Overcoming the Obstacles to Cloud Adoption

A successful cloud migration project requires a strategy that methodically addresses costs, security and application performance.
First Things First

It’s not difficult to recognize the allure of cloud computing. The economies of scale and flexibility inherent in the cloud model are proven and plain to see. Where things get complicated is in examining an entirely on-premises environment and figuring out which pieces of that can be deployed effectively to the cloud.

The transitions involved in migrating workloads to the cloud can be complex, especially in organizations with carefully built-up infrastructures already in place. There are technical challenges, of course, but there are also obstacles in convincing decision-makers and IT teams to see the efficiency benefits of the cloud.

This handbook serves as a guide to confronting that resistance. First, cloud expert Tom Nolle outlines how to make the case for cloud adoption, suggesting specific steps to take and in what sequence. Winning approval for what will ultimately be a successful cloud project, he says, is not as difficult as some might think.

TechTarget’s Stephen Bigelow, meanwhile, looks at whether tools can help a business manage its cloud costs. Running certain workloads in the cloud will shift some of your costs into the Opex category, but there’s a variability to cloud costs that will need to be reckoned with.

Lastly, IT expert Brien Posey offers some guidance on how to develop an effective migration strategy. He suggests a prudent approach that accounts for important considerations such as hardware lifecycle and application performance.
Confronting Resistance to Cloud Adoption

Despite cloud computing’s growth, it’s clear that many companies don’t know how to drive a cloud project forward—they’re either picking the wrong benefits or meeting too much opposition internally. Get both of these things right and cloud resistance can evaporate.

A successful cloud project has three demands: prove the benefits, prove the provider choice and defend against objections. All of these relate to identification and delivery of benefits, so start there.

Cloud computing can create three distinct benefits, and most projects can draw a bit from them all to build support and momentum.

Cash, Costs and Agility
An important benefit is the cloud’s ability to reduce capital costs and improve cash flow. Because most projects underutilize previously purchased hardware, the cost of buying only the required cloud computing resources will be lower than the cost of acquiring physical servers, storage and so on.

Not only that, cloud computing can be expensed, meaning that the full annual cost is written off against business revenue. Purchased computers must normally be depreciated, so that while a company pays the purchase price it can only deduct a fraction of that cost per year. For small and midsized businesses, this difference creates a critical benefit.

The second benefit the cloud can deliver is reduced support and licensing costs. A server that’s been bought must be supported with a maintenance contract. In addition, it needs to be powered and cooled, and skilled resources may be needed to monitor the system. In the cloud, the hardware for infrastructure as a service (IaaS), platform as a service (PaaS) and software as a service (SaaS) and some or all of the software (in PaaS and SaaS) are provided as
a service, which means the support comes from the cloud provider. In many cases, the use of cloud services (particularly SaaS) will result in a significant reduction in your costs.

The third major cloud benefit is business agility, which has two parts. The first is the time it takes to deliver an IT application to support a new business problem or opportunity, and the second is the ability to match computing resources to variable business loads.

Elasticity makes the cloud superior with regard to both of the aforementioned business agility components. There is no protracted purchase and installation period, no need to buy computer resources large enough to match your estimated maximum needs, and no need to make secondary purchases when you find you’ve guessed wrong. Cloud capacity can be ordered with no delay and can be expanded or contracted with usage to avoid overspending.

Many cloud planners make the mistake of running first to the people who sign off on project financials. The best way to start a cloud approval process is to begin with the IT department and the line departments affected by the application being run. That means finding out whose budget the costs will come from. For this group, the document you’ll need to generate is a total cost of ownership (TCO) chart. This will show the cost of acquiring, sustaining and supporting both the cloud alternative and the purchased IT alternative for a fixed period, usually either three or five years depending on how long on-premises computers are kept in your company.

The TCO chart should show savings to be obtained from using the cloud. This means that your opening position with the line departments is that the cloud will cost them less. The TCO will rely primarily on the capital cost savings and the support/operating savings; avoid the temptation to introduce agility benefits here because they are more difficult to quantify.
Still, don’t ignore agility entirely. Experience shows that the best way to introduce this characteristic is to ask your line departments what they would do to respond to a sudden expansion or reduction in business, and how long it would take to make the necessary changes. By explaining how the cloud adapts to business changes, you can validate a powerful benefit despite the fact that it’s difficult to quantify.

**MANAGE OBJECTIONS**

When you have garnered an acceptance of the cloud migration option from IT and line departments, it’s time to take on financial approval. This will also start with the TCO, but CFOs and similar managers will want a financial comparison of five-year cash flow with the cloud versus purchased IT resources.

The cloud will almost always improve cash flow by matching deductions with spending. Buying computers won’t do that.

Objection management is the last issue, and one you shouldn’t undertake until you’ve addressed the benefits. The most common objection to the cloud is, of course, “Will it really save me money?” If you’ve done your TCO and cash-flow analysis properly, you should be able to answer that skepticism.

Other concerns will center on:

- That cloud costs will rise over time but computer costs won’t
- That the cloud isn’t secure
- That auditing/compliance requirements can’t be met in a cloud environment

All of these can be answered.

Cloud service providers have steadily reduced their prices, without ever increasing them. In contrast, every TCO element in private computing—with the exception of computer prices—gets more expensive over time. The cloud is a good bet for stabilizing costs.

The most common objection to the cloud is, of course, “Will it really save me money?” A TCO and cash-flow analysis should be able to answer that.
On the security and compliance side, cloud computing doesn’t really raise risks that company Internet use hasn’t already raised. Security and compliance practices and tools used within a company can also be applied to cloud resources. It’s just a matter of learning how the cloud provider best supports encryption, physical data security and so on.

You know the risks from the Internet. You know the practices from your own current data center operations. You only need to fit the practices to the cloud provider and cloud service type you’ve selected. Your cloud provider will be able to help with case studies and tools to create the needed level of cloud security.

Most resistance to the cloud comes from a failure to communicate benefits and address risks. Do both, in the right order, and you should be able to sail through the review process and be on your way to a successful cloud project. — Tom Nolle
Understanding Cloud Costs

A principal argument for cloud services is the shift from capital to operational expenses. While it’s an attractive notion to most business leaders, it’s important to remember that cloud costs are recurring—not fixed.

The monthly cost of cloud services varies dramatically depending on changes in usage. For organizations expecting steady cloud expenses, this realization can come as an unwelcome shock.

Luckily, businesses can turn to a growing suite of software tools to track private, public and hybrid cloud usage. These tools help users visualize, forecast and improve cloud budget planning. For example, RightScale’s Cloud Analytics offering displays each cloud account in a dashboard, monitors usage and breaks it down by application, group and so on. Additionally, it projects future usage and cost trends based on seasonal patterns.

There are many other cloud management tools for budget planning, such as Cirba’s private cloud management software and Egenera’s PAN Cloud Director.

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Budgeting errors can cause big problems for a business, and some cloud providers recognize that. Vendors, including VMware, sponsor a Cloud Credits Purchasing Program, which allows users to buy services upfront and redeem those services with certain cloud providers over time. This minimizes unexpected budget fluctuations and maximizes the full budget.
Finally, it’s important to use cloud budget data. Shifting workloads from an on-premises environment to the cloud changes Capex to Opex, but don’t assume it automatically saves you money. Determining actual—if any—savings takes careful budget analysis.

Budget tools can be extremely useful for ROI assessments. The data culled from these tools, such as actual versus projected costs or long-term budget trends, provides vital feedback to finance and business leaders. This refines cloud budgeting processes and justifies cloud usage.

Cloud services are effective alternatives to traditional on-premises deployments. But cloud doesn’t automatically make those services better for a business. Any move to the cloud must meet a clear business need, be technically feasible and offer measurable cost benefits. —Stephen J. Bigelow
The Cautious Approach to Cloud

**EVEN IN THE** server virtualization era, deploying on-premises servers comes at a cost. Along with the licensing expenses, there are costs associated with hardware resource consumption and support infrastructure. As such, there is almost always a significant investment associated with an on-premises server.

Outsourcing a server’s data and/or functionality to the cloud may mean abandoning your on-premises investment unless an on-premises server can be repurposed. Although this rip-and-replace approach to cloud migration may not make financial sense for organizations that have a large investment in an on-premises data center, an organization can still benefit from migrating certain resources to the cloud.

Server hardware eventually becomes obsolete. Organizations have traditionally coped with this reality by adopting a hardware lifecycle policy. They might, for example, choose to retire servers after five years. A new twist on that practice would be to integrate a cloud services roadmap into that hardware lifecycle policy. Doing so would allow IT teams to migrate on-premises resources to the cloud instead of moving them to newer hardware.

Cloud services can be particularly attractive for smaller organizations and startups. Not only does the cloud let a business get started quickly and without a sizable investment, it provides access to enterprise-class hardware and fault-tolerant features that might otherwise be unaffordable for a new or small company.

**APPLICATION REQUIREMENTS FOR CLOUD MIGRATION**

In the case of application servers, administrators must consider whether the specific application can function in the cloud. Likewise, the application’s performance must be considered.
Compatibility usually isn’t a big problem for newer applications that run on top of modern operating systems. It is also easy to assume that performance won’t be an issue for such applications because most cloud providers will allow hardware resources to be allocated to hosted servers on an as-needed basis.

Still, you’ll need to consider performance. Even though you can provision the hosted application server with nearly unlimited compute and memory resources, Internet bandwidth may impede application performance. It does little good to have a high-performance hosted application server if bandwidth limitations stand in the way of a good user experience.

The second consideration is application portability. Although it is often easy to migrate a virtualized application server to the cloud, the application might have external dependencies that rule out (or greatly complicate) a migration. For example, an application might have an Active Directory dependency or require access to an on-premises SQL server database.

For older applications running on legacy operating systems, a move to the cloud may not be an option. Lab testing is the only way to know how an application will behave in a cloud environment.

Another consideration for moving application servers to the cloud is hardware scalability. Some IT analysts have suggested that cloud services are ideal for hosting hardware-intensive workloads because service providers generally offer nearly unlimited scalability. That scalability, of course, comes at a price.

Providers of _infrastructure as a service_, including Microsoft and Amazon Web Services, charge customers a fee based on resource consumption. As such, a cloud-based, high-performance computing environment can become cost-prohibitive. Recently a client told me, for example, that it costs more than $10,000 per month to operate a single

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high-performance application in the cloud. The majority of the cost is related to CPU and disk I/O consumption.

**VIRTUALIZATION AND NETWORK CONCERNS**
Regardless of organizational size, a key consideration is whether the workloads targeted for cloud migration have been virtualized. In some cases, migrating workloads to the cloud is easier if on-premises servers have already been virtualized. In fact, some providers will allow an organization to port VMs directly to the cloud.

If on-premises servers have not been virtualized, a migration to the cloud is typically still possible. That process, as you’d expect, will likely be more complicated.

Another factor to consider is the on-premises network. When an organization plans to keep resources on-premises (even temporarily), a cloud network must function as an extension of the on-premises Active Directory forest. This means that the organization will typically need to deploy cloud-based domain controllers, DNS servers and possibly DHCP servers. More importantly, the organization will need to figure out how to establish a secure communications path between the cloud-based virtual network and the on-premises network.

This requirement usually isn’t a deal-breaker for organizations with an existing on-premises network, but it does mean that a significant amount of planning may be required before beginning a migration.

As an organization contemplates the risks and benefits of a move to the cloud, it is important to keep in mind that cloud migrations are not an all-or-nothing proposition. In most cases, it will make sense to move certain services to the cloud while continuing to operate others on-premises. —Brien Posey
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