

Flexibility First — The SDDC and Modern Data Center Strategies

Introduction

The pressure to digitally transform virtually every aspect of the business is disrupting companies in every industry. Strategies vary broadly, though the aim of any digital transformation initiative is to leverage technology to build new business models, processes, and/or systems that bring connectivity and visibility into business operations.

In order to drive sustainable change, business leaders need to work closely with IT executives to develop the environment, resources, and solutions needed to support a truly digital business. They also need to make smart choices when it comes to which technologies are deployed.

A key component of the modern digital enterprise is the Software-Defined Data Center (SDDC), which refers to a “choose your cloud” data center where all infrastructure is virtualized and delivered as a service.

In this environment, management of the data center is fully automated by software and maintained through intelligent software systems. The use of open standard programming languages allows organizations to leverage third-party automation applications to streamline data center operations.

The SDDC is emerging as not just a “nice-to-have” technology, but as an enabler of the modern digital business.

This whitepaper examines how the SDDC can address key challenges that organizations face as they move forward with digital transformation and help enterprises run far more efficient IT environments.

A host of challenges

As organizations forge ahead with digital transformation, they need to address a number of business and technology challenges.

One is the rise in IT infrastructure complexity, largely due to the proliferation of multicloud environments. Organizations oftentimes deploy multiple tools and applications to manage a growing number of platforms and components, which of course adds complexity and demands on IT staff. This is especially true for global enterprises with multinational operations.

Another challenge is operational risk and downtime. No company can afford a lengthy period of downtime for critical business systems. Even a data center outage lasting a brief period can lead to negative results such as high costs, especially for businesses with revenue models depending heavily on the data center for customer service delivery.

Downtime can also result in a large decrease in employee productivity because workers don't have access to the resources they need; a disruption to the business that can lead to customer dissatisfaction and loss of loyalty, and loss of revenue from the inability to conduct transactions with clients.

Even if systems and networks are not fully down, companies might have to deal with degraded service. This can result in slow response times for customer inquiries, erratic performance of applications and websites, and other issues. The upshot can be irritated customers who end up taking their business elsewhere.

Companies today also have to deal with the challenge of keeping up with the fast pace of business. Whether it's delivering new products or services, addressing customer feedback, creating new applications, getting the right data to the right end users, or some other factor, speed is vital in today's business environment. This is why models such as DevOps have become more popular.

Yet another challenge is having insufficient visibility into the network, workloads, and applications. Along with rising complexity in IT infrastructures comes the difficulty of having enough visibility to identify risks such as unauthorized access or data misuse. The rise of mobile devices and apps, as well as the growth of the Internet of Things (IoT) and edge computing, have made visibility all the more necessary and challenging.

Then there's the challenge of navigating an increasing number of regulatory compliance requirements and audits. New data privacy regulations have been passed, including the General Data Protection Regulation (GDPR) in the European Union that took effect in May 2018, and the California Consumer Privacy Act of 2018 (CCPA) that goes into effect on January 1, 2020.

These laws put increasing pressure on organizations to safeguard data such as customer records, but this becomes more difficult when information is stored in multiple locations and cloud services.

In addition, data centers today must be able to function without errors or downtime, to support constant service delivery to end users, business partners, and customers. The proliferation of multicloud models requires new approaches to security and regulatory compliance.

Workloads run and data flows everywhere: in the cloud, on-premises, on mobile devices, at the edge, etc. And in many cases, workloads and data are ineffectively governed by inconsistent policies. Fortunately, there is a solution to these and other challenges, and it's the SDDC.

The SDDC and its benefits

A Software-Defined Data Center (SDDC), also referred to as a virtual data center, extends the concept of virtualization by abstracting, pooling, and automating all resources and services within a data center. It enables the delivery of IT as a Service (ITaaS), much like the cloud enables the provision of Software as a Service (SaaS) or Infrastructure as a Service (IaaS).

Within an SDDC, all elements of the infrastructure, including networking, storage, monitoring, and management, are virtualized. The core components of the SDDC include Software-Defined Networking (SD networking or SDN); Software-Defined Storage (SD storage or SDS); and software for management, monitoring, automation, and orchestration.

SDN is an approach to network management that allows dynamic, programmatically efficient network configuration so as to improve network performance and monitoring. This makes corporate network management more like cloud services than traditional network management.

SDN enables networks to be more flexible and easier to maintain, in part by centralizing network intelligence in a single component and disassociating the forwarding process of network packets from the routing process.

SDS is storage software for policy-based provisioning and management of data storage that's independent of the underlying hardware. It typically includes a form of storage virtualization to separate the hardware from the software that manages it. SDS software might also provide policy management for features such as data deduplication, replication, thin provisioning, and backup.

Management, monitoring, automation, and orchestration software enable administrators to provision, control, and manage all of the SDDC components.

Organizations can see a number of benefits by deploying an SDDC. One is a reduction in manual processes and the time savings that can result from this. Because the SDDC enables organizations to configure, monitor, and maintain data center components from a centralized interface, they do not need to physically update hardware as in the past.

Manual tasks are replaced by automation, and managers don't need to spend nearly as much time on such tasks, freeing them up to take on other responsibilities.

Another benefit is reduced management overhead. Because the SDDC allows enterprises to pool data center resources and provision and deploy them as needed, they can realize lower operating costs and refocus IT staff on more strategic priorities.

With an SDDC, companies have the ability to consume network resources as services, much as they do with the cloud. There's greater efficiency and agility, which helps organizations become the digital businesses they need to be in a fast-paced environment that thrives on speed. The flexibility and elasticity of resources across on-premises and cloud-based data centers enables easier workload migration across the environment.

Another advantage of the SDDC is that it provides consistent visibility, security, and control across platforms, as well as common policy, governance, and abstraction across heterogeneous environments. This is extremely important for global enterprises that have diverse and complex IT infrastructures.

Finally, the SDDC supports business continuity and disaster recovery strategies. These capabilities can be provided as cloud-based services within the SDDC, enabling companies to protect and recover applications and data without the need for a dedicated secondary site.

Through these benefits and capabilities, SDDC technology enables organizations to address the many challenges they face, including the rise in IT infrastructure complexity; operational risk and downtime; keeping up with the fast pace of business; having insufficient visibility into networks, workloads, and applications; increasing regulatory compliance requirements and audits; and the need for data centers to function without errors or downtime.

Does your organization need an SDDC?

To help determine if it makes sense to deploy an SDDC, organizations need to ask themselves a series of questions:



Are our data center resources responding fast enough for application owners? If data center networks, servers, and storage systems are not adequately responsive, worker productivity and customer service levels could decline.



Is our data center scalable and secure enough for our applications? Scalability is a must for growing companies, or any business that sees a lot of fluctuation in demand. Security is even more important. If the data center is not sufficiently secure, the organization is exposed to all sorts of threats.



Does our IT team have good insight into east-west data center traffic? Having visibility into the movement of data packets from server to server within the data center is vital for ensuring high performance.



Does the team have a complete understanding of all network traffic flows and security topologies? Failure to have this kind of understanding can result in inefficient use of networks, poor service quality, and security weaknesses.



Is our organization appropriately leveraging cloud or multicloud resources? Just because a company deploys cloud services doesn't mean users are getting the most out of them. Companies need to have good visibility into how these resources are being used and take corrective action as needed.



Are networking and security configurations consistent across all environments? Consistency is important. All it takes is one weak link to bring the entire enterprise to a grinding halt.



Are network and security provisioning automated? Automation might be a popular buzzword today, but there's no denying that automating processes is a major priority for organizations. Eliminating manual processes for provisioning can save time and reduce errors.

SDDC solutions bring transformation to life

SDDC offerings from companies such as Insight can help organizations make their digital transformation a reality.

Insight's SDDC service offerings include assessment and application dependency mapping, solution positioning, proof of concept, pilot/limited production deployment, and full production deployment.

We partner with leading SDDC vendors such as Cisco and VMware to create comprehensive solutions.

For example, Insight helps organizations deploy and implement Cisco® Application Centric Infrastructure (ACI) and Cisco Tetration®. ACI is an SDN platform that delivers a network policy automation model. It enables software control of the network and how it operates, so that software can automate and change the network based on current conditions.

ACI uses the concept of endpoints and policies, with endpoints being the virtual machines or traditional servers. Policies can be defined around which endpoint groups can communicate with whom. The platform uses a centralized controller called the Application Policy Infrastructure Controller (APIC), which creates application policies for the data center infrastructure.

Cisco Tetration is a hybrid cloud workload protection platform designed to secure compute instances in both on-premises data centers and the public cloud. Compute instances might be virtual machines, bare-metal servers, or containers. The platform uses machine learning, behavior analysis, and algorithmic approaches to offer a holistic workload protection strategy. It enables organizations to gain complete visibility into application components, communications, and dependencies in the data center.

Insight also helps organizations deploy and implement VMware® NSX®, a network virtualization platform for the SDDC that delivers an operational model of a virtual machine for entire networks. With the platform, network functions including switching, routing, and firewalls are built into a hypervisor and distributed across the environment. This basically creates a network hypervisor that acts as a platform for virtual networks and services. Virtual networks are programmatically provisioned and managed independently of any underlying hardware. NSX reproduces an entire network model in software, allowing organizations to create and provision any network topology within seconds.

Success story

Large energy corporation modernizes with SDDC solutions

A Fortune 150 company and one of the largest energy companies in the U.S. had aging network systems that were frequently failing, draining IT resources, and incurring unnecessary costs. New compliance requirements made it impossible to continue in this fashion without also facing monetary fines and causing disruptions of power delivery for large segments of the U.S.

Insight was asked to help the company plan and execute a transition to an SDDC with SDN and other virtualized components. Our work included:

- Assessing their data center facilities and networks, which encompassed more than 17,000 devices
- Designing and implementing segmentation without impacting production
- Deploying a Cisco APIC using programmability to accelerate migration into new data centers
- Increasing endpoint visibility by leveraging tools within Cisco ACI

Thanks to our efforts, the company now has a reliable, secure, and high-performance environment that can be easily managed through a single pane of glass. IT operations now take less time and require less money.

Other benefits:



More predictable costs and reduced CapEx



Increased visibility with consistent policies throughout the environment



Faster provisioning and migration using automation



Fewer network incidents and greater network stability

Transforming your business takes Insight

It's possible to undergo digital transformation without leveraging software-defined data centers — but it's a lot more difficult and not as likely to be successful.

As noted, organizations are facing significant challenges. The SDDC is clearly a key to creating a modern data center: One that works in harmony with cloud services to deliver the kind of speed, flexibility, scalability, and security organizations need to be truly digital businesses.

Nearly all organizations can benefit from an SDDC, because it can simplify data center resource provisioning, provide increased security and easier management, and enable consistent operations across platforms.

By first conducting a thorough assessment of their current IT environment, then determining how to deploy the right SDDC solutions, enterprises can enjoy an optimal transformation and excel in this emerging digital marketplace.

Transforming your business takes Insight

It's nearly as critical to have the right partner and services provider strategy as it is to have the right transformation strategy.

Adopt an SDDC model at the pace and in the ways that make the most business sense for your organization. Let Insight help you find optimal solutions, run Proofs of Concept (PoCs) and limited deployments, and fully implement what works best.

Discuss your SDDC goals with one of our experts today:

solutions.insight.com/contact-us

Explore more resources about software-defined technologies and approaches for finding new efficiencies.

- Video: "Software-Defined — An introduction"
- Video: "Traditional WAN vs. SD-WAN — Why SD-WAN is considered the future"
- Whitepaper: "The Truth About SD-WAN and the Business Transformation Journey"
- Whitepaper: "Automation: The Key to a Successful Hybrid Cloud"

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Driving innovation with digital transformation

At Insight, we help clients enable innovation with an approach that spans people, processes, and technologies. We believe the best path to digital transformation is integrative, responsive, and proactively aligned to industry demands. Our client-focused approach delivers best-fit solutions across a scope of services, including the modern workplace, modern applications, modern infrastructures, the intelligent edge, cybersecurity, and data and AI.

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