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The Means to the End

There's no one-size-fits-all approach to migrating apps to the cloud. So choose wisely.

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- SaaS Apps
- Storage Performance

FILE SHARING

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SURVEY SAYS

Cloud Storage

NETWORKING

The Alternate Route

OVERHEARD

@ Cloud Expo, Google Next

EDITOR'S LETTER

How, When, Why or If?

THE NEXT BIG THING

Machine Learning: Let's Get Started

IN THE MIX

IT Is Not the Customer Anymore

END USER ADVOCATE

The Case for Doing Nothing

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TechTarget

EDITOR'S LETTER

How, When, Why or If?

WHEN EVALUATING A new technology, some people like to go all in, with gusto, and adopt it hook line and sinker. Then there are folks whose M.O. is to take baby steps: dip a toe in the water and do a lengthy proof of concept. What's right for any given organization depends on its temperament, needs, budget, skills—any number of factors.

When it comes to cloud migration, there are two competing methods of getting an application to its destination: wholesale re-architecting (re-platforming) vs. the more gradual approach of "lift-and-shift." On the surface, re-platforming an app seems like the right way to take advantage of the cloud's inherent elasticity, finds contributing editor Kristen Knapp in "The Means to the End." But there's a case to be made for lift-and-shift, too—if the application has predictable utilization patterns, for instance. And doing disaster recovery (DR) in the cloud is by definition a reason to do a lift-and-shift—you wouldn't want your cloud DR instance to differ from what you're running on-premises.

Emerging wide area network (WAN) virtualization or software-defined WAN products are proving to be cut costs, reports contributing editor Margie Semilof in "The Alternate Route." The best thing about them is there's no hardware to buy, says Peter Christy, an analyst at 451 Research, in New York. "It enables greater configuration and orchestration agility since it can be done largely in the software overlay."

In 2014, as many as 35% of organizations experienced a data leak as a result of employees sharing files over sites like Dropbox, according to research by CTERA Networks and Research Now. For those organizations, the time to put in a secure file sync and collaboration platform is now, writes contributing editor Jake O'Donnell in "File Sync-and-Share Without Fear." Lucky for them, O'Donnell lays out exactly what they should look for in such a platform.

Sometimes though, the question isn't how to implement this new technology, but whether to bother implementing it at all. The answer is often a resounding no, writes columnist Brian Madden, in "The Case for Doing Nothing." "I'm a big believer in the natural balance that forms based on how people actually use things versus planning for how people might use things," Madden writes. In other words, sit tight. What you need to do will become clear soon enough. ■

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CLOUD MIGRATION

The Means to the End

Moving an app to the cloud means choosing between two competing migration models.

BY KRISTIN KNAPP

INDECCRAFT/ISTOCK

LIKE SO MANY things in IT, there's no one-size-fits-all approach to migrating applications to the cloud. In fact, an organization chooses its application migration path based on a range of factors—everything from an application's age, to whether it was developed externally or in-house, will shape how it moves to and performs in the cloud.

When migrating an application to the public cloud, most IT organizations choose either the "lift-and-shift" approach or they re-architect the app. And while both approaches have their advantages, organizations should choose carefully.

As its name suggests, the lift-and-shift migration takes an on-premises application and replicates that application to the cloud without modifying its architecture or design.

Meanwhile, the re-architecting approach, also known as application refactoring, involves making changes to how an application performs before moving it to the cloud. These changes can include revising source code, re-writing application APIs and interfaces, and de-coupling or coupling data. Other changes, such as designing an app to dynamically scale resources using native cloud APIs or making its database calls object-oriented, are specifically intended to maximize the value of cloud.

"You are breaking the application down to its functional

components and redesigning it specifically for a cloud platform," said David Linthicum, senior vice president at Cloud Technology Partners, a Boston-based consulting firm.

The lift-and-shift model can vary drastically from the re-architecting approach in terms of time and up-front costs. While lift-and-shift can be accomplished in as little as a week, Linthicum said, the re-architecting process can take months—in some cases even longer—depending on the application and whether the work is done in-house or by a third party.

Lift-and-shift costs tend to start at roughly $10,000 per app, Linthicum said. But that number can grow significantly based on the type of application and the number of external dependencies (i.e., on databases) that it has. That $10,000 cost, however, can also be reduced by as much as half if a large number of apps are migrated at once.

"[The cost] goes down exponentially if you do maybe a hundred [apps] at a time or a thousand at a time, and we're seeing those out there," Linthicum said.

The re-architecting process changes based on the application and who's performing it, so it's difficult to gauge exactly how much that would cost an organization.

Linthicum estimated $100,000 per app would be on the lower-end for refactoring costs. Still, that doesn't necessarily mean lift-and-shift is the more cost-effective option in the long run.

WHERE LIFT-AND-SHIFT FALLS SHORT

When a legacy application is migrated onto an infrastructure as a service platform with little or no modification, it can't take full advantage of one of cloud's biggest benefits: cost-efficiency through autoscaling. In the cloud, compute resources automatically scale up or down based on application demand. But most legacy apps weren't specifically designed to capitalize on that native cloud feature. So when those applications move to the cloud, they consume more storage and compute resources than they actually need; that can lead to a hefty bill.

"The idea with cloud is I can gain value and cost reduction by matching the peaks of my load to how much infrastructure I'm using," said Robert Green, principal consultant at Enfinitum Inc., a San Antonio-based consulting firm. The issue with lift-and-shift, he said, is that on-premises applications are built to adhere to peak loads. And when those apps move to the cloud, they continue to operate that way—even if demand or usage is low.

"So, the times when I'm not at peak, which could be 80% of the day, I'm overpaying," he said.

HIGHLIGHTS

- An organization migrates an app based on a range of factors, from its age to where it was developed.
- Lift-and-shift takes an on-premises app and replicates that to the cloud without modifying its design.
- Re-architecting involves making changes to how an app performs before moving it to the cloud.

Because of this inefficiency, lifting and shifting applications to the cloud, in some cases, can ultimately cost an organization more than re-architecting the software upfront, Green said. And sometimes, lift-and-shift is even more expensive than leaving the app on existing in-house infrastructures.

OTHERS AGREED LIFT-AND-SHIFT DOESN'T ALWAYS YIELD THE COST SAVINGS ONE WOULD EXPECT IN THE CLOUD.

"Imagine keeping your lights on all day and all night," he said. "It's going to be more expensive than going around the house every night and turning everything off. With lift-and-shift, everything is on, all the time, 24/7, no matter what."

When Jonathan Feldman, CIO for the city of Asheville, N.C., started to work on a new information portal application for Asheville residents, he chose to architect that application from scratch to take advantage of autoscaling.

"The salient point is that without API control of the cloud fabric from within the source code of the application, it's not really cloud," Feldman said. "It's rip-and-lift, because you can't scale up and out."

Others agreed lift-and-shift doesn't always yield the cost savings one would expect in the cloud.

"We had an analytics product that was very hungry to crunch all this data and it came to a point where it was actually representing more than a fourth of all our costs in AWS, yet it was three servers out of three hundred," said Alex Witherspoon, senior DevOps and software engineer at FlightStats, a provider of applications for tracking flight statuses, based in Portland, Ore. "And it had none of that cost [when it was] hosted privately."

While the lift-and-shift approach may not fully capitalize on cloud's cost-efficiency, it still has its time and place. Lift-and-shift is a good option for organizations who are "bleeding costs" from maintaining their own physical infrastructures, said Gregory Ness, VP of worldwide marketing at CloudVelox, a cloud migration platform vendor based in Santa Clara, Calif.

"If your investment in a data center is costing you today twice as much as the cloud, why wait?" Ness said. Some CloudVelox customers will lift-and-shift an application to reduce on-premises infrastructure costs in the short term, and then re-architect the app after it's in the cloud, he said.

The lift-and-shift model is also a solid choice for cloud disaster recovery, said Feldman, who is also a CloudVelox customer.

"If you have apps that just need to keep going, rip-and-lift can be very good for that," Feldman said. "And that's why we're using it for disaster recovery of systems that are just not going to get re-architected right now."

NOT ALL APPS ARE CREATED EQUAL

When deciding which applications to lift-and-shift or re-architect, there are a few criteria to consider. For ex-

ample, resource-intensive applications, such as those used for big data analysis and image rendering, are better candidates for re-architecting than lift-and-shift, Linthicum said.

ORGANIZATIONS SHOULD STRIVE TO EMBRACE A DEVOPS OR AGILE SOFTWARE DEVELOPMENT MODEL.

"You are going to find that [these apps] are almost always going to generate an unusually high cloud bill, so therefore redesign is in order to utilize those resources better," he said.

These resource-intensive apps can also suffer from performance and latency issues if they aren't re-architected first, said FlightStats' Witherspoon. "Every [application] dependency, especially over the network—the multiplying effect of having that latency can really be a problem."

Applications that lend themselves well to the lift-and-shift model have "very easily defined patterns," such as those for risk analytics, Linthicum said.

Meanwhile, enterprises must adopt a lift-and-shift approach for commercial or off-the-shelf applications, simply because they can't re-architect that software, Green said. That capability, instead, lies only with the application vendor itself.

"You are really limited to what the ISV has done with regards to defining the architecture of their application," Green said.

Organizations should strive to embrace a DevOps or agile software development model to reduce the burden—and price tag—of re-architecting, Green said. Because agile development environments increase the speed organizations can develop and modify their applications, they can also boost a business' revenue—sometimes by as much as 30 percent, he said.

"You have a net gain," Green said. "And that will help you justify the refactoring costs." ■

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#Hashtag

Twitter on #SaaS

Preston Clark
@PrestonJClark

Make the time, if it matters. Or de-prioritize and stop worrying about it. (Saying this aloud to myself). #SaaS

Jim Cooper
@jimccooper

Lots of benefits from selecting #SaaS for your #JourneytoNewIT BUT remember the first S stands for SOFTWARE .. you still need IT Service!

Ned Renzi
@NedRenzi

Spent last month looking at ways to reduce friction for healthcare apps w/ docs & hospitals. Need faster build-measure-learn cycles. #SaaS

Rasmus Børlum
@rborlum

Just used http://birme.net/ to resize and crop 500 images in two minutes. I give my thanks to the creators. #automation #cloud #saas

Dominic Tavassoli
@DomTavassoli

How many #Cloud or #SaaS applications do organizations run? At least twice the number they think they run, via @Talend

Michael Caruso
@mdcvegas

Is Oracle feeling the heat as they enter the cloud market? #cloud #ERP #saas

TECHTALK
WITH DAVID HOFF

The Truth About SaaS Apps

DAVID HOFF, CTO of Cloud Sherpas reveals how enterprises can get the most out of their software as a service apps.

What is the most common misconception enterprises have about hosted SaaS apps?
The most common concern we see is organizations feel they're going to lose control. There's a very common pattern that's established over many, many years that we've been able to build a walled garden, and put a firewall around all that is IT. That paradox starts to change when users are able to access a solution directly.

Can SaaS apps now deliver the right level of customization that an enterprise really wants and needs?
In the vast majority of cases, absolutely. The better question tends to be, 'What level of customization really is appropriate?' For so long, we've kind of taken the parent approach that whatever a child asks for, they get. And it's our responsibility now to change that equation a bit and say this is really what makes sense for us as a business.

What about multi-tenant performance and availability?
When we think about cloud, and we think about the business model that supports the environment, these are organizations that are getting paid, per user, per month. So everything they're going to do is going to support that availability and that uptime, which is a stark contrast to the situation we had on-premises years ago where we would invest in a solution and it would sit in maintenance mode for three to five years.

Are there any similarities in how you would manage a SaaS app vs. an on-premises app?
There are a lot of things that are very similar, many of them are amplified. We think about the traditional roles in IT, the on-boarding and off-boarding of employees in the directory, we think about the integration needs, managing the security of the data.

What specifically can IT teams do to better support a SaaS environment?
Moving out into the line of business, understanding what's strategic about the organization really helps the business and the IT teams make decisions that fit how the organization is run. ■

FILE SHARING

File Sync-and-Share Without Fear

There are secure alternatives to Dropbox that both end users and IT can love.

BY JAKE O'DONNELL

LUCY2014/ISTOCK

IT FACES AN eternal tug-of-war when it comes to providing services: how can it supply something employees want to use while also maintaining security and manageability? In the era of consumerization, few business processes have been more impacted by this balancing act than enterprise file sync-and-share (EFSS). While bring your own device is discussed frequently, it's "bring your own app" that can't be overlooked.

Employees are drawn to consumer cloud storage applications because they're easy to use. The importance of user experience (UX) can never be underestimated in anything related to mobile or end-user computing and companies can discount UX at the risk of their data.

It's not that employees have bad intentions when they use non-IT approved file sync-and-share; they just want a place to get their work done and access it more easily than keeping everything in email, said James Gordon, first vice president of information technology at Needham Bank in Needham, Mass.

"I can't manage content via email," Gordon said. "Email is not a place for long-term content storage and there's no shared access."

But if IT doesn't carefully monitor and regulate how

data is stored, consumer-grade cloud offerings such as Dropbox and Google Drive can wind up being home to your sensitive data. This could lead to the nightmare scenario for IT: a terminated employee saves that data to their personal Dropbox account before they depart and your data is out in the wild forever.

MANY PRODUCTS ARE ON THE MARKET THAT COMBINE USABILITY AND SECURITY FROM THE CONSUMER-FIRST VENDORS.

IT is trying to fight back. In a 2015 survey of 300 IT professionals conducted by cloud storage services provider CTERA Networks and research firm Research Now, 83% of respondents have corporate policies that either restrict or entirely forbid the use of specific software as a service-based file sharing product. Yet 35% of organizations experienced corporate data leaks in 2014 as a result of employees sharing files—often using unsanctioned file sync-and-share services.

"I think there are two categories of people in IT: people who realize they have the ["Dropbox"] problem or the people who just haven't had it yet," Gordon said.

Despite the dangers, vendors have listened to IT's concerns and many products are on the market that combine usability and security from the consumer-first vendors.

'DROPBOX-LIKE FUNCTIONALITY'

In the EFSS market, customers often want four things: security, consumer-style ease of use, scalability and integration as part of a larger feature set, said Alistair Mitchell, CEO of Huddle, a content sharing and collaboration vendor in London.

"[Customers] don't want 15 different point solutions," Mitchell said.

Five years ago, Needham Bank began to invest heavily in mobility, which allowed employees to access corporate information and workflows on mobile devices while deploying MobileIron for mobile device management. But because email wasn't enough for content management and collaboration, the bank found employees were getting around IT-approved channels by using products like Dropbox.

The bank turned to Accellion to provide an IT-friendly and secure content collaboration and storage platform.

HIGHLIGHTS

- IT is in the midst of a struggle: How can it give employees what they want while maintaining security?
- Employees are drawn to consumer cloud storage applications because they're easy to use.
- If IT doesn't carefully monitor how data is stored, Dropbox could end up being home to sensitive data.

Besides security, Accellion affords "Dropbox-like functionality" in user experience for employees, Gordon said.

Integration with existing systems is also a key advantage for EFSS platforms. For example, Accellion utilizes connectors to SharePoint and Windows file share environments so customers learn new ways of accessing content without the help of bank employees.

"We didn't have to reinvent the wheel to mold to [Accellion's] processes and they were able to connect to our content," Gordon said.

The management capabilities of EFSS tools have also gotten more comprehensive. Early EFSS admin consoles only showed usage statistics, but they now give IT a view into user adds, user deletes and transfer of file ownership. Admins can also ensure files are flagged if they're shared outside of an organization. Most major enterprise platforms give IT these manageability tools, including Box, Dropbox and Egnyte, Lepofsky said.

For IT pros like Gordon, logging is another important feature. As a highly-regulated business, a bank needs to track who created a file share at what specific time and how long that shared access lasted. A product that doesn't do that is a non-starter in his world.

"What do you do when you have to forensically get your hands dirty, and roll up the sleeves, and find out who did what when?" he asked. "After-the-fact wouldn't be the time to say, 'I wish we had logs.' "

Management hurdles remain, however. Data portability in EFSS systems, for example, isn't what it should be, Lepofsky said.

"When it comes to switching from one platform to

What to Look For in EFSS

WHEN LOOKING FOR an EFSS vendor, options fall in a couple different camps: those with standalone EFSS products or those with file-sharing integrated into a larger platform, said Alan Lepofsky, vice president and principal analyst with Constellation Research in Toronto.

If you don't have a corporate-approved EFSS vendor already, it isn't hard to find one. It's likely some IT shops already have a secure EFSS option from a vendor in-house:

- **IBM Files**
- **Salesforce Files**
- **Microsoft OneDrive** for Business
- **Citrix ShareFile**
- **AirWatch** by VMware's Secure Content Locker

are among the EFSS products from established enterprise software vendors.

"The simplest decision is that your email provider can also be your collaboration provider," Lepofsky said.

In contrast, the standalone players include enterprise-focused versions of products like Dropbox and Box while others like Egnyte, Accellion, Intralinks and Soonr also populate the space. ■

another, no one is great at that today," he said. "It's not easy to migrate all your files to places like Box or Salesforce Files right now."

With regard to security, the Holy Grail for EFSS is key encryption and management, Lepofsky said. Vendors are offering more client-side key management options as opposed to keeping key management within the vendor. Box recently introduced an Enterprise Key Management program that gives customers full control over encryption keys.

"If the vendor has access to your encryption key, in theory they can do more with your data," Lepofsky said. "Customers who want maximum security want to manage the keys but they may lose some end-user functionality as a result, so there's a tradeoff there."

Many admins feel they must hold the key encryption to make EFSS viable.

"I feel strongly with all the SSL and protocol vulnerabilities out there that we need to hold the keys and manage them appropriately," Gordon said.

STAND YOUR GROUND

The interest surrounding EFSS has grown as the market has matured. BlackBerry's 2015 acquisition of WatchDox is a recent example of an EFSS vendor getting scooped up by a larger technology company to round out its portfolio.

"The viable winners in this market are reducing down to a small number," Mitchell said. There is still room for new solutions to the problem. Beyond the two different sets of vendors mentioned above is a third approach, where IT uses third-party software to secure files within an EFSS platform. Vendors such as Vera and SearchYourCloud take this tack, where users can employ any EFSS product they want and the files are safe.

IT MUST TAKE A STAND, AND THIS IS ONE PLACE TO DO IT.

"Instead of being the alarm system, they're going to grab all your valuables and put security on them and let you in anytime you want," Lepofsky said.

Nor are all of the players in the market created equal, Gordon said.

"They all seem to be very convenient and easy to use, which is good," he said, but noted that IT needs to keep personal and corporate information separate when using the different versions of those products.

In order to make sure all stakeholders understand the risks associated with going outside of sanctioned avenues for file sync-and-share, IT must take a stand, and this is one place to do it.

"We have to have a thick skin," Gordon said. ■

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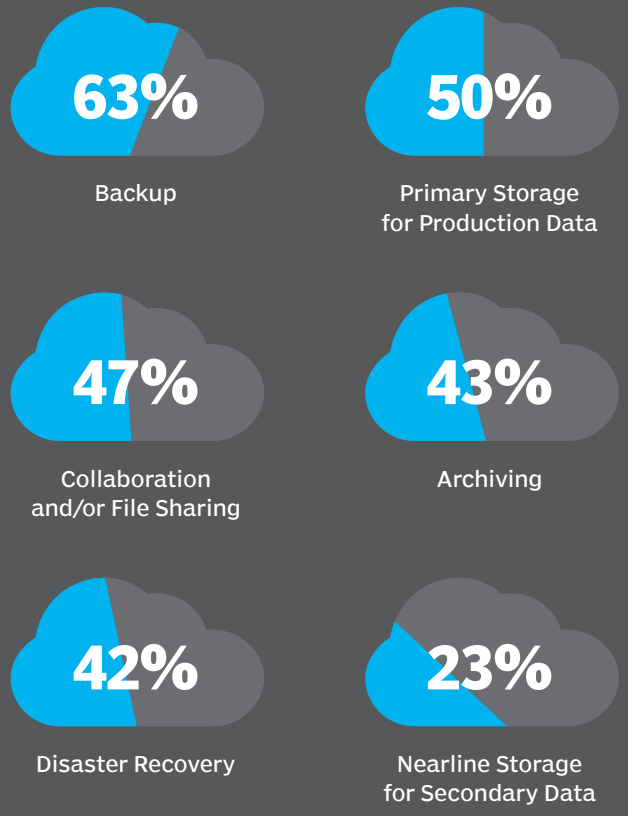
Survey Says

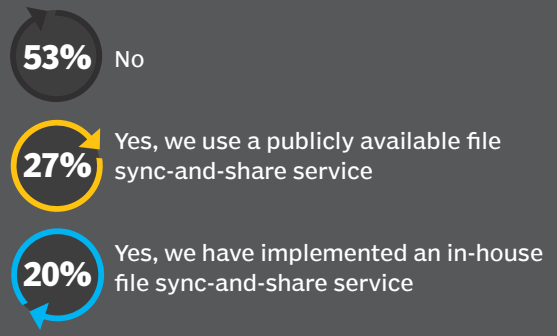
Cloud Storage Services

Which applications do you primarily use cloud storage services for?*



*MULTIPLE SELECTION ALLOWED; SOURCE: TECHTARGET CLOUD STORAGE SURVEY 2015; BASED OFF RESPONSES FROM 159 IT AND BUSINESS PROFESSIONALS.

Does your company use any file sync-and-share services?

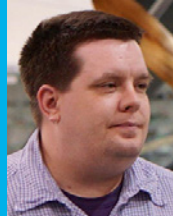


SOURCE: TECHTARGET CLOUD STORAGE SURVEY 2015; BASED OFF RESPONSES FROM 317 IT AND BUSINESS PROFESSIONALS.

Percentage of respondents who use Dropbox as their publicly available file sync-and-share service

47

SOURCE: TECHTARGET CLOUD STORAGE SURVEY 2015; BASED OFF RESPONSES FROM 79 IT AND BUSINESS PROFESSIONALS.



Solving For Virtualized Storage

SCOTT LOWE, *storage and virtualization expert, explains the trouble with storage in virtual environments.*

Why is server virtualization so tough on traditional storage arrays?

Back in the old days, we had physical servers with custom-tailored storage to meet unique workload needs, each with different I/O patterns—log files have different I/O patterns than databases, for example. With virtualization, we've taken all these different workloads with different block sizes and I/O patterns and dumped them all in to the SAN and told it to sort it out on its own. And we're doing this with spinning disk, which is great for sequential type patterns, but not for random I/O.

How does flash solve these storage performance problems?

Flash is very well suited to random IO patterns, and we see a lot of different ways that vendors are using it: We have all-flash arrays which are super-fast. There's also a hybrid approach with a significant flash cache which then gets spun down to disk. How those systems get better performance is to reorder the write operations so they're sequential, the way hard drives really want them.

Explain the appeal of virtual SANs made out of commodity servers and storage and flash.

The biggest example of this trend is hyperconverged infrastructure, which basically eliminates the SAN. The beauty of that for a lot of organizations is that the storage environment is often the most expensive outlay that people buy—companies spend tens or hundreds of thousands of dollars on storage. These systems solve for performance with a hybrid or all-flash approach to storage, but it goes beyond that. Hyperconverged systems also simplify operations. If there's no more SAN, you don't need someone with a storage Ph.D. to manage storage.

Is the model of separate servers and SANs outdated?

It's not outdated. It depends on the organization. Some organizations take a hybrid approach to the data center, where they take a single application and put in on hyperconverged infrastructure. But the days of the monolithic SAN are not over. It's going to take some time for converged and hyperconverged offerings to become more robust and scalable than they are today. And for people to change their thinking. ■

The Alternate Route

Virtual WAN is transforming networks just as virtualization transformed servers and storage.

BY MARGIE SEMILOF

DERRREK/ISTOCK

CARE TO SLASH your wide-area network budget by swapping out expensive private lines to branch offices for consumer-grade Internet, all while increasing network performance by orders of magnitude?

How about replacing expensive branch hardware for an appliance, hardware or software, or even a cloud-based service?

It's achievable with emerging wide area network (WAN) virtualization technology that eliminates most routing protocols. Innovations or upgrades are quickly programmable—far faster than you'd expect with today's proprietary hardware.

That's what John Spiegel, global IT communication manager at Columbia Sportswear, hopes to gain over the next 36 months as he recreates his company's retail infrastructure through the adoption of a software-based virtual WAN (vWAN).

For instance, the company, based in Portland, Ore., currently uses one product that creates an overlay on top of Columbia's existing physical network. Ultimately, it will cut the number of routing protocols the company manages, and carrier multiprotocol label switching (MPLS) lines needed to reach its retail locations.

Virtual WANs will radically transform networks just as virtualization has changed how IT provisions servers and storage. Today's IT pros must procure and program an expensive and proprietary router, connect it to costly MPLS private lines and maybe even pay for a backup VPN with a different carrier that may never be pressed into service.

"The typical customer is an enterprise with remote locations looking to replace the hardware with a next-generation WAN," said John Burke, CIO and principal research analyst at Nemertes Research Group, a consulting firm in Mokena, Ill.

WAN virtualization takes on several forms that range from outsourcing everything as a service, to extending existing hardware (using the iWAN from Cisco), or replacing everything with a physical or virtual appliance. Products, which are called vWAN, software-defined WAN (SD/WAN) or network as a service (NaaS), all claim varying degrees of routing, optimization, traffic management, application management and security from the branch office to the data center and the cloud.

On a simple level, a vWAN may boost bandwidth at a lower cost by virtualizing multiple links from a branch office to a corporate data center. Some products dig deeper into the application and prioritize traffic based on need, plus address compliance and security.

"We believe in the power of the hypervisor," said Spiegel, who expects to reduce his budget 40% by using commodity bandwidth to boost WAN performance, simplify configurations in branch offices and reduce time to deploy.

THE vWAN, SD/WAN SPECTRUM

WAN virtualization has lagged behind computing and storage, mainly because it's taken so long to break up the vertically integrated network stack, said Bharath Rangarajan, a vice president of products at Pertino, a Cupertino, Calif., startup that sells a cloud-based VPN service.

Such services allow for higher levels of security to end users who access important enterprise applications using mobile devices anywhere from cars to coffee shops. Sensitive data might then be sent over the unsecured public Internet where network performance is unpredictable.

In the enterprise, Cisco's black boxes dominated networks for years before Juniper Networks introduced its own proprietary stack. Today's technology separates the functions of the control plane—which decides where traffic is sent—and the data plane, which transports the traffic.

The vWAN, or SD/WAN, keeps the most dynamic

HIGHLIGHTS

- WAN virtualization eliminates most routing protocols, and upgrades are quickly programmable.
- Virtual WANs will radically transform networks just as virtualization changed how IT provisions servers.
- A vWAN may boost bandwidth at a lower cost by virtualizing links from an office to a data center.

aspects of the WAN to a software overlay while retaining the physical underpinnings of the network as an underlay, said Peter Christy, an analyst at 451 Research in New York. "It enables greater configuration and orchestration agility since it can be done largely in the software overlay," he said.

Customers can buy optimization services from companies such as Aryaka, Akamai Technologies or CloudFlare Inc. Traditional service providers, such as Verizon and AT&T, also sell services that manage routers or optimization via the cloud. Cisco's iWAN does the job in hardware.

VeloCloud Inc., Viptela, Glue Networks Inc., Silver Peak Systems, CloudGenix and Talari Networks are among a group of companies that abstract the complexity of the branch stack to varying degrees by using an appliance (hardware or software) at the remote office.

The whole software-defined network movement opens up people's eyes to the fact that there are different ways of solving networking challenges, said Andrew Lerner, an analyst at Gartner Inc., in Stamford, Conn.

"The incumbent networking companies didn't do it better, and when you have a set of incumbents that are not making life easy, they left the door cracked open for the SD/WAN vendors," Lerner said.

EARLY DAYS FOR vWAN

Most vWAN technologies are relatively new so few vendors have a critical mass of customers, and none of the major market researchers have published adoption figures. Forrester analyst Andre Kindness says that 83% of enterprises are still doing the basics in consolidating servers in their data centers.

But there is great growth potential, with similar benefits to data center virtualization, such as greater agility,

Considerations for vWAN

A vWAN'S VALUE is easily understood—it's not a technology looking for problems, it addresses them. "It's a more cost effective WAN," 451's Christy said.

Consumer-grade Internet to branch offices has also become more accepted, not just for small remote locations, but larger ones too. It's still considered risky, but the definition of small seems to be expanding and the evaluation of risk is getting looser.

As Internet links get cheaper, faster and more reliable, businesses have become less averse to using them where connectivity is critical, said Nemartes' Burke. This is especially true when you can install two cheap Internet connections with three or four nines of reliability.

"It may not match the five nines of MPLS but taken together with a vWAN box, it can certainly match MPLS," he said. ■

faster provisioning, cost savings and general simplification of network management. One example is JAS Worldwide, an Atlanta-based freight forwarder and logistics provider, which has 240 locations in 80 countries. The company never established a true WAN as it grew as a network of companies, solving different problems and needs as it evolved. Sites are often located in areas where infrastructure is poor, so the company's quality of service is uneven.

When Mark Baker became CIO in 2010, he wanted to consolidate and standardize business processes. Baker looked to solve two problems on his network—lower the cost of bandwidth and find the local talent to tackle remote site management. Baker addressed both problems with one device, an appliance from Aryaka Networks that plugged into the LAN and Internet and tunneled into an Aryaka point of presence.

"I can run voice, data and video thorough the cloud with zero management on my part, with respect to how it's routed," Baker said. "It gives you virtually a LAN experience across the WAN, which we could deploy in a fraction of the time it took for us to provision a private circuit."

Baker said the network service will save about 52% over what he would pay with a traditional hub and spoke model. Plus, the company was able to remove the Cisco gear from branch offices.

Another company, Redmond Inc., a Heber City, Utah, diversified manufacturer, uses vWANs to deliver VOIP and video services to remote sites. Redmond has trouble getting private MPLS lines to its branches, among them, a salt mine, which by regulation must have a way to communicate with the home office.

Ryan Critchfield, an IT director at the company, said Redmond had avoided using cloud-based technologies in the past due to its many remote locations and limited bandwidth options. Improvements to network performance of consumer grade Internet made possible using a vWAN appliance from VeloCloud has convinced the company to now push applications, such as email, into the cloud, he said.

THE WHOLE SOFTWARE-DEFINED NETWORK MOVEMENT OPENS UP PEOPLE'S EYES TO THE FACT THAT THERE ARE DIFFERENT WAYS OF SOLVING NETWORKING CHALLENGES.

The VeloCloud technology takes any kind of network conversation, encapsulates the TCP and guarantees quality using forward error correction where the packets are streamed across links and assembled on the other end. ■

MARGIE SEMILOF *is Editorial Director for TechTarget's Data Center and Virtualization Media Group. Email her at msemilof@techtarget.com.*

Overheard @ Cloud Expo and Google Next

Cloud Expo:

"So far, we have built something that is useful—but there is kind of this unfinished business."

SIMONE BRUNOZZI, *VP and CTO of hybrid cloud services at VMware, on the need for greater interoperability between public and private clouds*

"Compliance doesn't equal security."

PAUL MAZZUCCO, *CSO at TierPoint, on not assuming that your public cloud provider is secure simply because it meets certain compliance standards*

Google Next:

"Our approach to this project was really to try to ignore the infrastructure as a service offerings. That pollutes your thinking—keeps you in the old world. You very easily start falling into old habits as a development shop and with technologies you're familiar with."

JOHN SARVARI, *group VP of technology, JDA Software, on using Google Cloud Platform*

"While we think our alliance with Google is distinctive in the market, we work with Amazon Web Services, Salesforce—that's just the reality of where the world is right now."

JAKE SCHMIDT, *managing director, PricewaterhouseCoopers, LLP, on the need for multiple cloud providers*

Machine Learning: Let's Get Started

To take advantage of machine learning, you need to fully understand its potential pitfalls.

BY MIKE MATCHETT

MY LAST COLUMN examined a few basic principles of machine learning, the force behind many big data initiatives. Now let's look at a few of the things that can go wrong when implementing machine learning, and what that means for IT operations.

It's important to note that predictive modeling can be fraught with peril if you don't have a firm grasp of the quality and veracity of the input data, the actual business goal and the real world limits of prediction (e.g., you can't avoid black swans).

It's also easy for beginners to either make ineffectively complex models or "overtrain" on the given data (learning too many details of the specific training data that don't apply generally). In fact, it's quite hard to really know when you have achieved the smartest yet still "generalized" model to take into production.

Another challenge is that the metrics of success vary widely depending on the use case. There are dozens of metrics used to describe the quality and accuracy of the model output on test data. Even as an IT generalist, it pays to at least get comfortable with the matrix of machine learning outcomes, expressed with quadrants for the counts of true positives, true negatives, false positives (items falsely identified as positive) and false negatives (positives that were missed).

A lot of key metrics derive from these four basic measurements. For example, overall accuracy is usually defined as the number of instances that were truly labeled (true positives plus true negatives) divided by the total instances. If you want to know how many of the actual positive instances you are identifying, sensitivity (or recall) is the number of true positives found divided by the total number of actual positives (true positives plus false negatives).

And often precision is important too, which is the number of true positives divided by all items labeled positive (true positives plus false positives). A simplistic model that labels everything positive would have 100% recall,

but terrible accuracy and precision—it finds everything, but you can't tell the wheat from the chaff. Usually some tradeoff is made between these metrics to find an optimal balance.

In some use cases, such as targeted marketing, a 20% advantage over randomly flipping a coin might be great (in Vegas, the house really needs only a 1% advantage over time to prosper). When screening a million people for cancer, even a 99% accuracy rate can lead to bad consequences: assuming a low incidence of actual cancer, most of the 1% inaccuracy would be false positives, and that might translate to 10,000 unnecessary treatments.

This brings us to machine learning's impact on IT. First, the host storage and the processing platform should match the kind of learning being attempted. Sometimes learning is done offline, and the resulting model is applied as a simple processing step in production. Other times the learning is continuous or recurring (e.g. reinforcement learning) and needs to be closer to the current data stream.

Some machine learning algorithms scale better than others with partitionable libraries suitable for big data scale-out clusters (e.g., Apache Mahout, MLlib, Madlib), while others might even require high-speed HPC-style interconnect and read-write transaction storage architectures to calculate efficiently.

In-memory tools can be the way to go for heavy-duty interactive data mining or predictions that require low latency. And there are cloud-hosted machine learning services that charge by the API call in production, which may be cost-effective assuming cloud-hosted data.

If you have programing chops and want to play around with or start developing machine learning, there are free packages for Python and other languages. You can even sign up for a free-to-develop, cloud-hosted machine learning studio on Microsoft Azure. Many of these products can run on small data sets locally on your laptop and scale to large data sets for production. This is a hot area, and every day we hear of vendor-specific offerings that promise to make machine learning simple enough for the average business analyst.

It's important to keep in mind that all of this predictive modeling isn't artificial intelligence. Yes, it can provide a real and distinct business advantage by looking for and exploiting deeper patterns in the data, but all you've established is correlation.

Still, given how easy it's becoming to apply machine learning methods to just about any interesting data set, we predict that it is valuable for all IT organizations to start developing in-house expertise—gathering and cleaning data, hosting development, assisting modeling efforts and applying them in production. Expert data science is valuable, but given the democratization going on in this field, you shouldn't wait until you can justify a team of full-blown data scientists to get started. ■

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IT Is Not the Customer Anymore

Cloud computing has exposed what's wrong with most IT departments.

BY BOB PLANKERS

I'VE TALKED A lot recently regarding the move toward the cloud. Most of the folks I've spoken to are technical staff—it seems like they need the most help to start thinking in terms of clouds. The biggest hurdle for them is getting over the idea that, in this era of clouds and choice, IT is not the customer anymore. IT is about the business.

Say what you want about cloud computing, but it's here to stay. It isn't surprising cloud is popular with senior leadership in companies everywhere. IT has long been the tail that wags the dog, controlling how and when things happen. In the past, a business was seriously limited by the technology available, so the excuses were justifiable. Today, IT has a lot of non-technical reasons to kill a project. However, businesses are tired of being told no with regard to technical requests.

Along came the cloud, and we've had to relearn and remember that IT is a means to an end, not an end by itself. It's a means for parent organization to accomplish its goals. IT is a service inside of an organization, and the organization itself is the customer. Businesses are no longer a captive market, as they now have choices. And we in IT find ourselves needing to make decisions that are good for the business but sometimes not favorable for the IT status quo.

So how do we do that? How does IT maintain its relevance? The first, and slightly paradoxical step, may be to stop thinking about technology, and start thinking about people and their respective needs. We get back to basics and we start fresh, gathering new requirements as if IT has ever existed in our companies before. And we gather those requirements from the customers—the end users, the C-level executives, the line managers, the programmers—but not IT. Why not IT? Because IT is not the customer anymore.

None of this is easy. Requirements are hard to gather, as you have to listen to people tell you stories, and tease out the actual requirements from a mishmash of pent up frustration and technical inexperience. You have to listen to complaining and grousing about how IT didn't help

someone years ago, so that's why there's a server under the person's desk. You have to listen to business requirements being phrased as technical requirements, and turn those back into business requirements by asking what people need to do, not how they think it should be done (that's IT's job in all this). And you have to do all this with a smile and humility. "Yeah, we know things can be better, and that's what we're trying to do now with your help," or so I've told people.

GATHERING REQUIREMENTS IS A PAIN, BUT ONCE IT'S DONE IT FORMS THE BASIS FOR EVERYTHING ELSE.

Gathering requirements is a pain, but once it's done it forms the basis for everything else. IT then gets to do system design and product evaluations, and has a customer-focused yardstick with which to measure success. Management can and should prioritize the requirements, to help adjust the score. And then IT can build solutions, using the customer requirements and priority to justify expenditures, as well as demonstrating to the business, to the customers, where the project is at.

Clouds are just a giant people problem and not a technological issue. It's important that IT takes that people problem seriously by talking to the customers, gathering requirements, and remembering that IT is there to serve the business, not the other way around. ■

BOB PLANKERS *is a virtualization and cloud architect at a major Midwestern university.*

The Case for Doing Nothing

When it comes to end user computing, IT's next step might be to sit tight.

BY BRIAN MADDEN

CONFERENCE SEASON 2015 was a busy one.

One of the things I like most about conferences is that I can talk to a lot of people in a short amount of time. It's an opportunity for some personal, albeit unscientific, market research through which I can get a sense of what's happening across a broad spectrum of end user companies.

If I were to summarize my recent conference conversations, I'd say the theme is "confusion." This applies to the entire industry, according to my conversations with both large and small customers.

Most companies have spent the past several years getting off of Windows XP and onto Windows 7. They plan to skip Windows 8 and 8.1 (except for new devices with touch screens) and go right to Windows 10. The vast majority of their users still use traditional Windows desktops and laptops. They have Citrix XenApp, which they use strategically for certain apps and desktops, and they have a sprinkling of VDI that they first tried a few years ago but it never really took off.

On the mobile front, most enterprises don't have a formal, widely deployed EMM product—they rely on Exchange ActiveSync along with platform-native apps to support their specific mobile needs. Many enterprises also use some EMM or MDM for company-owned devices, but not much (if anything) for employee-owned ones.

So that's the backdrop when IT pros ask: "What do we do now? Should we look at VMware for RDSH and published apps? Should we move to XenApp 7? Do we need to prepare for Windows 10? Should we be thinking about DaaS? Should we get more aggressive with VDI? Should we bring more apps into XenApp?"

My answer, almost universally, is that in terms of end user computing, enterprises can be well served by not doing anything at all!

I'm a big believer in the natural balance that forms based on how people actually use things versus planning for how people might use things. It's like the proverbial story of the university which waits a year before installing footpaths across the commons; they learn from the pathways students have worn down to dirt instead of trying to guess up front where the students will want to walk.

Put another way, the best method for any given enterprise is, by definition, the method they're using now. If it didn't work for them then they wouldn't be doing it. (This is similar to the argument which I've made several times in this column which is, "If VDI were so good, everyone would be doing it by now.")

So if 80% of your desktops are physical today, it's probably OK for them to continue to be physical. If you're only using VDI for a few desktops here and there, it's OK to continue to only use it for a few users here and there. If you don't use an EMM product, it's probably OK for you to continue to not use EMM.

As you're thinking about what future technologies you might want to adopt, consider that you've made it this far without them, and you know your current method works. ■

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