Cisco Catalyst SD-WAN Design Case Studies

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Contents

Introduction

Cisco Catalyst SD-WAN design case studies are deep-dives into the methodologies and technical solutions of how Cisco customers have leveraged SD-WAN use cases to achieve business outcomes. Although the companies covered in these case studies are fictitious, the designs, features, and configurations represent best practices and lessons learned from actual customer deployments across multiple industries.

Design case studies showcase the depth of Cisco's coverage for the different categories of SD-WAN use cases as defined by the technological research firm Gartner, Inc, in the 2021 SD-WAN Edge Magic Quadrant (MQ) report. Design prototypes for each category have been built in Cisco Catalyst SD-WAN labs to validate the best practices and feature combinations covered in each case study. The categories include:

- Small Branch: This category focuses on a use case with remote sites that support up to 10 people, where simplicity, cost consciousness, and flexibility of transport choices are key. Examples of the small branch category include gas stations, convenience stores, small banks, and fast-food restaurants.
- Global WAN: Global WAN focuses on large enterprise organizations with 200 to more than 1,000 sites with remote sites distributed across different countries or regions. The Global WAN use case includes the ability to scale to hundreds or thousands of sites, typically across multiple geographic regions. Applications include a mix of private DC, public IaaS and SaaS with increasing resources moving to the cloud. Some examples of this category include global financial institutions, large retailers, and manufacturing environments.
- Security Sensitive: Although the number of locations and sites can vary, the main focus of this category is to provide a comprehensive security solution combined with the networking solution. It is the typical use case for those organizations focused on securing branch offices as the main priority where network and security procurements are increasingly converging. The security infrastructure is delivered as a cloud service or from an SD-WAN appliance, with native security or with the ability to host a third-party security solution at the branch. Examples of this category include financial services, government, some retail, some healthcare, and some regulated industries.
- Cloud First: Cloud First focuses on organizations that consider the need for easy, high-performing, and flexible WAN-to-cloud access, where a majority of the business initiatives are cloud-hosted with little to no workloads in on-premises data centers. The goal of this strategy is cost reduction and improved quality and speed of delivery, as cloud-based solutions can be scaled up or down as required.
- Remote Worker: This use case focuses on individual workers connecting to the enterprise network from remote locations such as their homes instead of connecting from the branch. Enterprises typically choose a software-driven product, or a lightweight hardware solution meant for single user environments. Security with Zero Trust Network Access (ZTNA), which includes VPN, is the focus with other cloud security functionality based on worker identity and split tunneling to securely connect to cloud workloads.

Case Study Descriptions

The following table outlines each case study category, description and URL, and major topics covered.

Table 1. Case Study Descriptions

Category	Case Study Description	Major Topics Covered
Small Branch	This case study follows a fictitious company, American GasCo, through several planning and design phases and considerations they addressed during their journey to SD-WAN.	• Enterprise considerations for Cisco cloud-hosted control component deployments • SD-WAN underlay design for multiple types of WAN transports • Small branch WAN Edge platform and topology considerations • Cellular 4G/LTE branch deployment best practices • Dual data center hub-and-spoke overlay routing • Application-Aware Routing (AAR) • Quality of Service (QoS) • IP Multicast
Global WAN	This case study follows a fictitious large global WAN company, Bank of the Earth, through several design considerations they addressed during their adoption of a large-scale SD-WAN.	• Scale considerations when designing for a large global Cisco Catalyst SD-WAN network • Multiple-overlay design • Branch SD-WAN router design in a large-scale network • Datacenter head-end SD-WAN router design with horizontal scaling utilizing tunnel groups • On-prem control component design (SD-WAN Manager, Controller, and Validator) for a large-scale network • OMP Route, TLOC, and Tunnel calculations
Security Sensitive	This case study provides an in-depth look at a security-focused SD-WAN deployment for a fictitious customer, Tidal Pharmaceuticals.	• An overview of security already integrated into the Cisco Catalyst SD-WAN solution • Embedded security on SD-WAN Edge routers (DNS-layer security and Zone-based Firewall) and DIA • SD-WAN Cloud Security Integration (Umbrella, Zscaler, or other 3rd party Security Internet Gateway (SIG) provider) • Cisco Virtualized Security Appliance hosted on a SD-WAN Edge router (Firepower Threat Defense virtual (FTDv) deployed on a UCS-E module)
Cloud First	This case study follows a fictitious customer, 4Dachs Consulting, who is taking a cloud-first approach to providing software services to its customers by leveraging the benefits of Cisco Software-Defined Cloud Interconnect (SDCI).	• Multiple design models for site-to-cloud and cloud-to-cloud connectivity • Benefits of the Cisco SDCI solution • Considerations when implementing
Remote Worker	This case study builds on the previously published Small Branch case study and focuses on how American GasCo deployed the SD-WAN remote access (SDRA) feature to	• An overview of the SDRA solution, its components, and use cases.

Category	Case Study Description	Major Topics Covered
	enable secure remote access for technicians responsible for managing and monitoring the store network.	

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