

WHITE PAPER

Creating Customer-Centric Datacenters That Are Agile, Efficient, and Secure with IBM's Data Center Services

Sponsored by: IBM

Jennifer Koppy

Rob Brothers

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EXECUTIVE SUMMARY

Datacenters are powering a new and more demanding era of IT built to accommodate organizations' growing reliance on mobile devices and applications, greater use of cloud-based applications, and use of data analytics to transform existing business processes. These datacenters should be highly automated and standardized, where applications and data will be deployed and provisioned on systems and in sites based on workload demand.

As an IT executive, you must ensure that datacenter investments and operating strategies address the following key questions:

- How can I meet demands for a more agile delivery of applications with the ability to scale up/scale down capacity and yet limit excessive capital expenditures?
- How do I improve upon facilities and IT asset efficiency in my datacenter?
- How do I expand employee/customer use of mobile or enable digital imaging while avoiding becoming the next front-page data security disaster?
- How do I harness the power of my datacenter to provide better analytics over the data I currently have, and how do I take advantage of it in the future?

Selecting a datacenter services partner that can support all phases of your datacenter transformation and optimization is critical. The partner must focus on four issues: enabling customer-centric datacenters, improving datacenter agility, boosting datacenter efficiency, and ensuring the security of data in your datacenters. A superior services offering should address all of these factors, though one may be the most critical, for specific datacenter projects.

IBM's Data Center Services provide deep domain expertise in decision making across all parts of the datacenter optimization process. Its focus is on the four key qualities of a datacenter transformation: building for agility, planning for efficiency, managing for data security, and keeping the datacenter customer centric.

THE DATACENTER'S CRITICAL ROLE IN TODAY'S CHANGING BUSINESS LANDSCAPE

Whether in financial services, retail, healthcare, government, or manufacturing, organizations expect their datacenter operators to reliably support fast-growing yet highly variable transaction, content-serving, archiving, and analytics workloads on time, with no delays.

Datacenters are powering a new and more demanding era of IT built to accommodate:

- ☒ Growing reliance of employees, partners, and customers on mobile devices and applications
- ☒ Greater use of cloud-based applications and information to enhance business services and enter new markets
- ☒ Deep integration of data analytics to accelerate and transform existing business processes
- ☒ Secure use of social technologies to gather/use more information from customers as well as improve the delivery of information to prospects/customers
- ☒ Use of internal and service provider–operated datacenters (hybrid datacenters) to accommodate unpredictable demand and geographic expansion

At the core of all these developments is one major fact: Today's datacenters must be customer centric. Increasingly they are the first point of contact between your business and your customers, whether consumers or business professionals.

Factors Driving Today's Customer-Centric Datacenter Boom

In 2013, enterprises around the globe operate over 187,000 datacenters larger than 1,000 square feet in total floor space. The total floor space capacity in these datacenters is 607 million square feet. Over the next two years, enterprises will build over 19,000 new datacenters either to replace obsolete facilities or address new markets and service requirements. In this same period, enterprises will also undertake over 18,000 major rebuilds (spending greater than 20% of the cost of a new datacenter) of existing facilities to boost operational efficiency or expand capacity.

The boom in datacenter investments extends across all sectors, but the factors driving investment decisions when it comes to the pace of change and functional needs vary significantly by industry.

- ☒ In retail, datacenter operators are grappling with new application needs such as analytics or mobile services that require state-of-the-art levels of availability, redundancy, and flexibility, often in new geographies.
- ☒ In financial services, datacenter operators must still focus on long-running, mission-critical applications but are facing tighter capitalization requirements and stricter regulatory oversight, so datacenter challenges often focus more on meeting stringent limits on the capital expenses related to IT.

- ☒ In healthcare and life sciences, datacenter operators need to focus on the content delivery, high availability, and long-term data preservation challenges posed by the move to digital medical imaging and records.
- ☒ In government and energy, datacenter operators must focus on integrating large clusters of new compute resources needed to support smart energy or smart city initiatives.

Key Criteria for Developing a Successful Datacenter Strategy

The need to meet both ubiquitous and unique challenges is shaping organizations' IT and datacenter decisions. IT executives must ensure that datacenter investments and operating strategies address the following key questions:

- ☒ Improving datacenter agility: How can I scale up/scale down capacity to meet unpredictable requirements and yet limit excessive capital expenditures?
- ☒ Effective use of cloud solutions: When should I move to the cloud? Public or private? Which workloads should I move?
- ☒ Rationalization of datacenters: What is the right mix? How many should I have? Where should I locate them?
- ☒ Boosting datacenter efficiency: How do I improve upon facilities and IT asset efficiency in my datacenter?
- ☒ Improving data security without sacrificing data access: How do I expand employee/customer use of mobile or enable digital imaging while avoiding becoming the next front-page data security disaster?

At its core, the strategy must address the need for greater business/service agility, improved cost/operational efficiency, and more secure data access/retention/use. For hard-pressed IT executives, a partner — one with global reach and experience addressing thousands of real-life businesses — will be critical. This partner needs to deliver services that significantly reduce the timing and costs associated with asset migrations as well as services that dramatically improve the accuracy of datacenter capacity planning and the timing of datacenter buildouts.

This rest of this white paper discusses in more detail the types of services IT organizations can leverage to ensure that their datacenters are the key to business expansion, not a barrier to business success.

ASSESSING THE VALUE OF DATACENTER SERVICES

Datacenter services are wide ranging and encompass all phases of transformation and optimization. It's important to focus on the following qualities when evaluating any datacenter services: customer centricity, agility, efficiency, and security. A superior services offering should address all of these areas, though one may be the most important, depending upon the specific service offering.

Customer-Centric Datacenter Services: Redefining Scale and Workloads

The goal of any datacenter is to support and drive the business by being accessible 24 x 7 x 365 at peak performance and delivering services that are easy for employees, partners, and end customers to consume. In a business world built on mobile and social factors, the datacenter is the first point of contact with customers. Decision factors such as where is power, connectivity, engineering, and personnel available for the best cost now become critical concerns. The challenges of running a customer-centric datacenter include scale and changing workload profiles.

- ☒ **Scale of applications delivered** (e.g., applications that support millions of end users rather than thousands of sales personnel). Organizations must be able to quickly add compute, storage, and/or network capacity as new applications launch and gain traction. Service providers must offer asset assessment and capacity planning service solutions that take into account the changing scale of new, customer-facing applications.

- ☒ **Flexibility in shifting IT capacity across new workload types** (e.g., ingesting and serving content, organizing and preserving information, and computing and analyzing large data sets). The explosion of content within industries such as healthcare and media/entertainment is putting pressure on many organizations' existing datacenters that were optimized for transaction processing. Service providers must offer rapid application/data migration services as well as datacenter operations services that can track changing power, cooling, and network bandwidth patterns as datacenter workload profiles evolve. New technologies such as software-defined datacenters will help facilitate the ability of organizations to be more flexible and agile in meeting those needs.

Agile Datacenter Services: Keeping Up with the Changing Pace of Business

A key challenge facing all datacenter operators is the accelerated pace of change in business requirements. Businesses are demanding access to IT resources faster than ever, and they expect capacity to be delivered in hours or even minutes rather than days or weeks. Creating an agile datacenter isn't just about changing the way physical IT assets, such as servers, storage, and networking equipment, are purchased, deployed, supported, and managed. It's also about how applications are designed, upgraded, and (ultimately) superseded.

Traditionally, applications were "fixed" and ran continuously, 24 x 7 x 365; when the application load outgrew the system resources, a forklift upgrade (and extended migration plan) was needed to move to new servers and storage. Today's customer-centric applications are different. They are highly variable in nature (expanding and shrinking as loads shift) and require the ability to provision resources in minutes. This variable nature also means that they may be piloted one month, expand rapidly for six months, and then be completely replaced with a new version three months later. The provisioning of these virtual systems should feature self-service capabilities where end users can select options and create the resource themselves and eliminate it when finished.

The key IT solutions for supporting this agile application environment are cloud (private and hosted) and integrated systems (pre-integrated pools of server, storage, and network assets with a common orchestration environment). These solutions can support applications where capacity needs expand and contract as demand fluctuates.

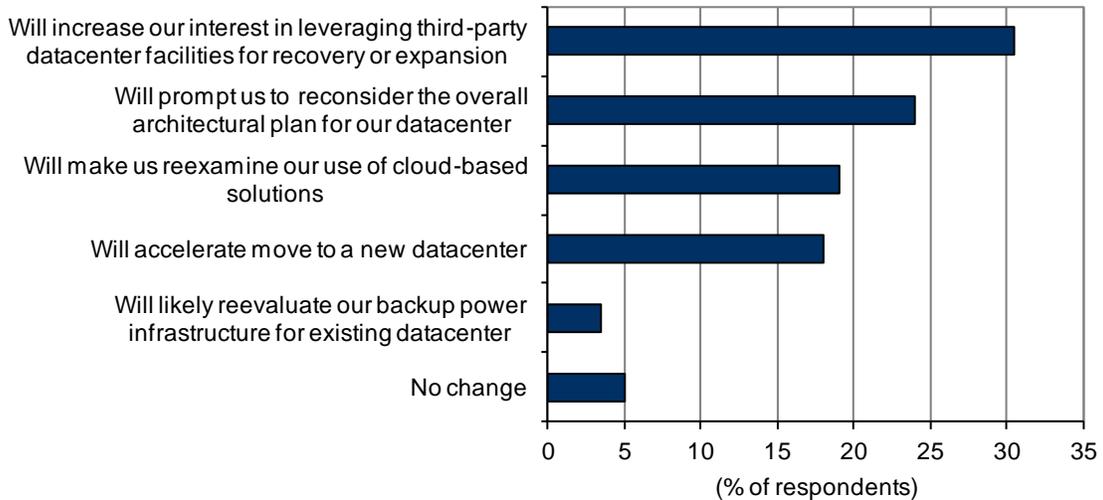
Getting the most from cloud and integrated systems, however, requires that your service provider deliver assessment, implementation, support, and managed services that allow your organization to more quickly design and deploy agile private cloud solutions. A critical part of these offerings are datacenter business continuity and disaster recovery planning services that are optimized for this new environment, not just traditional business applications.

Superstorm Sandy, which affected the northeastern United States in 2012, highlighted the importance of disaster recovery in the customer-centric datacenter environment. It forced IT executives to examine how to best mitigate risk. According to IDC's *Datacenter Survey* in 2013, 31% of respondents said that the storm increased their interest in leveraging a third party for datacenter recovery or expansion, and almost 20% said they would reexamine their use of cloud-based solutions (see Figure 1).

FIGURE 1

Impact of Storms and Natural Disasters on Datacenter Decisions

Q. *Regardless of whether you were directly affected by Hurricane Sandy, which of the following best describes how a large storm or natural disaster will impact your datacenter plans?*



n = 200

Source: IDC's *Datacenter Survey*, 2013

Efficient Datacenter Services: Maximizing Assets and Staff Resources

For all datacenter operators, improving resource efficiencies is the business goal cited most frequently by senior executives. In difficult economic times, it can overwhelm all others, but even in periods of strong business growth, getting more from existing IT resources is always a priority.

For the past decade, datacenter organizations boosted resource utilization by deploying virtualized servers and storage systems and implementing software tools to manage, monitor, and automate the virtualized environment. By doing this, enterprises increased the number of logical servers a system administrator could manage. In the world of customer-centric datacenters, scale, rapid workload shifts, and the need for business agility, business requirements are changing the underlying efficiency metrics at multiple levels:

- ☒ **IT asset use.** Cloud and integrated systems enable the rapid reallocation of IT assets to variable workloads. Your service provider needs to provide more advanced, application-specific deployment and managed services solutions as well as ongoing asset monitoring, especially in emerging areas such as power and cooling.

- ☒ **IT staff effectiveness.** The scale of IT resources needed to support customer-centric applications means that incremental increases versus exponential increases in administrator efficiency won't keep pace. Your service provider needs to provide a broader range of support and managed services to help offload repetitive, low-value tasks from IT teams. More importantly, it must also deliver services to help companies rationalize, alter, and optimize existing IT operations practices.

As the role of the datacenter shifts, the role of the datacenter team must shift as well; that is, now the team must focus on finding the most cost-effective solution to a problem or delivering on a strategy by choosing the best resource. Effective sourcing is a key CIO success measure, and service providers need to be measured not on how well they manage infrastructure but on how well they allow IT teams to act as service providers for internal IT needs.

Secure Datacenter Services: Protecting and Maximizing the Value of Your Data

With the explosion in the number of mobile users and multiple end points accessing applications, the number and scope of security threats will continue to morph and challenge IT organizations. Organizations will continue to need service providers that can help keep pace with the fast-evolving threat environment. Equally important will be the need for service providers that can help secure the data residing in and moving between datacenters. Only by protecting that data can organizations be sure to achieve maximum value from it.

The digital universe is growing exponentially and becoming increasingly interconnected. IDC estimates that in 2013, organizations will deploy over 53,168 petabytes of new storage capacity to increase transaction volumes, store and deliver digital content, and analyze large volumes of machine/sensor data. By 2016, the amount of storage capacity deployed annually will triple.

In the customer-centric datacenter, the effective collection, retention, delivery, and exploitation of data are the keys to business growth, risk avoidance, and increased customer services. Ensuring the reliability, availability, and integrity of large, fast-growing data pools is a major business challenge that requires the service provider to play a leading role as follows:

- ☒ **Manage data volume.** The sheer growth in data is a major threat to IT organizations in terms of capital expenditure and IT staff resources. Organizations need to look for a service provider that can help exploit evolving storage efficiency technologies such as flash and automated tiering as well as advanced data movement services that reduce the bandwidth costs required to provide reliable data access/replication. Additionally, the service provider should be able to harness this big data and translate it into meaningful insights.
- ☒ **Manage data variety.** More data is only part of the problem, however. Organizations are also dealing with an explosion in the types of data (e.g., inventory databases, images, video, sensor data, mobile messaging data, and customer data). Each has its own unique use, data protection, and security/privacy requirements. Organizations need to look for a datacenter service provider that can help them get a firm grasp of existing data assets, anticipate future changes in the mix of data sets, and implement a consistent, enterprisewide data management strategy.
- ☒ **Manage data value.** In the customer-centric datacenter, the reason for collecting, storing, and delivering data is to maximize its value. The easiest way to destroy that value is to lose the ability to control how the data is used. Organizations need to look for a service provider that can help them respond to regulatory requirements and customer expectations for the protection and privacy of the data they provide and use.

As discussed previously, CIOs are now tasked with running datacenters that are customer centric, meaning that they are agile, efficient, and secure. The next part of this white paper examines the services developed and delivered by IBM through its Data Center Services, a comprehensive set of services to help organizations with the planning, design, implementation, and ongoing management of their customer-centric datacenters.

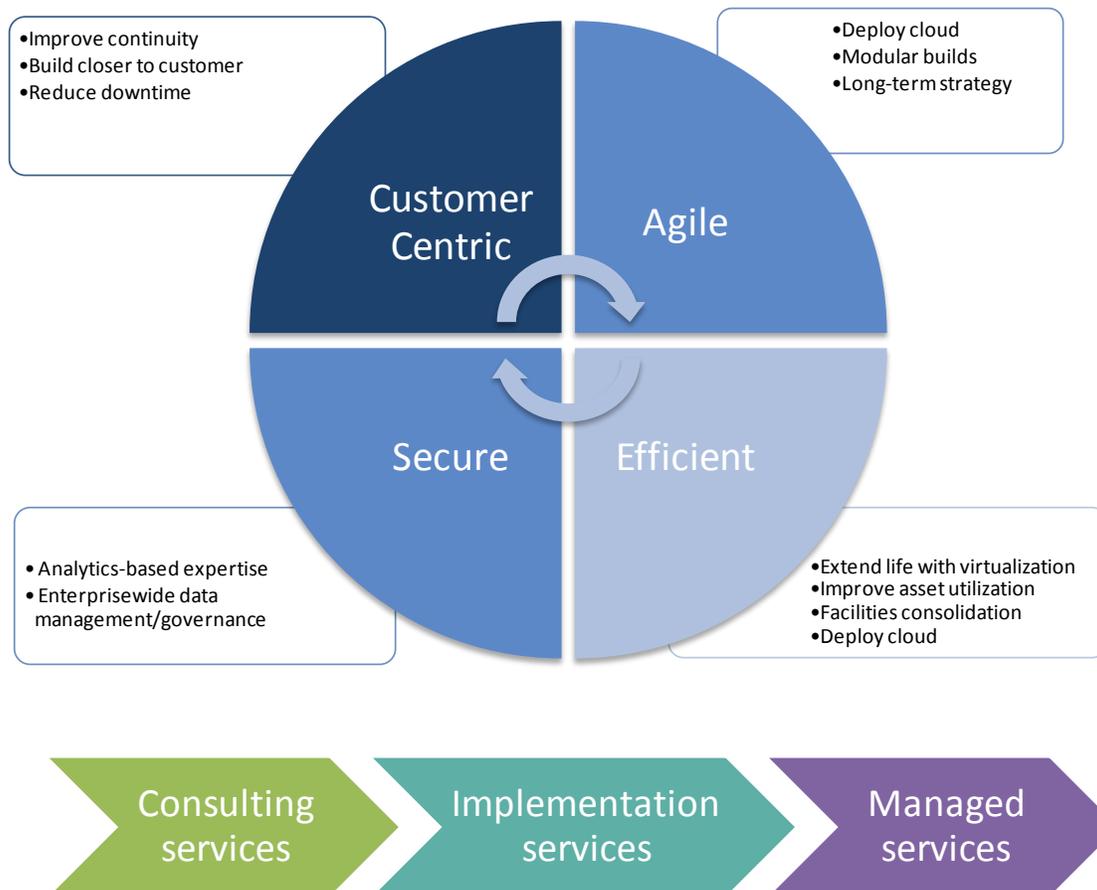
IBM DATA CENTER SERVICES: KNOWING HOW AND WHEN TO TRANSFORM

IBM is a global leader in the delivery of IT and services solutions for datacenter transformation and operations. Its customers are dealing with multiple projects at once to transform and optimize their environments. For these reasons, IBM believes that coordination of these complex projects is critical. Success is best achieved by working with a service partner that has visibility into and understanding about the multiple projects and objectives and that can orchestrate the changes in an efficient, organized manner.

IBM's Data Center Services provides deep expertise in all aspects of decision making across all aspects of datacenter optimization. Its focus on the four key qualities of a datacenter transformation: building for agility, planning for efficiency, managing for security, and keeping the datacenter customer centric (see Figure 2).

FIGURE 2

Fundamental Qualities in Datacenter Transformation



Source: IDC, 2013

Ensure a Customer-Centric Datacenter by Improving Resilience

Today, there is little to no tolerance for downtime, underscoring the importance of datacenter performance as the first point of contact with existing customers and potential customers. Datacenter downtime can result in not only lost revenue but also a negative impact on stock prices and reputation along with the inability to meet regulatory requirements, especially with government organizations.

IBM's Business Continuity and Resiliency Services offer several routes to protect the business by determining the weakest links in the datacenter, quantifying what needs to be protected and how much money should be spent protecting each application and infrastructure element. The underlying assumption is that business continuity should be a result of working smarter, not harder, to reduce the financial impact from disruptions.

The company has invested heavily in disaster recovery. IBM's Business Continuity and Resiliency Services combine extensive experience and global resources that set the services apart from those of other service organizations. Starting with workshops to discover and assess client requirements, IBM's Business Continuity and Resiliency Services range from helping with business continuity planning to getting a datacenter up and running quickly. They also offer on-demand, cloud-based, managed services for server recovery, data protection, and content management through SmartCloud Resilience Services.

Build for Agility

Building for agility can mean constructing a new datacenter facility, expanding or retrofitting a current facility, or looking to a third-party datacenter operator for new facilities in new geographies.

IBM's Data Center Services can help customers define what they need up front. Many times, customers think they need a new 10,000 square foot facility. But in reality, customers should make the decision based on their unique business requirements. Such major decisions, when approached at the outset, can make the entire project more efficient. Coupled with strategy-related services, the datacenter decisions made today can serve customers 10 years down the road.

IBM is in a unique position to help customers define what they need based on its many years of experience and lessons learned from its own buildouts and those of its customers. IBM's global reach is a differentiator, especially for customers that want to build to a standard in multiple geographic regions.

Datacenter managers also struggle with how to incorporate cloud capabilities into their agility strategy. They must integrate these new capabilities with existing technical resources, install new technology without increasing the administrative burden, and improve use of the existing infrastructure — all while improving the speed and agility of the datacenter.

IBM offers end-to-end private cloud services, including consulting, deployment, and managed services that have been utilized in thousands of client engagements. IBM's private cloud solution, IBM Private Modular Cloud, enables organizations to start up a PaaS private cloud onsite in as little as 20 days using tools and automation. This will allow provisioning and deprovisioning of middleware and hardware through a self-service portal in minutes versus weeks. Also, this can start with a small virtual environment and scale up to thousands of virtual machines quickly through a standard architecture.

Plan for Efficiency

Planning for and realizing datacenter efficiency involves extending the life of the datacenter and IT assets with server virtualization, storage automation, and middleware optimization. IBM has optimization and integration services to extend the life of existing infrastructure through improved server, networking, and storage asset utilization. In addition, IBM provides services around power and cooling to help maximize the efficiency of the physical datacenter.

IBM's Data Center Services can define strategy and provide insights into consolidation and relocation options. Aimed at optimizing existing resources, IBM provides a suite of services for rationalizing the datacenter to increase capacity through cloud strategy and design services, IT transformation strategy and design services, as well as middleware and service management software strategy and design services.

Manage for Effectiveness

Using a customer's existing resources in an efficient and effective manner is one of the core attributes of IBM's Data Center Services. Datacenter managers are taxed with supporting and managing their environment, which is changing and evolving daily. For many IT organizations, the best solution is to deploy IBM services to take over specific roles (e.g., security, network or systems management, and/or middleware) in their entirety, enabling the business to focus on its core competencies.

Finding one vendor that can act as a single point of contact for all issues helps eliminate finger pointing and can potentially resolve datacenter issues more efficiently. IBM supports infrastructure solutions that comprise IBM and non-IBM hardware and software components. IBM can also help:

- Optimize the use of IT products and services
- Simplify support to help resolve problems faster
- Provide increased IT environment availability
- Provide tools and automation to help detect issues and potentially warn a customer of possible downtime

Optimize Facilities

Designing and managing a truly efficient and agile datacenter begins with power, cooling, and floor space strategies. Power consumption and thermal control remain major datacenter expenses and can lead to downtime and data loss if not managed well. Techniques such as hot aisle/cool aisle and rack containment have been in use for years.

Addressing these realities should start with a holistic approach to understanding the facility and its future needs. Demands for IT capacity remain difficult to predict. IBM's IT Facilities Assessment, Design, and Construction Services start with addressing the current situation to identify and improve on facilities, whether a new build or a retrofit of an existing structure. IBM's thermal analysis for high-density computing optimizes investments in heating and cooling, as well as improving server performance.

Get the Most Out of the IT Staff

Now that most enterprise workloads are consolidated, the next hurdles for many IT shops are to decrease management time and resources; increase availability, cloud, big data/analytics, and mobility initiatives; and support the line of business. Some of these processes and soft issues are difficult to address from within the organization. IBM Data Center Services provide an external point of view to help the IT director both choose where to begin while maintaining balance between resource limitations, availability, and expansion. IBM provides IT managers with an opportunity to gain knowledge and improve their IT environment by working with the IBM Data Center Services team, which provides expertise, strategic insight, global experience, and analytically driven strategies.

Secure for Value

With each new technology — cloud, mobile, social media — come new IT security concerns. The rise in sophisticated attacks, combined with a worldwide shortage of IT security skills, makes partnering with a trusted, end-to-end provider of security services critical.

IBM Security Services provide a broad and comprehensive portfolio of security services that enable customers to effectively manage risk while optimizing their security investments. IBM packages deep experience and expertise into an integrated set of solutions, which span security consulting and implementation and managed security services. The IBM Security Services portfolio includes Professional, Managed, and Cloud Security Services. With Security Services from IBM, organizations can protect information assets, pursue new business initiatives securely, and prevent problems before they occur.

IBM provides security solutions for the datacenter, including Security Optimization Services, Managed Security Services, and Security Strategy and Compliance Services. IBM Security Optimization Services are based on a customer's unique business needs, risk profile, and budget and are designed to optimize controls and reduce program costs. Tools, technology, and expertise are used to secure information assets 24 x 7 x 365 with IBM Managed Security Services. IBM's Security Strategy and Compliance Services identify threats, vulnerabilities, and risks to datacenters and help mitigate them. IBM also conducts datacenter audits and provides compliance services for the datacenter.

CHALLENGES/OPPORTUNITIES FOR IBM

Challenges

- ☒ Creating the tools and or application solutions that will enable a software-defined datacenter (SDDC) is a challenge for IBM and all the other major IT providers as the next-generation datacenter technology emerges. Although most businesses are not ready for SDDC today, the higher degree of agility and flexibility it will deliver will make this an architecture to pursue in the coming years.
- ☒ With many broad, strategic, and long-term decisions, establishing connection with a lead service provider or corporate champion to spearhead IT initiatives is critical. This lead service provider can be someone within or outside IT, as long as it can include all the resources necessary — such as line-of-business manager, IT manager, vendor — to help develop the solution.

Opportunities

- ☒ IBM's Data Center Services are consumable by and affordable for midsize as well as large organizations through variable costing models and pay-as-you-go services. The ability of IBM to leverage its many lines of business and work with other vendors in the datacenter provides the company with an advantage.
- ☒ With the demands on datacenters growing and changing rapidly, businesses recognize the need to invest in their datacenters. Datacenter services that emphasize the ability to fix problems and strategize across multiple dimensions with business-focused solutions, not just by building out capacity, will resonate well with IT decision makers.
- ☒ The coordination of multiple and concurrent datacenter services is a key differentiator for IBM's Data Center Services. Most of today's datacenters are undergoing multiple projects at the same time, and the ability for the service provider to have a deep understanding of the coordination of these efforts is critical.

FINAL THOUGHTS

Today's datacenters are far different from datacenters of the past; the tools and automation available to CIOs to make better IT decisions have matured to the point where they provide an excellent holistic look at enterprise IT. Deciding how to best gather and use the information can be daunting. Many CIOs know they need help on this front, but they do not know where the best place is to begin optimization for flexibility, reliability, security, and efficiency. Many times, there are trade-offs between goals, and, unfortunately, stagnancy is not a viable option.

IBM's Data Center Services are designed to help. CIOs and datacenter managers have many options to choose from with the assistance of a reliable, proven partner. The breadth and depth of IBM's analytically backed offerings are proven not only

through measurement and analysis but also in IBM's own outsourcing and customer datacenters. For datacenter managers on the road to creating or managing these dynamic datacenters or those looking to begin, IBM is an excellent place to start.

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