What Makes a Private Cloud a CLOUD?

Creating an agile, manageable private cloud environment that enables efficiency and solves business problems isn’t easy. We take a look at the steps required.
Organizations of every size have the capability to build a private cloud—and frankly, they should. A private cloud opens the way to agility in the datacenter, as shown in the top five goals achieved by private cloud users responding to InformationWeek’s 2014 Private Cloud Survey: more efficient use of hardware, improved scalability, increased reliability, standardized OS builds, and more efficient use of IT’s time. Private clouds are also the means for IT to re-establish its value back to the business—enabling productivity, competitive advantage, and increased customer service.

PUT VIRTUALIZATION’S POWER TO WORK

Achieving these and a host of other private cloud benefits requires some key building blocks. Most organizations have already implemented virtualization, which is one of those building blocks. Companies are looking for a flexible, modular approach when it comes to building the virtualization foundation they need for a private cloud that will let users self-provision computing resources, shift workloads across machines on demand, automatically launch new servers, and more. Pre-integrated turnkey systems may offer the advantage of a quick initial deployment in creating this sort of infrastructure, but these solutions come at the cost of openness, interoperability, and expansion opportunities. That’s a price few companies can afford—certainly not when tight IT budgets force them to find cost-effective ways to expand their virtual infrastructures. The InformationWeek survey found that nearly 60% of respondents spend less than 30% of their IT budgets on building virtualization-dependent private clouds. Given that, IT must focus as much on leveraging industry-standard architectures that support advanced virtualization as on

How Successful Is Your Private Cloud in Meeting These IT Goals?

<table>
<thead>
<tr>
<th>IT Goal</th>
<th>Rating</th>
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<tbody>
<tr>
<td>More efficient use of hardware</td>
<td>4.3</td>
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<tr>
<td>Better scalability</td>
<td>4.3</td>
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<tr>
<td>Better overall reliability</td>
<td>4.2</td>
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<tr>
<td>Standardized OS builds</td>
<td>4.1</td>
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<tr>
<td>More efficient use of IT’s time</td>
<td>4.1</td>
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<tr>
<td>Better disaster recovery</td>
<td>4.0</td>
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<tr>
<td>Shorten time to deliver applications to the business</td>
<td>3.9</td>
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<tr>
<td>Better peak application performance</td>
<td>3.9</td>
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<tr>
<td>Better average application performance</td>
<td>3.8</td>
</tr>
<tr>
<td>Business user self-service portal for select IT services</td>
<td>3.6</td>
</tr>
</tbody>
</table>

NOTE: Mean average ratings
DATA: InformationWeek Private Cloud Survey of 113 business technology professionals at organizations with 50 or more employees

Learn more about private clouds at www.dell.com/privatecloud
breaking down silos of complexity to aggregate pools of heterogeneous resources.

Interoperability also is critical. Open network strategies and the implementation of software-defined networks via open standards enable component interoperability and agility in a virtualized network infrastructure, and are key to holistic private cloud strategies, both for cost-savings and to enhance network functions for scalable services.

Of course, a business must plan its virtual infrastructure in the context of the virtual computing environment sized for its specific needs, whether that’s a small, shared infrastructure platform or a huge, scalable, enterprise-class blade server environment. One-size, preconfigured virtual computing platforms do not, in fact, fit all.

Dell PowerEdge VRTX, for instance, offers streamlined shared infrastructure, enabling a virtual cluster-in-a-box solution that appeals to smaller businesses because of its capabilities, office-friendly design, and simplified management. However, it also meets the needs of large companies that want to run high-performance apps in departmental or workgroup environments, or at remote branches. It supports the same blade servers and management tools as the larger M1000e-based solutions and combines server, shared storage, and networking in a sleek form factor.

An even more scalable option, Dell’s PowerEdge M1000e blade chassis, provides the broadest range of blade server options and the industry’s most efficient power and cooling. The PowerEdge M620 (12th generation) holds the honor of the highest SPECpower scores, as did Dell’s two previous-generation servers in the same category. The M1000e also provides a range of flexible networking options, including IOA, FC, InfiniBand, and 1/10/40 GbE modules to provide proper service levels for your cloud. With the variety of options for storage (SAN “blade” EqualLogic PS M4110 or externally attached storage of your choice), chassis management, and software integration tools, you have the complete foundation for IaaS (Infrastructure as a Service).

The M1000e blade chassis also gives customers unmatched flexibility in configurations that deliver 100% more computational nodes than other blade infrastructures to provide the density
needed in massively scalable virtual environments. The M1000e can deploy 32 M420s in a 10 rack unit. Doubling the number of nodes per chassis drives down the cost per port and per node. These sorts of flexible and powerful solutions, with innovative form factors, are important to consider when choosing your platform.

EFFICIENT, INTEGRATED SYSTEMS MANAGEMENT

A well-planned virtualized environment does not by itself add up to a private cloud. What makes a private cloud real is the combination of technology function and business logic to give it purpose. Capabilities, such as resource provisioning and capacity on demand and at specified authorization levels, align the infrastructure with systems management tools and set the stage for IT to translate “success from the data center to the business,” as the InformationWeek 2014 Private Cloud Survey report put it. Meeting service-level agreements, better IT alignment with business and organizational needs, and improved quality control all received high success ratings from respondents.

How do you begin to build the ties that bind the private cloud infrastructure to what the business needs? How do you accelerate application and services delivery, and contain “happy” users within the internal IT environment? How, that is, do you prevent users from looking to public clouds for the access and speed advantages they can’t get in-house, and keep them from moving to those platforms without the proper controls in place and the resulting IT fragmentation, compliance violations, and data exposure?

The first thing that’s needed to more efficiently and effectively support users’ expectations is to apply the “service” part of IT service: Talk with all stakeholders to uncover problems and requirements, and map appropriate technologies to the business outcomes. IT teams must integrate business logic into their IT systems and management frameworks. Systems management frameworks and tools such as VMware vCloud and Microsoft System Center, or solutions from vendors that have long specialized in the space, including CA and BMC, are set up to include rules for automation and approval processes.

Existing business logic and models can be integrated with any vCloud Automation Center server, for example, to develop complex automation tasks. (VCloud Automation Center is based on cloud management software from Dynamic Ops, which VMware acquired in 2012.) That includes building workflows for automated server provisioning to support IT-as-a-service models—though server and storage array vendors must provide, as Dell does, a plug-in for vCenter that bridges the hardware provisioning gap.

Another option for customers is to leverage Microsoft System Center Suite as the primary point of cloud management. Smooth integration of business logic and models can be accomplished with Microsoft System Center Virtual Machine Manager, including its integration with other components of the System Center 2012 suite to support automating the management of policies, processes, and best-practices by discovering, capturing, and aggregating knowledge related to their virtual infrastructure.
Add Microsoft’s App Manager, System Center Orchestrator, and Service Manager, and you have all the cloud capability you need to automate apps and services. Dell’s OpenManage and hardware integrations with MS System Center (most notably SCOM, SCCM, and VMM) enable discovery, updating, management, and visualization of Dell server, storage, and networking components of your cloud infrastructure—so you can control everything from the console you’re familiar with.

Other heterogeneous tools for workload templating and resource provisioning, such as Dell’s Active System Manager (ASM), also can apply business logic to private cloud systems management. ASM supports Dell’s and other vendors’ resources to align with customers’ existing and future purchases. It integrates with many hypervisor platforms, like Microsoft Hyper-V and VMware Vsphere, offering a centralized approach to workload-specific configuration to automate IT service delivery. Think of it as packaging the entire application ecosystem—the application as well as the infrastructure resources that it runs on—in a self-contained envelope rather than requiring IT to work across multiple consoles and business users to suffer the resulting lag in deployment time. By capturing best-practices into service templates, ASM ensures reliable and repeatable infrastructure and workload deployments.

**The potential of automating business processes is huge. Web and database provisioning can be deployed in a few hours instead of weeks.**

Automating the business processes that handle the majority of IT workflows is all part of the push to customer-initiated IT service provisioning. Automation’s potential is huge: Web and database provisioning activities can be reduced from hundreds of steps and many weeks to deploy, to several steps and a few hours to deploy.

**ENABLEING APPLICATION AGILITY**

End users today want instant, on-demand service from their clouds. With a few clicks, they can easily acquire these services from the public cloud, creating the shadow IT challenge. The best way to prevent unguided, risky cloud use is to provide the on-demand capability that users want from your own IT portfolio.

IT organizations can provide this instant, dynamic capability by implementing “service catalogs,” creating a suite of services that leverage automation and key business logic. Cloud computing begins when end users and customers can request applications and services from IT portfolios without manual intervention. Approval matrices, cost centers, and other aspects of the business units can peacefully co-exist with the IT resources they rely on, resulting in velocity and productivity for both teams. This is an essential feature and benefit of enabling capacity on-demand in cloud environments.

Tools like Microsoft System Center Orchestrator and App Manager, and Dell’s Active System Manager, can optimize application delivery and use via the private cloud, dialing capacity up or down as needed. Such features are critical given that cloud apps must be ready for varying load requirements and to accommodate, not only internal users, but also customers, partners, and other external users, at different points in a business cycle. ASM provides step-by-step guidelines that let users execute tasks...
across the workload lifecycle, from provisioning to decommissioning of virtualized infrastructure. This approach helps ensure that a coordinated set of components works together to meet SLAs and avoid application degradation and failure, giving users the perception of unlimited resources.

With Dell OpenManage integrations, customers can use their console of choice to view, monitor, and manage infrastructure and applications. This open standards focus enables customer choice and flexibility. OpenManage helps drive operational effectiveness for physical and virtual machines, and it provides critical features like power metering and management for remote site cloud infrastructure administration, as well as instrumentation, asset management, server and workload profiles, and many other essential capabilities that simplify operations and management of workloads and resources.

It’s important for companies to have access to cloud-savvy application delivery and management, as well as business-logic-infused systems management capabilities, in sophisticated yet accessible offerings. A 2013 commissioned study conducted by Forrester Consulting on behalf of Dell, “Customer Cloud Adoption: Drivers Of Cloud Adoption”

“How important are the following in your firm’s decision to adopt public/hosted private/internal private cloud computing IaaS?”

- Improved IT infrastructure manageability and flexibility
  - Very important - 5: 42%
  - Not at all important - 1: 13%

- Improved disaster recovery and business continuity
  - Very important - 5: 42%
  - Not at all important - 1: 16%

- On-demand capacity and scalability
  - Very important - 5: 40%
  - Not at all important - 1: 17%

- Lower total cost of ownership for servers
  - Very important - 5: 41%
  - Not at all important - 1: 17%

- Lower capital expenditures by purchasing services instead
  - Very important - 5: 30%
  - Not at all important - 1: 21%

- Faster time to market with new business capabilities
  - Very important - 5: 28%
  - Not at all important - 1: 29%

- Ability to use as peak capacity for times of high usage, such as the holiday season
  - Very important - 5: 29%
  - Not at all important - 1: 30%

- Provides developers with fast, easy resources for test and development
  - Very important - 5: 25%
  - Not at all important - 1: 26%

- Temporary or project-based capacity needs, like special projects
  - Very important - 5: 23%
  - Not at all important - 1: 23%

- Eliminates need for capacity planning and/or contract renegotiation
  - Very important - 5: 23%
  - Not at all important - 1: 23%

- Improved power and cooling efficiency
  - Very important - 5: 25%
  - Not at all important - 1: 25%

BASE: 555 North American and European IT decision-makers at firms with 500+ employees who are planning to or have already implemented IaaS. SOURCE: Forrester Hardware Survey, Q3 2013, Forrester Research, Inc. NOTE: “Don’t know” responses were not included.
From Development to the Data Center,” reveals that cloud adoption concerns linger: 15% of surveyed firms said cloud solutions don’t offer good enough performance; 16% said they are too complex to manage; and close to 18% worry that management tools are too immature.¹

Forrester also found that the top drivers for adopting cloud computing are improved manageability and flexibility of IT infrastructure, improved disaster recovery and business continuity, and on-demand capacity and scalability (see chart, p. 6).

VISIBILITY AND GOVERNANCE OF ALL YOUR CLOUDS
To run a truly efficient private cloud, the enterprise must have clear visibility into operations, applications, and costs, no matter how heterogeneous the underlying virtualized environment. That sort of pervasive visibility isn’t easy to achieve when functional silos do the administration using diverse tools, or when specific services don’t have much monitoring in place to start with, or when monitoring stops at the end user’s computing device.

Limited visibility takes a toll on the efficiency of private clouds and private cloud users, contributing to resource mismanagement and latency, and making it impossible for developers and application administrators to understand the impact of their configuration choices. And without insight into who is doing what, cloud administrators can’t determine where chargebacks should fall. Just 13% of respondents used charge-back methods in 451 Research’s Servers and Virtualization Wave 13, and only another 13% were considering using them in the next two-plus years.²

With the right tools, though, you can get the visibility you need to run an efficient private cloud. Dell’s Foglight Suite, for example, provides software tools for management, utilization reporting, and performance monitoring in a unified dashboard with visibility from the end user through to underlying hardware layers, supporting cross-domain collaboration and reducing the time it takes to resolve problems.

CLOUD ON YOUR TERMS
As IT leaders prepare for the future of cloud computing, many are considering a hybrid cloud strategy. Leveraging public clouds in tandem with an in-house cloud infrastructure offers a way to quickly and efficiently add scale, support a specific function (such as test and development), and rapidly meet changing business requirements. Equally if not more important, hybrid cloud computing lets a company have a cloud environment on its own terms, getting the scale and reliability of the public cloud, without having to hand over all its assets.

Any number of hybrid cloud options are available, but to capitalize on them, IT pros must build their private cloud environments using industry standards, flexible and modular approaches, and heterogeneous management platforms for best alignment with public cloud choices. That approach ensures seamless integration with external clouds—whether community clouds, vertical clouds, or SaaS options—without compromising systems and applications management setups, performance insight, and cross-cloud interoperability.

Today, technology must be built to accommodate the merging of the on- and off-premises cloud worlds. Dell’s support of open networking standards, software innovations, and the ability to manage single or multiple private and hybrid clouds through one pane of glass is an approach that supports this new age of enterprise computing.
Compliance and governance are top of mind in multi-cloud environments, especially. Dell Cloud Manager, for instance, can help enterprises as they extend their private clouds to hybrid cloud solutions. Cloud Manager provides insight into applications whether they are provisioned on-premises from a private cloud resource pool or off-premises from a public cloud, as well as enabling access and cost controls so organizations have the freedom to pick the right cloud for the job, and still control and manage it in a unified way.

Solidifying a virtual private cloud infrastructure with industry standards-based technology and open-source IT architectures is just a start. To attain true private cloud capabilities, you must also deploy a systems management framework, optimize application delivery, and drive visibility. All these steps add up to an efficient and effective private cloud that gives IT the tools it requires to provide business users with the self-service and on-demand capabilities they want and need.

It’s time to take these very practical steps. As the survey shows, more than three-quarters of your peers already are boldly marching into the private cloud. Don’t get left behind.

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