Data Center Networking Best Practices

At-A-Glance

What Are Cisco Data Center Networking Best Practices?

Cisco® Data Center Networking Best Practices give customers guidance and assistance in developing the data center network architecture most appropriate to meet changing IT requirements. These best practices augment the Cisco Data Center Network Architecture technologies and solutions to help IT architects and data center professionals take a phased approach to building and operating a comprehensive network platform for their next-generation data centers. By taking advantage of Cisco Data Center Networking Best Practices, IT professionals can build a data center–class network, deploy solutions more quickly with lower risk, facilitate technology evolution and upgrades, and help ensure that IT staff are equipped with the right skills and expertise.

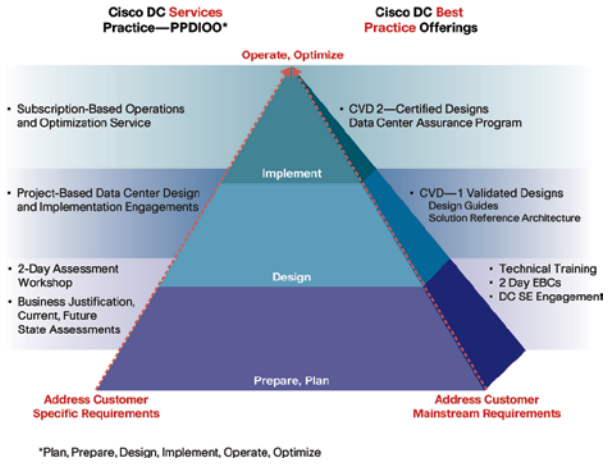
Benefits

- *Build and maintain a data center-class network*—Use validated and documented data center network solution designs to plan and implement networks that can achieve the stability and scalability required for mission-critical data centers. By using proven best practices, enterprises minimize downtime and accelerate recovery from disruptions. These designs also provide a robust foundation that customers or Cisco Advanced Services can use to make customizations to meet specific requirements.
- *Deploy solutions more quickly, with less risk and complexity*—Use Cisco Data Center Best Practices to reduce the time, cost, and investment required for pre-production testing. Tried and tested designs help avoid the risks associated with technology disruptions, security exposure, nonscalable designs, and inappropriate software selection.
- *Facilitate technology evolution and upgrades*—The data center network is evolving to meet the challenges associated with cost, business alignment, resilience, and facilities concerns such as power and cooling. Cisco Data Center Network Best Practices are constantly updated to incorporate these changes, so that customers can adopt them in a timely manner, with minimal risk.
- *Accelerate knowledge transfer*—The expertise and skills required to design and maintain increasingly sophisticated integrated data center networks are provided through constant training and knowledge transfer programs and infrastructure services. These programs include specialized Cisco CCIE® training such as the storage specialization, data center training labs, Cisco Press® books, Cisco Networkers, and executive briefing sessions.

Why Data Center Network Best Practices?

The role of the network in the data center is becoming ever more crucial; it is evolving into the intelligent integrated platform for next-generation data centers. Because it is pervasive and scalable and promotes standards, the network is developing into a foundation across which information, application services and all data center resources, including servers, storage are shared, provisioned, protected, and accessed. With this in mind, customers need to plan, design, and deploy a data center network that can provide the highest levels of stability, performance, and security and can also withstand and recover rapidly from disruptions. IT architects and network planners need to adopt design best practices to help ensure that the data center network they are deploying can achieve these goals. They also need to plan ahead so that the network is designed to meet today's requirements and can also transparently evolve to facilitate the ongoing consolidation, virtualization, and automation of data center resources,. The best practices need to take into account the integration of a wide range of traditional (for example, Ethernet switching and security) and emerging (for example, storage networking, server fabric switching, and application network services) network technologies, as well as non-networking computing, storage, and application technologies. Most IT organizations do not have the resources to develop all these best practices themselves and rely on the expertise and experience of vendors, consultant, and others.

Figure 1. Complementary Cisco Data Center Network Best Practices and Services Offerings



How Is Cisco Helping Customers with the Data Center Network Lifecycle?

Cisco gives customers extensive assistance with the preparation, planning, design, implementation, and operation of data center networks. This assistance is provided in two ways: First as a free set of generic best practices intended to address mainstream data center network deployments, providing customers with an excellent foundation upon which to base their own implementations; and second as services intended to help customers tailor the network for their specific requirements (Figure 1). These are complementary offerings, which build on each other and allow customers to use their own internal expertise or to augment their own capabilities with the expertise of Cisco Advanced Services specialists.

Data Center Networking Best Practices

- Cisco Data Center Networking Best Practices—Cisco provides data center best practices through the Cisco Validated Design Program. This program offers validated and certified designs:
  - *Cisco Validated Design (CVD) 1 validated designs*—These designs identify a system that has been validated through architectural review and proof-of-concept testing. Designs at this level, developed by Cisco technical solutions engineers, follow a baseline development methodology and have been approved by engineering, marketing, services, and sales operations to meet the desired criteria. Validated designs are architectural best practices that can be used by customers to design their own data center networking architectures. They incorporate emerging technologies or technology refreshes that customers may not yet have experience with. Validated designs provide a baseline for additional customer-specific proof-of-concept and pre-production testing.
  - *Cisco Validated Design (CVD) 2 certified designs*—These designs, based on the Cisco Data Center Assurance Program, identify a system that has undergone architectural and customer-relevant testing. Designs at this level both meet the requirements of a CVD1 validated design and are certified to a baseline level of quality that is maintained through ongoing testing and automated regression, for a common design and configuration used by leading customers. Certified designs are architectural best practices that have been reviewed and updated with appropriate customer feedback and can be used by customers with a similar environment, with minimum additional proof-of-concept or pre-production testing.
  - Certified designs are supported with forward-looking roadmaps and system test programs, which provide mechanisms to promote adoption of new technologies and designs that maximize customers' return on investment (ROI) while minimizing the operational effects of integrating new technologies. CVD 2 certified designs provide customers with a high degree of confidence in the system-level integrity and production readiness of the design. In addition, ongoing testing of new software images and extended software maintenance versions helps ensure the sustainability of the design. They also provides customers with regulatory support such as Sarbanes-Oxley and Basel II vendor test support and documentation, The availability of the completed test reports provides a high level of transparency and allows customers to better analyze any risks associated with their specific deployments.
  - *Cisco Data Center Networking Services*—Cisco augments its data center networking best practices by offering services that provide business and technical assessments to help customers identify gaps between current and future states. The services promote network architectures that effectively meet customers' objectives and help customers achieve reliable implementations. Customers benefit from end-to-end processes and planning, reducing customer risk by deploying validated designs. Cisco also offers network optimization services, making it easier to plan changes and major migrations and improving ROI through faster reconfiguration and integration of new applications into the data center infrastructure. Customers can augment internal operation staff with onsite technical support to resolve problems rapidly and to transfer knowledge to the internal support organization.

Why Cisco?

Cisco is in a unique position to offer the comprehensive best-in-class data center networking technologies, best practices, and services required to satisfy customers' immediate and ongoing infrastructure requirements. Cisco helps customers successfully plan, deploy, and operate a data center-class network by sharing expertise, experience, and best practices resulting from extensive solution-level lab testing, numerous real-world deployments, and partner engagements. Cisco enables customers to take a phased architectural approach to attainment of a next-generation data center, by providing a coherent strategy, vision, and roadmap and delivering network products that are designed to be modular, extensible, and interoperable. By taking this approach customers can achieve investment protection and incremental value from project to project.

Additional Information

- Cisco Data Center Network Architecture: http://www.cisco.com/go/datacenter
- Cisco Data Center Design Guides: http://www.cisco.com/en/US/netsol/ns340/ns394/ns224/networking_solutions_design_guidances_list.html
- Cisco Storage Network Services: http://www.cisco.com/en/US/products/svcs/ps2961/ps3010/serv_group_home.html
- Data Center Networking Services: http://www.cisco.com/en/US/products/ps6892/serv_group_home.html

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