Extensibility to Future and Legacy Technology

CONNECTING MULTIPLE CLOUDS TO LONG-STANDING IT INFRASTRUCTURE

SECTION ONE

Bridging the Old with the New | Tensions from Legacy to Cloud

ENTERPRISE IT MUST INTEGRATE MULTIPLE EXISTING SYSTEMS WITH NEWER CLOUD SERVICES.

"With new on-premises public cloud stacks entering the picture, there is a distinct possibility of a significant surge in private cloud deployments over the next five years."

- Kuba Stolarski, research director, Infrastructure Systems, Platforms and Technologies at IDC

As a result of rapid growth in digital transformation initiatives, enterprises and agencies now have infrastructure that spans both private and public cloud environments along with legacy technology in their data centers. This explosion of multiple, heterogeneous infrastructure environments is due to at least one or more of the following reasons:

Public Cloud

Agile developers and individuals from lines of business have been self-provisioning resources, sometimes outside of central IT control. They use public cloud providers for many of their new initiatives while much of the existing workloads for core enterprise business applications run on premises in the data center. As the main consumers of new infrastructure resources, they want to meet new demand for digital services that differentiate their business and go to market faster without the overhead of complicated IT processes.

Expansion

Infrastructure and resources are inherited through mergers and acquisitions, as are the processes used to manage them. This leads to an inevitable mix of different vendors and technologies under the responsibility of central IT. The challenge is to figure out what to consolidate and what to migrate to new environments.

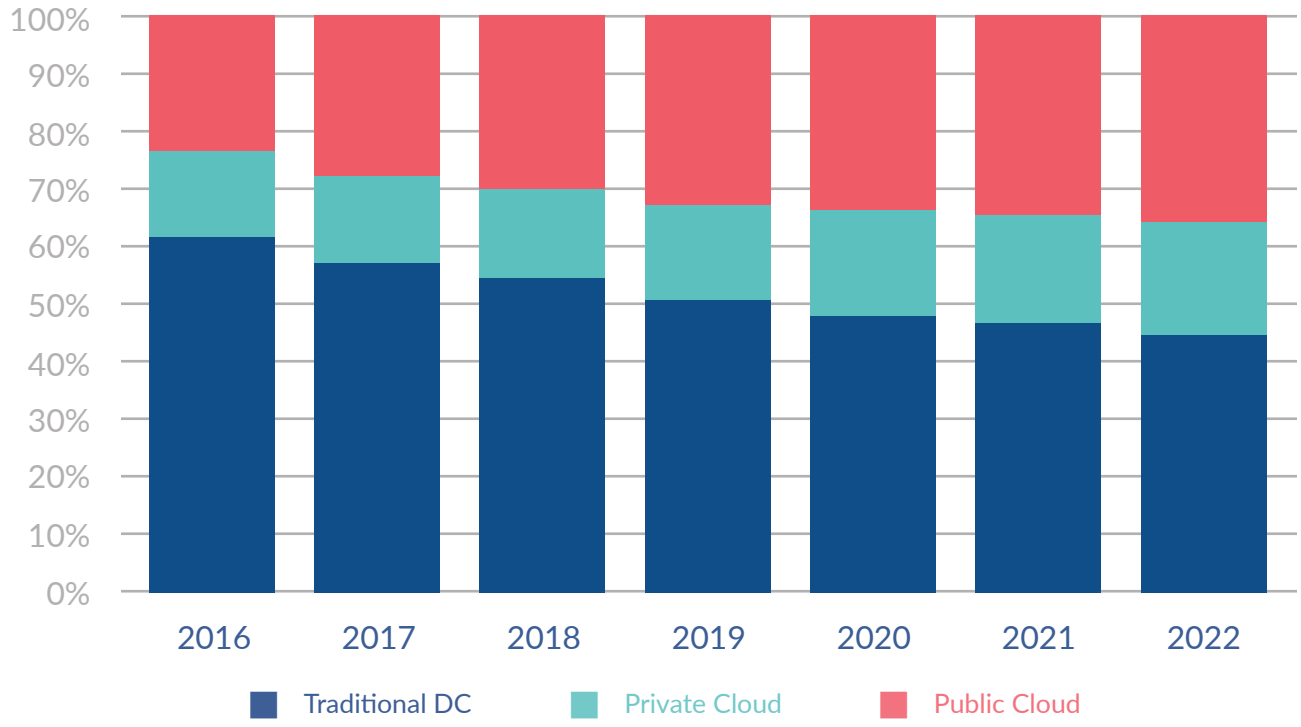
Security

Evolving backup and disaster recovery scenarios have dramatically changed for where and what gets stored as well as a plethora of highly availability scenarios for resilience. All these approaches contribute to more infrastructure sprawl and complexity. Data security and compliance standards can force some public cloud initiatives to come back into the data center for more direct control.

For most enterprises, there's one or more migration projects going on from legacy, tiered infrastructure to hyperconverged infrastructure and on to private or public cloud environments. A few years ago, many IT pundits would have assumed a much greater transition to the cloud by now but that's not the case.

The reality is that modern digital initiatives involve the coordination of multiple existing systems, and most likely will require the use of future systems yet to be deployed. As shown in Figure 1, according to IDC, nearly half of IT infrastructure will remain within traditional data centers in 2022. Enterprises must have the ability to connect to both legacy and state-of-the-art technologies.

Figure 1. Worldwide Cloud IT Infrastructure Market Forecast by Deployment Type, 2016–2022 (shares based on values)

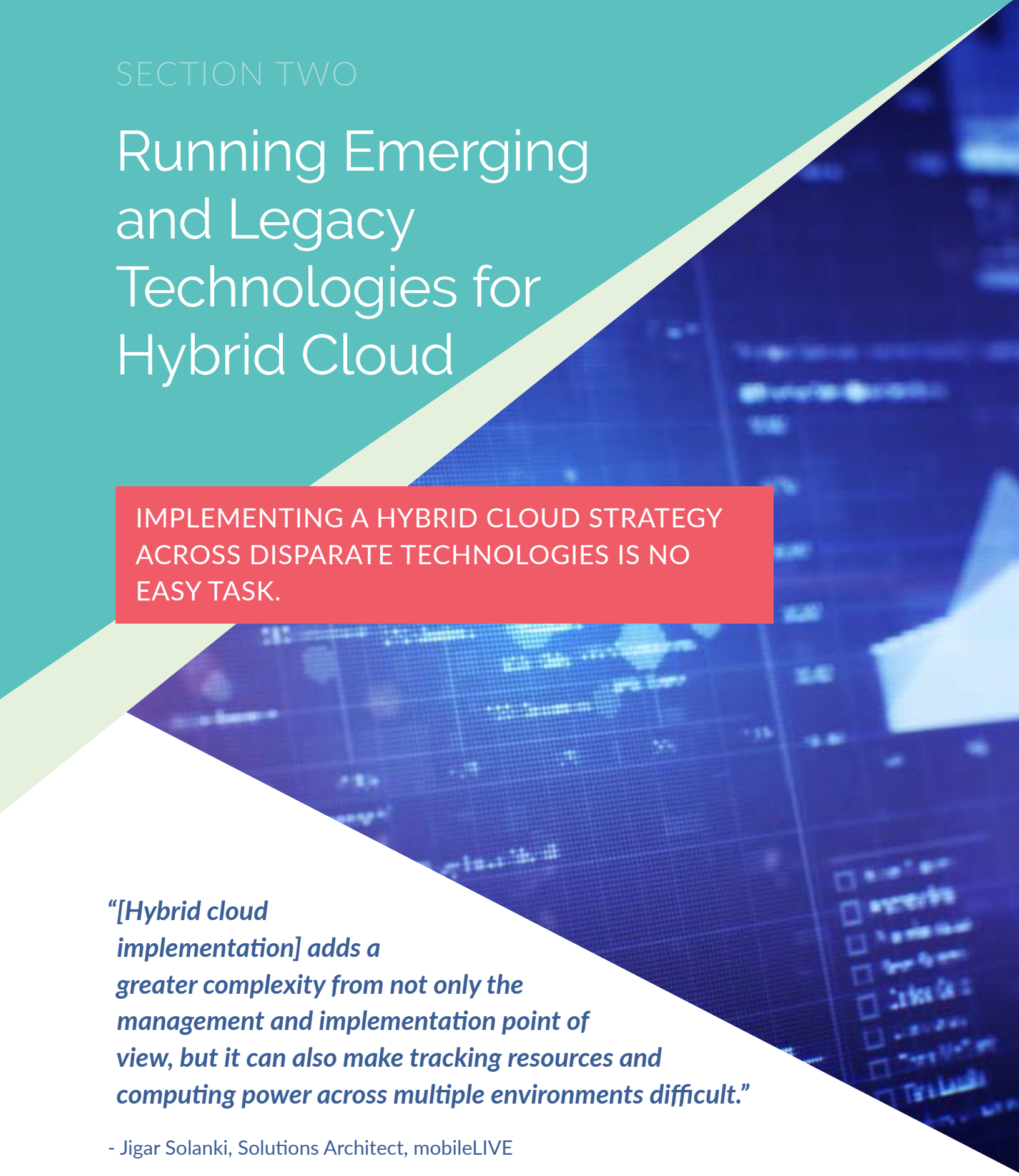


IDC. (2018). Worldwide Cloud IT Infrastructure Top 5 Cloud Vendors, 2018Q1 vs 2017Q1 (shares based on vendor revenue)

Although the movement is slower than many of us expected, there's an increasing number of choices from public and private cloud offerings that integrate with existing on-premises data center virtualization technologies and configuration management tools. A hybrid cloud approach continues to be extremely relevant to not only bridge the new with the old when necessary but also bridge the new with the newer.

SECTION TWO

Running Emerging and Legacy Technologies for Hybrid Cloud



IMPLEMENTING A HYBRID CLOUD STRATEGY ACROSS DISPARATE TECHNOLOGIES IS NO EASY TASK.

"[Hybrid cloud implementation] adds a greater complexity from not only the management and implementation point of view, but it can also make tracking resources and computing power across multiple environments difficult."

- Jigar Solanki, Solutions Architect, mobileLIVE

Each infrastructure environment that has been inherited, built from bare metal on-premises, or running in a hosted public cloud has its own strengths and pitfalls for cost, agility, and security.

Private data center infrastructure is a capital expense (CapEx) and running infrastructure in the cloud is an operating expense (OpEx). When infrastructure is running in a private data center it needs to be sized properly for the anticipated demand. There's an initial expense to physically get the hardware required and virtualization technologies installed. When infrastructure runs in the cloud it can be purchased on-demand and might be a lot cheaper than investing in infrastructure up front. Taking into account legacy technology, there might be existing compute, storage, and networking capacity that has an initial cost that has long been forgotten but still holds a viable place for running a lot of workloads needed for the core business.

In addition, the workloads within each environment will typically have wholly incompatible architectures so that they cannot be moved from one environment to another for consolidating or expanding very easily. As the reality sets in for most enterprises that they cannot just lift and shift workloads from one infrastructure environment to another, they have to make choices and determine right-fit hybrid cloud strategies.

For example, moving all the virtualized servers running in the data center to the cloud, one for one, is probably a bad idea. In a data center, you have to have the capacity for peak demand ready to go at a moment's notice but in the cloud you would not have to have the same compute power standing at attention and ready to run. You can turn on or off, scale up or out, in the cloud so that the OpEx is directly aligned with demand. On-premises, enterprises have paid the CapEx upfront to be ready for the demand at any time.

Security varies from one environment to another depending on the type of data required for a workload. In some cases, IT architects have standardized on storing personal, sensitive data on-premises while other non-personal data can run anywhere in the cloud for computational purposes. Compliance regulations could require a separate dedicated tenancy in a cloud with no shared underlying resources with any other entity.

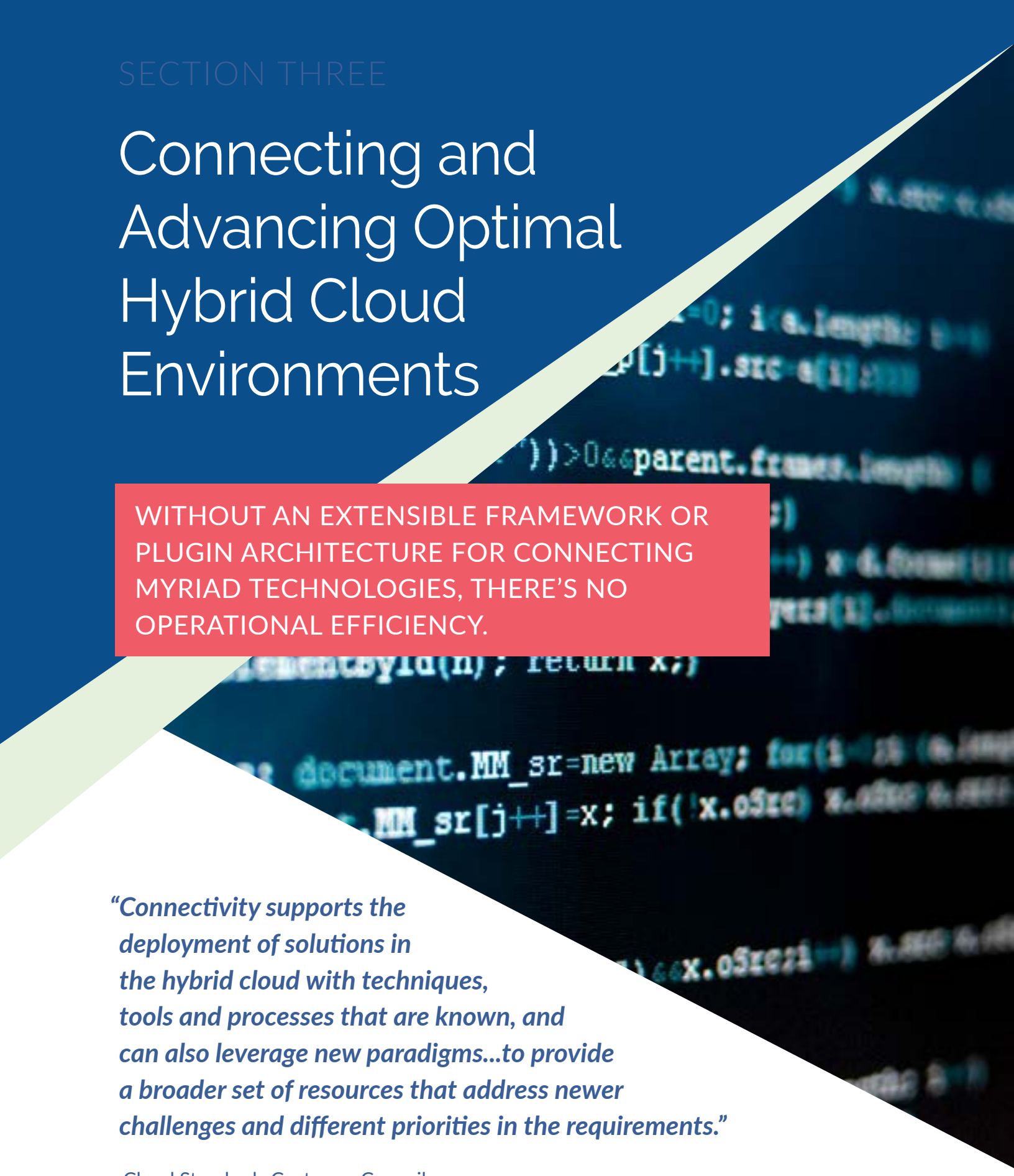
While considering the strengths and pitfalls of one environment over another, also consider that public cloud providers can take advantage of economies of scale much easier than a single enterprise. They realize that the more business they get using their services, the less it will cost them to run. They can get more revenue while pricing competitively enough to get the business.

Each public cloud provider wants to differentiate its offering to get the business of today's enterprises and agencies. For instance, public cloud providers offer a number of functions as a service, all marketed as lean, mean, plug-and-play capabilities. There's quite an allure for more public cloud services at lower prices and every enterprise and agency now realizes that getting their public cloud strategy moving a bit faster is going to pay off. However, there's a lack of standardization and framework between public cloud providers for many of these value-added services so it's more difficult to migrate from one cloud provider to another.

SECTION THREE

Connecting and Advancing Optimal Hybrid Cloud Environments

WITHOUT AN EXTENSIBLE FRAMEWORK OR PLUGIN ARCHITECTURE FOR CONNECTING MYRIAD TECHNOLOGIES, THERE'S NO OPERATIONAL EFFICIENCY.



"Connectivity supports the deployment of solutions in the hybrid cloud with techniques, tools and processes that are known, and can also leverage new paradigms...to provide a broader set of resources that address newer challenges and different priorities in the requirements."

- Cloud Standards Customer Council

Considering the rapidly changing digital environments from disruptive technologies occurring almost everywhere, while static infrastructure is becoming a less viable solution. Enterprises now realize that planning, sizing, installing, and maintaining most of the compute power to support software code that runs the business is a losing proposition. By the time everything is approved with the proper specs, the market has changed. Balancing the existing investment in the infrastructure still on-premises and the need for agility in the cloud is at the core of a hybrid cloud strategy.

Public cloud offerings, such as AWS, Azure, and Google Cloud have made it easy to have compute power on-demand so this disruption can be both a build for capacity and a pay-as-you-go strategy. The digital value that's created has a direct relation to its cost in real time if properly architected so that every digital service is running in a best-fit scenario. Predictable workloads can be sized more easily so that a strategy of reserving compute power at a lower price is prudent. In some cases, static infrastructure running the workload on legacy systems in a data center is a more viable option even for a modern business application.

Without the ability to be responsive to emerging technologies, as well as take advantage of the resources in place, enterprises can lose their competitive edge. In order for their digital business software to thrive in this new digital era, it must have, at the very least, an "open API" that allows other digital assets to interact with it. The authors of the software must expose something public and accessible for other systems to connect to it while locking the proprietary portion that is licensed for sale. In other cases, "open source" software can be used where all the code is exposed for developers to use and modify as they see fit.

This interconnectivity is characterized as "extensibility." The extensibility applies to software application access as well as connecting infrastructure that spans multiple environments.

SECTION FOUR

Advancing a Technology Ecosystem

USING THE RIGHT PLATFORM, IT BECOMES EASY TO DISCOVER ALL TECHNOLOGY ASSETS; NOT JUST THE NEW ONES. CONNECTING TO AND MANAGING LEGACY ENVIRONMENTS SEAMLESSLY IS CRITICAL TO YOUR SUCCESS.

"If a company decides to go down the hybrid path, they need to ensure that connectivity between their on-premises and cloud-based infrastructure is reliable."

- SearchITChannel

Advancing a Technology Ecosystem

An extensible framework, “plugin” architecture for connecting technologies provides an operational efficiency that can scale to any technology or environment. Although every system has a unique IP address on a public or private network to exchange some information, that’s not enough. Open APIs provide more functionality to transfer digital work from one system to the next. APIs provide ways to “do” things that can be initiated on one system and then remotely started on another. Using the public API of most cloud providers, a system can call that API and provision resources in the target cloud environment.

From internet of things (IoT) devices to applications, an API can be invoked to act on sensing data. We now have online printers that know when it’s time to refill the ink cartridges as one basic example. The sensor communicates through a network and wireless gateway and the app, which has your physical mailing address stored, can then automate the refill delivery right to your door. Both the provisioning cloud environment example using an API and the application development for new digital initiatives require a technology ecosystem that includes many different IT systems for configuration, deployment, monitoring, apps, and infrastructure.

When two systems need to be connected, the technology expertise must be learned in many cases and programmed accordingly. Some systems have consoles, others just need command line access or can be reached with a representational state transfer (REST) API in the form of hypertext transfer protocol (HTTP) request to get or put data from one system to another. This results in additional overhead for training and developing new ways to connect to all the environments. Testing and developing new add-ons and features takes a lot of time and resources configuring and maintaining connections in all these disparate environments. You may have one IT tool to manage your legacy infrastructure while a new tool manages future technologies, and they probably won’t communicate well with each other.

Fully Extensible Hybrid Cloud Orchestration Platform

In contrast, a fully-extensible hybrid cloud management platform allows simultaneous management of multiple systems, tools, and target public and private cloud environments in one place.

IT administrators can access resources without having to worry about having to get familiar with the idiosyncratic details of each disparate environment once the platform is enabled. Including orchestration steps that leverage existing IT tools such as Ansible, Chef, or Puppet, as well as other monitoring, backup, and even infrastructure as code (IaC) tools such as Terraform will be easier to do.

Often times, without extensibility, legacy technologies might be abandoned unnecessarily. In the cloud era, some tools only support what's in the cloud so tapping into legacy on-premises options is out of the picture. This environment too, can be connected to a well-designed extensible plugin architecture to access and configure bare metal if necessary.

How does it work?

The expert for each enterprise tool and IT admin work together to connect the targets as private, public, and on-premises resources that become the provisioning "palette" of target environments. IT teams don't need to have tribal knowledge of every technology environment or hold a slew of certifications across the technology ecosystem solutions.

Settings, images, templates, and whatever is necessary that is native to the target environment can be shared with the platform using this resource connection and then leveraged for the full lifecycle management of resources. Likewise with the enterprise IT tools for configuration management, they can be incorporated within the provisioning steps so that the time to value for provisioning complex virtual environments wherever they are hosted is shortened. Existing monitoring and backup tools can be included to integrate with the system.

The goal of the platform is to enable a hybrid cloud strategy that can bridge the old with the new as well as all the newer technologies with each other. The end result of this type of platform is that in one place the complexity of today's hybrid cloud technology ecosystem can be managed and serve as the back end orchestration engine to self-service IT portals such as ServiceNow or Okta or the platform can be accessed from its own fully customizable self-service portal and catalog of services.

Using a cloud management platform, enterprises can finally balance the control that IT wants with the agility and creativity that developers want from competitive public cloud resources. And it's with this control that IT can finally say goodbye to the sticker shock and VM sprawl that would otherwise plague their organization.

To find out how CloudBolt meets all of these objectives and provides a complete cloud control platform, schedule a demo today.

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