Software-Defined Infrastructure:

Solving the Problems of Cloud 1.0

In much the same way the Industrial Revolution fundamentally changed industry forever, the transition to digital business will also be a driving force for far-reaching and comprehensive changes to how organizations operate. Digital businesses will require IT platforms and solutions that can support the demands of this new paradigm, and software-defined infrastructure (SDI) will be essential.

Content

SDI can be described as a software-defined architecture that leverages logical infrastructure services that are abstracted from, as opposed to integrated with, the underlying hardware. This includes compute, storage, networking and security resources that previously would be purchased, installed and integrated separately but with SDI are all part of an integrated software solution. VMware has found that SDI delivers a 40% lower cost structure compared with hardware-defined infrastructure due to faster deployment times, faster provisioning and a reduced IT footprint that leverages built-in automation controls.

SDI is designed to allow IT teams to move past the limitations and problems that have been identified during the Cloud 1.0 phase of IT infrastructure modernization and enables an IT team to utilize any resources, both on premises and cloud-based, to deliver solutions. The result is an unprecedented level of agility across all services, not just within specific cloud environments. With the abstraction functionality, the time to build solutions is greatly reduced, as resources are deployed via a single, standardized solution package. Further, in the case of VMware clients

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utilizing VMware's Cloud Foundation SDI offering, one of the most vexing problems of Cloud 1.0 experiences the inability to truly utilize legacy IT resources in new applications and services is resolved. Rather than ostracizing on-premises resources and information, they are fully integrated, as all environments use the same VMware tools that enterprises already use for on-premises environments today. In addition, enterprises now have a "single pane of glass" for management across on-premises infrastructure, private cloud and public cloud services. The IT team can optimize utilization and ensure that operations run at the speed of business.

Put more simply, SDI delivers the comprehensive, simplified and operationally optimized platform that mitigates many of the drawbacks of first-generation digital business solutions.

Limitations IT Discovered in Cloud 1.0

When the rapid growth in cloud services started, the perception was this new architectural approach would provide all the answers to IT economics, agile operations, and scaling and capacity issues. However, in practice, many real and thorny technical problems arose that made it clear that first-generation cloud solutions were not a panacea. The most common technical problems included:

1. **One-way migration** – Moving workloads into the cloud provided obvious benefits, but organizations that wanted to either move workloads back from the cloud or to other cloud options experienced problems. In some cases, proprietary or single-sourced elements of the cloud stack made migration difficult, or the costs of moving the data or application from the existing cloud service provider was prohibitive. This negatively impacted agility and reduced the options available to IT.

2. **Cloud services becoming "islands"** – Interoperability between different cloud services and on-premises infrastructure has long been an issue. Though improved of late, many cloud services can become silos that increase complexity and limit agility. True workload mobility, a critical requirement for supporting a digital business, is lost.

3. **Cost surprises** – For some cloud services, it is necessary to precisely predict usage levels (instances, storage, etc.) so usage does not run outside of contracted levels. If that happens, there are often cost penalties. Cost surprises are never positive, and when they continue for multiple months and in an unpredictable manner, it can be very frustrating. In addition, some cloud service providers make it costly or very labor-intensive to exit from their services, which is another unbudgeted cost.

4. **Cloud service providers focused on their offerings, not customer issues** – As many traditional IT vendors learned years ago, the most important part of the customer relationship is to understand customer problems first and then identify how your solution provides value. Many cloud service providers have yet to realize this. That forces the IT team or business unit leaders to figure out how and if the cloud service provides value, and without a lot of experience, poor choices are common.

SDI Provides Answers for Key Technical Shortcomings in Cloud 1.0

In the past three to five years, IT organizations have gained substantial experience in the use and management of cloud services. IT teams must move beyond the limitations of Cloud 1.0 to scale infrastructure and better support their organization's transition to becoming a digital business. Remediating these issues is where SDI truly shines.

Perhaps the single largest and most important strategic benefit of SDI is that it delivers on the critical need for a single point of control for compute, storage, security and network resources across all infrastructure. A true digital infrastructure will be driven by a single view of all resources, not just those in one platform within the environment. With a single point of management, the IT team can leverage existing on-premises infrastructure along with the latest cloud services as a single resource pool. For example, a single point of management delivers a holistic perspective to support compliance and audit demands, while providing a simplified model for deploying layers of security to protect the organization. Another benefit is the ability to cohesively manage storage across environments, which ensures data management and protection and enables a single solution for data protection, backup and disaster recovery.

SDI also mitigates the problem of silos that often exist among legacy, public cloud and hybrid cloud infrastructure. All three of these environments can now be viewed holistically and utilized effectively. This dramatically simplifies daily operations and enables automation of manual management tasks. And from a budget perspective, it is now possible to holistically optimize all infrastructure, not just pieces of it.

A single, comprehensive management capability makes true workload mobility a reality. This is the goal of many CIOs and senior IT professionals, as it delivers the cost reduction and optimization that is now a strategic necessity as IT is mandated to do more with fewer resources. This capability also makes it possible to deliver scalability and agility without sacrificing service levels.

Getting to SDI Faster: Managed Service Providers Deliver a Jump-Start

Speed is essential for digital business success, and IT must quickly deliver the next-generation systems that enable digital business agility and innovation. For this reason, making the transition to SDI to speed up delivery of new apps and systems is Job 1. Managed service providers help speed up the migration process dramatically. There are three key benefits of partnering with an MSP:

1. **Access to state-of-the-art skills** – One of the realities every IT organization faces is difficulty gaining access to the latest skills and competencies. Using an MSP, whose business depends on the latest technologies and has trained staff with a vast amount of experience, internal IT organizations can leverage the skills needed to deploy new solutions faster. In addition, MSPs have the experience gained from multiple engagements to know which technologies work best for a given project. Enterprises can use this experience to avoid common pitfalls.

2. **Specific expertise that IT teams may not want to invest in** – Some skills or tasks are more effectively "bought" than "built in-house." For example, one-time or task-specific skills that are used only for a platform migration and not reusable are better sourced from an MSP. The same is true for project design skills that may be useful for only one specific project but not worth building in-house.

3. **MSP experience that drives a better design and deployment strategy** – By virtue of having experience across many engagements, MSPs are going to better understand issues that may occur during a project and have real knowledge about what the final expectations should be. Simply put, an MSP has the knowledge and experience to deliver a clear vision of the "art of the possible," ensuring a successful project. This eliminates the problem of over-promising and under-delivering.

How CenturyLink Delivers for You

CenturyLink is the second-largest U.S. communications partner for global enterprises, with customers in more than 60 countries. CenturyLink partners with VMware, a leader in SDI, to provide a complete solution, from design to operations. This helps companies to migrate to a true Software-Defined Infrastructure faster without the need to change your platform, tools or the need to learn a new, proprietary

environment. CenturyLink has been managing VMware environments for clients for over a decade, and currently operates on the largest VMware public cloud as well as a large installed base of private cloud environments that help run key enterprise applications.

Key Takeaways

The cloud is truly transformative. However, initial implementations of cloud have had very real limitations and drawbacks that need to be remediated going forward. Digital businesses require infrastructure that works across legacy, public cloud and hybrid cloud in a seamless fashion. Using cloud services that create new silos or require new knowledge or tools is completely counterproductive.

Delivering management, security and interoperability across all infrastructure is why SDI will be the primary infrastructure approach of the future. Describing all resources across compute, storage, security and networking as software elements that can be

combined dynamically is the best option for most enterprises, as it eliminates the problems found in Cloud 1.0. As one of a handful of vCloud-certified partners, CenturyLink is uniquely positioned to help you successfully negotiate the road to SDI and would love to have a conversation on how to accelerate your journey in the digital world.

Take the Next Step

To find out more about CenturyLink Cloud® Solutions, visit https://www.centurylink.com/business/hybrid-it-cloud.html. Or drop us a line at info@centurylink.com to request a no-charge, 30-minute consultation with a CenturyLink expert and find out how managed services can help you.