The Incredible Shrinking Desktop

Have Apple and consumerization finally broken the back of the Wintel juggernaut?

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Desktop Wars Reverberate in the Data Center

By Alex Barrett
Editor in Chief

Until recently, IT pros responsible for servers, network and storage infrastructure could be forgiven for not thinking much about the Windows desktop. What happened on the desktop stayed on the desktop. But like a distant war that is suddenly being fought on native soil, Microsoft’s struggles to revitalize and preserve its venerable desktop business are having an impact in the data center.

The assault on the Windows desktop is intense. Microsoft’s OS business is under fire from Apple and consumer devices. The profitable Office productivity applications are under attack by countless new Software as a Service (SaaS), mobile and Web apps. Even back-end services such as Exchange, SharePoint and Active Directory are no longer safe.

The most visible symbol of the turmoil is the client, which is no longer synonymous with a Windows PC. These days, end users’ tablets and smartphones are decimating the comfortable position that Windows PCs have maintained writes executive editor Colin Steele in “The Incredible Shrinking Desktop.” Already, IDC predicts that Windows’ share of the endpoint device market will slide from 31% in 2012 to 24% in 2016, and the move from mainstream Windows applications could exacerbate that trend.

Indeed, mainstays of the corporate IT environment such as Office, Exchange and SharePoint seem pretty vulnerable. As users move to mobile devices for a greater portion of their working hours, desktop-bound versions of Outlook and Word suddenly don’t seem so attractive. SharePoint, meanwhile, remains hopelessly unattainable outside of the corporate VPN. Could it be one of the first casualties of this war? Even Active Directory is on the chopping block—or at least the back burner—writes news writer James Furbush in “Cloud Muddies Identity Management Waters.” Organizations that rely on SaaS are implementing cloud-based identity access management tools from newcomers such as OneLogin and Okta, he reports.

Not that Microsoft is taking this lying down. The company’s ambitious Office 365 subscription program is an attempt to bring its desktop offerings into the 21st century with hosted versions of its productivity suite sold as a subscription. But that could be too much of a change for entrenched Microsoft shops, writes executive editor Ed Scannell in “Is Microsoft’s New Office too SaaS-y?” especially when you consider that they have already purchased perpetual licenses for earlier versions, and Software Assurance guarantees upgrades to on-premises software licenses.

Plus, as news director Bridget Botelho points out in “Explained: The Lease vs. Own Debate, Cloud Apps Edition,” a long-term cost analysis of SaaS vs. on-premises software isn’t always favorable, and could test Microsoft shops’ loyalty. Whether the company can muster enough new recruits—customers—to do battle with the enemy remains to be seen.
ONE ON ONE

Education of a Cloud Guy

These days, Mark Szynaka spends his time building and deploying virtual data centers for his consulting and integration firm, CloudeBroker, which specializes in rapid deployment of complex applications leveraging services sold on Amazon Marketplace. But just two short years ago, Szynaka was knee-deep in a traditional enterprise IT shop, heading up the network operations management department at Citigroup, where he oversaw security, performance, capacity planning and troubleshooting for 45,000 devices servicing 140 countries and upward of 500,000 employees. Before that, he was self-employed, developing network performance management software and even making a run for the early application service provider (ASP) market.

It’s from that vantage point that he formed his impressions of the public cloud, which he finds wildly compelling—despite occasional flashes of immaturity. Szynaka will present on his cloud expertise at the Modern Infrastructure Decisions event in New York City on April 11, in the session “Fast-Track the Delivery of Apps with Shrink-Wrapped Cloud Templates and Services.”

What were your first impressions of the cloud?

I was actually involved in the cloud back in 2002 in the ASP [application service provider] era when I was selling services under the name SLApolice.com. My belief was that if the era of computing as a utility was here, then service-level agreements would be very important. But with the exception of Sales-force.com, that model never really took off.

I first started using Amazon Web Services in 2010. I was truly amazed at the number of service offerings that were available in the marketplace—things like Database as a Service, big data, content delivery networks and mobile application development toolsets. I was also impressed by the pace of new services being offered, which was nothing like what I was used to in the enterprise. There, software providers would come out with new functionality quarterly or maybe semi-annually. Here, things were coming out once a week or maybe more frequently.

I was also impressed with the ease of development. I was able to do it without change control, I was able to self-provision what I need, configure, test, all independent
of any oversight. I liked that. I had come from an environment where I’d have to contact the guys to rack and stack, I’d have to contact the guys to even just provision the VM [virtual machine]. With AWS, I was able to simply do it all myself.

It was exhilarating. I’ve had a few “wow” moments in my career, and this was one of them. The ability to independently design, develop [and] test the network systems servers and the applications—it’s making computing fun again.

**Why did you found a cloud consultancy?**

I founded CloudeBroker in 2010 with the idea that the enterprise would need assistance in shopping what cloud services that were out there given the numerous services and the confusion around this particular space. But when I called my enterprise buddies, they all politely told me that they were not interested. Instead, I worked with start-up companies that wanted me to do integration work. They already knew what they wanted to be on AWS, knew they wanted the virtual private cloud, and they reached for someone who could do the work.

In mid-2012, my enterprise buddies started taking my calls again. They were being asked to come up with 2013 budgets and roadmaps and were being asked what their stance was on leveraging the cloud. Before, they didn’t need to defend the stance of “We’re not going to use the cloud.” But now, their business departments are using SaaS.

**OVERHEARD | *Cloud Skepticism and Desktop Virtualization***

“I have worked in the cloud before, and like they say, when your Internet is down, that is one thing, but when your phones and other things are on there, it’s a problem.”

—**TOM LIKELY,** IT manager at Billion Automotive, on choosing not to move to a public cloud service provider

“Everyone is talking about the cloud. But this is a redo of what we did in 1985. Everyone had to have their data with them; now everyone doesn’t want their data with them.”

—**BOB LABONTE,** lead engineer, MITRE Corp.

“Wow, that’s expensive, and I am not sure what I’ll be getting for that.”

—**PAUL DEGROOT,** principal at Microsoft consulting firm Pica Communications, on users’ reactions to Office 365 roadmap

“The best apps to move to the cloud are the ones nobody really cares about, like Ted and Alice’s private SharePoint app, or Bob and Susan’s moldy old database project. Those are the cheapest to run and the least likely to require heavy lifting by the IT shop to move.”

—**CARL BROOKS,** analyst at 451 Group

“We’re afraid it will get a lot of attention in the first year but then just fade into the background like any other system.”

—**JONATHAN KEOUGH,** desktop engineer at American Student Assistance, on considering a desktop virtualization project
[Software as a Service], and some of them are even developing in the cloud with rogue IT. Global central IT departments’ stance can’t just be “We don’t use the cloud.” It has to be more informed.

**What do you recommend to them?**
I recommend that they make the compute environment available to their development shops from their desks but that they view those cloud resources as untrusted connections. That means using a secure VPN into a secure VPC [virtual port channel] configuration, with firewalls and DMZs [demilitarized zones], and all that good stuff—much like they’ve set up B2B connections for years.

The enterprise needs to be more aggressive with the cloud, because they need access to these new technologies. They need to engage their clients and their sourcing partners out on common ground. Having tens of hundreds of B2B connections, to each individual customer, was not economical or efficient. The social-mobile-local demands of engaging your client base should be driving enterprises to come up with a strategy to centralize that access in a cloud-based environment.

**Is the cloud ready to host production systems?**
I completely understand that these companies would want to keep most of their production systems in-house. But cloud-based data storage, data warehousing and disaster recovery all make a lot of sense for enter-

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**READER SNAPSHOT**

**Virtual Desktop Infrastructure**

**Will VDI adoption increase or drop off?**

- **55%** Increase as performance improves
- **12%** Decrease as cloud grows
- **33%** Other

“There are some emerging technologies [that] **overcome the inherent limitations of traditional VDI**...These desktop virtualization software products run directly on the physical hardware **without the unavoidable redundancy of the classic VDI.**”

SOURCE: SEARCHVIRTUALDESKTOP.COM/READER SURVEY
prises to be engaged in. They should start with and get their feet wet with applications that lend themselves to the elastic compute, social-mobile-local aspect of engaging customers. Then they can start to consider the systems that are mission-critical to them. I recommend keeping 60% to 70% of what they’re doing in-house, and moving 30% to 40% to the cloud.

Are there any caveats to using the cloud for production environments?
The one bad thing is the lack of operational discipline that is currently available in the cloud. The classic example is AWS going down on Christmas Eve when a developer made a change to their ELB—elastic load balancer—and took production down, namely Netflix. It’s inconceivable that a development change would have been approved then. In the enterprise, that would have been considered a change freeze time period, when the only changes that are approved are break/fix—and even those need the approval of a managing director or EVPs. That outage more than anything signals that there needs to be better operational lockdown.

Do you think those operational changes are coming?
Amazon has come out with statements that they are coming, but only time will tell. Those changes need to be made to get the enterprise customers to move to the cloud.

—ALEX BARRETT

SUMMING IT UP | Desktop projects take off

Which of these desktop projects will your company implement in 2013?

<table>
<thead>
<tr>
<th>Project</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Windows 7</td>
<td>40%</td>
</tr>
<tr>
<td>Desktop virtualization</td>
<td>29%</td>
</tr>
<tr>
<td>Application virtualization</td>
<td>23%</td>
</tr>
<tr>
<td>Windows 8</td>
<td>22%</td>
</tr>
<tr>
<td>BYOD or similar self-service policy</td>
<td>22%</td>
</tr>
<tr>
<td>Online productivity apps, such as Office Live (Office 365)</td>
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</tr>
</tbody>
</table>

N = 497 IT PROFESSIONALS; SOURCE: TECHTARGET INC’S PRELIMINARY FINDINGS FROM THE “2013 IT PRIORITIES SURVEY”
NEWS IN REVIEW

Is Microsoft’s New Office too SaaS-y?

With its most profitable franchise caught in the crossfire of aggressively priced cloud-based offerings from competitors and the inertia of a user base reluctant to change, Microsoft last month launched versions of its Office applications suite available by subscription only.

While offering a desktop suite as a service hardly seems to be a bold decision, it is exactly that for Microsoft. If the company can’t convince a good chunk of its user base to upgrade to the subscription-based versions of its Office 365 ProPlus over the next year, that could further slow the acceptance of Windows 8 on desktops and mobile platforms, most notably its Surface Pro tablet.

Most of the bullets in this crossfire will likely come from larger customers unwilling to change the way they have purchased, deployed and supported Office—a product with tentacles reaching into every corner of their business—for decades. And the associated cost of swapping out thousands of copies makes most businesses skeptical.

“It’s an interesting model, but it’s such a change of mindset. It will take quite a while to run down the cost benefits of this, if there turn out to be any,” said Mike Drips, an information architect with CSC in Houston.

Looking at the per-user, per-month fees for the subscription-based versions of Office ProPlus (see chart below), another user believes Microsoft has a better chance of selling the service to midsize companies than larger ones.

“If a large shop has 20,000 users, this just looks like too much money. It could be doable for a company with closer to 1,000, but even 1,000 looks crazy because at $180 a user for a year that’s $180,000,” said one IT administrator who did not wish to be named.

“I mean, good Lord, this is only Office we are talking about here.”

CHANGE IS HARD

Beyond cost, it could be that Office applications have taken root so deeply that many accounts have shaped essential business processes around them.

“Give Microsoft credit for creating a way of working with Office to where businesses are not only very comfortable with it, but have built their business practices around the existing versions of it,” said Paul DeGroot, principal at Pica Communications, a consulting firm specializing in Microsoft’s licensing practices. Another factor is cost-conscious customers who are staying with existing, on-premises versions of Office longer. They are doing so, in part, because their existing Enterprise Agreements (EAs)

OFFICE 365 SUBSCRIPTION FEES

<table>
<thead>
<tr>
<th>OFFICE 365 VERSION</th>
<th>COST PER USER/PER YEAR</th>
<th>NUMBER OF USERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Enterprise</td>
<td>$144</td>
<td>&gt;250</td>
</tr>
<tr>
<td>Midsize Business</td>
<td>$180</td>
<td>10-250</td>
</tr>
<tr>
<td>Small Business Premium</td>
<td>$150</td>
<td>1-10</td>
</tr>
</tbody>
</table>
grant them a perpetual license to the software, meaning they own the software and sidestep monthly subscription charges. Many add Microsoft’s Software Assurance plan to that license, which guarantees them attractively priced upgrades to the next version. Some are now questioning why they still need Software Assurance.

“Customers with Software Assurance are already licensed for Office 2013, so if they renew their existing EAs, what they are really paying for is Office 2016, a product they know nothing about,” DeGroot said.

But if Microsoft convinces customers to switch over to a subscription service for Office, it has a better chance of maintaining customers and continuing a steady revenue stream because it is more difficult for users to exit a subscription plan than one that grants users perpetual rights to the product for a one-time fee.

“The current licensing model actually encourages users to stop paying Microsoft. If they can move users into subscriptions, they have to continue paying whether they get the new products or not,” DeGroot said.

NO PAIN, NO GAIN

While getting large customers to switch to a services model may prove daunting, some observers believe if they succeed, Microsoft not only protects its cash flow but also gives its Windows 8-based devices a much-needed boost against Apple and Google.

“Desktop sales have been saturated for a while now and Microsoft needs ways to keep the gravy train rolling,” said Carl Brooks, an analyst with 451 Research. “This is going to be a significant source of recurring revenue as long as a viable, low-cost alternative doesn’t show up out of the blue.”

Brooks added that the new subscription plan gives Microsoft a fresh and more meaningful way to upsell the millions of shops with aging versions of Office.

Addressing user skepticism, company officials said there are longer-term cost savings in not having IT manually install both server- and desktop-based versions of Office, as well as the resulting increased productivity of getting the latest software updates delivered automatically under one license.

Some are now questioning why they still need Software Assurance.

“To get the whole productivity experience before, you had to stand up a SharePoint Server, stand up an Exchange Server, stand up a Lync Server and then put in your Office clients and—by the way—have all the current versions. Not that many people could do all that. Now you just pay a subscription and that’s all taken care of for you,” said Julia White, general manager of Microsoft’s Office Division.

Microsoft has also made it easier for users to incorporate a subscription for the new Office into their existing EAs by paying a “step up” from their current on-premises version of Office.

In concert with the new Office 365 desktop offerings, Microsoft announced the availability of the online server-based versions of Office 365, including Exchange, SharePoint and Lync.

Whether Office users decide to plunge into the services model or not, one observer notes there could be a downside for Microsoft. “The worst thing about Office for Microsoft is that people won’t change. The best thing for Microsoft is that people won’t change,” DeGroot said. —ED SCANNELL
MAILBAG

IaaS No Silver Bullet

READERS RESPOND to recent stories. Have a comment or question? Email us at editor@moderninfrastructure.com.

“[This is a] great illustration that IaaS [Infrastructure as a Service] gives you the tools to scale, but not the architecture; that part is still up to you.”

RICK NUCCI, founder of Dell Boomi, on “Tackling cloud concerns from the front lines,” October 2012 MI issue

“[We’re] currently using Hyper-V/VDI in production for about 125 users. No complaints, especially with Windows Server 2012 and Windows 8. We would totally disagree that VDI lags behind PCs.”

—SearchVirtualDesktop.com reader on “VDI performance still falls short of PCs,” October 2012 MI issue

“I read the article ‘When an in-house IT infrastructure wins out over cloud computing’ [January 2013 MI issue] with much interest. How would you define a hybrid cloud? Is it a setup where a company to some extent utilizes public cloud services (even free ones maybe) and to some extent runs its own separate computing centers?

Is that a fair interpretation? I try to “purify” the different types of clouds—public, private and hybrid. My current understanding is that a hybrid cloud is where you have equipment that is in fact still located at Google or Amazon, in the same computer rooms as the publicly available equipment, but where you have special agreements with the provider to treat your equipment and information with extra care. I’m really trying to get my head around this.”

—KJELL OHLSSON, CISSP, integrated assurance manager, Mölndal, Sweden

Editor-in-chief ALEX BARRETT responds:
Ask three people to define the term hybrid cloud, and you’ll get three different answers. The definition of hybrid cloud is a work in progress, but it usually refers to one of two setups: a combination of multiple public clouds or the combination of a pure-play public cloud plus an on-premises private cloud such as VMware vSphere and vCloud Director. The setup you describe sounds more like something you’d get from a managed services provider, such as Terremark’s Enterprise Cloud Private Edition.

READER SNAPSHOT | Mobile Management

What do you use for mobile management?

SOURCE: SEARCHCONSUMERIZATION.COM READER SURVEY
EXPLAINED

The Lease vs. Own Debate, Cloud Apps Edition

ANY FINANCIAL ADVISER will tell you it’s better to own than to lease, but that pragmatism is ignored when it comes to cloud computing.

More and more companies pay cloud providers monthly subscription fees for instant access to the latest and greatest infrastructure, platforms and applications that they can’t afford to buy outright. The market for leased IT platforms, applications and operations is so hot right now that companies can get just about Anything as a Service, like SaaS, IaaS, PaaS (XaaS)—and they seek out those services with the hope of lowering IT expenses.

Nearly three quarters—73%—of IT pros using public cloud services listed cost savings as the primary reason, said a 2012 TechTarget survey of 1,500 IT professionals. But cloud services may end up costing far more than on-premises IT over the long term—and that’s exactly why vendors create cloud versions of their wares. Software as a Service (SaaS) gives vendors a reliable revenue stream that they don’t get with their biennial software product releases.

“If you believe the marketing literature, you think that you should be moving everything to the cloud tomorrow,” said Sean McDermott, CEO of Windward IT Solutions, an IT service provider based in Washington, D.C. “That’s not the case … there are a lot of factors to consider.”

THE COSTLY CLOUD

For mature companies with a lot of cross-system integration, the question of what to put in the cloud is a complex one, and the answer often leads back to their own data center.

Windward IT Solutions considered moving its Office and SharePoint environment to the cloud, where it already runs email via hosted Exchange. But certain applications, such as its customized accounting software, can’t be integrated with the cloud-based version of Exchange, McDermott said.

The market for leased IT platforms, applications and operations is so hot right now that companies can get just about anything as a service.

Add to that the ongoing subscription cost of about $9 per user per month for hosted Exchange via a cloud service provider, plus Exchange ActiveSync costs, and for about 120 people, that amounts to $1,600 per month, or $19,200 per year, he said.

“I have to buy a server that I need for accounting software and some other things anyway, so in this case, in terms of Capex and Opex, it makes sense to build our own private cloud,” McDermott said.

Microsoft, which charges $8 per user per month to host its Exchange Online service, said it does not have any data comparing the total cost of owning on-premises Exchange servers with using cloud-based Exchange Online. The company also declined to offer an Exchange Online customer to discuss the topic.

Instead, a spokesperson directed us to
a January 2013 case study of a West Coast nonprofit that migrated from an old version of Exchange Server to Exchange Online, Microsoft Office 365, Lync and SharePoint Online to avoid about $40,000 in Capex costs for equipment and software upgrades. The organization now pays $1,500 a month, according to Microsoft’s study.

Some simple math will tell you that in just over two years, their $1,500 monthly payment amounts to the $40,000 capital expense they wanted to avoid.

That’s not to say cloud services are never worth the price; the benefits of not having to invest in a product up front and avoiding all the expenses that go along with maintaining and managing it are what make it worth using, according to Carl Brooks, an analyst at 451 Research.

“You’re going to pay the same amount to Oracle and roughly the same amount in operating costs to AWS [Amazon Web Services] as you do inside the data center,” Brooks said. “So the reason an IT shop uses cloud services isn’t to save money, but because there’s some other inherent advantages to using it.”

This applies across the board to all external services and is actually the reason enterprises spend the most money—about 7% to 8%—with managed services providers, 1% to 2% on Infrastructure as a Service and 2% to 3% on SaaS, Brooks said.

“It’s all about pushing actual work off the IT guy’s plate into the service provider,” Brooks said. “The other 90% of the budget still goes to all the usual stuff: salary, software, existing data center.” —BRIDGET BOTELHO

SUMMING IT UP | Budgets tick upwards

Which areas will your budget increase in this year?

Software: 55%
Hardware: 51%
Maintenance: 32%
Staff: 31%
Cloud services: 24%
Outside services: 14%

Nearly one-quarter of IT professionals report plans to increase spending on cloud services this year.

N = 1,171 IT PROFESSIONALS; RESPONDENTS COULD CHOOSE MORE THAN ONE OPTION; SOURCE: TECHTARGET INC.'S PRELIMINARY FINDINGS FROM THE "2013 IT PRIORITIES SURVEY"
Buzzword Alert

Software-Defined

Forget virtualization, forget cloud. These days, it seems every new technology to come down the pike is software-defined.

Leading the charge is software-defined networking (SDN), a technology pioneered by Google and Facebook to abstract network architecture and make network devices programmable. Its goal is to make networks more dynamic. Beyond that, software-defined networks mean many things to many people. For some, SDN is synonymous with the OpenFlow protocol, while others take their cues from VMware Nicira or Big Switch, and countless other vendors. The confusion about SDN hasn’t prevented anyone from adopting and co-opting the software-defined moniker for their own purposes. Let’s look at a few examples that have landed in our inboxes.

Software-defined data center

A marketing term popularized by VMware that describes its vision of the future, where data center services such as compute, network, storage, security and availability are pooled, aggregated and managed by intelligent policy-driven software, providing self-service, automation and application and business management. This sounds suspiciously similar to a virtual data center.

Software-defined storage

This is a marketing term claimed by storage vendors from Nexenta and Coraid to traditional vendors like NetApp and EMC. At a high level, SDS usually refers to the disaggregation of storage functionality that was previously included as part of a storage array. In practice, it can refer to anything from a simple volume manager to storage virtualization software that pools and aggregates hard disk capacity. Others say software-defined storage delivers storage virtualization capabilities as part of an operating system or hypervisor. Whatever your definition, it appears that software-defined storage is an attempt to put a new face on technologies that have been here for a long, long time.

Software-defined storage networks

Following on the heels of software-defined networks and storage is the software-defined storage network, as put forth by newcomer Jeda Networks. With static and expensive storage networks like Fibre Channel and iSCSI in its sights, Jeda proposes to virtualize the storage network by decoupling the storage network control plane from the actual physical network. It does so by replacing the storage network control plane with its own “intelligent” controller, its Fabric Network Controller software, which converts standard Ethernet switches into an enterprise storage fabric. We’re sure Cisco and Brocade are going to love this particular version of software-defined.

Software-defined hypervisor

This is a bit of a stretch, but at least one analyst has used it to describe HotLink SuperVISOR, with its ability to virtualize the hypervisor layer and decouple it from the underlying management console. The HotLink product is a favorite among longtime VMware shops that are heavily invested in VMware vCenter for virtualization management but that also want to selectively use lower-cost hypervisors such as Hyper-V or KVM. Whether that qualifies it as software-defined is up to you. —ALEX BARRETT
Boeing’s newest passenger plane, the 787 Dreamliner, has been in the news for equipment failures. Batteries catching fire, electrical problems and fuel leaks are among the problems that have grounded the planes, on top of the serious delivery delays that customers—the airlines—have experienced.

Many analysts have blamed the extensive outsourcing—as much as 70% of the design and assembly was outsourced, unintentionally driving knowledge and profits to the suppliers and away from Boeing. The result is a product that is billions of dollars over budget, late and malfunctioning.

Other companies are doing exactly the opposite with operations, bringing design and manufacturing back in-house and back into the United States from China. GE is building appliances again in Kentucky. Its water heaters cost less, are better quality, and don’t incur long-distance freight delays and costs. Designers can talk to the implementers: the welders who assemble the heaters’ internal plumbing. They have pinpointed problems and made design adjustments that result in higher quality and faster assembly.

**The Upsides of Insourcing**

There are many parallels between what the IT industry is undergoing and the outsourcing transformations in manufacturing industries during the 1980s. All we talk about now is moving to the cloud, pushing workloads into faraway data centers, after which we wheel our servers out the back door. This is today’s outsourcing. Companies reduce their data center footprints and staff, and as staff members leave, they take person-years of knowledge with them.

GE discovered that having a feedback loop between the designers and implementers meant better, less-expensive products. What about the feedback loop between developers and system administrators, or between architects and users? Can that loop even exist when most of the system design and implementation is done by a supplier, like Salesforce.com or Dropbox, with no chance for input?

The cloud offers new choices and potential freedom from the brutal enterprise software we’ve been stuck with for years. Absolutely everything in life is a tradeoff. But as CIOs adopt a herd mentality about cloud computing, we need to consider what we might lose. Are we pushing critical IT and business knowledge out the door, possibly to our competition, as we downsize our server room? Are we gaining agility in the cloud, or losing it with the rigid one-solution-fits-all approaches of cloud providers? In the long run, would it solve more problems and be cheaper to hire knowledgeable staff, and keep IT operations in-house? Could that be a competitive advantage? These are tough questions. I just hope we have answers before the cloud turns us all into 787s.

Bob Plankers is a virtualization and cloud architect at a major Midwestern university. He is also the author of The Lone Sysadmin blog.
How to Select a Colocation Facility

By Steve Gunderson

SELECTING A colocation facility presents not only potential hazards, but also the prospect of additional flexibility and business value. Steps include exploiting expertise throughout the organization, establishing formal requirements and collecting unbiased evaluations. This month, we’ll review the evaluation process and some common decision factors.

The first and most important step is to select a diverse team that can determine the full range of data center requirements. A predefined decision framework ensures that one dominant personality does not drive the decision. We have seen data center selections based on network or security factors at the expense of critical infrastructure or operational requirements.

Once the team and decision framework are in place, consider these six factors:

1. Critical infrastructure. The electrical and mechanical infrastructure to power and cool the data center typically receives the bulk of the attention. The important thing is to understand how these components are designed to operate as one system and what vulnerabilities are inherent in those designs.

2. Operations and maintenance. Evaluating preventative maintenance procedures and day-to-day practices is both art and science. What is the service history of the facility? Has it experienced problems affecting customers? How disciplined are the maintenance procedures? How many and which types of engineers are on site? Will your operations and maintenance teams be comfortable working together?

3. Business model. Does a provider focus primarily on renting space and capacity? If so, how does it charge for rent or power? What additional services are available. How do they match your requirements?

4. Security. Most providers have the minimum certifications (SAS70 or SSAE16) necessary to satisfy the Payment Card Industry Data Security Standard, the Health Insurance Portability and Accountability Act, or Sarbanes-Oxley Act requirements. What did recent audits find? When you tour the facilities, can you spot vulnerabilities?

5. Financial and legal. How financially stable is the provider? Does it own the underlying real estate, or has it signed a master lease? Will you be asked to sign a lease or a license?

6. Network. Most colocation providers use dual network entrances. Confirm that the services you’ve selected do not share a common infrastructure or ride on a common backbone.

Next month, we will offer tips on selecting a data center site.

STEVE GUNDERSON is a principal at Transitional Data Services.
For VDI, Choose Persistence

By Brian Madden

WANT YOUR VDI project to be a success?
Choose persistent desktops.

In the world of virtual desktop infrastructure, there are two basic kinds of desktops: persistent (also called personal or one-to-one) and nonpersistent (also called shared or many-to-one). Many VDI proponents claim that nonpersistent desktops are the way to go because they’re easier to manage. With nonpersistent, a single disk image is shared among many users. As each user logs in, he or she gets a clone of the shared master desktop, and then that clone is customized on demand with app virtualization (Microsoft App-V, VMware ThinApp, etc.) or with user environment virtualization (AppSense, RES, etc.).

While this seems like a great concept, the unfortunate reality is that it’s impossible to virtualize every single app and user setting with these tools. For example, how do you handle new apps the user wants to install? They can’t install to the master image since everyone uses that image, and they can’t install into their own clone because the app would be lost when the admin refreshes the master image. (The ability to refresh a single master image is why you’re using the nonpersistent desktop in the first place, right?)

In your existing pre-VDI environment, most desktops are persistent. Your users have laptops and desktops with hard drive images that persist between reboots. In most cases, users even have admin rights—they can install their own software, and each image is different depending on the needs of the particular user. Sure, you might use some app and user virtualization (and you should), but any apps that can’t be virtualized can be happily installed into a user’s image manually.

One of the main reasons that VDI projects fail is because most pre-VDI environments are based on persistent images and most VDI environments are built around nonpersistent images. Companies spend too much engineering time trying to cram diverse images into a common one, and by the time they give up they’ve wasted several months and pissed off a bunch of VDI pilot users.

So when you move to VDI, don’t try to re-engineer your desktops. If you’ve been using persistent desktops where users have their own admin rights, then keep doing it for VDI. (After all, if you want to move to a locked-down nonpersistent desktop image, you can do that with existing hardware.)

The reason you’re not hearing this message much is because the storage technology needed to support VDI users and their personal images has just started coming out in the past year. But now that persistent images on VDI are possible, you can finally design your VDI environments so that they mimic your physical environments. That’s a surefire way to please your users and to create a successful project.

BRIAN MADDEN is an opinionated, supertechnical, fiercely independent desktop virtualization and consumerization expert. Write to him at bmadden@techtarget.com.
CONSUMERIZATION OF IT

The Incredible Shrinking Desktop

Mobile devices are here to stay, and traditional enterprise infrastructure will never be the same.

By Colin Steele

Francis Poeta used to rely on his laptop. Now he never travels with it.

The transition was a slow one. For a while, Poeta carried both a laptop and an ASUS Transformer tablet to customer sites. He began using the Android tablet more and the laptop less. Eventually, he realized he’d gone a week without even opening the laptop bag.

“I thought, if I haven’t had to take it out for a week, how long can I go?” he said.

That was a year and a half ago.

As mobile devices and cloud services rise to prominence among business users, they’re chipping away at the dominance of Windows and x86-based computing at the endpoint and, less obviously, in the data center. It’s a transformation the likes of which IT hasn’t seen since the early 1990s.

“When Microsoft came about, they said, ‘We can’t compete with IBM. We’ll create a whole new marketplace. We’ll turn a terminal into a computer, and we’ll make it personal.’ That’s what Apple did with the iPhone,” said Poeta, president and CEO of P and M Computers, an IT solutions provider in Cliffside Park, N.J.

Windows PCs did not replace terminals overnight, and x86 servers haven’t eradicated mainframes. Today’s shift will follow in those footsteps. Smartphones and tablets
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will live alongside desktops and laptops, and infrastructure will rely on a mix of in-house servers and hosted services. Nonetheless, the ramifications of the influx of these devices will be far-reaching.

“THERE ARE OTHER WAYS OF WORKING”
The smartphone boom, which began with the iPhone’s launch in 2007, is driving the mobility trend. Manufacturers shipped 712.6 million smartphones worldwide in 2012—a 44% increase over 2011, according to research firm IDC.

But it is tablets, with their larger screens, that pose the real threat to PCs. And that market is experiencing even more growth. In the fourth quarter of 2012, worldwide tablet shipments jumped by 75% to a record 52.5 million units. Meanwhile, PC market growth was flat for the year.

Workers say these devices make them more efficient. Before Poeta went mobile, he took notes at customer sites with a pen and paper.

“I'd have to go back and try to figure out what customer, what day, what I was supposed to do with it,” he said. “I sketched out my first deal on a bar napkin.”

Now he uses note-taking apps such as Evernote and Penultimate, which organize notes, photos and other documents and sync that data across multiple devices.

Mobile computing can also empower users in new ways. In May 2012, cable provider Cablevision kicked off an iPad pilot program with its field employees, many of whom didn’t have work computers before. The company implemented mobile device management software but gave workers the freedom to install apps themselves—a leap of faith traditional Windows administrators have hesitated to take.

An employee in the program discovered he could use the Google Translate app to communicate with customers who don’t speak English. In the past, Cablevision would have to reschedule the customer appointment and send a translator to the home. Google Translate reduced those problems and helped improve productivity, said Aaron Freimark, chief technology officer at Tekserve, a New York-based Apple reseller that worked with Cablevision on the project.

“This is something that would never happen in a Windows environment,” Freimark said. “Windows is so much about control, which stifles a lot of the progress and innovation.”

In October, Cablevision began a full-scale rollout of more than 3,000 iPads—with Google Translate pre-installed—to employees in New York, New Jersey and Connecticut.

This more specific, app-based approach
to working is part of mobility’s appeal, and it represents the future of computing, said Benjamin Robbins, co-founder at Seattle-based mobile consultancy Palador. “Instead of being monolithic, it’s going to be task- and function-driven,” he said.

In February 2012, Robbins left his laptop PC at home during a trip to the Mobile World Congress event in Barcelona. He’s been mobile-only ever since, relying on the Samsung Galaxy Note, an Android phone/tablet hybrid (or “phablet”) that can connect to an external keyboard and monitor. The experience has forced him to rethink his approach to certain tasks and ultimately improved his productivity, he said.

“Don’t just work in the way you’ve always worked because that’s the way you’ve always worked,” he said. “There are other ways of working.”

WHAT’S KEEPING WINDOWS ALIVE

Despite mobile computing’s explosive growth and valuable benefits, the Windows PC will be an enterprise mainstay for the foreseeable future. Microsoft will support Windows 7, the leading desktop OS by market share, until at least 2020, meaning organizations have no pressing need to migrate. Plus, most employees use mobile devices in addition to their PCs, not instead of them.

“Tablets are being used as companions,” Freimark said.

Workers may also hold on to the PC because mobility represents such a new way of doing things. Robbins acknowledged the transition to a mobile-only lifestyle was tough.

“I was stuck in that PC mindset,” he said. “We really have ingrained patterns in our heads about not only how to work, but how to interact with a computer. Stepping outside of that is frightening. ... The first month was really a challenge. I really had to stop and think about what I was doing.”

Windows’ application ecosystem gives organizations another important reason to stay with the operating system. Certain workers rely on powerful software that only fully loaded computers can support. More importantly, there’s a plethora of business-critical legacy apps, made by third-party developers, that won’t work on other OSes. As long as that’s the case, Windows will remain in the enterprise picture.

To make these applications available to mobile workers, organizations may turn to desktop or application virtualization. Desktop virtualization stores a full OS environment in a data center and delivers it to an endpoint over a network; application virtualization takes a similar but more limited approach. Both technologies allow mobile workers to access Windows OSes and apps on non-Windows devices, but they’re not without their drawbacks. Network connectivity requirements, performance issues and cost all create problems in a desktop or application virtualization project. User-friendliness is another concern.
“If anybody’s ever tried [virtualization on a mobile device] for long periods, it’s not really great,” Freimark said. “Windows was built for a keyboard and mouse.”

Some virtualization vendors offer features designed to optimize the experience of using keyboard- and mouse-based software on touchscreen devices, but most experts agree a user experience designed specifically with mobile in mind is better. As more independent software vendors (ISVs) develop mobile versions of their Windows apps, they “could conceivably quell the marketplace” for desktop and application virtualization on tablets, Poeta said.

“That’ll be what drives Windows up a wall,” he said.

ISVs may also develop more cloud-based Web apps, which are easier to update and offer more cross-platform compatibility than native mobile apps, said Paul Kunze, vice president at IntraSystems, a Braintree, Mass.-based solutions provider. Web apps, however, come with their own challenges. Mainly, they can’t take advantage of all device- or hardware-specific features, which can limit their functionality.

THE DATA CENTER OF THE FUTURE

As the consumerization of IT takes hold, it will also have ramifications in the data center. More users will want to access corporate systems from their smartphones and tablets, outside the firewall, and share data with colleagues in more collaborative ways—something that legacy data center infrastructure and server-based applications aren’t set up to do particularly well.

For example, the traditional enterprise data store, the network file share, typically requires virtual private network access from a machine that can read the Windows file system. To share a file, a remote user would have to log on to the corporate network from an approved device, save the file locally and email it.

Traditional server-based collaboration software functions in a similar way. Robbins recently watched a colleague struggle to find and share an old document in his company’s Microsoft SharePoint environment.

“He was cursing the thing,” Robbins recalled. “I was like, ‘Wow, I do not miss that.’”

Robbins is one of millions of users who have turned to cloud storage and file-sharing services, which sync data across multiple devices and offer one-click sharing. Box and other vendors offer enterprise versions of these services—either in the cloud, which many IT pros are still wary of, or on-premises, which requires IT to become more of an internal service provider.

Another data center fixture, the Microsoft Exchange email server, also faces a murky future. Increasingly, workers who rely on cloud-based email in their personal lives have come to expect the same features (virtually unlimited storage capacity, easy search) from their work email. And cloud email providers such as Google are tempting...
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enterprise customers with the promise of lower costs, easier management and better disaster recovery.

“Exchange drives a good deal of Windows adoption,” Poeta said. “If you get rid of Exchange, that’s another serious blow.”

CAN THE WINTEL EMPIRE STRIKE BACK?

How did we get here so quickly? As recently as six years ago, questioning the long-term success of the Wintel juggernaut would have seemed preposterous. Then Apple released the iPhone, opening the floodgates to creative new computing technologies. Instead of coming along for the ride, the traditional powers largely dug in their heels. And when they finally tried to adapt, they found the transition much harder than expected.

Microsoft gets most of the blame here, but it’s not alone. Traditional PC manufacturing powers have also dropped the ball.

“Complacency and a lack of innovation among [original equipment manufacturer] vendors and other parts of the PC ecosystem have occurred over the past five years,” IDC said in a January press release.

Dell, a company built on its PC-making prowess, has had to expand into new areas—servers, virtualization, even cloud—through several high-priced acquisitions. CEO Michael Dell, an investment firm and Microsoft teamed up to take the company private earlier this year.

Last year, Hewlett-Packard announced plans to lay off 29,000 employees over two years. Some observers trace the start of the company’s troubles back to its 2002 merger with another PC giant, Compaq.

As the PC’s share of the endpoint device market continues to slide—from 31% in 2012 to 24% in 2016, according to IDC—Microsoft is struggling to fight back. With the Windows 8 and Windows RT OSes, the company tried to give customers the best of PCs and tablets on one device. But thanks to confusing dual interfaces and no shortage of various devices—made by hardware partners and, for the first time, Microsoft itself—consumers and businesses largely tuned out. Windows Phone 8 has similarly failed to get traction in the market.

If there’s any good news for Microsoft and others left in consumerization’s wake, it’s that innovation in the mobile market has slowed from its once-breakneck pace. There’s a bigger version of the iPhone and a smaller version of the iPad, but the soft-

There is room for another player to step up, offer something unique and reap the benefits.

ware that runs both has remained largely unchanged for a few years. And in some regards, the market’s top mobile devices are very similar. Case in point: Samsung, the only smartphone manufacturer that outsells Apple, was found to have infringed on Apple’s patents in a high-profile case last year.

There is room for another player to step up, offer something unique and reap the benefits. It will happen eventually, as it always does in the tech industry. And it will bring even more disruption for IT, as users’ computing habits move further and further away from the PC.

“Is the desktop done?” Kunze wondered. “Certainly not today, but I can see it being less and less important as we move forward.”

COLIN STEELE is executive editor in the Data Center and Virtualization media group at TechTarget. Contact him at csteele@techtarget.com and follow him on Twitter.

MODERN INFRASTRUCTURE • APRIL 2013 20
IT'S NO SECRET that virtual desktop infrastructure involves significant storage costs, but the problem is exacerbated by vendors that vastly underestimate storage requisites.

Meanwhile, new hybrid solid-state storage products for virtual desktop infrastructure (VDI) reduce the storage problem and—finally—bring the cost of virtual desktops to the level of PCs.

Many VDI pilots start out with a small pool of virtual desktops that any old storage system can handle, so conceptually, everything works. But as companies scale out, storage becomes the root cause of performance problems, and desktop virtualization quickly turns into a money pit.

Part of the problem is that vendors vastly underestimate the storage that will be needed. They use best-case scenarios when specifying product infrastructure requirements during the product sales process, said Rick Varju, director of engineering and operations at Foley and Lardner LLP, a Boston-based law firm.

After working with VMware Inc. through the initial stages of an early-adopter View deployment project, Varju said he learned not to underestimate storage requirements. He heads the law firm's VDI deployment initiative.
Virtual Desktops

“The difference between what was initially specified and what was actually required from an infrastructure perspective was off by as much as 50%,” Varju said. “This was true not only for storage but also for VM host, server CPU and memory requirements.”

Billion Automobile, a Midwest-based GMC auto dealership with 16 locations, had a similar experience when it recently put 500 of its 900 employees on VMware View virtual desktops.

“[The vendors] come in and say, ‘You have enough storage; you will never use all of it up,’” said Tom Likely, IT manager for the auto dealership. “But it happens soon enough.”

Both organizations deployed persistent virtual desktops, where each end user receives a personalized desktop image. This approach requires far more storage than nonpersistent virtual desktops.

“We did factor that into our storage planning efforts with VMware and a storage vendor using information provided by VMware at that time, and [we] ultimately ended up missing the mark,” Varju said. “It was a real eye-opener, as you can imagine.”

When Foley and Lardner upgrades from Windows XP and Office 2003 to Windows 7 and Office 2010 this year, resource demands will increase, and the firm may need even more hardware.

The problem is not unique to VMware customers, said Dan Bolton, systems architect for Kingston University in the U.K. He did proofs of concept on just about every desktop virtualization product out there before settling on Quest Software’s vWorkspace in 2011.

“Everything VMware, Citrix, Quest and others claimed about storage reductions and beating the IOPs battle I took with a pinch of salt,” Bolton said.

Bolton chose Quest because its technology met his organization’s needs at the right price.

**VDI STORAGE PROBLEMS: WHO IS TO BLAME?**

VMware, for its part, puts the onus on customers to determine their own storage requirements and insists that proper planning can stave off the need for massive infrastructure upgrades.

“The up-front assessment, done either by a partner or by the customer, is where you get an understanding of the application needs, what users are doing on the network [and] the current infrastructure,” said Mason Uyeda, a spokesman for VMware’s end-user computing group.

“We see issues where the assessment wasn’t comprehensive enough, where an administrator didn’t realize that their end users needed as much as they did.” Those customers have to throw more hardware at the problem, Uyeda said.

While reference architectures and storage best practices can help, IT administrators who are new to VDI can’t possibly know how to architect a complicated virtual infrastructure—which involves networking, storage, servers and desktops—without performing test benchmarks against real workloads, Bolton said.

“[Vendors] have technology to ‘help’ and white papers about what they can achieve in a closed lab, but nothing compares to real-world implementations,” Bolton said. “Don’t assume 20 IOPS [I/O per second] per desktop will be enough because it rarely is—unless the end user has fallen asleep.”

Administrators also need to understand that traditional storage arrays that work fine for virtual servers aren’t designed for virtual desktops, experts said.
That’s what Ryan Goessling, infrastructure architect for the California State Teachers Retirement System (CALSTRS), learned when his team deployed VDI in the same way they did their server virtual machines. “We were using three SAN [storage area network] devices for virtual servers and tried to mix server and virtual desktops on them,” Goessling said. “It didn’t work out. ... We ran into bottlenecks with storage, CPU and RAM.”

**HYBRID STORAGE TO THE RESCUE**

You can bet that where there is a problem, a vendor with a “solution” is not far behind. Storage vendors have come up with new solid-state storage arrays that have so much capacity and are so fast that “many of the storage-centric performance problems people have will go away—and so will the need for traditional storage,” VMware’s Uyeda said.

VMware said it will publish a View 5.2 reference architecture for solid-state disk in early 2013 that should help View customers get below the threshold of $200 per virtual desktop—around the cost of a PC.

Today, the cost per virtual desktop hovers around $250, VMware said, though one independent analyst said that is a very low figure that excludes large parts of the cost equation—including VDI software and Windows virtual desktop licensing costs.

One VDI storage vendor, Atlantis Computing, claims that the cost of storage for persistent virtual desktops drives up the combined capital expenditure and operating expenditure cost of the infrastructure (including server, storage and network) to $1,000 to $2,000 per desktop. Atlantis claims that its new in-memory VDI storage system, called ILIO Persistent VDI 4.0, lowers the infrastructure cost for persistent virtual desktops to $300 per user by using RAM as primary storage.

Meanwhile, an all-flash storage system from vendors such as Pure Storage can bring the infrastructure cost to just under $100 per desktop, according to the company’s website.

While the cost per virtual desktop varies,

### VIRTUALIZATION SOFTWARE SHOULDS SOME STORAGE BURDEN

**THERE ARE ALSO** improvements within virtualization software to reduce storage requirements. In VMware View version 5.1, the View Storage Accelerator aims to prevent performance bottlenecks and reduce storage costs by caching image blocks while reading View desktop images to prevent storage overloads.

For Citrix Systems Inc. customers, the IntelliCache feature helps to reduce XenDesktop storage costs by using local caching for some desktop files. That way, lower-cost storage handles some of the runtime reads and writes of the virtual machine, reducing central storage requirements.

—BRIDGET BOTELHO
Virtual Desktops

a large part of the price comes down to storage. The average VDI customer spends 40% to 60% of its desktop virtualization budget on storage, according to Gartner Inc.

In an effort to reduce that percentage, Billion Automobile moved from a big-box SAN to Tegile Systems’ Zebi Storage Array—a hybrid system that includes solid-state disk and flash memory—to support its View 5 environment.

Tegile’s storage costs around $30 per virtual desktop, even for persistent desktops that require more storage than nonpersistent desktops, according to Rob Commins, a Tegile Systems spokesman. The average Tegile customer spends about 10% of its VDI budget on storage, he said.

With Tegile’s deduplication and replication capabilities, Billion Automobile has “stretched the impending doom” of running out of storage space, Likely said. When Tegile adds more virtual desktops this year, Likely will be able to add more storage while staying within the company’s IT budget, he said.

There are a number of other startup companies that design storage specifically for virtual desktops.

Tintri Inc.’s VMstore appliance, for instance, is a redundant system with flash and spinning storage for IT shops that want to manage storage through the virtualization layer. Nutanix Inc.’s Complete Cluster removes the need for network storage. Nimble Storage also offers a hybrid solid-state and spinning-disk storage array.

Then there is the appliance approach from companies such as Pivot3 Inc. Its vSTAC delivers shared storage and virtual servers as an appliance. CALSTRS moved to vSTAC from a SAN. The appliance is easier to use than SAN, and it is simple to add and move storage, Goessling said.

“So far, it has also proven to be cheaper than using a SAN … and [our virtual desktop] performance is about on par with laptops,” he said.

The big SAN storage vendors aren’t being left in the dust. For example, EMC sells a hybrid storage option from its acquisition of XtremIO in May 2012. Dell also added hybrid solid-state arrays for VDI to its EqualLogic iSCSI SAN PS6500 Series last year.

That’s not to say that traditional SAN storage can’t be architected to support a virtual desktop environment. It can, said Keith Norbie, a vice president at Nexus Information Systems, a Stratos Co.-owned IT provider.

“There are cases where people already have the right type of storage, and there are cases where people need separate storage for VDI,” said Norbie, who provides infrastructure assessments to help size virtual desktop environments.

Foley and Lardner’s IT team, for instance, uses multiple NetApp FAS3240 systems attached to Fibre Channel disk, with 45 TB of the 66 TB allocated in use to support about 1,600 virtual desktops.

The bottom line is that many factors play into storage decisions.

“You can argue for and against storage specifically for VDI. The decision isn’t always technical,” Norbie said. “You can get any solution to work well with VDI; the appeal here is what makes the most sense operationally, like whether you like the management interface. It’s all preference.”

BRIDGET BOTELHO is news director in the Data Center and Virtualization Media Group. Email bbotelho@techtarget.com or follow @BridgetBotelho on Twitter.
The hard candy shell of the traditional corporate firewall and network has dissolved into a gooey center from the proliferation of Software as a Service (SaaS) apps and personal mobile devices.

The process of controlling identity, access and delivery of services was relatively simple when employees had only one desktop computer to log in to every morning. Unfortunately, that is no longer the case for most organizations—whether they know it or not.

For much of the past decade, enterprise identity and access management (IAM) was a mostly solved problem. Microsoft’s Active Directory or Lightweight Directory Access Protocol (LDAP) were sufficient tools for managing everything from group security policies to access to a Windows domain.

Now, organizations need tools to extend user access and identity to everything, like SaaS apps and mobile devices, while still integrating with existing investments in Active Directory and traditional Windows applications, said Gregg Kreizman, an identity access management analyst at Gartner, Inc., a Stamford, Conn.-based research firm.

Without a plan for a consumerization-era approach to IAM, organizations can be challenged by everything from shadow IT, unfettered use of Dropbox, unsafe password
management and even provisioning external temporary users.

SAY GOODBYE TO THE OLD WAY
Legacy approaches to IAM, such as Active Directory or Oracle’s Identity Manager, are failing organizations because those products can’t manage access from consumer endpoints, don’t support rapid adoption of cloud services and can’t provide secure data exchange across user populations, said Wendy Nather, an analyst with the 451 Research Group.

A Forrester Research report on bring your own technology found that personal mobile phones and tablets are being used at approximately 65% of organizations. At the same time, nearly 30% of those surveyed said employees were also provisioning their own software on those devices to use at work—with Dropbox, Box, SugarSync and Evernote as the most popular examples—without IT’s approval.

“There are more and more applications that are hosted beyond our perimeter. We try to vet those apps, but there are a lot of people just signing up for whatever,” said David Miller, IT manager for Front Porch Inc., a provider of advertising tools for Internet service providers based in Sonora, Calif.

Miller believes it’s not the IT department’s role to tell the business what applications they can or can’t use. Rather, it’s his job to securely deliver the best tool on whatever devices they prefer.

Most of Front Porch’s employees—Miller estimates 75%—are content with using a Windows endpoint paired with Windows applications. However, there are a multitude of SaaS apps and personal Apple laptops infiltrating the corporate environment. While Active Directory has been good enough for the majority of IAM use cases, it wasn’t up to par for seamlessly extending the corporate directory to those laptops and apps. Miller turned to a few products from Centrify to fill that void.

Most companies already have an investment in Active Directory, so it doesn’t make sense to rip and replace that for the sake of better identity management. “It’s still logical to build off of AD and leverage this tool that everyone has and is familiar with,” said Gartner’s Kreizman.

When it comes to IAM systems, there isn’t a one-size-fits-all approach.

When it comes to IAM systems, there isn’t a one-size-fits-all approach, and organizations need to evaluate which applications are being used today, which ones can be replaced or retired, how important mobile and remote access will be to employees down the road, and a host of other factors, Kreizman said.

Once the full scope of an organization’s application and device use cases have been inventoried, it’s much easier for IT departments to evaluate the correct IAM tool to purchase that will integrate into the current environment and be future-proof, he said.

IDENTITY MANAGEMENT UPSTARTS ENTER THE MARKET
Aside from pricey legacy IAM vendors like Oracle, Novell and CA, a new breed of SaaS products has popped up in recent years to help organizations better integrate mobile endpoints and SaaS apps into their environment through single sign-on and turning “a once-boring enterprise niche into some-
thing sexy,” Kreizman said.

As is often the case with enterprise technology, both types of identity vendors—which exist to serve distinct market needs—have started offering similar feature sets as one another to provide customers a full range of governance, provisioning and de-provisioning, group policy, and single sign-on access.

The goal of many of these newer identity vendors is to integrate with Active Directory in the short term and help companies transition off it over the long-term by offering AD-like functionality within the feature set, said Thomas Pedersen, cofounder of OneLogin Inc., a cloud identity startup headquartered in San Francisco.

OneLogin began in 2010, after a group of employees from Zendesk, a customer service software vendor, had conversations with Sun Microsystems about its on-premises IAM product. It was costing them approximately $100 per user per month and couldn’t adequately handle SaaS apps and mobile access.

“It was a complete disconnect from what we needed and what they were providing,” Pedersen said, who figured there must be other companies out there with the same shifting IAM needs.

OneLogin’s enterprise offering costs $5 per user per month, and includes typical cloud-based IAM features such as directory integration, support for unlimited SaaS apps, desktop sign-on and legacy application connectors, VPN integration and auditing controls. The company competes with vendors such as Okta, Ping Identity and Symplyied.

However, OneLogin aims to differentiate itself from its competition with new features such as password vaulting for managing non-Security Assertion Markup Language (SAML)-enabled applications (which is pretty much every legacy Windows application); single login and password setup for applications shared among employees; and federated search capabilities across cloud applications.

“We want to use the best app for the company, but it gets complicated pretty fast.”

—Richard Rothschild, VP of enterprise information services, Pandora Internet Radioo

Those features are especially important for shops that use a lot of cloud apps. Pandora Internet Radio, a streaming music service based in Oakland, Calif., uses approximately 80 cloud applications, and its application ecosystem grows all the time, said Richard Rothschild, VP of enterprise information services.

Pandora relies on cloud applications like Salesforce.com for customer relationship management (CRM), human resources and financial applications, Box for storage, and plenty of others. The IT department coordinates with the business team to find and vet cloud applications to help limit application sprawl, and relies on OneLogin for IAM, a switch after it initially selected Okta.

“We want to use the best app for the company, but it gets complicated pretty fast,” Rothschild said.

Complexity is a small price to pay, however. The upside of being a 100% SaaS environment is it’s easier to swap applications in and out to find the best one, he said. And Pandora’s IT department needs only nine employees to manage its entire infrastructure. Rothschild estimates the company
Cloud Computing

spends approximately one-third the cost of offering the same services via an on-premises deployment.

**ACTIVE DIRECTORY: NEVER SAY DIE**

Pandora still uses Active Directory as its central employee directory because it’s still the best tool for onboarding, offboarding and managing employee profiles. Similarly, ServiceSource, a service revenue performance company based in San Francisco, still uses Active Directory as well, but it’s merely an afterthought, said Amrith Nambiar, ServiceSource’s director of business applications.

ServiceSource is transitioning between an on-premises Windows applications and a SaaS applications environment. It uses Workday as its central directory, which then sets up a profile in Okta, which then automatically provisions employees into Active Directory. Okta then provides identity and access controls for IT and a single sign-on workspace for ServiceSource’s 2,600 worldwide employees.

“When you talk about identity management, there are so many variables caused by business applications, proliferation of our own products, legacy applications and temporary contract workers,” Nambiar said. “How do you tie them all together in a seamless and efficient way? That’s the problem we’re having.”

ServiceSource is in the third of four stages of its Okta deployment, which began in 2012 as a way to ensure Sarbanes-Oxley (SOX) compliance. The first stage was adding basic single sign-on for SaaS apps; the second phase was migrating off Active Directory by making Workday the company’s central directory; and the third phase was building automation between Workday and Okta for provisioning and de-provisioning employees. The final push will be to set up more granular profiles so employees will automatically have certain apps provisioned for them upon being hired or transferring to a new department, for example.

The goal is to have an identity system to give employees the ease of use to work on any device from wherever they want without sacrificing the security and control that SOX compliance requires.

“I had a business analyst who spent two or three hours a day checking cloud apps against our AD to disable access to them,” said Nambiar. “Now it's a nonissue. Access to those apps is disabled at the push of a button.”

Big public companies can’t ditch their investment in Active Directory because of the legacy stuff, Nambiar said, but anyone starting a company today could live without it by relying on SaaS apps combined with a modern IAM product.

“We don’t have a problem with shadow IT and even managing mobile devices and remote access is a nonissue for us,” he said.

**“How do you tie them all together in a seamless and efficient way?”**

—AMRITH NAMBIAR,
*director of business applications, ServiceSource*

**JAMES FURBUSH** is a news reporter covering consumerization. Email him at jfurbush@techtarget.com, or follow @JamesFurbush on Twitter.
Are We There Yet?

Mind the Gap

By Jonathan Eunice

When it comes to modernizing IT, the first, worst and most common pitfall is being distracted by shiny new gear, and ignoring the need to rethink how it’s sourced, organized, managed and used.

It’s easy to just keep doing what you were doing. But that leaves most of the potential value on the table. Modern infrastructure isn’t about having the latest and greatest gear. The real opportunity is improving IT’s attributes and outcomes: How fast it provides answers. How much it costs. How well it supports and grows business opportunity. Changing those things requires re-architecting the data center—and indeed, the greater IT supply chain.

We saw this, for example, with the first generations of blade servers. They provided a cool new form factor with exceptional compute density and great plug-and-go flexibility. But many blade adopters didn’t focus on making a fundamental shift toward modularity and flexibility. They kept putting local storage on every blade, and some insisted on managing each blade individually. By conforming to the legacy of rack servers, it was almost as though they weren’t blades, and certainly not part of a shared infrastructure. Then, a half dozen or so years later, the use of virtualization, shared I/O and shared storage started picking up steam. As a result, blades finally came into their own: They started providing the modularity and effectiveness they had been capable of years before.

Not everyone had to wait though. Some shops got it long before the mainstream because they shifted approaches. Modern IT infrastructure and practices—cloud, blades, virtualization, scale-out, agile development, converged equipment, Anything as a Service, DevOps, etc.—combine to make a very different landscape and set of capabilities than what IT has had before. Using those tools and technologies effectively requires different ways of working. Not everyone is comfortable with those new approaches (or with new approaches in general). Thus we have a wide built-in chasm between most peoples’ thinking, practices and expectations, versus what’s needed for a truly flexible, network-savvy operation.

Minding—and Bridging—the Gap

I’m often asked to do gap analysis. After discussing what a client’s already doing, plans to do or wonders whether it should be doing, we get to “So … what are we missing?” “What are we missing?” is the best question because most organizations already do a reasonable-to-good job in most areas. We can tweak—and occasionally, outright fix—things that could be done better. But the most interesting risks, dysfunctions, weaknesses and opportunities tend to lie in the things they’re not doing—frequently, in things they’re not even thinking about.

Here are some common gaps I’ve seen:

- **Static data.** The failure to rethink the data layer—the combination of storage, databases
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and transactions—with the same vigor and depth as organizations rethink servers, insourcing/outsourcing and other issues. Virtualization’s buildout over the past decade showed that getting the data layer right is at least as important as getting other infrastructure right. IT is data processing, after all—and even more so in the age of analytics, real-time updates and big data.

- **Management inertia.** Too many shops continue an equipment-centric view of how things are—and should be—managed, rather than a service- and application-centric view. A similar gap is continuing to think of development and operations as separate, never-the-twain-shall-meet activities. You can’t be efficient if you can’t share, and you can’t be agile if you don’t eagerly coordinate.

- **Failure to automate.** As IT deals with much more flexible and varied underpinnings (thanks, virtualization and cloud!) it needs to move away from building everything by hand to building recipes. Shops on the forward edge of scale-out IT are already deeply into deployment automation, because there’s no real alternative.

  Modern infrastructure isn’t a synonym for “new gizmos.” Late-model equipment nicely advances performance, integration and efficiency. But rebalancing how we use IT to take advantage of the leverage that virtualization, cloud and convergence gives us—that’s a critical companion to upgrading the gear. When you’re modernizing, don’t just focus on “New! Shiny!” Getting the full benefits requires at least equal attention to “How do we need to change how we’re doing things?” and bridging the gap between how you used to work and that new way.

**JONATHAN EUNICE** is principal IT adviser at analyst firm Illuminata Inc.