QuickStart for Data Center: Cisco on Cisco

Network Goals

Cisco is our own reference account for Data Center. What Cisco is doing for its employees is exactly what our customers want to do for theirs. So how did we get here?

Cisco's network has three goals:

- Ensuring all applications and users get the communications services and resources they need, and only when they need them
- Minimizing resource waste and cost, with unused resources being put back into the virtual pool
- Centralizing control of the network, communications services, and resources so that administrators can instantly apply policies and services whenever needed

Data Center Redesign

In order to achieve these network goals, Cisco IT had to transform its approach from a technology-based structure to an architecture-based structure.

Initially, Cisco IT divided the Data Center infrastructure into four physical layers, or tiers. Gradually, the components of the Data Center were organized vertically for applications support, and horizontally for hardware and operating system support.

Over time it became clear that this design did not scale, and that it resulted in a number of problems, including inflexible application integration, poor manageability, and increased cost of ownership.

To solve these problems, Cisco's Data Center was redesigned in three stages:

- Consolidation of resources across the company
- Virtualization for dynamic allocation of resources
- Automation to deliver computing and network services as needed

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Data Center Strategic Objectives

Cisco's Data Centers are now designed to meet three strategic business objectives:

- Cost containment
- Business agility
- Risk management

Cost Containment – Cisco spends roughly 25% of its IT budget on Data Centers. This is about half of what our customers spend.

Business agility – Businesses succeed by being able to react quickly to marketplace changes and technology improvements, and by delivering the right information where and when needed. Cisco IT's goal is to provision new processing or storage resources to meet an application's requirements within 30 minutes, instead of the three months this process can take.

Risk management – In our Data Centers, every component is utilized and load balanced at all times, but losing any single component does not affect application availability. This maximizes the utilization of expensive resources, and makes costs drop. The key is to virtualize and separate the application layers from the service layers and the infrastructure, then to combine a security wrapper around it that enables us to keep operational data highly accessible and available to end users, while securing Cisco's critical data.

Data Center Applications

Like our customers, Cisco runs many, many applications. Over 4,000 actually. That's a pretty impressive number. As we've done with servers and storage, the next phase in the Cisco Data Centers is to consolidate applications. That will help us continue to get the rewards of a truly services- and network-based Data Center.

Sales Office Server Consolidation

As with your customer's data centers, extreme decentralization in Cisco's data centers came at a price: a proliferation of server platforms and operating systems increased capital and operational expense and complicated disaster recovery. Consolidating Cisco's data center architecture would require overcoming two challenges. First, Cisco IT needed a way to optimize bandwidth to accommodate the increase in traffic when Cisco's field sales offices began accessing services over the WAN instead of hosting them on their

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office LANs. Second, Cisco IT would need to accelerate application performance so that employees would experience LAN-like performance over the WAN.

Cisco IT found its solution for WAN optimization and application acceleration in Cisco Wide-Area Application Services (WAAS). Here are some of the business results from this consolidation effort:

- Faster application performance – for example, a 61% improvement in the time it takes to open a file from LiveLink!
- Increased productivity – if each of 2000 remote employees in Emerging Markets branch offices save just 10 minutes a day (30 seconds time savings for accessing 20 HTTP pages per day) Cisco will save US$7 million annually.
- Lower operating expenses – Cisco is reducing its maintenance and operating costs and freeing up bandwidth for backups, application expansions, and other needs.
- Capital cost avoidance - Cisco anticipates avoiding US$6.5 to $10.5 million in capital costs by 2011.

Application Server Virtualization

In early 2008, Cisco IT had nearly 4000 applications running on more than 15,000 physical and virtual servers in its data centers. And this already large number of installed servers was growing at a rate of 15 percent per year. To meet this significant demand as well as address cost, resource, space, and server deployment issues in the data centers, Cisco IT is using the VMware ESX Server product, the Cisco network, and Cisco technologies for server networking and data center management. Cisco IT has realized these business benefits from deploying virtual servers, including:

- US$19 million cumulative cost savings and cost avoidance
- Reduced demand for data center space and resources
- Faster server deployment
- Increased productivity of IT staff
- Improved application stability

Cisco on Cisco

We've used our Data Center approach on ourselves and have benefited immensely. This approach has transformed our Data Center infrastructure, giving us improved user service, better utilization, more automation and flexibility, and a lower total cost of ownership.

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