Executive Overview

Converged Infrastructure Enables Advanced IT

Information Technology continues to evolve at a dizzying rate. With the advent of Virtualization and Cloud Computing the IT industry has taken a new path – bringing together all of the core technologies used in the data center into pre-integrated converged platforms that combine storage, network and compute. These platforms are optimized for a virtualization and shared infrastructure model – moving away from traditional dedicated platforms for individual applications.

This white paper provides CIOs and IT executives with a practical guide on the players driving this market and provides practical advice around the selection, design, implementation and operations for these new IT solutions. The paper also describes some of the use cases and real-world examples – validating the value of these platforms for customers.

Before we begin – a few definitions

In general terms, Converged Infrastructure (CI) can be defined as: a class of data center systems that deliver a combination of server, shared storage and network devices in a pre-integrated stack.

Interestingly – Gartner ([www.gartner.com](http://www.gartner.com)) defines this solution further into the following three segments:

- **Integrated infrastructure systems** — Server, shared-storage and network hardware integrated to provide shared compute infrastructure. Examples include HP Virtual/Cloud Systems, VCE vBlock, DELL vStart, IBM PureFlex.

- **Integrated workload systems** — Integrated infrastructure systems that are pre-integrated with database and/or application software to provide appliance, or appliance like, functionality. Examples include Oracle Exadata, HP AppSystem and IBM PureApplication.

- **Integrated reference architectures** — Products in which predefined, pre-sized components are designated as options for an integrated system, whereby the user and/or channel can make configuration choices between the predefined options. Example includes NetApp FlexPod, EMC VSPEX.
Converged Infrastructure – the new frontier for Data Centers

The continuous evolution of data centers is driven by Moore’s Law and new technological innovations. In recent years Virtualization technology has advanced and impacted Data Center infrastructure significantly and led to the re-architecting of IT infrastructures to capitalize on this software defined data center model. With this in mind it is not surprising to see a flurry of new Converged Infrastructure platforms being introduced.

According to IDC’s (www.idc.com) recent article on organizations around the world, over $3.3 billion is spent on converged systems. In 2012, converged infrastructure spend increased in excess of 20% CAGR. This growth rate is estimated to continue through 2013, 2014 and beyond.

Value Proposition

According to Gartner’s article, Market Share Analysis: Data Center Hardware Integrated Systems, 1Q11-2Q12, integrated systems offer a number of compelling capabilities that meet key user requirements. They are:

- Better performance
- Improved cost/performance ratio
- Simplified deployment
- Increased optimization
- Increased automation
- Lower cost of IT operations
- Simplified sourcing and support
- Support in moving from IT maintenance to IT innovation

Additional Considerations

In contrast to these drivers are a number of inhibitors that create a perception that diminishes the value of converged infrastructure and that traditional IT solutions remain in place. These include:

- Limited flexibility in selecting best of breed components
- High upfront investment costs

All of these inhibitors can be overcome by selecting the right Converged Infrastructure provider and configuration. The next sections of this white paper will discuss these in detail.
Top five recommendations for optimizing value from Converged Infrastructures

As an advisor to companies seeking to select and deploy various converged infrastructure and cloud solutions, Sequoia has defined the following five recommendations for accelerating and optimizing your ROI for Converged Infrastructures:

1) Selecting a best of breed solution that aligns to your current architecture

As indicated earlier in this white paper, there are three options for Converged Infrastructures, two of which are specifically aligned to IT infrastructure. One of the key inhibitors though is the perception that these platforms are not “best of breed” – the reality cannot be further from the truth.

By aligning each technology and provider – the various Converged Infrastructure solutions can complement the offerings of your existing providers and provide the added benefit of a pre-architected and pre-tested configuration.

In addition, many providers offer multiple variations of their configurations that are designed to meet your specific infrastructure requirements. To illustrate this point we will look at two infrastructure options:

   I. Integrated Infrastructure Systems
   II. Integrated Reference Architectures

Each of these options provide varying degrees of flexibility for best-of-breed implementations which are described below.

Option 1 – Integrated Infrastructure System

If your IT network is based on Cisco, EMC, and VMware, the VCE vBlock™ solution may be a good fit. VCE is a joint venture between all three of these companies and develops a robust pre-integrated Infrastructure System.

The solution is pre-integrated in the factory and shipped to customers based on the specific configuration selected. There are many configurations with each, targeted at mid-large sized enterprises for specific workloads and applications.

See www.vce.com for more information.

Option 2 – Integrated Reference Architecture

Extending the same premise – based on Cisco, VMware and EMC infrastructures – EMC has defined a reference architecture led solution approach called EMC VSPEX (www.emc.com). This solution is pre-architected and tested but is provided as a recommended configuration – integrated by local solution providers and channel partners.
EMC VSPEX offers multiple configurations including a variety of Hypervisors, networks and compute providers.

A functionally equivalent alternative to the VSPEX solution is FlexPod, a joint solution from NetApp and Cisco. Similar to EMC VSPEX, FlexPod offers additional configurations and pre-tested integrated architectures across applications, hypervisors and operating systems.

Interestingly, Cisco is extending the reference architectures to cover new Storage Platforms and both EMC and NetApp are actively enhancing their reference architectures to include additional compute, network, hypervisor and operating system choices. This is a clear indicator that there is continued interest in best-of-breed converged infrastructure solutions.

2) Select high impact Workloads and Applications

Each Converged Infrastructure solution is developed to support multiple applications and workloads. In addition, thanks to the virtualized software defined data center capabilities, the platform can support multiple applications simultaneously across single-tenant and multi-tenant environments.

Sample application workloads include:

- Application Development
- Collaboration
- Messaging
- CRM
- ERP
- Finance
- Unified Communications
- End User Computing

In addition many providers are developing tailored solutions for specialized applications – VCE for example offers specific vBlock configurations for:

- Extreme applications
- High Performance Databases
- SAP HANA

Refer to the manufacturers’ websites for specific examples across each of these application categories.

3) Right Sizing the Solution to fit your Applications

Given that most Converged Infrastructures are architected with pre-populated servers, storage and networking they can come with a fairly hefty price tag unless the solution is right-sized for your business.

Not all solutions are created equal. Some are designed for high-end mission critical applications deployments, while others are designed more for mid-range systems use cases.

Continuing the VCE example – there are multiple vBlock configurations tailored for specific use cases and application workloads - ranging from the 100 mid-range system through to the 700 enterprise-class solution.
4) Explore Managed Services

As enterprises continue to reduce costs from operations along with converting costs from capital expense fixed allocations to operating expenses – Managed Services Providers quickly become an preferred option for rapidly driving ROI for converged infrastructures.

Rather than having to cover the up-front cost and capital outlay for Converged Infrastructures – a small number of Managed Services Providers (MSPs) are now offering bundled solutions consisting of the core hardware/software within the Converged Infrastructure solution and combining this with the Operational Services offered through Managed Services.

5) Extend into Private Cloud through Self Service Automation

Once your Converged Infrastructure solution is deployed, you have laid the foundation for your own Private Cloud platform. To extend the solution to Private Cloud and enable Infrastructure as a Service, various management systems and tools are necessary.

There are a growing number of Cloud Self-Service Automation software solutions available in the marketplace from all of the major providers of the Converged Infrastructure solutions. Some examples include VMware’s vCloud Suite, Cisco’s Prime Service Catalog and Process Orchestrator technologies and HP’s Cloud Services Automation solution.

Implementing Private Cloud Self-Service and Automation technologies provide additional efficiencies and savings while driving consistency and increasing quality of service delivery.

Presidio Network Solutions, Inc, a large US-based IT Solution Provider, offers Presidio Managed Cloud – a fully integrated, deployable VCE vBlock/Cloud Management solution that enables Hybrid Cloud services for Compute and Storage across Private and Public Cloud services.

Presidio is a good example of a company offering a new of Managed Converged Infrastructure Platform that brings together both the value of Converged Infrastructure Platforms with the benefits of Managed Services. Refer to the following link for more information on Presidio’s Managed IT and Cloud Services:

http://www.presidio.com/managedservices
Summary

This white paper has provided a summary of the key capabilities and benefits offered through Converged Infrastructure solutions. In addition the paper provides five recommendations for companies selecting and deploying Converged Infrastructure solutions.

Converged Infrastructure solutions are here to stay. With a CAGR of over 50% and an addressable market calculated in the $100B’s there is plenty of opportunity available for this exciting new Data Center solution. Now that all of the major manufacturers have solutions in the market – it’s now more challenging than ever to select the best solution that meets your needs.

While we have provided a number of recommendations in this white paper – we always suggest that our clients seek advice from multiple sources.

As a leading provider of Cloud Strategy, Architecture, Design and Implementation services for Cisco, VMware, VCE and EMC solutions, Sequoia Worldwide and our partner Presidio Network Solutions offers comprehensive converged infrastructure and Cloud Solutions to support your needs.

Contact us at: www.sequoiaworldwide.com

References

Additional information can be found at the following web sites:

- http://www.cio.com/article/730423/Is_Converged_Infrastructure_Takes_the_Market_by_Storm
- http://wikibon.org/wiki/vConverged_Infrastructure_Takes_the_Market_by_Storm

About Sequoia Worldwide

Sequoia Worldwide is a consulting firm based in Campbell, California. We specialize in Hybrid Cloud Strategy, Design and Implementation Services.

Our team of cloud specialists offer Strategic Consulting services, Knowledge services including training development and delivery and Integration Services.

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