

Tech Outlook



Making the Cloud Work

Hybrid cloud solutions can help organizations balance the costs, benefits and risks of cloud computing.

Reduced capital and operational costs. Simplified IT management. Increased performance and productivity. Cloud computing can deliver these and other benefits while enabling in-house IT

personnel to focus on strategic initiatives rather than keeping the lights on.

But despite the business value of cloud computing, there are a number of roadblocks standing in the way of more widespread adoption. Security is the biggest obstacle to cloud deployment, according to a recent Deloitte survey of midmarket companies, followed by data privacy risks and network performance bottlenecks. Other common concerns include loss of control to a third party, cloud application performance and regulatory compliance issues.

Private clouds help to address these concerns while enabling organizations to leverage the technical benefits of cloud computing. Applications

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Cloud

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and data remain squarely behind the firewall, while the data center becomes more flexible and scalable. However, implementing a private cloud can be challenging and requires a higher investment than public cloud solutions.

Enter the hybrid cloud.

Hybrid cloud solutions apply policy-based provisioning to both internal and external cloud resources. They allow organizations to tap both public and private cloud computing with a single interface that streamlines the flow of data and creates a consistent user experience.

Network World has declared 2014 to be the year of hybrid cloud adoption, and Gartner predicts that half of mainstream enterprises will have a hybrid cloud by 2017.

“Hybrid cloud is central to the conversation about cloud computing,” said open source software pioneer Mark Shuttleworth in a recent *Wall Street Journal* article.

“Hybrid cloud sits at the nexus of the operational requirements, security concerns and technical challenges of cloud computing,” said Matt Merriman, VP of Professional Services, ProSys. “It enables organizations to place applications and data in the right cloud, balancing business benefits against costs and risks.”

Rapid Build-out

Given the keen interest in hybrid cloud computing, a number of vendors are offering solutions that speed the deployment of hybrid cloud solutions. EMC’s Hybrid Cloud solution is the latest entry, introduced at EMC World in May.

The EMC solution is an end-to-end reference architecture that enables organizations to quickly, easily and cost-ef-

fectively build a hybrid cloud. IT organizations can broker services from private and public clouds, enabling visibility and control over the best location to run business applications. The solution can also help profile applications and identify the most efficient, secure and cost-effective IT operational model across both private and public clouds.

Users access an easy-to-use self-service portal that offers a personalized catalog of services housed in a secure data center that provides lower costs, better efficiency, and enterprise-class service levels. IT professionals benefit from best-of-breed technologies, more effective IT management, smarter health and performance monitoring, and 100 percent control over what users can provision. The new solution also delivers faster application provisioning and deployment, greater business agility and increased levels of IT automation.

“The EMC Hybrid cloud allows customers to rapidly integrate their in-house IT services with multiple public cloud services to create a unified environment,” Merriman said. “The solution enhances the performance, security and compliance of an organization’s private cloud with compatible, on-demand services from third-party cloud providers.”

At EMC World, EMC implementation engineers demonstrated the capabilities of the solution by building a hybrid cloud in less than 48 hours. The hybrid cloud featured Infrastructure-as-a-Service (IaaS), Platform-as-a-Service (PaaS), Backup-as-a-Service, Disaster Recovery-as-a-Service, automated monitoring and metering, usage transparency, and continuous availability. The demonstration also included the deployment of mission-critical applications from Microsoft, Oracle and SAP, and it showcased application mobility to off-premises service providers.

Strong Foundation

The EMC Hybrid Cloud solution is based upon a software-defined data center architecture comprising technologies from across the EMC federation of

companies: EMC storage and data protection, Pivotal CF PaaS and the Pivotal Big Data Suite, VMware cloud management and virtualization solutions, and VMware vCloud Hybrid Service. The EMC Hybrid Cloud solution currently supports VMware environments, and will soon support OpenStack and Microsoft environments.

Introduced in May 2013, the vCloud Hybrid Service is an IaaS solution operated by VMware and built on vSphere, giving VMware customers a common platform to seamlessly extend their data center to the cloud. As a result, customers can leverage the same skills, tools, networking and security models across both their on- and off-premises environments.

The vCloud Hybrid Service supports the thousands of applications and more than 90 operating systems that are certified to run on vSphere. Customers can run their applications in the public cloud without changing or rewriting them, with the same level of availability and performance as they get in-house. Because it is built on vSphere, the vCloud Hybrid Service offers automated replication, monitoring and high availability for business-critical applications, leveraging the advanced features of the VMware platform.

These solutions enable customers to blend two or more forms of cloud computing in an integrated framework so that various workloads can be deployed on the most appropriate cloud platform and managed seamlessly. Hybrid clouds deliver greater business agility and lower the cost of deploying and operating applications.

“IT departments are now expected to deliver both internal and external resources quickly and cost-effectively,” said Merriman. “Hybrid cloud solutions from industry leaders such as EMC and VMware enable organizations to navigate this operational transformation while gaining greater efficiency, security and control.”

ProSys Gains Global Capabilities

ProSys is now capable of supporting U.S. customers with international IT requirements through its investor, Pivot Technology Solutions, Inc. The new offerings focus primarily on projects in networking, virtualization and storage solutions for data centers.

Large companies with an extensive IT infrastructure require unified solutions across business and operational units, as well as multiple jurisdictions. Through its strategic business unit (SBU) model, Pivot assists customers in architecting and delivering complex solutions on a national scale, acting as the sole implementation and service partner. The company now has an international team to help customers duplicate their installations outside of the U.S. The company's initial focus will be on projects in Europe and Canada, while exploring opportunities in other regions, such as Asia.

This new initiative is an extension of the SBU model, with Pivot taking on local purchasing, assembly, hardware installation and cabling, while providing its SBU engineers with the ability to install and configure software remotely. Business origination and customer interaction remain with Pivot's U.S.-based teams that have well-established relationships.

Customers who previously required a different integrator to implement complex projects outside of the U.S. can now rely on the company to deliver its proven solutions in an international setting. This reduces duplication of work, speeds up project implementation, simplifies cross-border transactions, and improves financial efficiency. Pivot's international delivery capability differentiates the company, as only a few very large integrators have the ability to take on projects of similar scope and complexity.

"The rationale behind this initiative was simple; there is a very real and significant opportunity to generate additional business from existing customers," said Warren Barnes, CEO of Pivot. "A substantial part of our revenue comes from Fortune 100 and other large, globally operating companies. In the past, we had frequently received requests from this customer group to assist them with their international IT/data center projects. Now, through our new international team — who have established relationships with local/regional vendors of the technologies we deploy in the U.S. — we are able offer customers a seamless extension to their domestic IT/data center activities.

"Recently, we assisted a customer with a data center project in Europe, which required the integration of technology from 11 different vendors. With the successful completion of this and a number of other complex international projects, we have built credibility in the market, which we expect to translate into growing momentum for our business. Although currently limited in scale, we believe that our international business has the potential of becoming an important contributor to group revenues."

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Network Rejuvenation



The time is right for upgrading the network backbone to 10 Gigabit Ethernet.

“Our network is incredibly fast and we have way more bandwidth than we can ever use,” said no one ever.

The truth is that when it comes to network capacity, there is no such thing as “enough.” CIOs and IT managers perpetually face demands for more speed, more capacity and more services. It’s a tough job in today’s data center where bandwidth-heavy technologies and applications place a heavy burden on aging network infrastructure.

On average, bandwidth consumption and data volumes in the data center double every 18 months, and the number of devices accessing the network doubles every 30 months. Few organizations have a network infrastructure built to support such explosive growth.

In one recent survey of more than 1,500 IT leaders in North America and Europe, 81 percent said that growing demand for network bandwidth is one of the most critical

issues facing data centers, and 70 percent said that improving I/O performance in the data center was a “high” or “very high” priority.

Time is Right for 10GbE

This is why organizations are increasingly migrating to 10 Gigabit Ethernet (10GbE) data center infrastructures. More than 5 million 10GbE ports shipped in the fourth quarter of 2013, a 35.5 percent growth year over year. With a 10-fold improvement over the conventional 1GbE network backbone, 10GbE delivers the performance boost organizations need to accommodate current growth and prepare for anticipated demand.

The technology behind 10GbE isn’t new. The standard was ratified by the Institute of Electrical and Electronics Engineers (IEEE) in 2002, but for years it was used almost

exclusively to interconnect switches and routers. Server connections in data centers generally remained 1GbE for cost-performance reasons — it was more cost-effective to have multiple 1GbE connections than a single 10GbE port.

The cost-performance advantage is quickly disappearing. With demand driving volume, 10GbE has experienced significant price drops over the past two years. The cost per gigabit of bandwidth and the price per port have dropped enough to make the 10GbE upgrade a value proposition.

Another factor spurring the upswing is increasing support for 10GbE on motherboards from nearly every major server vendor. This means organizations no longer have to use pricey and power-hungry adapters to connect servers to the faster network backbone. Motherboards with onboard 10GbE controllers generate less heat with a better cost-performance ratio and a smaller footprint than those requiring a PCI-Express expansion card.

Enabling Virtualization, Consolidation

Analysts agree that the rapid growth of server virtualization is probably the single biggest factor behind the increased demand for 10GbE. While 1GbE is sufficient to support basic file serving, email and databases, it can't meet the demands of the virtualized environment. Physical servers that previously hosted only one application are now running virtual operating systems and hosting multiple apps, fueling the need for increased I/O capacity at every server.

Storage network changes also make 10GbE more compelling. Storage is increasingly dependent on heavy algorithms for compression, de-duplication, thin provisioning and more. Additionally, the increasing use of flash-based solid-state drives is delivering massive performance improvements over rotating media. These changes all increase the need for a high-performance network infrastructure.

Additionally, 10GbE supports network convergence. Data centers typically use Fibre Channel for storage networks and Ethernet for IP networks. However, 10GbE can accommodate Fibre Channel over Ethernet (FCoE), a technology that encapsulates Fibre Channel frames over Ethernet networks. This allows organizations to consolidate the LAN

and the storage network to conserve costs and resources. FCoE is not supported on 1GbE networks.

Supporting Wi-Fi

Organizations seeking to eliminate bandwidth bottlenecks within their Wi-Fi networks are also upgrading their networks with 10GbE. No longer viewed as a matter of convenience or a way to cut costs, reliable Wi-Fi is a strategic business necessity capable of creating competitive advantages and revenue streams. Wi-Fi supported by 10GbE helps organizations maintain the highest levels of productivity and customer service, support and quickly deploy new and innovative services, and maintain a more cost-efficient IT environment.

Organizations considering the new 802.11ac Wi-Fi standard should be particularly interested in 10GbE. With 802.11ac, 10GbE uplinks are needed to consistently deliver higher data transfer speeds and better data rates in high-density environments. A single 802.11ac access point will be capable of supporting much higher traffic volume and faster wireless connections, but only if 10GbE is in place to provide a faster connection between the access point and the network core.

It is safe to assume that demand for more network capacity, speed and services will only continue to grow. Upgrading to a 10GbE network backbone makes a lot of sense. It not only delivers key improvements in bandwidth, scalability, reliability and performance, but lays the groundwork for the next logical step in the evolution of the data center — the 40GbE network. The

40GbE standard was ratified four years ago and a number of routers, switches and network cards operate at this speed. Many enterprise organizations are already using 40GbE to aggregate 10GbE servers for high-performance computing, cloud and big-data applications.

“10 Gigabit Ethernet is finally on the verge of becoming the most popular data center switch port connection, after a long and sometimes rocky adoption curve,” said Seamus Crehan, president of Crehan Research, which specializes in analysis of the data center switch, server and storage networking markets. “And as 40GbE starts to ramp, we are still forecasting its adoption curve to look much better than that of 10GbE. This is already evidenced by the fact that recent data center switch introductions are really pushing the envelope on 40GbE port densities and economics.”

A 10GbE network backbone not only delivers key improvements in bandwidth, scalability, reliability and performance, but lays the groundwork for the next logical step in the evolution of the data center — the 40GbE network.

Transforming IT Processes

Data center automation and orchestration tools enable organizations to create a more agile IT environment while reducing costs and risks.



One hundred years ago, Henry Ford revolutionized manufacturing with the introduction of the moving assembly line. It began with workers arranging tools and parts in a row and dragging each auto down the line on skids. Ford then implemented a rope-and-pulley system and then, in February 1914, a mechanized conveyor belt. His innovation cut the time to build a car by nearly 80 percent.

Ford had worked to improve productivity for years, breaking the automobile assembly process into steps, training workers to perform one task and engaging a motion expert to make those jobs more efficient. But it took automation to truly transform the manufacturing process.

Data center managers are at a similar crossroads. A growing array of tools promise to streamline IT management and administration processes, yet operational costs are stubbornly stuck at almost 80 percent of IT budgets. IT teams face a constant challenge to keep up with growing demands for compute resources, storage capacity, network bandwidth and other services.

Virtualization has been embraced as way to reduce capital and operational expenses by enabling organizations to maximize the value of their data center resources. At the same time, virtualization creates a more agile IT environment in which the deployment of applications is accelerated. While this allows organizations to bring products and services to market faster and quickly take advantage of new business opportunities, it requires that IT departments work faster

and faster to satisfy ever-increasing demand and deliver revenue-producing value.

IT departments are finding it difficult to keep up using traditional tools and methodologies. There is a rapidly growing need for automation and orchestration technologies that add a layer of intelligence throughout the technology stack.

The Layered Approach

Even the best IT team on the planet cannot effectively support strategic initiatives when they're constantly tied up with day-to-day tasks such as provisioning, configuration, monitoring and administration. By automating many of these tasks, organizations can speed the deployment of new services and maintain optimal network performance and availability for today's mission-critical applications.

Server-level automation solutions are mature and robust, virtually eliminating manual configuration processes. Templated tools enable administrators to set up one server profile that can be propagated across new deployments. This enables the kind of rapid provisioning that reduces the risk of human error, increases IT agility and moves closer to an on-demand environment.

Similar tools are available to automate workload provisioning at the virtualization layer. Administrators can create virtualized environments in which each workload is monitored, managed and controlled by software, with processes that provision new virtual machines as needed to meet changing demands.

At the software layer, administrators can set load-balancing thresholds for key applications, and automate the provisioning of resources based upon utilization. If application

performance is impacted by peak demand, automated processes can spin up a new instance of the app or move it to a different server.

In regulated industries, many organizations are turning to automation to reduce compliance costs and risks. Compliance automation tools help ensure that automated provisioning, patching and management meet industry standards and regulatory requirements, and provide automated remediation of detected violations.

These tools not only relieve IT bottlenecks but improve productivity, customer service and responsiveness throughout the business. Those benefits, coupled with reduced operational costs and improved utilization, help to accelerate the ROI from IT investments.

The Next Step: Orchestration

Here's the catch. If the discrete systems within the data center environment — compute, networking, storage and virtualization — are functioning independently of one another, management is much more complex and automation becomes a nightmare.

The next step toward taking full advantage of virtualization and the cloud is orchestration. Orchestration brings all the pieces together so that they can be managed as an integrated whole using workflows based upon best practices.

With orchestration, all components are viewed holistically as part of one ecosystem that is aligned with business objectives and managed through a single interface. The infrastructure can be scaled up or down on demand through automated provisioning and change management that adheres to defined policies and service levels.

This approach eliminates silos and improves collaboration, making it possible to develop best practices for the entire environment in order to speed the delivery of services and quickly adapt to changing market conditions and business needs. Orchestration also enables organizations to make better use of their IT resources and reduce costs by eliminating the need for manual management of services.

A century ago, Henry Ford figured out that human-centric processes can go only so fast. In order to realize his vision of a "motor car for the great multitude," he had to automate the assembly line and build machines that could stamp out parts more efficiently than any human could.

The modern data center is no different. Organizations can achieve significant cost savings and agility through virtualization, but manual IT processes place very real limits on the ability of IT to keep up with growing data center demands. Automation and orchestration tools can help organizations optimize IT operations, accelerate service delivery and realize the full business benefits of today's data center technologies.

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EMC Hybrid Cloud

The bridge between public and private cloud computing

EMC's Hybrid Cloud solution delivers the speed and agility of public cloud services with the control and security of private cloud infrastructure.

Beyond delivering baseline Infrastructure-as-a-Service (IaaS), it also delivers feature-rich capabilities to expand to business-enabling IT-as-a-Service. Backup-as-a-Service and Disaster Recovery-as-a-Service are now just policies that can be enabled with a few clicks.

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Contact your ProSys representative today to learn more!



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