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## Narrow down your cloud tool choices

Most enterprises know the major cloud computing solutions providers, but several lesser-known players are making their mark. Whether any of these vendors will be successful is unknown.

So, with hundreds of cloud solutions providers on the market, what's the best way to classify them to find the one that products meets your needs? Early attempts to categorize cloud providers haven't been really useful in shedding light on leaders in key areas like application migration, automation and monitoring.

And all of these tool categories have benefits. Cloud application migration tools are necessary for mobbing apps and creating hybrid clouds. Automation tools facilitate provisioning, reduce errors and cut costs, making them highly visible. Cloud monitoring tools, while basic, haven't received as much attention, even though they are needed to ensure performance and security. Here are a few of the top cloud tools in each category.

**Application migration tools**
Interoperability is an important topic in cloud computing, especially when it comes to hybrid clouds. And a key piece of interoperability is application migration, or the ability to move apps back and forth between private clouds and public clouds or between one public cloud and another.

Moving applications between clouds allows enterprises to choose the most suitable technology and avoid vendor lock-in. But this migration isn't possible without tools that work with different cloud vendors and services. There are a number of companies in the application migration market, including the following:

- CloudSwitch Inc., which Verizon Communications acquired in 2011, uses Cloud Isolation Technology to facilitate multi-tier application migration to the cloud. Cloud Isolation Technology is a virtualization technology layer that automatically runs on top of the cloud provider's hypervisor and beneath an end user's OS.

  The virtualization layer relays information to the virtual machine (VM) without requiring any additional information from the cloud provider. It protects and isolates an environment in the cloud. You don't need to modify applications when using CloudSwitch; the technology maps an application so it appears to be running within the target cloud environment while maintaining the same configuration as the source environment.
- Racemi DynaCenter, captures a server (physical or virtual) in either a data center or a cloud and then deploys it in a target environment. An important component of Racemi Inc.'s application migration tool is a management appliance that can access the captured server environment as well as the target server environment. It maps between the two environments.
- AppZero provides software that creates, controls and maintains virtual application appliances (VAAs). VAAs are self-contained, portable units that do not have an OS. If you have an enterprise application, you can virtualize its deployment using AppZero products. Once it is in VAA format, you can move it between various IT infrastructures.
- Citrix Systems Inc.'s NetScaler Cloud Bridge extends the source cloud to make cloud-hosted applications appear as though they are running on one contiguous enterprise network. The bridge contains a secure tunnel that provides connectivity between clouds and allows data and information to be moved securely. It also offers transparent access to application services that are hosted in the source cloud, such as domain name system (DNS) and lightweight directory access protocol (LDAP). NetScaler Cloud Bridge creates an overlay network that is a logical extension of the source cloud

DMZ to make the settings on the target cloud virtual LAN (VLAN) appear similar to those on the DMZ VLAN.

**Cloud automation tools**

Server virtualization can reduce the amount of time it takes to provision servers, but it does not speed installation. To control and manage the infrastructure, IT managers must use labor-intensive management tools and manual scripts. It's difficult for IT teams to keep up with constant changes needed to maintain access and security in conjunction with a cloud's dynamic provisioning and VM movement. This makes automation an important piece of the move to the cloud. Here are a few companies that provide cloud automation tools:

- Cisco OverDrive, which Cisco Systems Inc. acquired from LineSider Technologies in 2010, automates the provisioning and deployment of network services in cloud environments. When resources are moved or changed, the policy-driven tool modifies the underlying network infrastructure. OverDrive sits between an LDAP directory, a hypervisor manager and device controllers to manage routing and virtual private networks, switching and VLANs as well as firewalls and associated access control lists.
- DynamicOps Cloud Automation Center is an Internet model-driven platform based on Microsoft Windows Workflow. Automating the delivery of predefined IT services in private cloud infrastructures is faster than traditional manual methods; the tool allows automation across private and public clouds.
- HP Cloud Service Automation is composed of several Hewlett-Packard software tools that automate provisioning, configuration, patching and release management. The suite simplifies and automates the deployment of databases, middleware and packaged applications and enables composite application provisioning and monitoring in heterogeneous and extensible cloud computing environments.
- The CA Automation Suite for Data Centers from CA Technologies automates server provisioning, processes and configuration management.

**Cloud monitoring and management tools**

If you look at the evolution of IT -- from mainframes with shared resources to clients and servers with dedicated resources and then back to shared resources with low-cost hardware -- you know that all systems behave differently. There are dependencies in virtualized environments that didn't exist in the client or server. This blurred line of dependency is forcing IT staffs to adjust how they monitor and manage environments.

IT organizations often don't properly use monitoring tools for virtualized environments. There is a tendency to use the same monitoring tools that were used in the traditional data center, but these tools won't adequately monitor traffic between virtual servers, if at all. Local communication between virtual servers can go unmonitored; traffic that runs through a virtual switch is practically invisible because it never hits a wire.

To ensure the optimal cloud experience, admins should monitor virtual traffic between VMs. The following are some available cloud monitoring tools:

- NetQoS Service Automation, which CA Technologies acquired in 2009, provides network software for performance management and response time analysis. It troubleshoots network application performance issues, plans for change and manages service levels.
- Hyperic HQ open source software monitors virtualized infrastructures and automatically discovers, monitors and manages software services. It also monitors servers, databases, authentication systems and other components that comprise a data center. SpringSource acquired Hyperic in 2009 and VMware Inc. acquired SpringSource later that year.

Even though open source software is making its mark on the cloud computing market, Hyperic HQ is the only product listed here that provides open source cloud software. There are, however, several companies,

such as Eucalyptus Systems, OpenNebula and the OpenStack project, as well as other open source hypervisors such as KVM and Citrix XenServer that target cloud environments.

- New Relic Real User Monitoring focuses on application performance monitoring, giving cloud managers the ability to see what's going on in the environment.
- SolarWinds is a complete set of tools for monitoring networks, storage, applications, servers and virtualization performance. The tools provide visibility into the health of CPUs, memory and networks in a virtual environment. This suite monitors the cloud stack from the top down -- through the devices.
- AccelOps APM monitoring tools capture and analyze information about the network infrastructure. Cloud managers can use AccelOps to access status, events, trends and configuration data about networks, network devices, systems, applications and virtual environments. Admins can also set up alerts to notify them of performance or memory allocation problems.
- Nimsoft Monitor for private clouds monitors servers, network devices, databases, and applications, along with virtualized environments based on VMware ESX, VMware vSphere, Microsoft Hyper-V and Citrix XenServer. CA Technologies acquired Nimsoft in 2010.

**Avoiding cloud tool mistakes**

Most of the tools listed here are relatively new, so they're only being tested in production. When choosing your cloud tool, be sure to check vendor references. If a vendor doesn't list customer references, beware.

You should also be wary when looking at cloud tools from companies that have been acquired or are candidates for acquisition as this can lead to lock-in. This happens frequently when an acquired company's tool is bundled or buried into a larger set of products and is no longer sold separately.

Some enterprises are creating clouds without first considering application migration, automation and monitoring needs. Without tools that take into account these functionalities, enterprises will have a hard time realizing some of the more important benefits of cloud computing -- agility, flexibility, lowered costs and scalability.

**ABOUT THE AUTHOR:**

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