FOUR LESSONS LEARNED IN MOVING TO THE CLOUD

By David Savino, Chief Technology Officer, Column Technologies

Cloud computing, in its simplest form, provides a framework for organizing data center improvement. Cloud reaches well beyond flashy, "nice-to-have" technologies. It's based on the logical convergence of real and mature technologies, such as consolidation, automation, and virtualization. At the same time, however, cloud represents a revolutionary advance that requires far more from IT than simply putting a request console on the front end of a virtualization engine. Cloud success requires a cultural transformation of IT.

Column Technologies has been working closely with IT organizations to help them meet their objectives with this transformation. Through this involvement, we have gleaned four lessons based on real-world experience. These lessons can help you to avoid common pitfalls as you navigate your path to the cloud.

Our experiences come primarily from working with customers who are building on-premises, private clouds. These customers view the private cloud as a pathway to a hybrid cloud that combines private and public cloud services. The enterprises we have worked with want to understand the cultural transformation required for effective cloud computing. They also want to master cloud technologies before they offload services to public cloud providers. That way, if something goes awry, they are not wholly dependent on an outsourcer to remedy the situation. Although the objectives of companies building private clouds typically differ from those building public clouds, the lessons apply to both.

LESSON 1: KEEP IT SIMPLE

A major attraction of cloud computing is that it enables IT to "spin up" virtualized resources at the touch of a button. Without controls, however, instant provisioning translates into the proliferation of thousands of unregulated resources. The impact on IT support can be huge.

Consider the number of components that comprise a single virtual server: the operating system, applications, patches, drivers, security software, access controls, and network connections. Supporting a multitude of different servers and ensuring that they maintain compliance with service level agreements, security requirements, internal policies, and external regulations is extremely difficult without appropriate controls.

One key to managing virtualization sprawl is to limit the number of options and combinations through standardization. This greatly simplifies resource management.

Simplifying life for the IT staff is not the only reason for limiting the number of options. Another major attraction of cloud computing is user self-service. Effective self-service strikes a balance between utility and ease of use. It presents people with the resources they need, without overwhelming them with too many options and combinations. Simplicity allows users to find and request what they need without an intimate knowledge of the technical details of the underlying infrastructure. An effective user portal also contains an entitlement layer that shields the user from selecting items he/she is not authorized to request.

Data centers accumulate many different resources over the years. It would be ill-advised to propagate this problem into the cloud. Just as moving to a new house gives you an opportunity to jettison items you no longer want or need, moving to the cloud gives you the opportunity to cull your resources to those that are most important to the business.

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In addition to standardizing offerings, it is also essential to deliver standardized and well-understood processes that streamline and speed operation. For example, you may already offer virtual resources, but the request and fulfillment process for obtaining those resources involves manual steps. So instead of taking minutes, it may take days just to fulfill a request to "spin up" a virtual server. This common issue runs counter to the "shopping cart" experience of cloud computing. Standardizing and automating your processes and service offerings help you to gain the "speed" advantage of the cloud.

Process standardization also facilitates data center consolidation. With the cloud, you can establish a standardized process, implement it in a single data center, and utilize it to provision resources from that data center to all the others. In time, you may be able to reduce the number of data centers, thereby cutting your IT costs significantly in several areas.

LESSON 2: UNDERSTAND THE LANDSCAPE

Today's composite, multitiered applications are highly complex and involve the interconnection and interoperation of servers, databases, middleware, storage, networks, and other components, some of which may be outsourced, off-site, or shared. If your organization is like most, you have only fragmented and incomplete views of these applications and their interdependencies. Gaining a complete picture of the landscape typically involves manually piecing together information from multiple, disparate sources. The resulting picture is often incomplete, and as your IT landscape evolves, the picture may be quickly outdated.

Before moving any application to the cloud, you must understand all the application components and their dependencies. That's the only way to make sure you don't leave any piece behind or break connections between pieces when you move to the cloud.

Fortunately, discovery tools are now available that automatically discover all components of an application to provide you with a complete picture. In many cases, the tools surprise users by uncovering previously invisible resources, such as obsolete operating platforms still running Windows NT or Windows 2000.

The ideal discovery tool finds all application components — not only at the network layer, but also all the way up to the Open Systems Interconnection (OSI) stack. It also discovers and maintains application topologies that show the interdependencies and interconnections of the application components. In addition, the tool periodically scans the environment to ensure that the application pictures are kept current. This helps enterprise change management teams to predict the effects of an infrastructure change — a capability not possible in the absence of an accurate impact model.

Some discovery tools catalog and track application topologies in a repository, such as a configuration management database (CMDB), where they are available to other service management tools and functions. For example, when moving applications to the cloud

infrastructure, you can take advantage of provisioning tools that leverage topology information stored within the CMDB to ensure that all application components and their interconnections are moved completely and correctly.

LESSON 3: KEEP AN OPTIMUM BALANCE

A major benefit of cloud computing is that it enables you to maintain the optimum balance between the needs of the business and the supporting IT infrastructure. That means ensuring that sufficient capacity is available to keep your service delivery at agreed-on levels — now and in the future — without overbuying equipment.

Assessing capacity requirements in the cloud is challenging. There are many elements to consider, such as processing power, memory space, storage, and network bandwidth. Capacity management becomes more difficult when the environment is highly dynamic, with virtual resources being continually deployed, moved, decommissioned, and reassigned as workloads change. In addition, virtual resources share physical resources, and the competing needs of those resources must be anticipated and addressed as applications expand and contract. You have to look beyond present requirements and ensure that you are adding capacity at the right time to accommodate growth.

Here again, tools are available to help you. Capacity planning tools enable you to test drive virtual resources on different combinations of physical resources. In this way, you can determine the optimum placement of virtual resources on your physical infrastructure. Monitoring tools track workloads over time and aggregate the data in a repository. Predictive analytic tools enable you to mine the historical workload data to identify trends that influence capacity requirements. With these tools, you can ensure that sufficient capacity is available to meet workload growth trends, not only now but also in the future.

LESSON 4: DISCOURAGE THE "FREE LUNCH" ATTITUDE

When people are offered a free buffet, they tend to overfill their plates. Likewise, if you offer computer users a free ticket to resources, they'll probably request more than they need. A developer may request two virtual servers when one will do the job. Some business units or departments even take a "first-come, first-served" approach to IT resources, staking out more than they need to ensure adequate capacity down the road. These resources — already paid for — sit idle until sometime in the future. While cloud resources are freely available when needed, cloud resources are not free.

You can encourage more frugal behavior by charging users for the resource options they request. Charge-back is a necessity for public cloud providers. For private cloud builders, however, charge-back may be a new concept. An alternative is a show-back mechanism that makes users aware of the costs of the options available to them without actually charging them for those options.

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Paying for the resources they request — or at least knowing what those resources cost — encourages people to be more thoughtful in requesting resources. It impresses on them that the cloud is not an unlimited pool of free resources. Rather, costs are involved, so there should be a valid business justification behind every request.

TAKE PRIDE IN THE RESULTS

By giving careful consideration to the four lessons presented here, you can successfully navigate the cultural transformation of IT as you move to the cloud. By keeping it simple through standardization of service offerings and processes, you'll reap the agility benefits of the cloud without creating a management nightmare. With tools that catalog and track your application landscape, you can move applications to the cloud with confidence — and continue to manage them effectively after they are moved. By carefully matching capacity with present and anticipated future workloads, you can maintain the high device utilization made possible by

the cloud, while still meeting service level commitments. And finally, by keeping users informed of the costs of their service requests, you can encourage them to take a more cost-effective approach to ordering services.

To learn more, visit **www.columnit.com** and **www.bmc.com/cloud**.

ABOUT THE AUTHOR

David Savino is the chief technology officer and one of the founders of Column Technologies. He presents Column's vision of business-centric IT to global customers across many vertical markets. He has been instrumental in the development of many of Column's strategic accounts and key to the growth of IT solution partnerships. Savino speaks often at industry events, where he champions IT process improvement and technology that works. He holds advanced certifications in networking, ITIL, and PRINCE2. He is currently leading Column's cloud computing consultancy.

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