



EBOOK

Data Mobility: Your Key to Success in the Age of Cloud

Five Lessons From The Experts



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 **NetApp**



Data Mobility: Your Key to Success in the Age of Cloud

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*Imagine if
technology could
move and adapt—
at the speed
of business.*



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For too long, IT has been consumed by day-to-day operations. It's been seen as a mere builder of services, so in most organizations the business value of IT has gone unrecognized.

But in the transition from the Industrial Age to the Information Age, every enterprise is becoming an information enterprise. IT has a huge role to play in this promising future by partnering with the business to give it the tools that are needed to be productive.

IT becomes an enabler. Instead of having rules that forbid, IT can work with its users to encourage productivity.

CIOs can help the business stay competitive by managing bigger business demands and newer market opportunities. Deploying a private cloud will help increase agility and reduce costs. But if changing business needs are to be met, the number of workloads being run in public clouds will increase as well.

Smart CIOs believe that the results of using a hybrid cloud are superior to anything that you can do on the premises. With a hybrid cloud, you get instant infrastructure, of any size, that you can immediately turn on.

Imagine if technology could move and adapt—at the speed of business.

Imagine removing the barriers and constraints that engulf your business.

IT leaders and business leaders have long dreamed of such a world. That world is here today, thanks to hybrid cloud computing.



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The CIO's New Role: The Business of the Business

Cynthia Stoddard, CIO, NetApp

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*Cloud is changing
the IT focus from
technology
to service
relationships.*



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In 25 years of leading IT teams, I've had only two choices when it comes to solving technology challenges: We either build it ourselves or buy it from someone else.

Today, the CIO's role is changing. Now, brokering cloud services provides a third option, which dramatically changes the IT landscape—and the way that IT teams approach issues. Here's how.

The cloud—specifically [hybrid cloud computing](#)—is changing the IT focus from *technology* to *service*

relationships. It isn't necessarily **which** technology we use that's important, but **on whom** we rely to deliver the solution.

In the past, IT would decide on a piece of software or hardware, build a solution around it, and then be locked in for a number of years—maximizing investment and minimizing obsolescence for as long as possible. From operating systems to networks to even telephone systems, IT's role was to think as far ahead as possible and make an investment in the future.

This process was a delicate balance between investing in slightly more capacity or capabilities than you initially needed—to allow for growth—but not to invest so much that you tied up capital that could be used for other projects. Get it wrong and you could find your organization going down a technology dead end—a cul de sac.

Then IT departments found themselves focused on the business of maintaining the technology, rather than on the business of the business.

Times Have Changed

Now, with the introduction of cloud computing, CIOs have an entirely different landscape and industry to navigate:

SaaS—software as a service—allows a choice of applications that reduce the investment in static legacy systems.

PaaS—platform as a service—still allows our IT team to build solutions, but we no longer need to focus on the underlying platform.

IaaS—infrastructure as a service—provides immediate expansion capabilities as our needs grow. We take traditional software and deploy infrastructure that our IT doesn't have to buy or maintain.



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With cloud computing, CIOs have an entirely different landscape to navigate.



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These three new cloud services provide several exciting benefits. Here are my top five:

Pay as you go: As the needs of our IT team grow or shrink, we're no longer as concerned about long-term investment in licensing. Instead, our costs shift with our needs, taking the guesswork out of forecasting.

Consistent updates: We reduce the likelihood of out-of-sync software updates and force disciplined lifecycle management.

Focused staff: The team is now freed up to focus on the business of business. This is a tremendous boon for our business units: They now have an IT staff with the cycles to be part of the bigger picture. IT can help them build and grow the business.

Improved agility: Needs may change. Situations may change. But our IT team is now able to respond and adapt with agility.

Demonstration of new services and technologies: Ramping up pilot programs can now be done with minimal investment, for immediate use and viability testing.

Get on Board—or Be Left Behind

To truly understand the power of the cloud, you have to embrace the movement.

There are lessons to be learned. Here are six important aspects of our movement to a hybrid cloud environment:

1. Providing **advice and guidance** on appropriate cloud solutions—the broker role
2. Gathering a **solid understanding** of cloud-provider roadmaps
3. Adapting to **evolve with** the changing IT landscape
4. Being willing to **work in partnership** with competitors
5. Driving **efficiency** through disciplined cost optimization
6. Becoming **experts** in business process and agile responsiveness

The Bottom Line

As CIO, you want to pull the correct “lever” to meet business requirements. Increasingly, those levers come in the form of cloud solutions.



How has your role changed? Share your thoughts with Cynthia Stoddard. [@StoddardCA](#) (Twitter)

[Cynthia Stoddard, CIO, NetApp](#)



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Three Big Cloud Fears (and How to Solve Them)

[Brad Nisbet, Senior Marketing Manager, Cloud Solutions, NetApp](#)

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Spending on cloud computing is expected to double in just three years, [reports](#) IDC. That's *six times* the growth rate of the overall IT market. Some enterprises hesitate to fully embrace the cloud. But in the end, it'll be a *major component* of the future of computing infrastructure.

So your task will be easier if you understand the risks and develop a clear strategy for the transition.

IT is constantly buried under extremely demanding business and operational objectives. A cloud-based IT delivery model can speed up application development. It can also provide flexible environments to accommodate the unpredictable needs of the organization and its customers.

So why are many businesses taking only cautious steps toward the cloud?

Cloud services are increasingly vital for success. So it's critical to understand how to deal with the three main inhibitors.

1. Complexity

The problem: Businesses that want to incorporate a public cloud into their IT environment often struggle with one question: "How do I get started?"

*Why are many
businesses taking
only cautious
steps toward
the cloud?*



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They're choosing between different service levels, virtualization and compute platforms, and data management frameworks. This can be a daunting task for any CIO's team.

In addition, managing these elements across a blend of private and public cloud resources is perplexing: Imagine the intricacies of managing data across disparate locations and platforms in a hybrid environment!

The solution: Develop a clear strategy, identify which workloads can be moved off the premises, and set concrete performance requirements. This will lead you to identify services and providers that can assist in your transition.

Additionally, take a tactical, piecemeal approach at the start. This will allow you to experiment with different solutions to find the best combination of services for your needs.

And work toward minimizing the fear associated with such a daunting and complex shift to a public cloud. Help your organization feel



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comfortable in taking the leap—emphasize that there are options to fine-tune and adjust the plan over time (if not right away!)

IT agility means having the capability to fine-tune architecture and solutions in a dynamic environment over time.



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2. IT Agility

The problem: IT has to meet the needs of the business. As these needs change, IT has to adapt, and fast.

For years, organizations have been working toward delivering agility within the data center. Now, as a public cloud is folded into their strategy, the ability to move applications, workloads, and data among cloud resources is critical. However, achieving that ability is easier said than done.

The solution: IT agility means having the capability to fine-tune architecture and solutions in a dynamic environment over time.

For many businesses, being locked in to a cloud provider is a big hurdle to adopting a public-cloud model. Without the right set of tools, it is. Being able to choose best-in-class solutions is a cornerstone of agility in the data center, and so it will be for the cloud.

Choose a cloud service that allows you to make adjustments with minimal pain and impact on the business.

3. Data Control

The problem: For years, large organizations have built their own virtualized data centers and private clouds. This was the best way to

ensure control of not only their IT environment, but, more importantly, of their data.

But as the popularity of cloud grows, IT organizations are drawn to exploring public cloud options. The mandate from the C-suite is to “Go figure out how to use the cloud.” IT is then faced with bringing a public cloud into the mix, managing it with a private cloud—and doing it all without dismantling the [data control](#) they’ve worked so hard to achieve.

The solution: [Software-defined storage](#) (SDS), which can be deployed on different hardware and supports rich automation capabilities, can be integrated into cloud deployments.

SDS can power a “data fabric” that seamlessly binds private and public clouds. Some offerings help businesses manage their data efficiently and build cloud infrastructures that balance private and public cloud resources while retaining full control and portability of their data.

The Bottom Line

CIOs and their teams continue to evolve toward being brokers of services that span cloud resources. As diverse and demanding workloads move to the cloud, the role of IT will become increasingly vital to maintaining the level of control and efficiency across a hybrid cloud environment.



What’s your take? Discuss with [@BradNisbet](#) (Twitter).

[Brad Nisbet, Senior Marketing Manager, Cloud Solutions, NetApp](#)



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The Hybrid Cloud: Shifting Emphasis from Cost to Benefit

Matt Watts, Director of Technology and Strategy, NetApp

The hybrid cloud has the potential to shift the cost/benefit emphasis from cost to benefit.



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For years, a message has been running through IT departments like an iPod® on repeat: *Reduce costs... reduce costs...reduce costs.*

Now, I'd be the last to argue that costs aren't important. But I *will* argue that the hybrid cloud has the potential to transform enterprise IT and shift the cost/benefit emphasis from *cost* to *benefit*.

The Sorry State of the IT Budget

To understand what I mean, let's look at the typical IT budget. Generally, IT spends money in three [distinct areas](#):

Run: This type of spending keeps basic applications and processes going so that the business doesn't fall apart. Software, hardware, and apps must be maintained and updated, questions about technology must be answered, broken technology must be fixed.

Run spending accounts for well over half of IT budgets, and although it is essential, it doesn't affect profitability.

Grow: This is spending on applications that power the business. In manufacturing, it's the apps that run the production line. In big banks, it's

the core banking systems. If *grow* applications are improved, they have the ability to add additional value to the bottom line.

On average, *grow* spending accounts for about a fifth of IT spending.

Transform: This area includes looking ahead to what a business *could* do—using big data analytics to make decisions about moving into new markets, developing new product lines, or offering customers new value propositions.

Transformational initiatives have the greatest potential to impact the bottom line, but they account for less than a sixth of the typical IT budget.

It's a Depressing Picture

Essentially, we spend most of our money in areas in which we have the least opportunity to create value. And despite the maniacal emphasis on cost cutting, IT spending has remained about the same for years.

Why? *Risk*.

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The Hybrid Cloud Brightens the Picture

The hybrid cloud dramatically alters this situation—not by changing the amount of money spent, but by enabling businesses to vastly increase their transformational bets.

As a result, we could see much more innovation and a faster pace of change.

There's no shortage of bright ideas. In most organizations, executives and workers come up with new concepts all the time. But they must be analyzed for their costs—usually IT costs—as well as their business potential. Most of the time, the risk of overspending precludes further development.

With the hybrid cloud, however, you can quickly explore a new technology—at low risk—by temporarily using thousands of CPU cores through a hyperscale provider such as Amazon, Microsoft, or Verizon—for a fraction of the cost of doing it in-house.

In no time, you'll know whether your idea has a good chance of working. If it does, great. If not, you can shut it down and move on to the next idea.

If you can test 100 ideas for the same amount that you previously spent on one, how does that affect the chances that you'll come across the next big thing for your business? If you do, squabbling over IT costs will be the furthest thing from your CEO's mind.

The hybrid cloud can also provide more efficient scalability. Extra computing power can be rented for peak demand periods, so IT will spend less of its run or grow budget on permanent resources designed to accommodate peak consumption. Run costs can also be reduced by moving utility services such as e-mail and file sharing to the cloud.



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Think *Benefits*—Not Costs

Using the hybrid cloud is not all about lowering costs. In many cases, spending will remain stable, but you'll get more for your money.

For example, at my company, we used a software CRM system for years, buying updates that were already outdated by the time we installed them. A couple of years ago, someone asked, "Does this make us better products or deliver better service to our customers?"

When no one could give a positive answer, we switched to Salesforce. It

*Using the hybrid
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wasn't an easy transition, but now we're reaping the benefits: mobile access, regular updates, and a much more advanced system—not to mention less IT time spent on troubleshooting.

Is the overall cost lower? Probably not. Was the investment worth it? Absolutely.

Security Worries—and New Ways to Address Them

Despite its benefits, many CIOs hesitate to use a hybrid cloud because of security concerns. Some business sectors—such as healthcare and finance—worry about layers of new rules governing privacy and disclosure. Companies in Europe often must ensure that their data resides in-country.

There are smaller-scale cloud providers located in regions around the world. If you're concerned about security but want to move some workloads or resources to the cloud, the chances are there's one near you.



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Hyperscalers are expanding their geographical presence, too. Amazon has a big data center in Ireland, and it recently opened another in Frankfurt.

For some enterprises, the worry isn't about violating the law, but simply protecting their data. Most cloud providers are taking a hard look at providing encryption as part of their business model.

Like Virtualization, Only Better

Sometimes when I think of the hybrid cloud, I recall virtualization in its early stages, when companies promised levels of efficiency never seen before and savings of millions of dollars.

Many CIOs hesitate to use a hybrid cloud because of security concerns.



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Things didn't work out that way. Virtualization didn't necessarily save money, but companies continued using it because it gave them new capabilities.

The hybrid cloud may reduce IT costs in some areas, while in others costs will remain about the same. But if it leads to ideas that transform your business, the skeptical bean counters will be the first to offer a Champagne toast (well, perhaps a more cost-conscious sparkling wine).

The Bottom Line

For years, IT departments have focused on reducing costs, with little success. Most IT money is spent to keep the business running, and doesn't improve profits.

But the hybrid cloud allows enterprises to use enormous computing resources for a short amount of time, so it changes the picture. Without spending more money, companies can test far more ideas, increasing the chance of transforming both their business and their balance sheet.



Have questions on how to make the most of the hybrid cloud? Connect with Matt Watts [@mtjwatts](#) (Twitter).

[Matt Watts, Director of Technology and Strategy, NetApp](#)



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The Risk with the Cloud—and How to Fix It

Jay Kidd, CTO (retired), NetApp

The only thing you own in the cloud is your data.



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Employees need to have the freedom to innovate, without IT restrictions. And the cloud allows such liberty.

But the cloud is built up of compute, network, and storage, *none of which is yours.*

The only thing you own in the cloud is **your data**.

When you move applications to a cloud, you still retain responsibility for that data—whether it is on your own premises or in a cloud.

So How Do You Manage Responsibility for Your Data If You Don't Own the Cloud?

Most enterprises worldwide already use multiple clouds for some part of their application landscape.

The economics and operating benefits of using the cloud for certain types of workloads are absolutely compelling. They can't be undone.

However, there are challenges with the cloud. Let's first understand some of the risk areas that come with it so that we can then take steps to maximize the benefits.

1. Cloud Sprawl

As applications spread into different clouds, we're at risk of "cloud sprawl." Many IT departments are at this stage today—with developers feeling empowered by the new freedom offered by the cloud.

I talked to a customer who was excited because a few of his more entrepreneurial, innovative developers were initially spending about \$500 per month to program and test some application ideas. Soon after, they started spending \$3,000 per month and it looked like they were making good progress.

But then, a few months later, the customer's bill had escalated to \$125,000 per month, and he couldn't justify the increased cost. It seemed to be out of control.

He needed an architecture that fights this sprawl and maintains a structured approach. Not only did he need governance over data, he also needed control over spending.

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2. Moving Your Data

For the most part, today's clouds are isolated, incompatible silos of data. It's very difficult to move your data from one cloud to another, because clouds use different data formats to control how things are stored. *Data has mass.*

But what if there were a consistent way for data to be shared and accessed by applications? Then you could quickly bring those applications to a cloud when needed.

Or, if it isn't appropriate to run them in a cloud on a sustained basis, you could bring them back into your on-premises data center.

Being able to move your data easily gives you more control of where it resides—on the premises, in managed hosting, in enterprise clouds, or in hyperscaler clouds.

*Running applications
in the cloud
is extremely
compelling, but
you still need to
be the steward
of your data.*



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3. Their Cloud...Their Data?

In addition to using different data formats, clouds also have unique application services. You generally write an application that's specific to a cloud, but then you have to redesign it if you want to run it on other types of clouds.

Imagine foreign currencies without any organized exchanges to trade them. If a bank said, "Oh, sorry. We can't give you any euros for your U.S. dollars," you'd have to find somebody with euros and convince that person to trade with you.

With cloud application services, *you have to do all the work to make the cloud exchange.* And if you're not careful when working with different cloud suppliers, you also run the risk that your data in their cloud will quickly become *their* data. You could get trapped.

A Need for Consistency: a Data Fabric

Running applications in the cloud is extremely compelling, because you get to run your applications on equipment that you don't have to pay for or manage.

But you still need to be the steward of your data. Your data management shouldn't have to be different based on where it's stored. What you can do on the premises you should be able to do in the cloud.

Imagine if the data-management capabilities in different clouds were all consistent. What if they were connected together to form a coherent, integrated compatible system?

It would be like a *fabric*, woven through the clouds, wrapping them all together.

Fabrics exist in many places. They exist in technology, in networks. They make modern systems work:

- The Internet is a fabric of sorts.
- It exists in software layers, with social networks.
- It exists in the physical world of air traffic control, where airports hand off flights from one zone to another in a mesh-type structure.



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Data fabric helps consistently manage, move and protect your data across hybrid clouds.



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And yet, this concept of a *data fabric* is new. It depends on four critical things:

1. A solid foundation of strong virtualization software to organize and manage the data into controllable,
2. A proven data-transport technology that's both efficient in storage and efficient in bandwidth use when moving data between clouds.
3. A consistent set of data services that are familiar to today's applications that run in the enterprise—and that provide a consistent platform for running those applications anywhere.
4. The ability to be deployed in a variety of different configurations, in different clouds, on different hardware.

The Bottom Line

The future landscape of IT is a *mixture* of clouds—public and private. What's needed is a way to consistently manage, secure, protect, share, and move data across this hybrid cloud setup.

A **data fabric** is the answer.



Interested in learning more about what a data fabric can do for your business? [Click here.](#)

[Jay Kidd, CTO \(retired\), NetApp](#)





How to Move Your Data to and From the Cloud (Without Breaking a Sweat)

[Jay Kidd, CTO \(retired\), NetApp](#)

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Imagine if all your data-management capabilities were consistent—even across public and private clouds.

Crazy, utopian vision? Not so much. Here's why.

I see that imagined world as having a *fabric* that connects all the pieces to form a coherent, integrated, compatible system. It's a *data fabric*, woven through the clouds, that wraps them all together.

A data fabric lets you use your existing data-center practices on data residing in the cloud. You'd easily share applications across different clouds and move your data to where you think is best.

Crucially, *you wouldn't be locked in* to a cloud supplier. Instead, you'd move workloads from one cloud to another based on the service level, costs, and capabilities you needed for your business outcomes.

Here are four key benefits of the data fabric:

1. A Less-Stressed IT Staff

A few months ago, I was talking to a CIO who said that he wanted the cloud to run applications that weren't core to his business. The cloud was an attractive option to run those applications on equipment he didn't own run by people he didn't have to hire.

Imagine if all your data-management capabilities were consistent—even across public and private clouds.



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That was relevant to him because all his applications require some space and power in the data center. But, most importantly, they require precious attention from his overworked IT staff.

2. Cost Savings for Certain Applications

Sometimes, IT leaders simply don't know where to begin. They look at their application landscape, but struggle to take

advantage of the cloud options that might be available.

Many start with backup or disaster recovery (DR). Instead of having a secondary data-center location for backup, they choose the cloud.

DR in a cloud can be used by making exact replicas of the data with private cloud storage. You then hold the copy of the data there and purchase or spin up the required cloud compute resources only in the event of a disaster.



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You save on all the capital costs that are typically required when you replicate an environment in your own data centers.

3. Efficient Data Transfer and Focus on Important Applications

With identical data-access services either on the premises or in the cloud, applications can easily move back and forth between your data centers and a cloud.

Once your team is comfortable with DR, its members can move primary instances of less-important applications that may not be core to your business. Those can then be the applications that go into a cloud.

With a data fabric, applications don't have to be written to be hosted in a cloud. They can just be moved there. This frees up precious space in data-center environments and allows scarce resources to be focused on applications that you absolutely must own, manage, and control yourself. Those applications can then grow as needed within your data center.

Applications can easily move back and forth between your data centers and the cloud.



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4. Support Innovation and Experiments

Imagine never having to say no to a great idea. It might make a material difference to the business, but you'll never know until you try it.

Typically, there's never enough time, resources, compute, or storage to be able to pursue every idea. But what if you could give developers all the compute time they need? A replica of production data in a cloud could help them develop an

application. Security is no longer a concern if you're near the cloud using private storage.

You could easily make writable clones of the data, so the development could be done in parallel, with every developer working against his or her own cloned copy. Damage isn't a worry either, because developers can always make another clone.

Similarly, you could also apply maximum compute for QA to make sure it is complete. Such approaches will let you try more things and fail more often, because the cost of failure is much lower when you use a cloud.

Conversely, the chances of success are much higher when you can try more things.

Some Tangible Benefits of a Data Fabric

A true data fabric can improve efficiency and accelerate innovation in your business.

Industries can benefit from being able to tap into different types of clouds using a common application model, without worrying about learning unfamiliar cloud scale-out programming techniques. They can build applications that collect and analyze data from people and processes, and they can run them across these different cloud models without change.

For example, businesses in the food industry can understand the supply chain of farms delivering raw materials, regardless of where the application resides: analyzing the status of the crop, its health, the temperature, fertilization level, potential yield, price, and so on. And all



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of this would boost their profit, enabling them to predict the future—in a hugely unpredictable business.

This extends to the Information Age as well—gathering data from mobile devices, from sensors, and from the [Internet of Things](#). The possibilities of being able to combine the power of your disciplined private cloud with hyperscalers such as Amazon Web Services or Microsoft Azure are enormous.

The chances of success are much higher when IT can try more things.



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The Bottom Line

The era of cloud-centric IT operations is just beginning. Your future will include multiple cloud providers woven together operationally, wrapped in a fabric that unifies your view of the data.

I urge you to use your imagination. How could your operations transform with a common view of data that spans multiple clouds?

What lies ahead is the freedom to pursue new ideas that weren't feasible before.

Data Mobility: Your Key to Success in the Age of Cloud

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Interested in learning more about what a data fabric can do for your business? [Click here.](#)

[Jay Kidd, CTO \(retired\), NetApp](#)



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Conclusion

Armed with the right strategy, IT can help the business win in the marketplace.



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The emergence of the cloud marks a new, silver-lined era for technology. Alongside it, the CIO's new job description isn't going unnoticed. But just like the need to harness technology for business, it's necessary to actively drive this opportunity.

Armed with the right strategy, IT can help the business **win** in the marketplace. But your teams need the right tools and technologies to make your hybrid cloud strategy a flexible and an efficient reality.

As an IT leader, your new role as the architect and broker of services is more critical than ever before.

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