

NEXT-GENERATION DATA CENTER

A generation gap is opening between data centers that are now showing distinct signs of aging and a new generation of data centers that will eventually replace them in many organizations.



The Data Center in Your Future

How to get there from here.

The benefits of a wide range of technology advances are calling out to CIOs:

- Consolidation and virtualization have validated the concept of a dynamic IT environment that can be centrally managed and will evolve along with an organization, instead of anchoring it in the past.
- Blade servers have introduced the concept of high-density data centers that pack previously unheard-of performance in a single rack.
- Advances in rack design and cooling technology provide a new level of control and dramatic savings in both cost and energy consumption. The so-called greening of data centers appeals equally to cost-anxious CFOs and wild-eyed tree huggers.
- Advances in networking technologies promise to converge Ethernet and Fibre Channel networks into a single network environment that is faster and easier to manage.

Appearing on the horizon is an image of a dynamic data center environment consisting of pools of high-performing computing resources that can be centrally managed, readily automated, and efficiently maintained. Security and compliance are built in instead of bolted on, and the upgrade path is evolutionary instead of disruptive.

That image, as attractive as it may be, can seem frustratingly out of reach to a CIO who is standing in a data center that occupies the same space that once housed the company's mainframes—the same space that has been retrofitted during the past 15 years, as those mainframes were replaced by minis, which were replaced by Wintel servers, and which are now being replaced by blades.

Faced with escalating levels of demand on data centers in virtually all industries, more IT directors and CIOs—not to mention CFOs—are realizing it might be time for a change.

STANDING ON THE BRINK

With the incentives of new technologies pulling and the risks of downtime and security breaches pushing, CIOs find themselves standing at the brink between the old and the new.

Bridging that gap requires an entirely new approach to the data center. More than just isolated technologies advancing in their own silos within the data center, the functional separation that existed between server, storage networking, and power technologies is disappearing, and a new, holistic approach to data centers is emerging that treats them as if they were a single, dynamic environment that needs to be addressed and managed in its entirety.



The challenge for IT departments that are traditionally compartmentalized into server, storage, or networking specialties is that being an expert in one specialty is no longer good enough. Certain advances in server and storage technology, for example, can't be fully realized unless they are aligned with advances in network technology—and vice versa. One hand in the data center definitely needs to know what the other is doing.

The need to treat the data center as a coherent, technical ecosystem is reflected in the product strategies of the three primary data center vendors: HP, IBM, and Cisco. Each one, in its own way, wants to expand its reach to encompass the entire data center. HP, for example, has come out with its ProCurve networking products, and Cisco now offers a server. Some market watchers have observed that the demilitarized zone that once existed between the leading vendors' product strategies has been breached.

ABUNDANCE OF CHOICES

The dizzying array of products from the major data center players complicates choices for the CIO who has to decide how to proceed without having to change direction as the needs of the organization change six months or a year from now.

Rapidly expanding capabilities of virtualization and power products from VMware and APC only add additional levels of complexity to the data center decisions that anxious CIOs, who have been given the mandate to do more with less, are facing. At a time when there is a shortage of available funds, there is an abundance of choices.

Logicalis read the writing on the data center wall and reorganized its sales teams to help customers take a service-oriented, vendor-agnostic approach. Many resellers have access to the various technologies involved, but very few have the scope to offer them all as part of a coherent strategy that ranges all the way from the engineering, design, and construction

of a new data center to the implementation and integration of the servers, storage devices, and networking technologies that go in it.

DATA CENTER DYNAMICS

A strategic approach to incremental changes in the data center can propagate benefits that extend from IT throughout your entire organization. Those benefits include the following:

Reduced Costs

Consolidating data centers slashes operating costs and dramatically reduces energy consumption.

Centralized Control

Having one place to look for everything facilitates management and compliance, and ensures security.

Quicker Response

Flexible, scalable data center technology empowers your business to pursue opportunities wherever they lead.

Automated Operations

Automation tools free up IT staff to focus on business initiatives.

Increased performance

Advances in servers, storage, and networking combine to catapult performance ahead of business needs.

Mitigated Risk

Implementing high availability and disaster recovery technologies minimizes downtime and effectively eliminates disaster.

ENGAGE ACROSS THE BOARD

From experience helping customers in a wide range of industries with their data centers, Logicalis has learned the best way to proceed is to set aside discussions about which technologies to choose and to concentrate on a comprehensive evaluation of the current infrastructure and the development of a set of requirements that accounts for the current and future needs of the organization.

A key step in developing a comprehensive data center strategy is getting all of the stakeholders talking to each other. “You’ve got to engage the server people and the storage and network people, and you have to talk to application folks, as well, because they are coming out with new applications,” says Logicalis Vice President Bob Hankins. “Basically, you need to engage across the board. You need to bring it to the CIO level and look across the enterprise.”

“A big piece of what we do is establish both a technical and financial baseline,” says Logicalis IT Consolidation Practice Manager Jeff Nessen. “You can’t very well draw a map to where you want to go without understanding where you are starting from. We’re like the directory at the mall,” he says. “The first thing you need to find is the ‘You Are Here’ arrow before you decide where to go next.”

“We use the same methodology and financial modeling tools with all our technology teams, whether the lead technology is IBM, Cisco, or HP,” Nessen adds.

STARTLING DISCOVERIES

Some startling discoveries are frequently uncovered during an evaluation. For example, many IT departments find scores of servers they didn’t know existed, plus islands of storage that never gets backed up. Logicalis Vice President Brandon Harris recalls one CIO who was appalled to find that impromptu data centers—some in closets and some in co-lo sites—were being created in his organization at the rate of two a day.

A significant realization that all evaluations show is that most of the cost of a data center is its management—not the equipment’s capex.

The good news hidden in that realization is that most data centers today are positioned to save dramatic amounts of money on maintenance. A project that Logicalis recently developed for a customer, for example, involved consolidating four data centers into two, which resulted in lowering four-year maintenance costs from \$267,000 to \$45,000.

In another example, Logicalis recently completed a data center transformation for a global marketing firm that involved the consolidation of several data centers—including one that had been outsourced—into one expanded data center and a remote disaster recovery center. The result? An annual savings of more than \$4.5 million. In addition to costing less to operate, the new data center is more secure, higher performing, and easier to evolve along with the organization.

CONVERGING NETWORKS

A good metaphor for the coming together of server, storage, and networking technologies in the data center is the convergence of Ethernet and Fibre Channel networks.

Traditionally, two separate networks are in every data center: an Ethernet LAN that basically connects users to each other and the Internet, and a Fibre Channel network that connects the servers through a multilayer director switch (MDS) to the storage area networks (SANs).



Cisco is now introducing Fibre Channel over Ethernet, which makes it possible to converge both networks into one, eliminating an entire set of switches in the process.

“Now we really have a total solution,” says Director of the Logicalis Cisco Practice Jim Dossias. “There was a big gap between the SAN and the Ethernet networks. Now we are bridging that gap and providing one network from the Internet service all the way back down to data storage.”

“Making that work for customers,” he adds, “means the networking, server, and storage experts all have to understand each other.” “We are cross-pollinating our experts so they can meet at a converged switch,” Dossias says. “Storage, server, and networking guys have all had connectivity conversations. Now the conversation is going to have to go deeper: What are you doing out there? How many ports do you need? What is that configuration going to look like? And what’s going to happen on the switch? Because on that switch, we all shall meet.”

The benefits of converging Ethernet and Fibre Channel networks are significant. “Now you need less infrastructure structure, less power, less cooling, less cabling, and less of a footprint in the data center—all good stuff that impresses CFOs,” Dossias says.

ONE PLACE TO LOOK FOR EVERYTHING

A key aspect of the next-generation data center is centralized management. “The ultimate goal is to have one place to look for everything,” says Logicalis Consultant Vic Dermott.

Logicalis helped a major Midwest hospital system with the transformation of its data center from a decentralized infrastructure that primarily served billing and administration to a centralized system that accommodates the hospital’s full scope of needs. It includes one of the most advanced electronic patient record capabilities in the healthcare industry. “There are people here who never use a pencil or paper,” Dermott notes.

Today the hospital complex is served by two data centers with a dynamically partitioned IBM server and a SAN and in each one. The two servers are connected by a single network over which all critical data flows. The two sites provide full replication for each other. “If one goes down or is taken down, it fails over automatically to the other,” Dermott says. “It takes about an hour.”

The changes in this data center were driven by the highest authority in healthcare. “The whole infrastructure was developed with patient care in mind,” Dermott says. “From one pane of glass, a physician can pull up a complete patient profile, including billing, insurance, X-rays, and lab tests—basically everything that is known about the patient. Initially implemented with 3.5 terabytes of storage, which seemed like overkill at the time, the data center has been able to grow storage capacity a hundred-fold in the last few years to 320 terabytes to meet the demands of digital images.”

Besides exceeding doctors’ expectations, the data center environment ensures the hospital satisfies another demanding authority in healthcare: regulators. Challenged with the potentially conflicting goals of keeping all patient data both widely accessible and yet totally secure, the data center ensures the hospital exceeds Health Insurance Portability and Accountability Act (HIPPA) requirements.



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The level of demand to store high-resolution digital images may be unique to healthcare, but this data center accommodates other demands that organizations in most industries share—like businesses in other verticals, hospitals frequently grow by acquiring other hospitals. As IT increasingly becomes a more integral part of every business, the ability to easily integrate an acquired organization's IT can make or break an acquisition.

"Hospitals have to be able to integrate the systems of an acquired hospital or doctor's practice—otherwise the whole business case for the acquisition can fall apart," Dermott says. "Business issues today are tied directly to technical issues much more so than ever before."

PATH TO THE FUTURE

In these times of tight budgets, it is possible to develop a comprehensive strategy that enables

you to make incremental improvements to your data center environment as funds become available. What's not possible, or at least not practical, is hoping those eight-year-old email servers won't go down again, or that the SAN island in your branch office's closet doesn't contain anything that anyone in the rest of the organization really needs.

"If you look at the dynamics of what's happening out there in the marketplace, with new ways to create and access data around the world from BlackBerry devices to RFID technology, all these devices are creating tremendous pressure on IT shops from a security standpoint to make sure the right people, and only the right people, have access to the data they need to conduct business," observes Logicalis Vice President John Iffert. "This is no time to be afraid to act. The need to simplify and make things happen is more critical now than ever."

Considering the convergence of technical, financial, and business objectives that meet at the data center of any organization, the condition of today's data center may already provide a glimpse into its future.

ABOUT LOGICALIS

Logicalis is an international provider of integrated information and communications technology (ICT) solutions and services founded on a superior breadth of knowledge and expertise in communications and collaboration, data center optimization, application development and integration, and outsourcing and managed services.

With its international headquarters in the UK, Logicalis Group employs more than 1,600 people worldwide, including highly trained service specialists who design, specify, deploy, and manage complex ICT infrastructures to meet the needs of more than 6,500 corporate and public sector customers. To achieve this, Logicalis maintains strong partnerships with technology leaders such as Cisco, HP, IBM, and Microsoft.

The Logicalis Group has annualized revenues in excess of \$1 billion, from operations in the UK, US, Germany, and Latin America, and is fast establishing itself as one of the leading IT and Communications service providers, specializing in the areas of advanced technologies and services.

The Logicalis Group is a division of Datatec Limited, a \$4.2 billion revenue business listed on the Johannesburg and London AIM Stock Exchanges (LSE/JSE: DTC).

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