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How Cisco IT Planned and Executed a Global Data Center Strategy

EXECUTIVE SUMMARY	
CHALLENGE	<ul style="list-style-type: none"> • Increase capacity to support business growth • Provide operational continuity throughout planned or unplanned outages • Transform Cisco IT business model to a service provider model
SOLUTION	<ul style="list-style-type: none"> • Established cross-functional Global Data Center Program to build or retrofit seven facilities • Financed the program in phases tied to measurable improvements in capacity, resiliency, and transformation
RESULTS	<ul style="list-style-type: none"> • Built capacity to enter new global market and adopt new business models • Gained resiliency to withstand disasters including loss of an entire data center • Enabled new IT services that transform the business, including infrastructure as a service
LESSONS LEARNED	<ul style="list-style-type: none"> • Fund program in stages, validating that the investment is returning the expected value • Select program leaders who are trusted by both the application and infrastructure teams
NEXT STEPS	<ul style="list-style-type: none"> • Develop next generation of data center services, delivering them from Cisco Unified Data Center platform

Cisco Global Data Center Program built or retrofitted seven data centers in less than four years, supporting strategic goals for virtualization, resiliency, and growth.

Challenge

In 2008, as its data centers approached space and power limits, Cisco IT developed a global data center strategy to meet three major requirements for continued business growth:

- **Capacity:** “Between 2008 and 2009, capacity, power, and cooling were either nearing exhaustion or severely constrained,” says Mike Telang, Cisco IT director. “We knew that continuing to meet SLAs would require standardization, virtualization, and automation.”
- **Resiliency:** Avoiding interruptions in business processes and the customer experience required resiliency to quickly recover from unplanned outages and planned upgrades.
- **IT transformation:** “Cisco IT envisioned operating like a service provider, transforming our business processes, products, and architecture to support Cisco’s continued market leadership,” says Ingrid Franzen, senior IT program manager with Cisco IT.

Many companies first focus on capacity, then resiliency, and later attempt transformation, according to Shaw-Jen Chang, vice president of

Data Center and Platform Services for Cisco IT and previously a co-director of Cisco Global Data Center Program (GDCP). “Cisco’s global data center strategy is differentiated by our intent to deliver on specific capacity, resiliency, and transformation milestones simultaneously, as opposed to sequentially,” he says.

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—Shaw-Jen Chang, Vice President of Data Center and Platform Services and Previous Co-Director of Cisco GDCP

Solution

Launching the Cisco GDCP required three efforts: developing the strategic statement of direction, building the financial plan, and obtaining approval from company stakeholders, including the Cisco board of directors.

“We realized that if we did nothing, spending would increase linearly,” says Koen Denecker, Cisco IT senior director. “A new data center strategy would require an initial investment spanning four or five years, but at the end we would have sustainably lower cost of infrastructure per unit of business. The enablers would be consolidation, virtualization, automation, and improved processes and governance.”

Developing the Statement of Direction

The statement of direction, developed before any action was initiated, guided all decisions made over the life of the program. “The Global Data Center strategy was the foundation for the multi-year program, and has remained our compass as we operationalize the data center and infrastructure services that are so essential to Cisco’s future growth, market leadership, and competitive advantage,” says John Manville, senior vice president of Global Infrastructure Services for Cisco.

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The core strategy team consisted of several Cisco infrastructure architects. They developed the plan over six months, soliciting input from other infrastructure architects across approximately 12 domains and from experts on major applications. “Early strategy discussions had three main themes: capacity, resiliency, and migration,” says Craig Huegen, one of the initial strategists and now senior director of IT architecture.

The statement of direction defined the end state, the path to get there, and major decisions, including:

- Data center locations and sizes: This was one of the most difficult decisions, especially because of the uncertain economic climate.
- Whether to execute the program internally or work with a partner: Cisco IT decided to use internal resources to develop employees and expand the internal skillset.
- The degree of application resiliency: The team had to find out how much resiliency different business stakeholders expected and develop resiliency guidelines for infrastructure, applications, and business processes. “We tailored resiliency for the criticality of each application,” Denecker says. “It’s like deciding

on the amount of insurance you need.”

- General migration approach: The strategy was designed to transform IT during migration instead of postponing the benefits until migration was complete. The strategy document firmly stated the need for migration to centralized data centers and the sequence of events, but allowed flexibility in terms of the approach.

The 200-page strategy document that emerged from the discussion became the guiding reference. “We fully documented the strategy before taking any actions,” Huegen says. “For every new initiative proposed, we first confirmed that it was part of the committed scope.” Initiatives outside the scope were funded separately.

Enthusiasm for the program grew as the Cisco IT team started to see the benefits. Program progress accelerated when Cisco IT appointed two program directors, Julie Finan and Shaw-Jen Cheng, who co-led the effort and jointly made all decisions. “The program leaders were selected as much for their trusted reputation within the applications and infrastructure teams as for their data center expertise,” says Denecker.

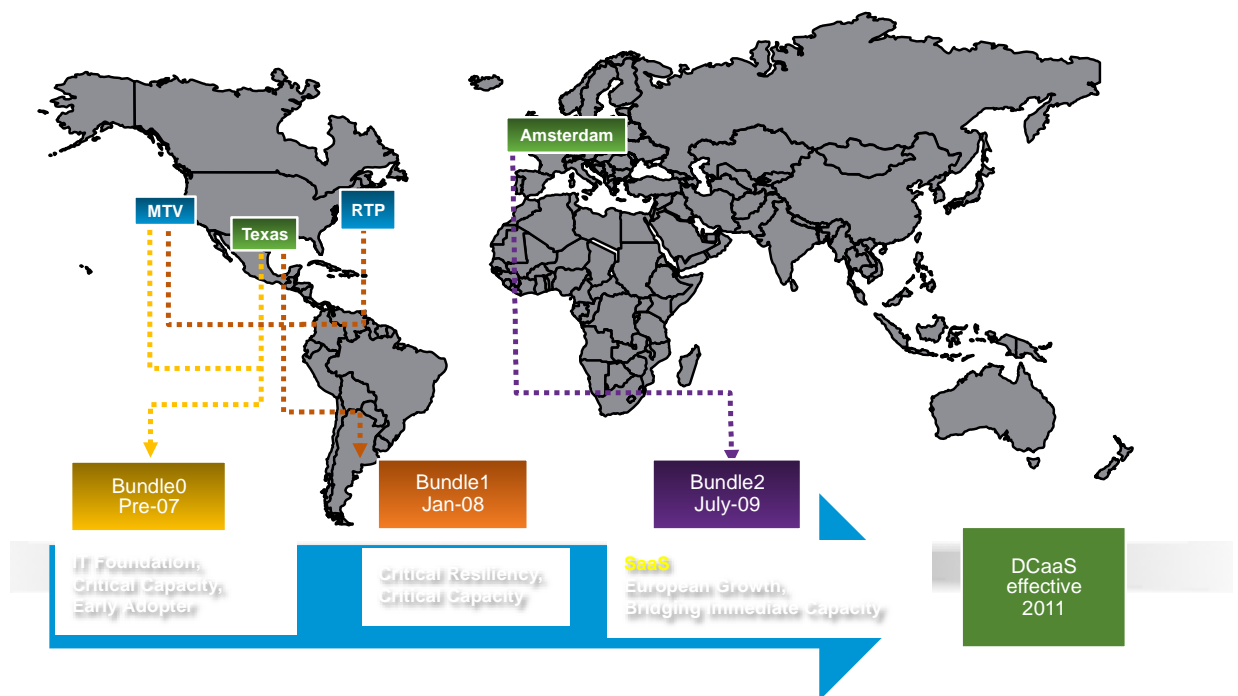
Investment Approach

Before requesting funding from the Cisco board of directors, the GDCP team defined multiple investment bundles for retrofitting four data centers, each bundle tied to measurable increases in capacity and resilience (Figure 1). “The bundled approach to investments was integral to the program’s success because it allowed us to scope our strategy, adjust as needed, and report progress to the board,” says Telang.

The Cisco architecture, finance, and workplace resources (WPR) teams collaborated on financial planning. For example, the finance team advised on how to structure the financing to maximize the depreciation period for the capital investment.

“We developed six-year cost analyses for doing nothing, optimizing only, and optimizing and adding resilience,” Denecker says. “From that data we developed value statements and risk statements to share with the stakeholders.”

Figure 1. Investments are Tied to Improvements in Resiliency and Capacity



Structuring the Program for Success

Implementing the GDCP strategy in three years would require a robust and coordinated program structure, according to Julie Finan, senior director of IT and previously co-director of Cisco GDCP. “We optimized program operations by building a flexible and lightweight structure with strong tie-ins to the existing IT delivery framework,” she says. “This removed a layer of complexity from the program and accelerated delivery by allowing us to capitalize on existing business and technical partnerships.”

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The structure included integrated program tracks, shown in Table 1. “All program elements were meticulously planned and delivered according to detailed roadmaps,” says Franzen. “We formed a strong matrix program structure with rigorous governance and oversight.”

Table 1. Main Program Tracks for Cisco Global Data Center Program

Track	Description
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Build	Building data center facilities and implementing infrastructure
Management	Providing management capabilities needed to deliver IT the way a service provider would
Application Migration	Moving applications from the previous server platform to the Cisco Unified Data Center platform (Cisco Unified Computing System and Cisco Nexus switch architecture), with the goal of taking advantage of its greater scalability, lower TCO, and resiliency
IT Transformation Through New Technologies	Introducing Cisco Unified Data Center platform, active-active architecture, storage virtualization, and other transformative technologies
Resiliency	Increasing the capability of specific data centers from Tier 2 to Tier 3; implementing a multi-site architecture; and moving out of high-risk geographies to support business continuance in the event of disaster
Architecture	Implementing the Cisco Unified Data Center platform to increase resiliency, automate provisioning, and simplify management
DeVirt (Decommissioning and Virtualizing Servers)	Decommissioning the existing data center architecture and replacing it with a virtualized cloud architecture
Program Management Office	Developing the overarching framework for the data center program and implementing operational practices

Results

Established in October 2008 and decommissioned in August 2012, the Cisco GDCP created the foundation for sustainable business growth. Major achievements included:

- Building a global data center platform (Texas, North Carolina, California, and Amsterdam) with the power and compute capacity to support Cisco's entry into new global markets and adoption of new business models. The global data center platform has so far enabled Cisco to expand into Dubai, Bosnia, Saudi Arabia, Turkey, and South Africa. It is also the foundation for internal collaboration tools, such as Cisco TelePresence and Cisco Jabber.
- Enabling rapid disaster recovery by building a dual-purpose data center for development and disaster recovery. The disaster recovery architecture is designed to complement and eventually merge with Cisco IT's virtual private cloud (VPC) architecture, which enables multiple virtual data centers to co-exist in a single physical data center.
- Providing comprehensive coverage for Cisco databases and critical applications. The GDCP created the foundation for Cisco IT Elastic Infrastructure Services (CITEIS), which is Cisco IT's infrastructure-as-a-service private cloud solution.
- Virtualizing 83 percent of all applications in the new data center.
- Integrating disaster recovery planning into the application lifecycle.
- Operationalizing a metro virtual data center (MVDC) that provides business continuity throughout planned and unplanned events. During the first 10 months after the active-active architecture went live, employees using Cisco Commerce Workstation applications experienced no interruption in service despite three server outages.

Lessons Learned

The Cisco GDCP team shares the following tips with other enterprises embarking on a global data center program:

- To obtain approval from the CFO or the board for multi-year investments, periodically validate that the investment is delivering the promised value. "Managing a global data center program is like managing a

startup because it requires change management and regular checkpoints,” says Denecker. “Asking for investment bundles instead of a one-time investment was a good idea because of unpredictable changes in the economy and industry.”

- Accept that application teams naturally resist platform change. “Application teams focus on pleasing their clients,” says Denecker. “We succeeded after the application leadership team got on board and saw the benefit of the new architecture.”
- Select program leaders who are trusted by both the application and infrastructure teams.

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—Koen Denecker, Senior Director for Cisco IT

Next Steps

The Cisco GDCP laid the foundation for the next generation of Cisco data center services. Already, Cisco has introduced CITEIS, an infrastructure-as-a-service cloud architecture that employees can use to self-provision end-to-end infrastructure (compute, storage, and networking) in less than 15 minutes.

Now Cisco IT is further strengthening its infrastructure offerings to remain the provider of choice for Cisco teams. Plans include continuing to automate, control costs, improve the user experience, and accelerate time to capability.

For More Information

[How Cisco IT Automated End-to-End Infrastructure Provisioning in a Private Cloud](#)

[How Cisco IT Plans and Executes a Large-Scale Data Center Application Migration](#)

[How Cisco IT Migrates Critical Applications from HP Superdome to Cisco Unified Computing System](#)

[How Cisco IT Designed a Data Center that Can be Repurposed from Development to Disaster Recovery.](#)

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