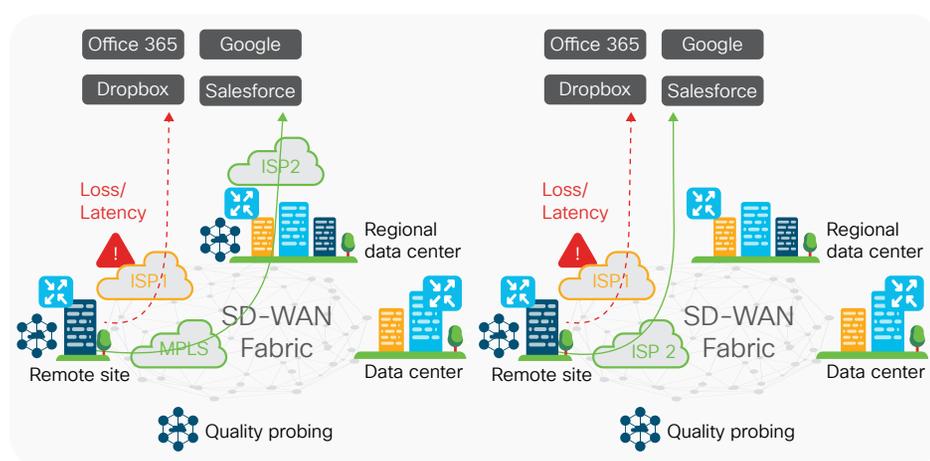
Figure 4. Optimization process for IaaS applications



Cisco SD-WAN OnRamp gives you enhanced, automated connectivity to IaaS and PaaS cloud environments without forcing you into existing multitenant gateways or a time-consuming manual process. Cisco SD-WAN gives instant visibility into cloud traffic, control over deployment, and the convenience of automated management.

In addition, Cisco SD-WAN OnRamp can optimize the SaaS applications that you and your stakeholders use in day-to-day operations.

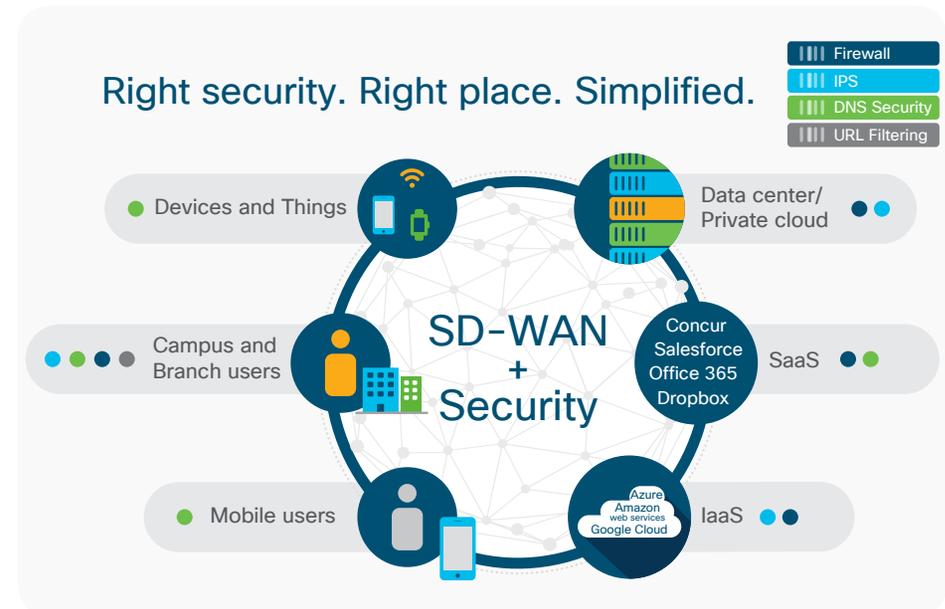
Figure 5. Optimization process for SaaS applications



Monitoring underlay performance via the vManage dashboard, Cisco SD-WAN OnRamp automatically selects the fastest, most reliable path to SaaS applications for your users, engaging in real-time steering no matter where they are located. In the event of Layer 3 service interruptions beyond your control, Cisco SD-WAN OnRamp will adjust as necessary, helping ensure continuous uptime.

**Right security. Right place. Simplified.**

Figure 6. Cisco SD-WAN security



As the world's leading networking company, Cisco defined the standard for routing. As the largest enterprise cybersecurity provider, Cisco covers thousands of customers with end-to-end protection.

By choosing Cisco SD-WAN, you gain the ability to manage certified trustworthy platforms while instantly deploying the right security in the right place, all from a single dashboard. With a few clicks in the Cisco vManage console, you can instantly harden your entire network, reducing risk while helping ensure business compliance, continuity, and success.

**“Cisco SD-WAN on ISR routers drives a reliable foundation to quickly integrate SD-WAN and its ability to simplify management and improve real-time access to critical cloud-based business applications.”**

**US Banking Institution**

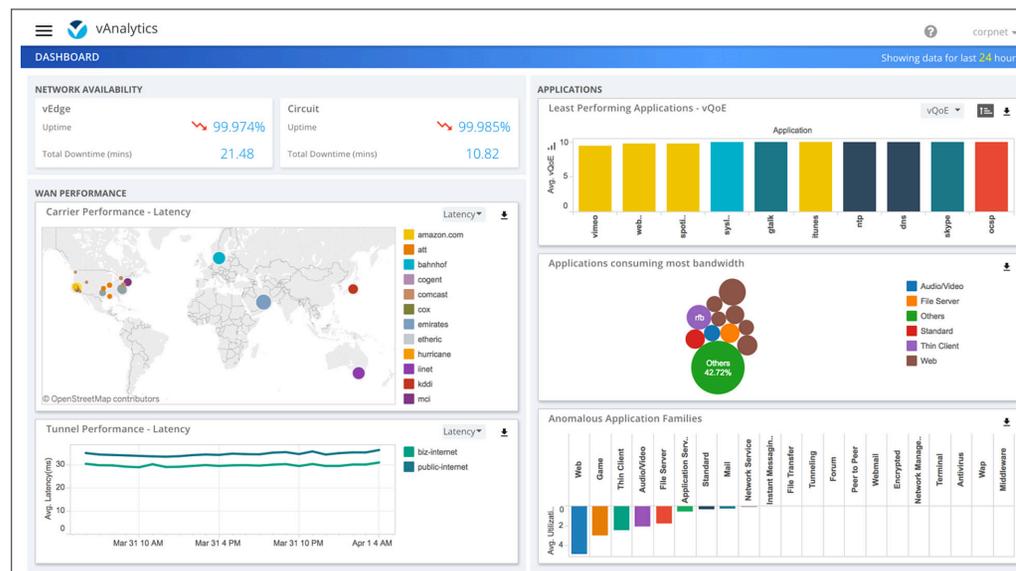
**“SD-WAN on Cisco’s ISR4K routers creates a robust, trusted platform on which to quickly realize security and performance benefits with a simple software upgrade.”**

**Rui Pereira, Altice Portugal**

Cisco SD-WAN can transform your Cisco routers into advanced, multilayered security devices with an application-aware enterprise firewall, IPS, URL filtering, and continuous DNS monitoring. As a result, end users—whether in the data center, in a branch, on the campus, or in a remote location—can enjoy protection from a multitude of security threats. In addition, Cisco SD-WAN can segment network traffic from end to end, protecting your business against data exfiltration and insider threats.

### Predictable application experience

Figure 7. vAnalytics dashboard



Using the advanced vAnalytics engine, accessed through the Cisco vManage console, you can quickly provide stakeholders with the visibility necessary to isolate issues in the WAN. Additional components of vAnalytics include:

- End-to-end visibility into applications and infrastructure across the entire SD-WAN fabric
- Real-time information for failure correlation, cross-customer benchmarking, and application performance scores
- “What-if” scenarios for performance forecasting
- Assistance in planning application provisioning, bandwidth increases, and branch expansions
- Intelligent recommendations based on existing policies, templates, and preferences
- Application Quality-of-Service (QoS) categorization and policy changes for predictable performance

**“Bringing the WAN edge securely to the Internet is now possible with the new security features of Cisco SD-WAN delivered as a single consolidated solution.”**

**Hussein Omar, Network Solutions Architect, Datacom**

**“With Cisco SD-WAN, we’ve reduced our MPLS spending by 25 percent while increasing bandwidth by 3,075 percent.”**

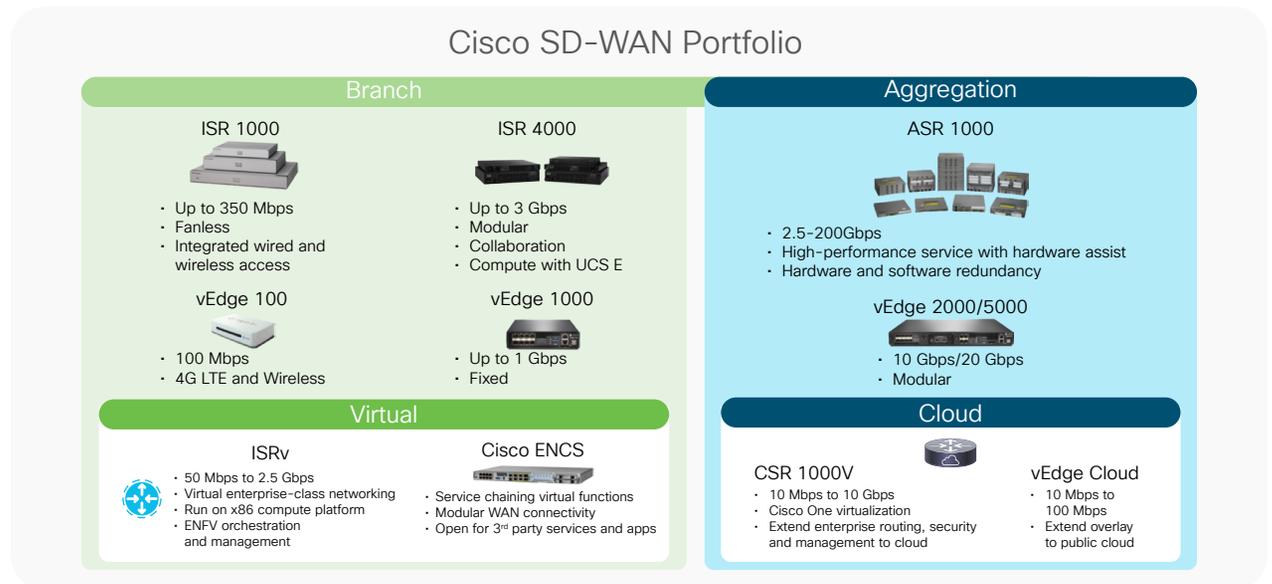
**Luis Castillo, Global Network Team Manager, National Instruments**

In addition, with an enhanced event correlation engine, Cisco SD-WAN vAnalytics helps you cut through noisy raw event data, using its contextual analysis to understand when to turn service interruptions into alarms. This capability drastically reduces false positives and unnecessary escalations, saving your IT department time so it can focus on what matters.

Cisco SD-WAN provides advanced analytics, monitoring, and automation for any connection across your network, whether MPLS or beyond the cloud edge. With Cisco SD-WAN, you can help ensure that users enjoy optimal speeds and the best performance from the applications they need for success. Enjoy improved productivity and an enhanced user experience with consistent, secure access to business applications on certified trustworthy hardware.

### SD-WAN Platforms

Figure 8. Cisco SD-WAN portfolio



Whether hardware or software, Cisco strives for quality, innovative technology that will help your business reach new heights. Cisco SD-WAN is no different. With a single WAN fabric scaling business into multicloud environments, Cisco SD-WAN can manage and provision a wide array of deployment options. Cisco SD-WAN ready devices can be deployed in:

## Services

Cisco Services helps IT teams worldwide design, manage, and maintain some of the most sophisticated, secure, and intelligent platforms for digital business. Our innovation, expertise, and services quality, coupled with advanced analytics, automation, and security, help you bridge the talent gap, manage risk, deliver excellence, and stay ahead of the pace of change.

### **Branches, Campuses:**

With physical, virtual, and cloud routing options, you can deploy Cisco SD-WAN on Cisco vEdge, Cloud Services Router (CSR) 1000V, 1000 Series Integrated Services Routers (ISRs), and 4000 Series ISRs, and with Network Functions Virtualization (NFV) using Cisco SD-Branch solutions such as the Cisco 5000 Series Enterprise Network Compute System (ENCS), and Cisco UCS® E-Series platforms.

### **Headquarters, Datacenter and colocation facilities**

With physical, virtual, and cloud routing options, you can deploy Cisco SD-WAN on Cisco CSR 1000V, ASR 1000 Series Aggregation Services Routers, or with NFV using Regional Hub solutions on the Cloud Services Platform 5000.

With Cisco SD-WAN, select the best platform for your environment, regardless of your business needs.