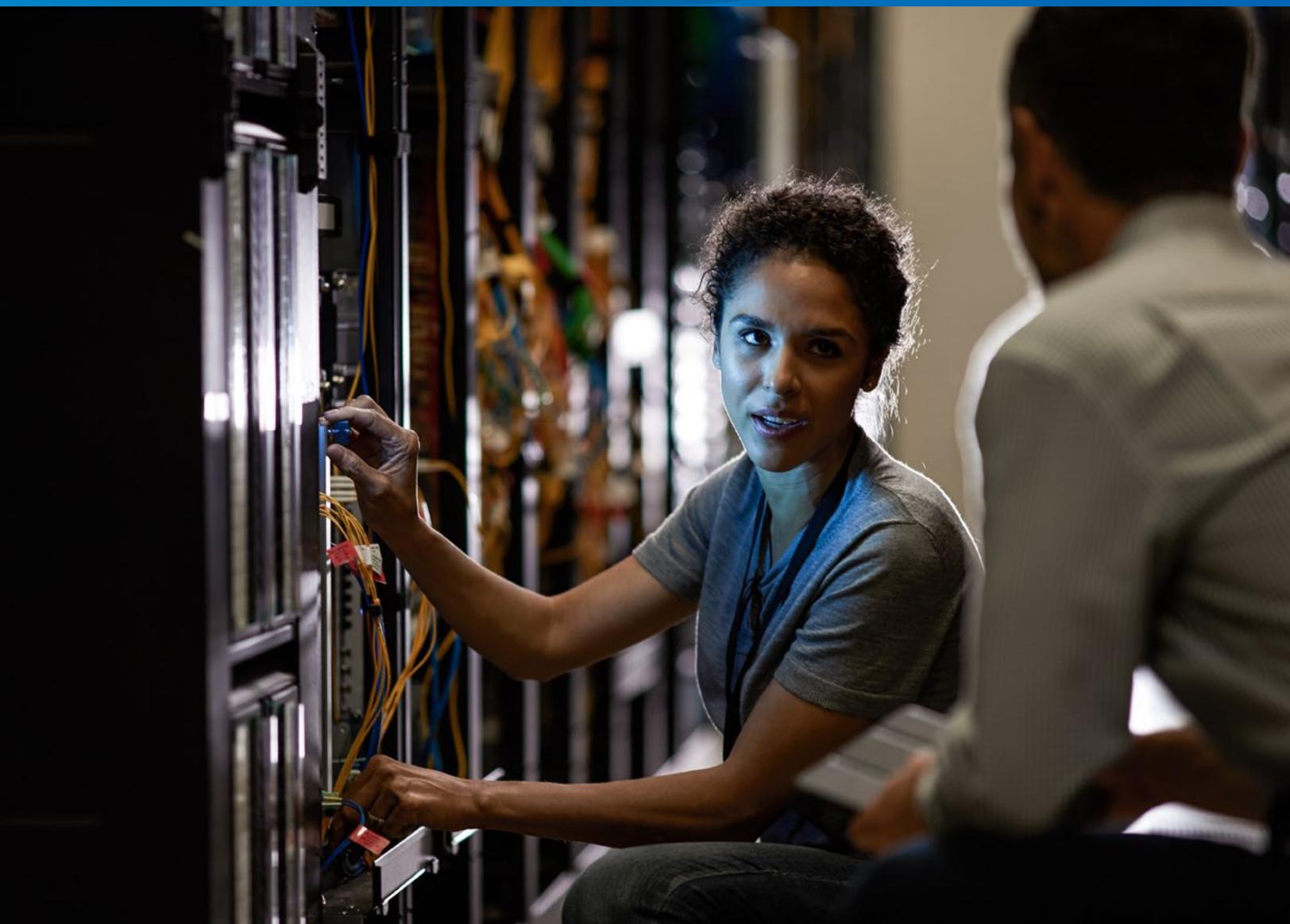


WHITE PAPER

The Fate of the Data Center

No longer the star, but still playing an important role in today's digital strategies



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Introduction

If your business invested in a computer 50 years ago, it was almost certainly a mainframe and most likely made by IBM. Back then, IBM mainframes were pretty much synonymous with computers. Later, x86 processors and client-server computing appeared on the scene as mainframe killers. Many predicted the mainframe would soon be completely extinct, but half a century later IBM is still selling a few billion dollars' worth of them every year.

Similarly, when you went shopping for books or shoes 25 years ago, you almost certainly did so in a store, very possibly a department store in a mall. Then Amazon and online shopping came along. Malls closed and major retailers such as Radio Shack, Toys 'R' Us and Sears bit the dust. But many other retailers have adapted, and, despite the vast growth of online commerce, traditional bricks-and-mortar stores still capture 90% of all retail sales.

Change is inevitable in the business world, especially in industries that are technology-led, and the consequences can be fast and fatal. But even in the face of massive market shifts, some things like mainframes and retail stores can transform and find their way to a new (if diminished) commercial presence. It's likely that enterprise data centers will follow that path: they'll no longer be the starring player in the IT world, but they'll still be able to pick up plenty of supporting roles.

When data centers were the only game in town, you had to force-fit the workload to the environment. You had no other option. Now you do. The IT world is not just more cloud-oriented, it's more hybridized and multimodal overall. Instead of force-fitting the workload to the environment, an enterprise can choose the environment that can best adapt to its workload. Public cloud or private cloud, Infrastructure as a Service or Platform as a Service (IaaS/PaaS), traditional data center or edge data center, containers, colocation—there is no shortage of options.

In this whitepaper, we'll look at the changing role of data centers and how they fit in to today's more heterogeneous digital strategies. At Navisite, we are cloud experts—Microsoft chose Navisite to be one of its elite group of Azure Expert Managed Cloud Service Providers—but our roots long pre-date the cloud. Navisite works with any organization that wants to get the right balance of resources to optimize its digital strategies.

Take advantage of this whitepaper and then let's discuss how you can leverage our expertise to help put in place the digital strategy that's right for you.

Data Centers: Yesterday and Today

Ten years ago, being in charge of a large enterprise IT operation meant providing a reliable infrastructure to run all the software used to maintain the books, process sales, track inventory and keep everyone working productively. Typically, that meant being in the real estate business and operating one or more climate-controlled facilities with raised floors and lots of server racks. The data center was in its heyday.

Lots of things have changed over the years. For starters, Software as a Service (SaaS) disrupted the market. Now much of the software that organizations run on—like email, CRM, office productivity tools, file storage, project tracking, and more—doesn't really need an infrastructure on the premises.

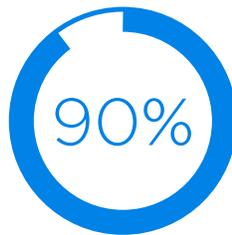
While SaaS was disrupting the software market, mobile devices, social media and the Internet of Things were making their presence felt, requiring new ways for applications to be built, deployed, maintained, and used.

Data centers initially withstood these changes by becoming more efficient. Years of investment in hypervisor-based virtualization solutions enabled data center owners to increase their server utilization. Even the seemingly dated mainframe has played a role: the new Linux-based mainframes IBM began releasing in 2015 have made it possible to replace x86 server racks with a single, refrigerator-sized device. That's sweet revenge for mainframe companies.

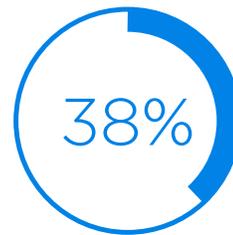
Data Center vs. Public Cloud

Now, with the rise of public cloud solutions such as Microsoft Azure, even the most efficient data center has met its match. While many organizations were initially reluctant to embrace the cloud because of security concerns, it's clear that the tide has turned, and cloud environments are now considered more secure than on-premises ones. According to RightScale's 2018 survey of nearly a thousand IT professionals:

- In 2018, adoption of the public cloud crossed the 90% mark for the first time.
- The percentage of organizations declaring that the public cloud was their top priority grew to 38%, a significant jump from 27% in the previous year.
- There has been a significant decline in security concerns among central IT teams, who typically have the most responsibility for security.
- Organizations shifting their infrastructure, applications and development activities to the cloud via IaaS or PaaS now make up the fastest growing parts of the cloud.¹



**adoption of the
public cloud by
IT professionals**



**organizations declaring
that the public cloud
was their top priority**

¹ RightScale 2018 State of the Cloud Report.

Cloud-First Strategies

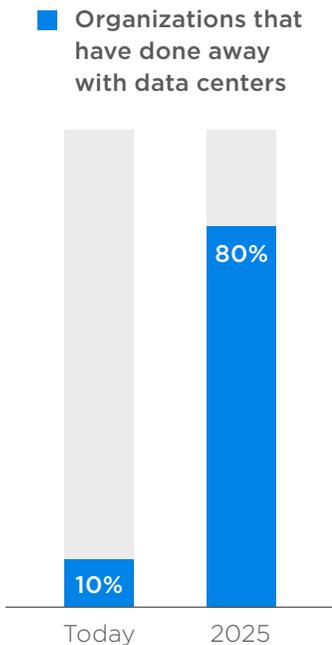
Along with the popularity of IaaS/PaaS solutions has come the growing realization that the cloud is not just replacing the data center as a new place to house your stuff. It's also a new way of operating.

Instead of investing in servers, startups now rely on "cloud-first" DevOps strategies: the initial development work underpinning these startups takes place in the cloud and that cloud-first approach persists even as the focus shifts to operations.

In well-established companies, IT can no longer justify its presence simply on the basis of supporting existing operations. It needs to be in the thick of developing and implementing new products and new business models and supporting differentiated customer experiences.

The centralization of resources in the data center, once so essential to enterprise performance, is now a barrier. Data must be free to move out of fixed internal infrastructures and get as close as possible to where it's needed.

The End of the Data Center?



All of this has led to widespread predictions of the data center's demise. No less an authority than the IT research firm Gartner declared that the traditional data center is effectively "dead." Gartner estimated that some 10% of organizations have already done away with their data centers, and within a few years (2025), that percentage will rise to 80%.²

IDC has provided a more granular depiction, but one that still points to steady decline. According to IDC, the number of data centers worldwide peaked at 8.55 million in 2015 and will drop by 15% to 7.2 million by 2021.

The likelihood that a data center will close is heavily influenced by its age and size:

AGE OF THE DATA CENTER

Older data centers are among the most vulnerable to being replaced by the cloud. Data center construction slowed dramatically after the financial crisis of 2008. Many organizations that made do over the years now have technology and infrastructure (e.g., uninterruptible power systems and static transfer switches) that are nearing or exceeding the end of their recommended service lives. Is it worth re-investing in them when the cloud beckons?

SIZE OF THE DATA CENTER

Realistically, the smaller the data center, the more likely it is that economics will dictate a move to the cloud. Because a data center must support a variety of functions in order to compete, its infrastructure must change continuously. You have to keep pumping in computing, storage and networking capacity to keep the environment running, but this is a challenge when you lack the scale to effectively amortize the investment. Cloud computing helps organizations address these concerns by offering an on-demand infrastructure with near-unlimited capacity on a pay-as-you-go basis.

² The Data Center is Dead, Gartner, https://blogs.gartner.com/david_cappuccio/2018/07/26/the-data-center-is-dead/

The End of the Data Center? (Cont.)



Right now, the issue of scalability is playing out in the world of colocation. Smaller organizations renting data center space make up the bulk of the colocation market. Now those organizations are increasingly turning to the cloud instead, producing softness in the retail colocation market.³

You can also see the scalability factor at work in one of the largest IT modernization efforts now underway: the U.S. government's Federal Data Center Consolidation Initiative. According to the Office of Management and Budget, the government has closed about 1,900 data centers since 2010, saving almost \$1 billion. But a disproportionate number of the data centers that have closed are in one agency (the Department of Agriculture), leading some to suspect that many of them are quite small, and may be little more than server closets.⁴

The new look of the data center landscape is also evident in the growth of super-sized, hyperscale data centers. Cisco estimates that there will be 628 hyperscale data centers worldwide by 2021, compared to 338 in 2016. While hyperscale data centers housed less than a third of all data center servers in 2016, by 2021 they will house over half.⁵

Maintaining Legacy Apps

While enterprise-owned and operated data centers are not growing, they are not going to disappear completely anytime soon. In many cases, it simply makes more sense to leave an application right where it is (i.e., in a data center). It can be costly and/or ineffective to refactor or rearchitect a legacy application for the cloud. Security, jurisdiction and/or regulatory compliance issues may also be deciding factors.

Many of the applications that were the easiest to migrate to the cloud have probably already gone there, leaving organizations to wrestle with the trade-offs of migrating some of the oldest and most challenging code.

That puts many organizations between a rock and a hard place: their data centers are shrinking as they rely more on the cloud and other options, but what remains on premises is more vital and mission-critical than ever.

³ <https://www.datacenterknowledge.com/archives/2017/01/19/how-cloud-is-changing-the-colocation-data-center-market>

⁴ <https://fcw.com/articles/2017/09/05/data-center-count-problem.aspx>

⁵ <https://www.zdnet.com/article/cloud-computing-will-virtually-replace-traditional-data-centers-within-three-years/>

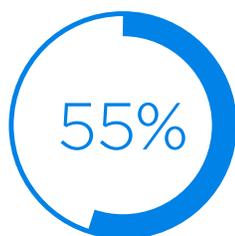
Best-of-Breed Digital Strategies

Even when the circumstances are right for pulling an application out of an on-premises data center, it's not simply a matter of moving it to the cloud. Organizations now have options—public cloud or private cloud, IaaS/PaaS, traditional data center or edge data center, containers or colocation.

For example, a company might use the public cloud to enable self-service access to computing resources, while it runs other business-critical applications in an onsite data center for proprietary reasons or simply because the economics are better.

Other options include using composable infrastructure (fully managed on-premises equipment licensed on a usage basis) or going serverless (combining transactions from public and private sources).

The availability of these options means that digital strategies are no longer driven by how to make new workloads fit into an existing on-premises infrastructure, but by how to best support each application's workload and its associated data to reduce latency, improve customer experience, enhance corporate reputation, deliver better service continuity, achieve geodiversity, improve compliance, meet mandated data location requirements—the list goes on.



growth of
“The True Private
Cloud” in 2017

According to the research firm Wikibon, many people have a backwards view of what's happening in IT today. Data isn't moving to the cloud; instead, the cloud experience is moving to the data: “All data won't end up in one public cloud, but rather a multitude of distributed locations, each architected to compute local data according to the needs of local tasks.”

Wikibon calls this kind of configuration “the True Private Cloud” and estimates that it grew 55 percent in 2017 to \$20.3 billion, outstripping the growth rate of the public infrastructure-as-a-service sector. It estimates that growth will continue at an annual rate of nearly 30 percent for the next decade.⁶

The Uber Example

The ubiquitous mobile ride-sharing company Uber is a good example of a business that is making use of both cloud and on-premises environments. Uber is rapidly growing in locations where it already has a presence and is also expanding globally (it's in almost 80 countries).

To get the IT scale needed to support this growth, Uber uses both cloud services and commercial data center providers to host its data. For Uber, this is not on-premises vs cloud, it's taking advantage of both.

According to Dean Nelson, Uber's executive in charge of infrastructure, the cloud is critical to scalability and agility. Relying on the global scale of a cloud provider (Uber does not disclose which one[s]) makes it possible to quickly expand into new regions or rapidly increase capacity in existing ones.

But when a company gets to the scale of an Uber, it also makes financial sense for it to deploy its own data centers. In Uber's case, that means leasing facilities from data center providers, which the company then fills with its own computing equipment.

⁶ <https://wikibon.com/wikibon-2018-true-private-cloud-forecast-market-shares/>

The Uber Example (Cont.)

Because of that cost advantage, today most Uber data center workloads are hosted in the company's own data centers in the US, but the company is looking to expand its dedicated infrastructure to Latin America, Europe, the Middle East, North Africa, and Asia-Pacific.

Its goal is to get to dozens of regions—three data centers per region—and hundreds of availability zones (single sites), some of them edge sites far away from core regions, deployed to improve application performance for local users.⁷



Strengthening the Hybrid Option

The move to more multimodal, heterogeneous digital strategies is also reflected in the strengthening of hybrid cloud options. Today, according to Forrester Research, more than 65% of companies implement a hybrid cloud environment, and that percentage is only expected to climb.

Microsoft Azure recognized this from the start, and focused on delivering consistency and reliability across application development, management, security, data, and identity tools and environments. This is one of the reasons it is the fastest-growing public cloud platform in recent years.

With Azure Stack, Microsoft has taken another major step forward in addressing organizational needs for seamless workload portability.

Azure Stack is an extension of Azure that can work in environments outside the Azure public cloud. Now, organizations can develop applications using Azure services and then deploy them to the location that meets the right business, technical, and regulatory requirements—in the Azure cloud, on premises, and/or within a colocation partner's data center.

⁷ <https://www.datacenterknowledge.com/uber/want-build-data-centers-uber-follow-simple-recipe>

Conclusion

When it comes to getting the right digital strategy, different companies have different needs, and will use different data center models to meet them. A virtualized on-premises data center has value, as does SaaS, IaaS or colocation. The trick is to use the best model for the task at hand.

To make the right decisions, it's important to avoid getting trapped a single technology silo. Just as mainframes were once the only option in IT and retail stores were once the only place to go shopping, there was once no real alternative to the enterprise-operated data center. Now there are multiple options, and the possible combinations in which they can be used are almost exponential.

Today's organizations are able to take advantage of an ecosystem of data environments and partners. What they need is the expertise to fully benefit from all of these options.

As a provider of managed cloud services with extensive experience in public cloud, private cloud, hybrid and multi-cloud implementations, Navisite stands ready to provide the critical support needed to help you make the right decisions about your cloud strategy.

Navisite has been a Microsoft Gold-certified partner for more than 17 years. Microsoft has selected Navisite as one of just 50 providers to be included in its highly prestigious group of Azure Expert Managed Service Providers (MSPs), and our company is also one of Microsoft's four Azure Centers of Excellence. Our extensive experience helping with complex digital strategies is a key reason for our designation as an Expert MSP.

To learn more about the services offered by Navisite, visit our [Azure Management Services page](#), call us at (888) 298-8222, or contact us for further information.