NEXT
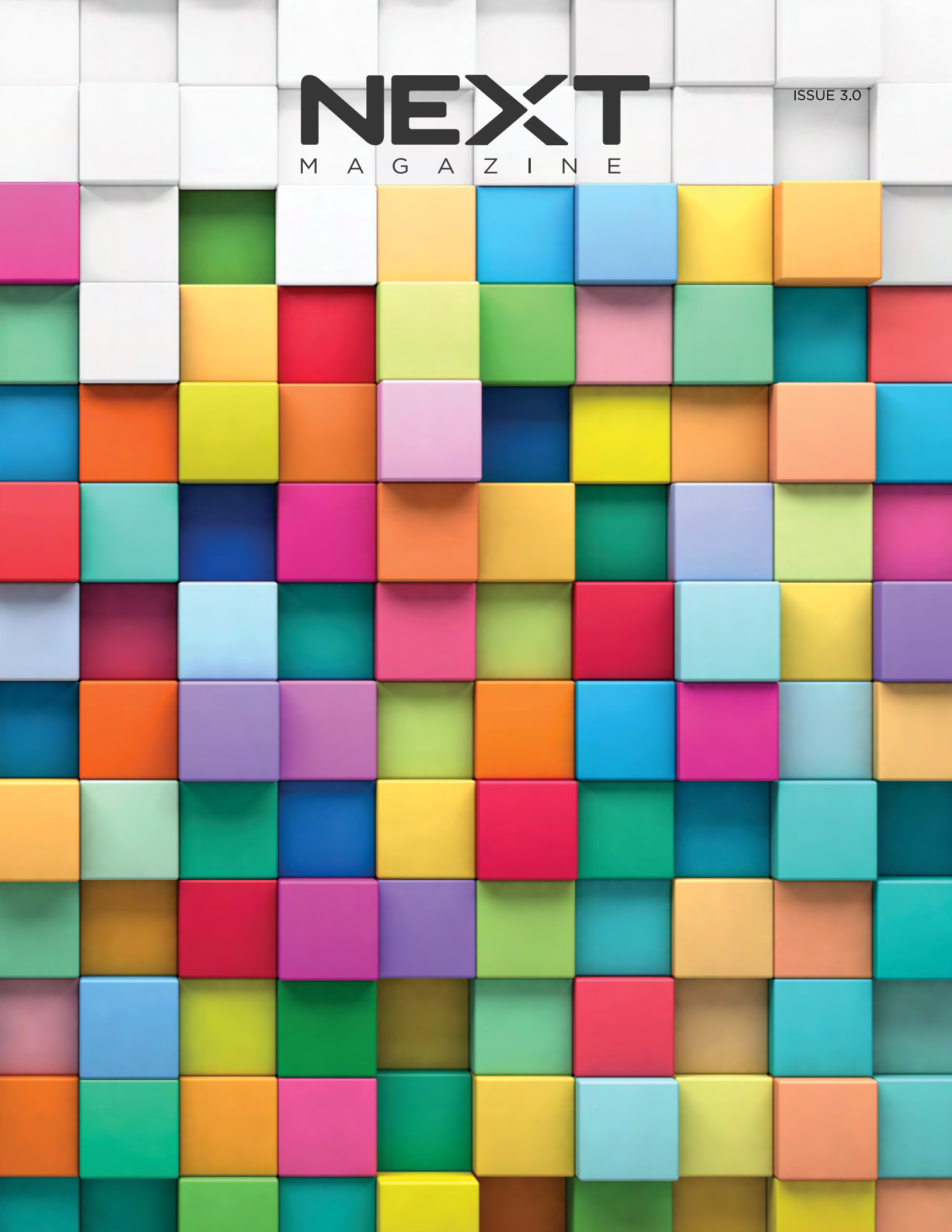## MAGAZINE

ISSUE 3.0

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LETTER FROM THE PUBLISHER

As Malcolm Forbes famously said, "Diversity is the art of thinking independently together." In other words, with our differences, there's opportunity to attack business challenges together from a variety of valuable perspectives.
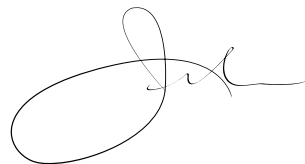
Diversity in the modern workplace presents itself in many ways—much of which you'll see in this issue of NEXT.

We're proud that nearly half of the contributors in this issue are women in tech sharing their perspectives on staying adaptable (pp 30), remaining open to—and bracing for—change, and daring to lead with vulnerability, clarity of values, trust and rising skills (pp 46).

On page 52, you'll learn how nonprofit organization Workforce Opportunity Services (WOS) is championing a new approach to helping companies bring underserved communities into the workforce. In this issue, you'll read about their partnership with organizations like Johnson & Johnson, Prudential, and Turner Construction.

Beyond people, the modern workforce includes diverse technology, as the cloud evolves with increasing levels of machine learning (pp 34) and as organizations move towards hybrid cloud environments to manage multiple clouds and workloads.

Read on, and enjoy!

Julie O'Brien
SVP, Nutanix Corporate Marketing
@julieaobrien

OPINIONS

HYBRID MANIA

Hybrid clouds solve many of IT's time-to-market and cost challenges, yet many organizations struggle to take full advantage of them. Here are some tips on how you can prevail.

BY FABRICE FERRANTE

The allure of the hybrid cloud is clear. By combining your on-premises private cloud with third-party public cloud services, you get the freedom to run each of your workloads in the location that's best optimized for performance and cost.

Many organizations with digital transformation programs need to quickly turn up new IT services. At the same time,

they're likely being asked to reduce expenses. Adding public cloud services helps organizations do both: they can instantly provision and scale IT resources while capitalizing on the public cloud's pay-as-you-go pricing model.

As they add public cloud resources, it's not uncommon for organizations to retain some private cloud infrastructure. There are legacy applications that might not benefit from

cloud hosting, for example. And IT departments might feel more comfortable continuing to manage certain apps that fall under strict industry compliance mandates themselves. **And thus the hybrid cloud is born.**

TRENDY BUT CHALLENGING

As these enterprise situations become common and public cloud service offerings mature, hybrid cloud market predictions are growing increasingly bullish. MarketsandMarkets Research, for example, expects the global market to reach nearly $92 billion by 2021, with a compound annual growth rate (CAGR) of 22.5 percent[1].

Yet despite all the hype and enthusiasm, many enterprises struggle to take full advantage of hybrid clouds. The reason? As with any IT change, new challenges rear their heads as you attempt to maintain an existing environment while learning the ropes of operating, managing, and securing a new one. Among those challenges:

- Gaining the ability to automatically provision resources to run in the best location, private or public, for optimal performance and economy

- Accurately managing capacity planning

- Providing consolidated public/private cloud usage chargeback to businesses and departments

- Getting visibility into third-party cloud environments for management and security

BUILDING A MIGRATION STRATEGY

Having a solid cloud migration strategy helps ease all these challenges. With the aid of others in your organization, map your business goals to the cloud strategy. If you can match your organization's long-term objectives to cloud functionalities, you can prioritize which areas of your business should be moved to the cloud first—and to which type of service: software as a service (SaaS), infrastructure as a service (IaaS), or platform as a service (PaaS).

Consider undertaking the following tasks as you create your strategy:

- Conduct a thorough IT audit. Clearly evaluate each application's potential to migrate to the cloud and through which route. Start by ranking applications based on how critical they are to business, factoring in security and performance requirements. Consult the security team to help you understand the specific security and regulatory needs of each app and how that translates to the hybrid cloud. Developers can advise on which workloads are best moved to the public cloud and which ones should stay local.

- Optimize short-term ROI. Generally, migrate newer, digital workloads to the cloud right away. Factor into your plan that application redeployment provides longer-term reduction on total cost of ownership (TCO).

- Use automation to provision workloads and manage your hybrid environment. Cloud Management as a Service (CMaaS) tools are emerging, for example, that give you visibility into and control over your digital assets across private and public clouds.

- Do your homework evaluating public cloud platforms. Understand the services and pricing models associated with them, so that you correctly architect your public cloud to benefit from cloud economics. Depending on the cloud service you're using, vendor pricing can be complex, tiered, and have hidden costs. Make sure you know what the service is really costing you.

- Adjust operations. Rethink your operating model and adapt it to the changes that are introduced by using public cloud services.

NETWORK, SECURITY, AND SKILLS CONSIDERATIONS

Hybrid clouds touch all facets of IT and networking. For example, the network connection between your public and private cloud must be able to handle high traffic
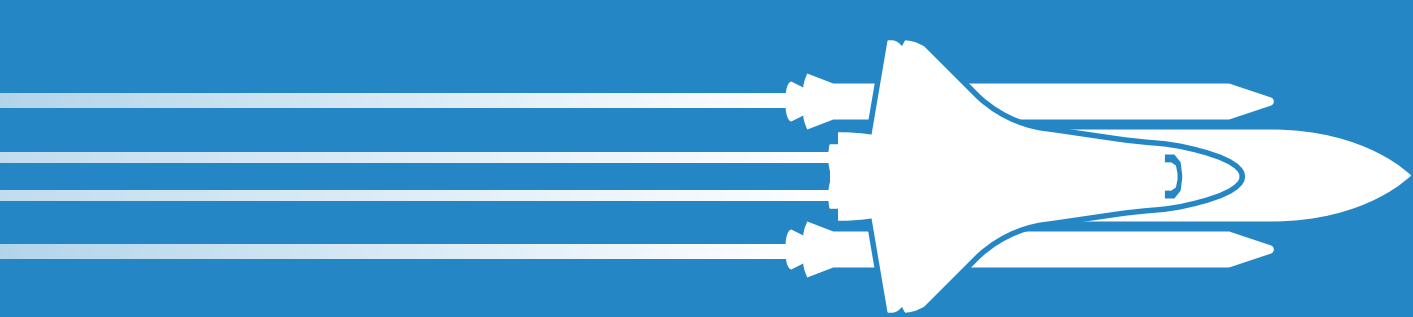
volumes reliably and with low latency. Using the cloud points of presence that are geographically closest to your data center helps reduces latency in the network. Also, investigate direct-connect options for linking your data center to the public cloud, as these can be faster than the public Internet and often offer encryption services on top of them for security.

Make sure you understand the pricing model, however, so that you know exactly when and how much you will be charged for traffic traversing the direct-connect link. When it comes to security, you might face any number of internal policies, industry regulations, and government rules. For example, new European Union's General Data Protection Regulation (GDPR) regulations state that customer data must not be replicated outside of the customer's country, so you need to be sure you can protect and control that data even if it is stored in a third party's infrastructure. (See story, "Biting the GDPR Bullet," page 20.)

You will likely also face a skills gap as you embark upon hybrid cloud networking. The earlier you identify those gaps and create a strategy to fill them through training or new hires, the better your chances for a successful migration. Begin migration by moving non-critical apps and data to prevent mistakes and teach IT how to use the migration tools and test that everything is working in the cloud.

GETTING VISIBILITY INTO THE WHOLE ENVIRONMENT

It can be tricky to maintain visibility into the hybrid environment as it grows more complex. Retaining a measure of control is a necessity, though, for successfully continuing to balance performance, management, security, and cost across private and public cloud platforms.

Cloud management tools and automation are coming into play to help out in this area. Tools with analytics are emerging, for example, that can compare the costs of various cloud providers' pricing tiers and continually keep you updated as to where the best place for your data is. Some tools allow you to actually move data from cloud service to cloud service yourself with a few clicks of the mouse from an integrated interface that lets you view your entire hybrid environment.

TEST AND THEN TEST AGAIN

It's always critical to thoroughly test a new process or technology. It helps to benchmark what acceptable performance and security should look like for each application and workload to be migrated. Then, each should be tested once it has been migrated and then tested again to ensure they work together.

Many cloud providers offer automated testing tools for this purpose. Automate as much as you can in order to minimize human error and delays during the migration. That said, however, spending time before migration in teaching IT how to test in the cloud and use migration and testing tools can make all the difference in keeping your migration project on time and minimizing chances for error.

About the Author

Fabrice Ferrante is Head of France Cloud Infrastructure Services Architects at Capgemini.

[1] MarketsandMarkets™, "Hybrid Cloud Market by Solution"

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A Perspective from:
Luca Cordero di Montezemolo

The Many Faces of
Innovation

Automating your business processes and striving for efficiency have their place in sharpening your bottom line. But those steps alone won't put you at the top of your industry. The strongest secret weapon businesses have is people, and fueling their curiosity and passion is what the most successful entrepreneurs are able to do.

"Innovation" has become the buzzword of the digital decade. We often associate it with the invention of breakthrough products and services, with clever marketing, and with the ingenuity to figure out how to do more with less. While these steps are essential to business success, just as important is being innovative with how we hire, train, manage, and motivate people. Without giving employees the opportunity to excel, these other types of innovation are much less likely to occur.

Being innovative with managing people entails many things. For one, you must make sure your team remains curious about the desires and needs of the consumer. At Ferrari, for example, I once gave fashion magazine subscriptions to our engineering staff. Why? Fashion advertising reflects the public's current feelings toward color, style, and design. And that translates into customer feelings about the cars they buy.

IT'S A TEAM EFFORT

Companies that excel at innovation aren't a one-man show. They rely on the collaboration of people who share the goals of the company, who can be the protagonist in the life of the company.

It is up to us as leaders to innovate in training and in developing each individual's role in the company as we create a spirit of working together. That means giving the people in your company the opportunity to succeed with clear goals and a finite number of achievable and measurable priorities. It's better to give people three priorities than 100 and work together to achieve them. Once those three priorities have been achieved, three new ones can take their place. Make rules and responsibilities very clear, so you can measure when people deliver and put them in a position to be successful.

WHAT MAKES A LEADER?

A leader, in my view, doesn't have to excel at everything, but does need to possess three qualities:

PASSION. This means being creative, always looking ahead, and having the desire to be the first client of your product. Instill the passion in those who work for you. If you find that someone doesn't share the passion, help that individual find another job.

VISION. Give people clear goals that hold the possibility for them to grow. Internal growth is most important; open windows for your people with the training you provide.

A DEMANDING DEMEANOR. Reward people who come to you with proposals, with ideas. Keep them always looking forward. Seek out the best suppliers in the world for technology, experience, and ideas. Look for innovation everywhere. Take risks on whom you choose as managers and leaders.

All this is not to say that products don't matter. Without an outstanding product, you're in trouble. But behind fantastic cars (and fantastic athletic shoes and fantastic smartphones) are fantastic people. And in the end, you don't sell a car, a sneaker, or a device. You sell a dream.

About the Author

Luca Cordero di Montezemolo, currently chairman of Alitalia, spent 23 years as chairman of Ferrari S.p.A. He was also chairman of Fiat S.p.A.

CLOUD BLOAT SYNDROME?

Your 5-Step Plan to Avoid Overspending in the Cloud

By Anand, Sr. Director of Engineering at Nutanix and Maqbul Khan, Manager, Engineering at Nutanix

Experts often cite the on-demand, pay-per-use nature of the public cloud as the reason for its superior cost efficiency. So, it's ironic that as organizations mature their multicloud strategies, moving ever more workloads into ever more clouds, they often find themselves in an uncontrollable situation of budget overruns.

Unlike traditional IT infrastructure, cloud costs are not easily predictable. In a Platform-as-a-Service (PaaS) public cloud, a single application stack could be made up of many different services and resources—each with its own pricing model. Costs for compute, storage, network, or other services can vary by vendor, resource type, levels of service, and usage. On top of that, provisioning of cloud services is usually distributed across the enterprise, so managing and controlling costs in a multicloud environment can quickly get out of hand.

It's a complex problem, but one we have had a lot of experience solving for ourselves, as well as for customers across a wide range of industries. Here are our five rules for gaining control and optimizing your cloud spend so you, too, can avoid cloud bloat syndrome.

1. Analyze Before and After You Buy

Before you move forward with a cloud vendor, make sure you understand their pricing model. It's critical that you understand all the "hidden" costs for various API calls and other transactions so you can make a fair comparison and choose the best vendor for your use cases.

Once you start using the cloud, identify those services that are the highest contributors to your monthly spend. Rationalize usage to either justify costs or identify opportunities for optimization. Over-utilization of a service could be due to a coding error in an application. Also, since cloud services are available at the click of a mouse, some services may have been provisioned and forgotten about. These orphaned or unused resources can waste thousands of dollars. Identifying them can deliver a quick cost-savings win.

> " 85% of organizations find huge savings through an unused resources cleanup effort. "
> *-- Botmetric Cloud Usage Report 2017*

2. Optimize and Clean Up Unused Resources

Once you have identified unused resources it's time to clean them up. Before you delete anything, consider backing up key resources. Based on the usage patterns you've identified, slowly begin to scale down resources to the next smallest size to ensure you don't impact application performance. Continue with this incremental reduction until you reach a point where the workload runs at the desired performance with the minimum infrastructure size.

Archaic data can be deleted or moved to lower-cost storage tiers. This will not only reduce immediate costs but moving data from primary to archival storage will also save you money on your ongoing backup and disaster recovery costs. Initiating a data management lifecycle policy
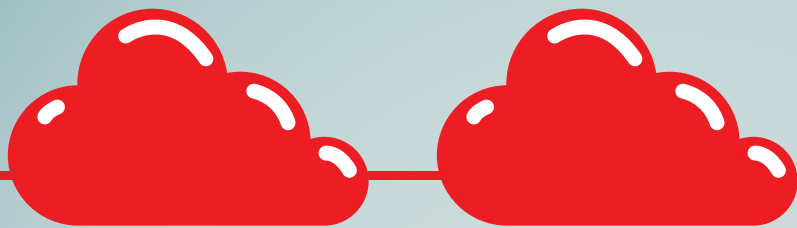
will help to ensure that the issue doesn't bubble up again. For non-production workloads, consider limiting access to on-demand services. Automating start/stop workloads based on your developer's needs will help clamp down on unnecessary or unauthorized service requests whose costs can add up quickly.

Lastly, since most cloud providers offer volume discounts, consolidating multiple accounts with the same provider is an easy way to collect on free money.

3. Establish your Baseline for Better Capacity Planning

Now that you've optimized existing services, it's possible to get a baseline for your infrastructure requirements. Based on your usage patterns and the purpose of the workload, segregate them into categories such as stable, variable, long term, and short term.

Identify performance requirements within each category. You may have workloads that need to scale out to meet certain performance metrics. You can identify such workloads and their capacity requirements by having your engineering teams perform load and performance testing.

Once you've identified stable workloads for each of your environments you can plan for reserving the correct level of capacity. Reserving long-term capacity can usually save you substantial money. If you have workloads running across multiple accounts on-demand in different time zones, it may be worth looking into reserving some capacity for dynamic workloads.

4. Assign Workloads and Budget Responsibility to the Groups that Own Them

A good best practice is to assign workloads to the business unit (BU) or other functional area that is responsible for them. This will not only enable you to chargeback for services, but the BU can help with more accurate forecasting. Budgets can be created based on the business knowledge and requirements of the teams that are using the services. BU owners can be made accountable for ensuring that resources remain optimized and within budget.

5. Define Your Cost Governance Policies and Reevaluate Regularly

You'll want to deploy a suitable cloud management platform to help automate much of this analysis and optimization activity, as well as other routine tasks that can help further reduce costs.

For example, by leveraging the tagging capabilities of a cloud management platform, you can easily identify all "non-essential" services and set them to automatically shut down during off hours.

Most cloud management platforms enable you to send cost summaries and billing alerts. Set up your system so that BU owners receive a cost summary daily. Set budget alerts to notify them when spend is getting close to their allotted budget to avoid overages.

Share your cost governance policies so that each BU owner knows what actions to take for proactive cost control. While each organization is different, some basic policies could include:

- Review cost summary daily and take action on quick wins
- Provision infrastructure only through automation and limit access to the ability to provision new services
- Prioritize use of reserved resources before provisioning new infrastructure
- Standardize on the tags you use to track and manage resources or create reports
- Ensure that tags are assigned to each provisioned resource

Define all necessary usage, spend, and other customized reports required by your organization, and develop a practice of reviewing them and taking action.

Cloud cost management and control can be an overwhelming and time-consuming task. By following this "analyze, eliminate, optimize, reserve and repeat" model, you will be set up for success from the beginning to keep cloud services optimized for cost-effective business agility.

To truly stay ahead with the best technology at the least cost—and avoid cloud bloat syndrome—make sure to reevaluate your architecture, technology stack, and your vendor partner relationships on a regular basis.

THE FUTURE HAS ITS HEAD IN THE CLOUD

BECAUSE IT'S A SECURE PLACE TO BE

ACCELERATE DEPLOYMENT OF PRIVATE AND HYBRID CLOUD:
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- SECURITY
- STORAGE
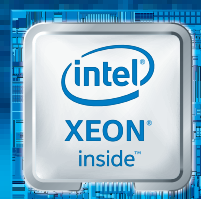
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BUSINESS

BITING THE GDPR BULLET

THE LOOMING DEADLINE FOR EUROPEAN DATA PRIVACY COMPLIANCE MEANS BIG INVESTMENTS IN TIME AND MONEY. BUT IN THE END, IT WILL PREVAIL BY WINNING BACK A MEASURE OF CONTROL AND ELIMINATING SIGNIFICANT DATA MANAGEMENT COSTS

The privacy of our personal data has fallen victim to the times. Information about us slips fluidly from our fingers into cyberspace with every passing keystroke. And each time we click on an "Accept Terms" or "Place Your Order" button without glancing at the fine print, we concede that the risk of liberating some of our personal info is worth the instant gratification of on-line living.

Despite our laissez-faire digital behavior, concerns over intrusions into our private lives continue to mount. Cloud computing, mobility, and social media have contributed greatly to worries ranging from unwanted solicitations to full-blown identity theft. A "like" here and a "share" there, for example, and poof! You've lost track of how many degrees of separation lie between your Facebook page and the IP address of that dreaded and notoriously deep-pocketed Nigerian prince.

TIME TO CATCH UP

As history shows us, it takes time for ways of thinking and legislation to catch up to the realities (and dangers) of modern life. And getting caught up with data privacy realities is what the General Data Protection Regulation (GDPR) is all about.

The GDPR, which has a fast-approaching compliance deadline of May 25, is a set of rules set by the European Union (EU) to help put data privacy control back into the hands of citizens. It's intended to usurp archaic European data privacy regulations drawn up in the mid-1990s when Alta Vista was the go-to search engine, a cloud was just something you hoped had a silver lining, and Mark Zuckerberg was busy planning his Star Wars-themed bar mitzvah.

So does the GDPR affect your organization? Consider this: under the regulations, EU citizens have the right to call up your company, ask what data you hold about them, and demand that you delete all of it; in effect, that you "forget" about them entirely. Are you equipped to deliver the goods on that call?

"If you're unable to prove that you've removed a requester's data, you can be fined 2% of your annual revenues or €10 million, whichever is greater," says Nina Vassilieff, a security and GDPR consultant in Paris. Vassilieff specializes in GDPR and security compliance with experience in several industries, including pharmaceutical and automotive.

REGULATION GOALS AND REQUIREMENTS

The EU has noble goals with the GDPR, which applies not only to organizations operating within the EU (including the U.K.), but also to any company outside the EU that stores EU residents' data. The hoped-for end game involves:

- Putting citizens at the center of decision-making about how their data is used
- Improving overall public trust in the digital economy by strengthening data protection legislation and enforcement
- Simplifying the regulatory environment by getting consistency across EU member countries as to how data privacy is handled
- Saving money. The EU has estimated that GDPR should eventually save businesses a collective €2.3 billion. Savings will likely come from reducing the cost of complying with multiple data protection regulations in the different countries they operate in. Businesses will also save by eliminating systems that don't comply and by reducing storage costs as they eliminate data that has no legal, regulatory, or business value.

The first two goals are desirable from your perspective as a citizen. The second two benefit you as a company. Getting there, of course, first comes at the price of compliance.

COMPLIANCE COSTS AND CHALLENGES

What GDPR will cost your organization depends on your existing level of GDPR maturity. Companies already compliant with industry regulations, such as Payment Card Industry (PCI), Data Security Standards (DSS) and the Health Insurance Portability and Accountability Act (HIPAA), might find that they are partway there, having already addressed certain aspects of customer and patient data privacy. But adherence to these other regulations by no means ensures full GDPR compliance.

Over the past several years, certain trends have made it exceptionally challenging to even know what information you are storing:

- The rapid migration of data into cloud environments owned and operated by third parties
- The movement of data onto mobile devices and networks, which means that data could be crossing network borders at will
- The uprising of shadow IT—those pesky apps created without involving the IT department that could contain all kinds of individual users' personal data unbeknownst to your company

If you're looking for somewhere to put a stake in the ground, consider that there are 99 articles, or rules, comprising the GDPR. About 30 to 40 of these apply to any given company, says Vassilieff.

"Those are the ones that should take priority in your company's GDPR activities," she says. Also, she says, a citizen's right to be forgotten and have personal data removed from your organization represent the biggest complaints to the data authorities. "So having a surefire way to delete user data and proving that you did so should be a priority from a risk perspective."

The EU is making it worth your while to comply because it's serious about levying noncompliance fines too big to ignore—up to €20 million (about $25 million*) or 4 percent of a company's prior year worldwide revenue, whichever is higher, for a "serious breach." But making sure you're not liable brings with it potentially hefty costs in terms of processes, people, and IT tools.

Research by Veritas Technologies suggests that companies will spend an average of €1.3 million (about $1.6 million*) on systems and training to comply with the GDPR . You might take that figure with a grain of salt, though: a recent, worldwide, cross-industry benchmark survey by Deloitte indicates that remedial GDPR spending varies widely, with no correlation between spending amounts and the size or industry of the company. About 39 percent of several hundred companies surveyed said they will spend less than €100,000, while 15 percent report spending more than €5 million, Deloitte reports.

Perhaps one of the biggest GDPR challenges is ferreting out just what information about citizens you are actually keeping, where it's stored, and what (if any) processes you have in place for managing it and notifying authorities if it is breached. Several surveys have indicated that many companies are worried about their ability to be ready by the May 25 deadline, but GDPR experts say that leniency will be given to those doing everything in their power to comply—with one glaring exception.

What won't slide is "being caught without a process for publicizing a data breach," says Famke Krumbmüller, a partner and GDPR specialist at OpenCitiz, a Paris-based consulting firm. She indicates that the first company to stumble over notifying customers and authorities of a data privacy infringement will likely be held up as a poster child for noncompliance with a fine large enough to incentivize others not to suffer the same fate.

WHAT AFFECTS YOU

The GDPR broadly defines what it considers to be personal identification information, so you have to pay close attention. For example, companies will need the same level of protection for things like an individual's IP address or cookie data as they do for name, address, and Social Security

number. There are other tricky requirements that cause you to rethink processes that were previously informal.

For example, says Vassilieff, sales might be only moderately concerned with honoring requests to remove an individual's name from a prospect list. "Now they need to pay attention and have a process in place to demonstrate that it actually works," she advises.

In short, here are the main things GDPR seeks to achieve that are likely to affect you:

- Mandating express consent for personal information tracking. This tenet attempts to discourage big Internet companies like Google, Facebook, and Amazon from tracking individuals by the websites they visit using cookies and actively advertising to them based on the tracked information. GDPR directly addresses this by requiring explicit consent from individuals for you to track them (or store their data) and mandating that your business clearly state how it intends to use the individual's information.
- Preventing retention of sensitive, personally identifiable information. This rule limits what personal information can be gathered, defines how personal information must be stored and protected, and dictates what needs to be done in the case of a breach.
- Limiting the cross-border transfer of information. GDPR stipulates that personal information about permanent or temporary EU residents should remain in the EU; or, if the information should leave the EU, that the target storage destination has data protection legislation in force which is considered "adequate" by the European Commission.

Given these realities and the looming deadline, it behooves your company to consider the mandates as an opportunity—one that provides a good excuse to get your house in order and return a measure of control to IT that has been slipping away with the uprising of social media, mobility, cloud computing, and shadow IT. Once you are on the other side of compliance, you should be running leaner and meaner, with the ability to save money by streamlining the data you hold onto and the processes that accompany data management.

The GDPR is compelling every European organization to consider how it will respond to today's security and compliance challenges. This may require significant changes to how your business gathers, uses, and governs data. If you're a business operating in any EU member state—including the UK—or store personally identifiable information about an EU resident, you need to pay attention. Compliance won't come easy or cheap, but getting there will ultimately save you money, return some much-needed control to IT, and serve your company's own best interest.
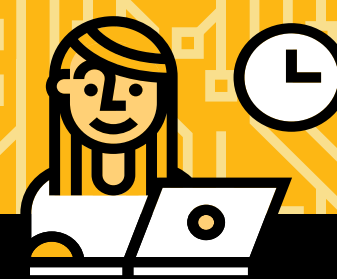
GDPR TO-DO LIST

GDPR consultants Nina Vassilieff and Famke Krumbmüller offer the following advice to make sure you're successful:

1. Appoint a data protection officer qualified to assist with GDPR compliance. The individual can be internal to the company or hired externally, but should be familiar with the effects that the regulation will have on your particular industry.

2. Register yourself with the Data Protection Authority in your country (unless you are exempt). Not doing so is illegal, says Vassilieff. The DPA is responsible for enforcing national data protection laws and providing guidance on the interpretation of those laws. It can also levy fines for noncompliance.

3. Conduct an information audit and readiness assessment. What data do you have and why? Do you really need it? Is it up to date? Is it safely stored?

4. Review your existing procedures to determine to what degree they meet new requirements. How easily can you access data and report a breach? Do you seek consent? Do you collect and store that consent? Is consent stored somewhere so that you can prove that you have it? If you run customer-facing applications with a "consent" box already filled in, that no longer is acceptable. Customers must explicitly check the box, and they have the right to revoke consent.

5. Check your international exposure. Under GDPR, it is illegal to transfer your customer data out of the EU, particularly to countries that don't have protections as tight as GDPR.

6. Map your data flows so you know where data is ending up. As part of this process, investigate and deploy tools that show you what's running on your network. This helps when addressing the issue of shadow IT, for example. There are GDPR assessment tools that identify applications you might not know you're running. Others can ID app versions that hold or transmit personal data and provide visibility of devices, users, and applications on premises, in the cloud, and on mobile networks. CSO Magazine has published a list of its top 11 GDPR assessment tools at https://www.csoonline.com/article/3236745/compliance/11-top-tools-to-assess-implement-and-maintain-gdpr-compliance.html.

7. Document your processes so you are prepared for an audit by the data authorities.

8. Have a compliant process in place out of the gate for new applications your organization develops going forward.

9. If your company isn't located in the EU, determine if you have EU customers or store data from partners and customers that have EU customers. Also, find out if your business has any plans to do business in the EU or might be hiring EU citizens in the future.
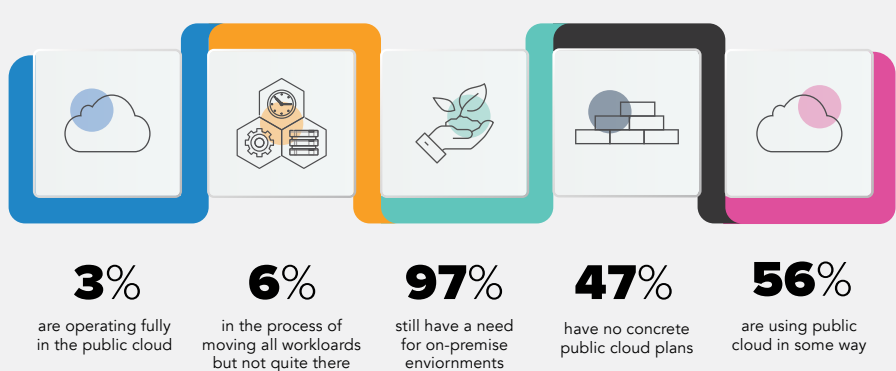
* Figures consistent with exchange rate on February 1, 2018.
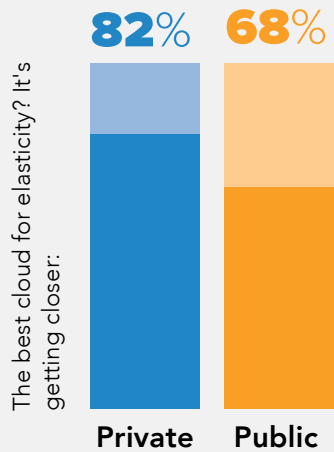
STATE OF THE
ENTERPRISE
DATACENTER

Where are organizations in their journey to cloud? Are IT organizations changing the types of applications they operate? And how far are they along the datacenter maturity path? The recently-conducted State of the Enterprise Datacenter survey revealed answers—some of which might surprise you.
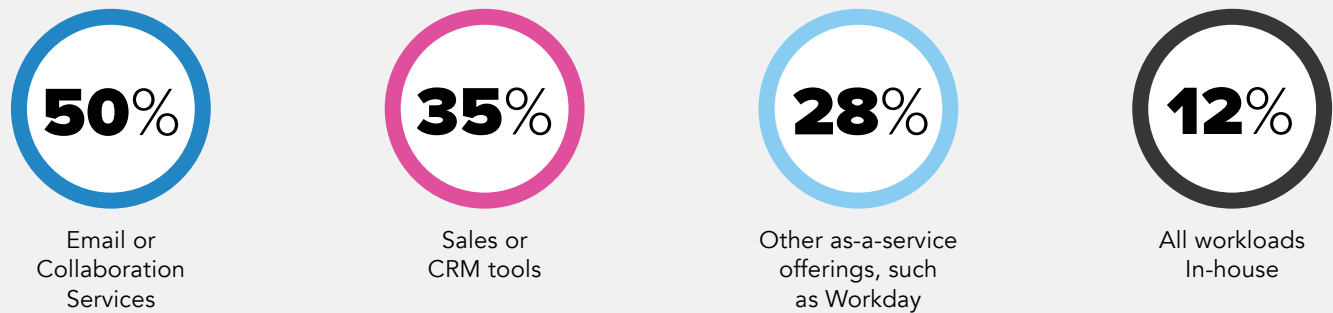
THOUGHTS ON PUBLIC CLOUD

Where are companies at with public cloud adoption? Short answer: it's a mixed bag. Most are not willing to fully commit to moving all their applications and data to a third-party datacenter, while most prefer to adopt public cloud for specific purposes and to further augment their existing infrastructure on-premises.

3%
are operating fully in the public cloud

6%
in the process of moving all workloads but not quite there

97%
still have a need for on-premise enviornments

47%
have no concrete public cloud plans

56%
are using public cloud in some way

The best cloud for elasticity? It's getting closer:

82% Private
68% Public

What's keeping companies from going "all in" with cloud? Data protection concerns. **90%** felt more comfortable with private cloud for hosting and protecting proprietary data.

TYPES OF AS-A-SERVICE WORKLOADS BEING RUN IN THE CLOUD

50%
Email or Collaboration Services

35%
Sales or CRM tools

28%
Other as-a-service offerings, such as Workday

12%
All workloads In-house

HYPERCONVERGENCE

With increasing datacenter complexity, there is a corresponding increased focus on solutions based on hyperconverged infrastructure (HCI) to address complexity while reducing costs. However, organizations (20% of them) also list cost of hyperconvergence as a roadblock to adoption—a common refrain in HCI circles, particularly when a TCO analysis has not been done.

ADOPTION

Have organizations that have adopted hyperconverged infrastructure been able to mature their data center environments? Those that have adopted or are in the process of adopting hyperconverged infrastructure are substantially ahead of their non-hyperconverged peers. In terms of dynamic scalability, for example, 45% of adopters and intended adopters say that they are either very close or have fully implemented this capability, as opposed to 26% to 30% of non-adopters.

ADOPTERS **45%**

NON-ADOPTERS **26% to 30%**

TOP 5 STATED BENEFITS OF ADOPTING HYPERCONVERGED INFRASTRUCTURE

27% improved operational efficiency

26% reduced cost

24% improved scalability

22% data efficiency improvements

21% improved service and support
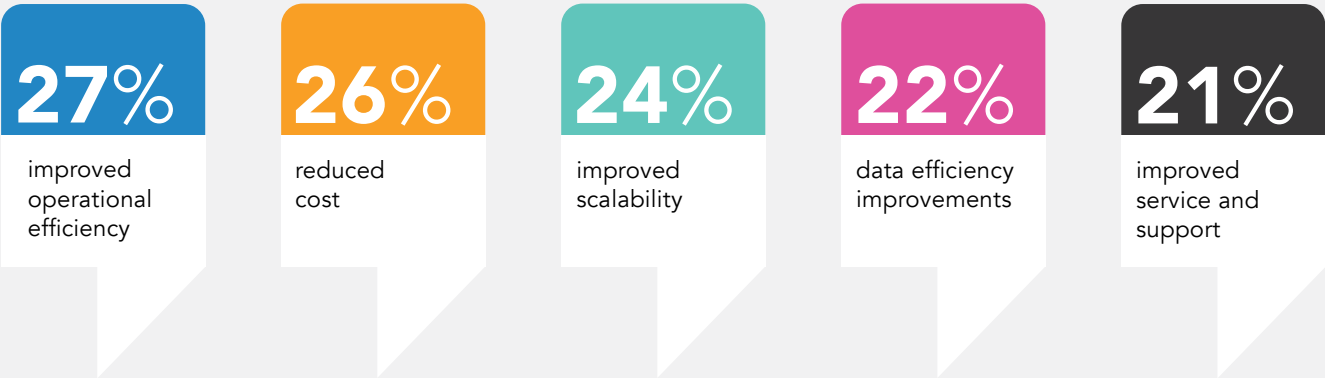
TOP 5 STATED CONCERNS ABOUT ADOPTING HYPERCONVERGED INFRASTRUCTURE

we like what we have in place just fine
24%

we're concerned about acquisition and implementation costs
20%

we don't know the benefits
19%

we don't have time or resources to evaluate
16%

we're worried it will disrupt operations or take a long time to deploy
15%

VIRTUALIZATION PENETRATION

The level of virtualization in organizations varies. Five percent indicate that they're not virtualized at all, 11-12% indicate that they're halfway-virtualized, and 2% indicate that they're fully virtual.
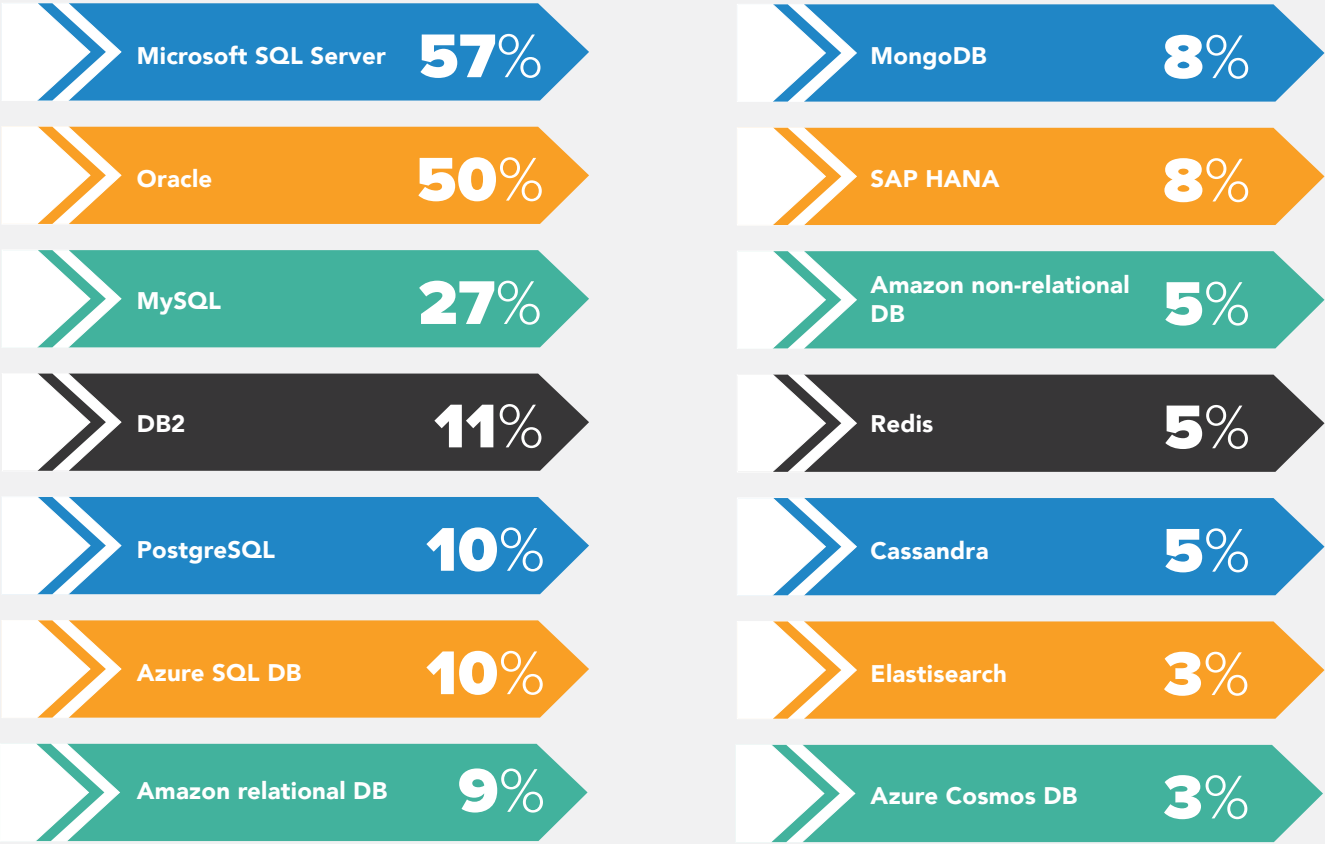

	0%	1% to 10%	11% to 20%	21% to 30%	31% to 40%	41% to 50%	51% to 60%	61% to 70%	71% to 80%	81% to 90%	91% to 99%	100%
	5%	4%	6%	12%	13%	12%	11%	8%	9%	8%	10%	2%

Of all x86 servers that can be virtualized in your on-premises environment, apporximately what percentage has been virtualized to date?
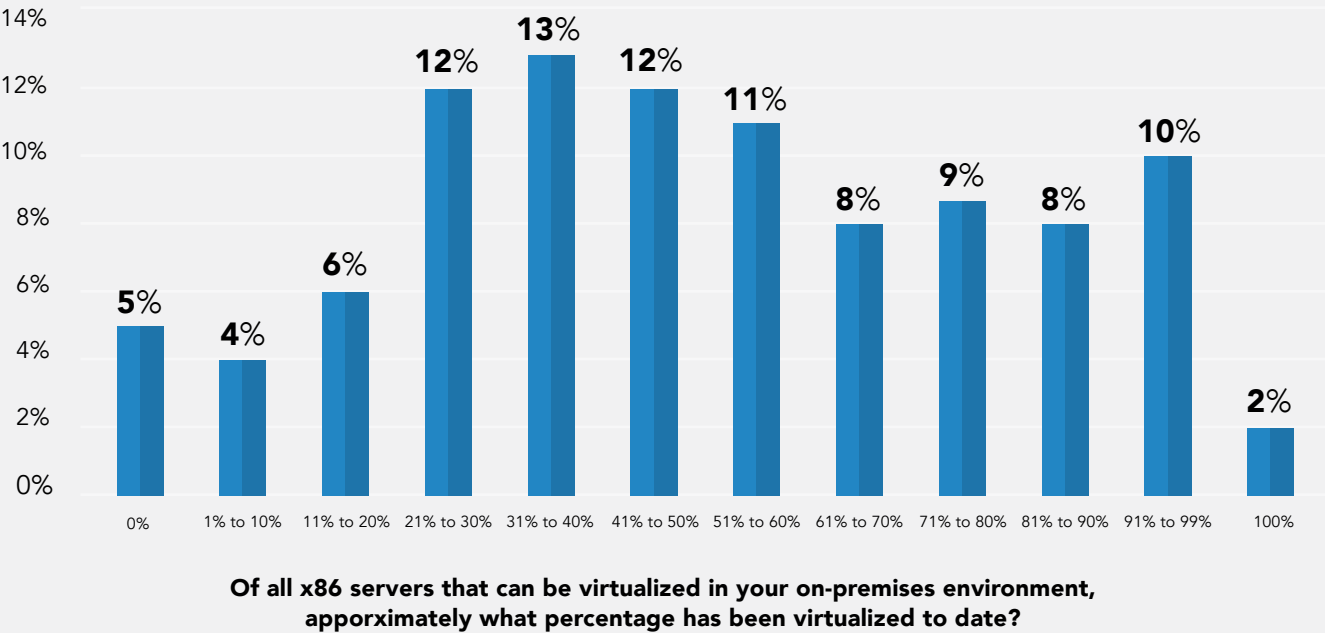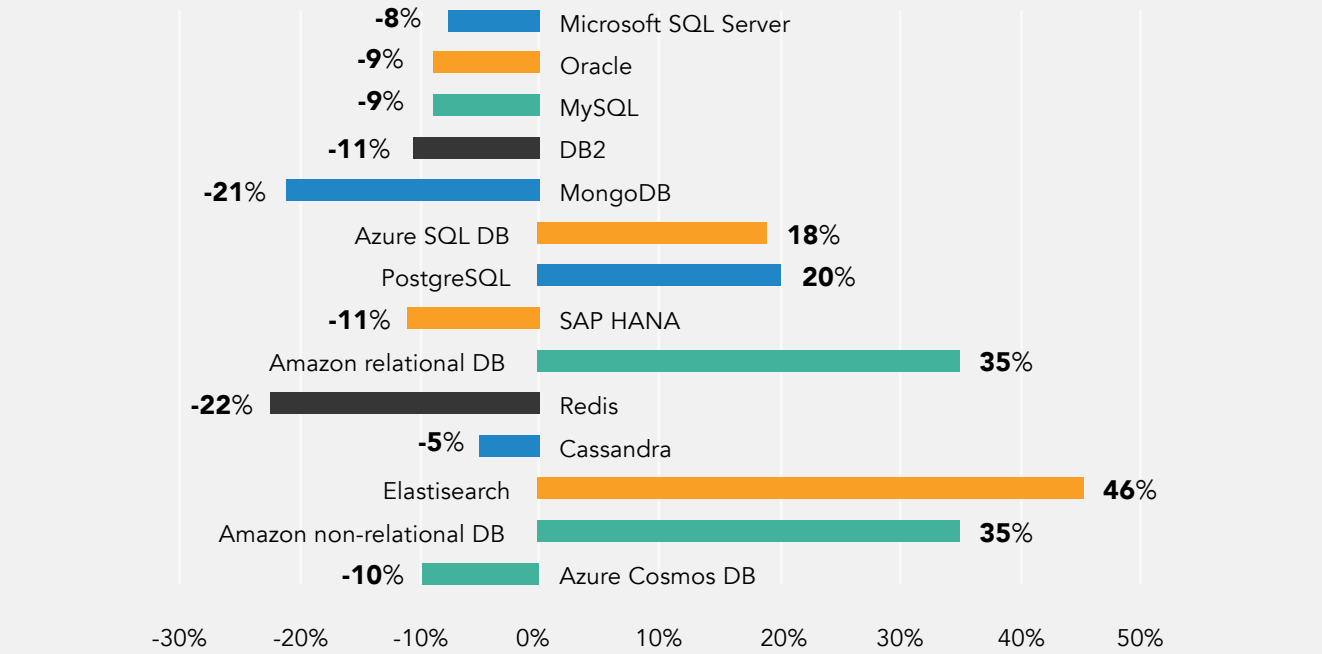
DATABASES

What databases are organizations choosing to support their companies? Realizing that many organizations may run more than one platform, these are today's most-utilized:

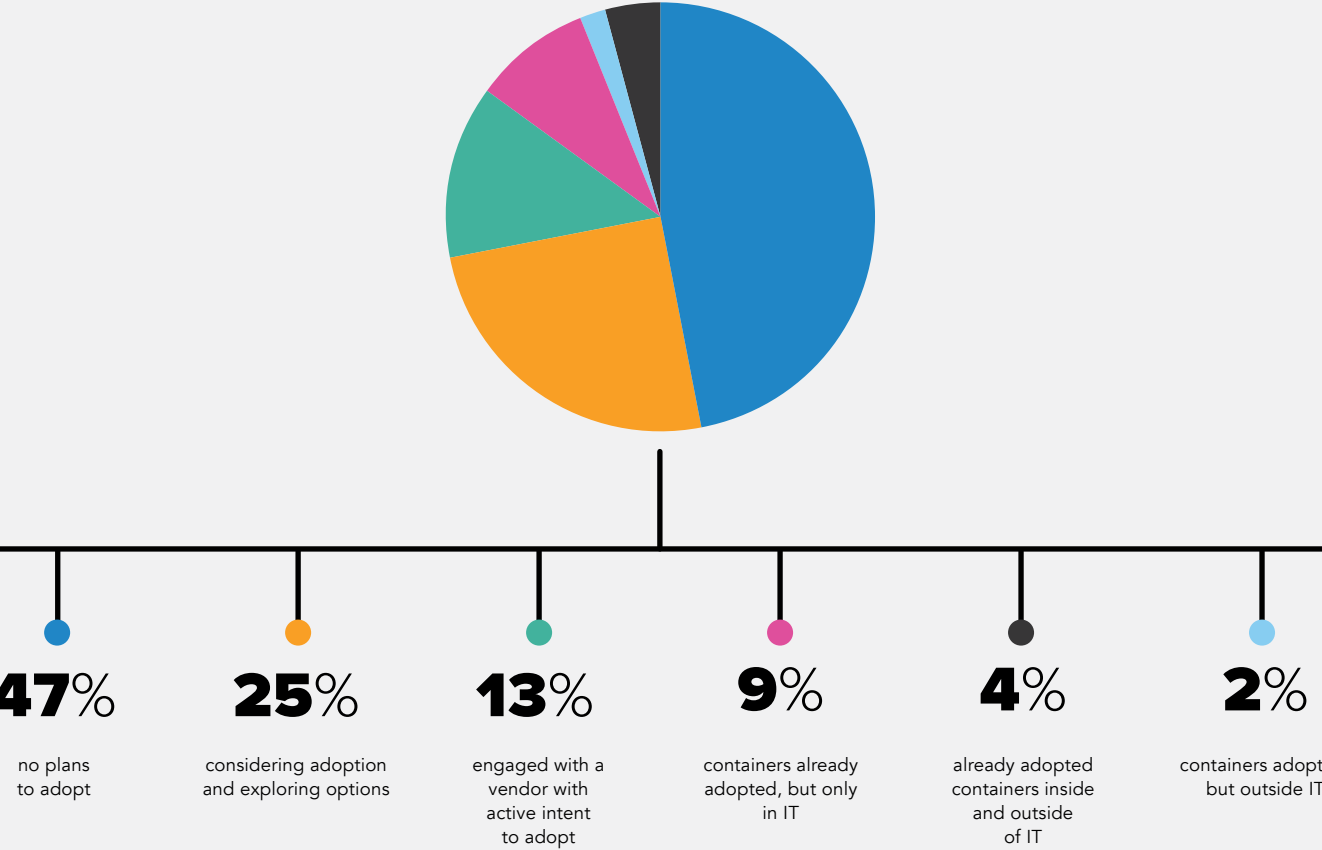| Microsoft SQL Server	**57%**	MongoDB	**8%**
Oracle	**50%**	SAP HANA	**8%**
MySQL	**27%**	Amazon non-relational DB	**5%**
DB2	**11%**	Redis	**5%**
PostgreSQL	**10%**	Cassandra	**5%**
Azure SQL DB	**10%**	Elastisearch	**3%**
Amazon relational DB	**9%**	Azure Cosmos DB	**3%**

CHANGES IN DATABASE ADOPTION IN 24 MONTHS

Among survey respondents planning platform changes, it's clear that a mindshift is happening when it comes to on-prem vs. cloud options.

Platform	Change
Microsoft SQL Server	-8%
Oracle	-9%
MySQL	-9%
DB2	-11%
MongoDB	-21%
Azure SQL DB	18%
PostgreSQL	20%
SAP HANA	-11%
Amazon relational DB	35%
Redis	-22%
Cassandra	-5%
Elastisearch	46%
Amazon non-relational DB	35%
Azure Cosmos DB	-10%

CONTAINER ADOPTION

Speed is the name of the game for app development teams today, and for many of these teams, containers are a jet plane. What does adoption look like as companies overcome security concerns?

47%	25%	13%	9%	4%	2%
no plans to adopt	considering adoption and exploring options	engaged with a vendor with active intent to adopt	containers already adopted, but only in IT	already adopted containers inside and outside of IT	containers adopted, but outside IT

TO READ THE FULL SURVEY REPORT, VISIT **http://bit.ly/enterprisedatacenter**

LEADERSHIP IN THE FACE OF CHANGE

"It is not the strongest of the species that survives, nor the most intelligent that survives. It is the one that is the most adaptable to change." – *Charles Darwin*

People, like businesses, are multidimensional. It's part of the human condition to struggle with goals and priorities that conflict with each other, both personally and on the job. When circumstances arise that involve compromise and tradeoffs, people—and the businesses they serve—are challenged to sort out the right course of action.

Some manage to successfully balance the scales, time and again, even as they face pressures that pit profit, ethics, family, community, and politics against each other. These are the individuals and organizations we often look up to as our leaders—the trailblazers who will usher us into new social, business, and technology realms that most of us can hardly imagine today.

Adapt and Prevail

True leaders have learned how to continually adapt to the changing influences and forces around them, observes Nutanix board member Sue Bostrom. "Being adaptable is not being weak," she asserts. "It's being responsive. And you can stay true to yourself while adapting."

Bostrom unequivocally falls in the category of "leader." And she's done a lot of adapting during her illustrious 35-year career in business and technology.

A first-generation college graduate, Bostrom went on to earn an MBA from Stanford University. There, she says she initially felt like a "fish out of water," because unlike many of her peers, she hadn't attended an Ivy League college and was married. However, the experience helped her realize that she could compete and contribute with the best of them.

She did indeed. Bostrom rose to a variety of high-powered positions, including executive vice president and chief marketing officer of the world's largest networking company, Cisco Systems. She worked at Cisco for 14 years and, among her many roles there, created "The Human Network" campaign and served as the executive sponsor of the company's Women's Initiative. During her tenure,

Cisco revenues grew from $7 billion to $40 billion, and the company expanded from 10,000 to 70,000 employees. So to say that Bostrom, who is also a wife and mother, has had a lot on her plate would be an understatement. But it was during her stint as a consultant at McKinsey and Co. in the mid-80s that Bostrom experienced a major "aha!" moment that helped make what followed possible.

Transformative Moments

When Bostrom joined McKinsey out of grad school, she "needed to gain credibility with people who had 20 more years of business experience than me." So when her manager on her first project in Dallas, Texas, told her, "You can't be a cheerleader all the time. Sometimes we have bad news to deliver to clients," Bostrom took the advice seriously.

"Although the feedback surprised me, I got the message that I needed to become adaptable," Bostrom admits. Growing up as a Midwesterner in the suburbs of Chicago, it was culturally the norm to be friendly and people-pleasing. Bostrom knew she needed to learn to become more of a straight shooter.

Bostrom next started a project for a high-tech services client. "All the executives were men, most with military experience. I decided I'd adapt. I wanted to be viewed as a peer in business. Not just as a woman in business. And not just as a woman."

It has all paid off with a laundry list of accolades that describe Bostrom, who today sits on a number of tech company boards, as a visionary and one of the most influential women of her generation.

The Long Road to Workplace Diversity

Still, there is more work to do to bring diversity to the workplace, particularly when it comes to women in technology. Women hold a mere 11 percent of executive positions in Silicon Valley, according to the Observer, and just 25 percent of computing jobs in general[1].

What's Going On?

First of all, many women opt out once they've reached a certain level in the tech biz. Notes Bostrom: "It's hard not to. There are so many work and family pressures. What I always encourage women to do is write down what would allow them to stay engaged at work. Would it be working three days a week? Having weekends free? It pays to see if your company is willing to be flexible."

She points out that many women simply don't feel comfortable asking for what they need. "I completely respect women and men that make the decision to opt out for whatever reason. My hope is that they explore all of the available options with their employer first."

Her observations are backed by a recent Reuters study reported by Forbes, in which 30 percent of 450 technology executives said that their groups had no women in leadership positions. The survey concluded that just 25 percent of IT jobs in the US are filled by women and more than half of these women—56 percent—leave IT at the peak of their careers[2].

Bostrom adds that there is a "funnel issue" in that there simply aren't enough girls going into science, technology, engineering, and math, or STEM curricula. The Observer, citing the Girls Who Code initiative as its source, says that 74 percent of girls express interest in these fields, but the statistics show that they obviously get deterred somewhere along the way.

Getting the Best and the Brightest

Women aside, there's a notorious IT talent shortage that some estimates predict could produce a deficit of one million jobs by 2020 in the U.S. alone. Bostrom says actively encouraging more diversity in general in IT could help bridge that gap.

For that to happen, "Companies have to understand that focusing on diversity is a way to attract and keep the best and the brightest," says Bostrom. "I put the onus on the top of the corporation to create an environment where all people feel comfortable and where their ideas will be embraced."

She points out that the tech buyer is changing, too, and the corporate makeup of technology firms should reflect this. "There are small businesses run by women.

Tech is now intertwined with consumers and, therefore, more diverse ethnic groups. We need to mirror these perspectives in the makeup of technology firms."

And part of the answer to making that happen is exposing students to STEM earlier in the education process. "We have to get coding proliferated across elementary and middle schools," says Bostrom. She notes that the younger people are when they learn a new skill, the less intimidated they will be by it and the less likely they will be to reject that course of study and career.

Leaders Who Make IT Happen

At the end of the day, what defines a leader who can precipitate such change? There's that ever-important ability to adapt, of course. Bostrom has a few other thoughts about the qualities that yield leadership:

The ability to define success. Leaders have a vision for success and continue to redefine it over and over again, she says. "And then you need the ability to communicate the vision as it changes."
Accountability. That means being accountable for the results you achieve and don't achieve, focusing on what you can control to continue to improve.
The ability to prioritize. "I've always put the company first, the team next, and then myself," says Bostrom. "I've tried not to think about what impact a strategic decision is going to have on my career."
Humility. Bostrom says that as an industry, "we have to always keep humility in mind. We're here to serve the needs of our customers. We need to ensure that we don't lose that connection."

Bostrom also believes that "if you have a lot of success, then you need to give back." She says that currently, her most fulfilling activity is her board work with the Lucile Packard Children's Hospital at Stanford, a nonprofit.

Bostrom stresses her belief in trying to leave a legacy that makes things better for people. "We have a good history of philanthropy in this industry, but it could be even better. I hope folks see that as part of their portfolio."
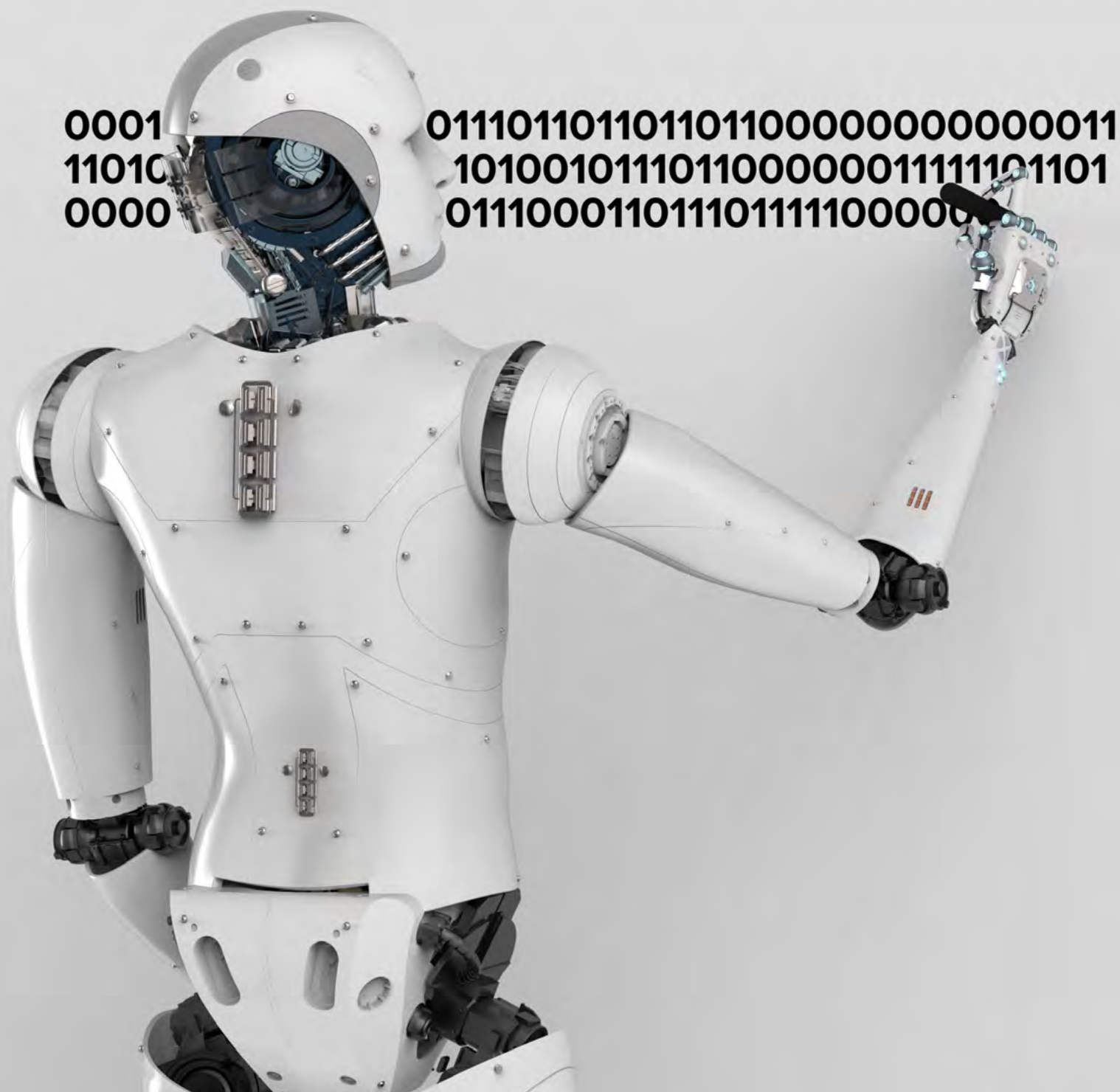
[1]Observer, June 5, 2017: "12 Stats about Women in Tech That Show How Big the Gender Gap Truly Is"
[2].Forbes, February 26, 2018: "It Is Time For Women In Technology To Lead The Way In Gender Equality"

TECH

CRACKING

The Code In Your Big Data: Why Enterprises Should Use Machine Learning

IN OUR LAST ISSUE, WE INTRODUCED MACHINE LEARNING AND WHY IT'S SUCH A HOT TOPIC. IN THIS ISSUE, WE GO ONE STEP FURTHER AND REVEAL HOW IT'S GOING TO REVOLUTIONIZE BUSINESS AS WE KNOW IT.

Machine learning and artificial intelligence aren't new concepts—they've been around for decades. But Hillery Hunter, Director of Accelerated Cognitive Infrastructure at the IBM Research Division, says that today we're witnessing an incredible convergence of technologies that has created the perfect environment for ML and AI to take the stage. "It's a confluence of the data and the compute abilities at the same time that has created this skyrocketing interest in machine learning."

In the beginning, there was Big Data. And people were excited about the possibilities of what they could do and learn with all that information. We gained some insights and began to apply it to business processes—but quickly saw that the never-ending deluge of data was perhaps too big for enterprise computing technology at the time.

Meanwhile, researchers were developing techniques for massively parallel computing, using graphics processing units or GPUs. These GPUs empowered data scientists to crunch much larger amounts of data, much quicker, using fewer IT resources. Now it was possible for enterprises to get close to the same high-performance computing capabilities that were traditionally the sole domain of academic research institutions and government labs.

The explosion of information and the maturing of parallel computing technologies have enabled a whole new level of analysis and insights, which is still, at its heart, about the data. "That's the bottom line," says Hunter. "The data is the resource that everyone has and it's where people want to try and make a difference for their business, be that improving consumer experiences or net profitability of the business or outcomes."

In fact, Hunter says, ML is the technology that is finally fulfilling the promises made by Big Data more than a decade ago. It's the key that is opening the door to new, exciting insights and possibilities for enterprises today.

GETTING DOWN TO SPECIFICS: HOW ML CAN TRANSFORM YOUR BUSINESS

As enterprises move more of their workloads to the cloud, it's becoming critical to incorporate ML and AI technologies to deliver the immediate, personalized experiences customers want and provide employees with quick, easy access to data and applications around the clock.

"Machine learning capabilities should be natively integrated into the cloud stack—it's the only way to deliver the same services without the need for an army of specialized IT resources," says Maryam Sanglaji, Principal Product Marketing Manager at Nutanix.

But there are sweet, sweet rewards in store for those enterprises that integrate ML and AI technologies into their operations. Sanglaji says the three biggest enterprise benefits of machine learning are improving risk management; optimizing performance and spending; and simplifying operations.

RISK MANAGEMENT, REVITALIZED

Sniff out suspicious activity and take it down
ML is a master at detecting anomalies, which makes it a powerhouse for improving risk management. A ML algorithm in your system can monitor operations and come to recognize what's normal and what's not. When it sees an anomaly, such as a link failure due to network congestion, it can alert you immediately or, in many cases, take action to resolve the issue itself (that's self healing). As the algorithm detects disruptions and automatically repairs them on the spot, your IT team has more time to focus on more critical business.

Become clairvoyant about security risks
A recent study showed that it takes businesses an average of 191 days to detect a data breach and another 66 days to contain it.* But with ML that knows your system's baseline normal, it might be able to detect and contain that breach much sooner—costing you much less money in the end. A ML algorithm is able to aggregate all past and current data to see how and when attacks happen. With that knowledge, it can detect some illicit activities right as they begin and take steps to secure the system before the threat has time to fully develop. By recognizing attack patterns, the system can learn to predict oncoming threats by knowing the early steps it took last time.

Run the whole kit and caboodle
Almost a quarter (22%) of data center outages are due to plain old human error.† We've developed technology to automate many tasks to help reduce that number, but we can go much further with ML. With such a smart algorithm in your system already detecting anomalies, preventing security breaches, and proactively resolving issues before you even know about them, why not go all the way and

> **"** In a big way, ML is the technology that is finally fulfilling the promise made by big data more than a decade ago. **"**

GPUS MAKE QUICK WORK OF ML

Data scientists are using GPUs to accelerate compute times for ML. GPUs can drastically shorten experiment times—to days instead of months, hours instead of days, and minutes instead of hours.

An easy way to understand the difference between a GPU and a CPU (traditional computer processor) is to look at how they process tasks. A CPU has several cores that process tasks serially, one after the other—while a GPU has a massively parallel architecture made up of thousands of tiny, efficient cores that all handle their multiple tasks simultaneously. The end result is superfast operations.

Source: NVIDIA

have the ML program become the admin? A ML program could certainly learn to deploy environments and manage them, taking the human and the error out of the equation.

OPTIMIZATION—BUSINESS JARGON FOR BEING AT YOUR BEST

Put data in its place and keep it safe
Where you store data in the data center matters. ML can learn how, where, and when the data is used and accessed and then place that data in the best place possible. It also has deep insight into the hardware and software your data runs on, so it can move data around if it detects potential failure of a hardware component, for instance. ML is great at monitoring who accesses data and when, and creating a baseline of normal so it knows when someone is attempting to access data outside of the norm. ML can also create security policies on the fly as it detects unauthorized activity outside of the pattern. In that sense it's extremely proactive.

Make peak performance the new normal
Things have to work when customers use them. No one likes calling customer service and being put on hold because the system is slow. When a customer signs into your service, it better be working at its peak or you could lose business. All of the ML abilities mentioned above can help you in this area. Putting data in the right place, making access easy, detecting anomalies and resolving them before they escalate, protecting the system from

security breaches—they all add up to the consistent, reliable user experience that keeps customers coming back.

Go green to save green
Not only can ML keep your data and systems running at their peak, it can also ensure that the data center environment itself is optimal. Thanks to sensor technology, ML can monitor every device in the data center and save energy by powering down unused devices. This can save you a lot of money and make your data center more energy-efficient as well. In fact, ML can become the brain of a smart building for even greater energy efficiency, managing heating, cooling, lighting, and more.

OPERATIONS MADE E-Z

Create APIs that can strategize
A step beyond traditional APIs (which allow various software components to work together), ML-driven intelligent APIs give you more information about the environment the software is in and the application users. So not only do they serve their core purpose, they can also alert you to relevant situations, like running out of capacity for that application, for instance. Or consider an API plugin that can also give you information about specific customers or what forms of communication they prefer—or whether they've recently looked for a competing product. Intelligent APIs can enable machines to make strategic recommendations. Machines can tell another machine how to change and improve operations in very specific ways.

Run it all with just a few clicks
At the heart of it, this is about delivering simplicity. Streamlining processes and creating one-click type of operations. ML can eliminate the need to configure apps and devices separately and have specialized IT resources doing disparate tasks. It can remove complexity and manage that configuration and deployment, automated tasks that used to take a team of humans.

COME ON IN, THE WATER'S FINE

Getting started in ML doesn't have to feel like stepping into whitewater rapids. There's a lot to know, but a multitude of scientists, including Hunter and her team at IBM Research, have your back: "Our philosophy is to address the pain points of machine learning by taking the wait times out of all the computations involved, and generally making things work more quickly and more seamlessly for people trying to get insights out of their data."

One way they do this is by improving the technology—developing better hardware and software that handle a lot of the more complex aspects of ML and allow users to

> **"** Organizations that don't think ML applies to them can rest assured that their competitors are finding ways to use ML to improve their products, create better customer experiences, and increase their revenue. **"**

start small. Another way is by putting together packaged distributions of the open source resources so enterprise customers don't have to navigate the open source community themselves, which can be daunting for ML newbies.

You can also work with a service provider that delivers ML and AI capabilities. Sanglaji says that one thing to keep in mind when choosing an enterprise cloud vendor is to "look at vendors who have natively integrated these technologies into their stack because patched services will never realize the true potential of ML and AI in traditional IT infrastructures—especially when it comes to delivering simplicity of IT operations. This makes time to value immediate."

ONE SMALL STEP FOR YOUR ENTERPRISE, ONE GIANT LEAP FOR A BETTER FUTURE

In the near future, ML will almost certainly be a significant component in every enterprise network across industries, across the globe. Sitting on the sidelines or avoiding the subject isn't an option for businesses that want to remain viable into the next decade. Even those organizations that don't think it applies to them can rest assured that their competitors are finding ways to use ML that are improving their products, creating better customer experiences, and increasing their revenue.
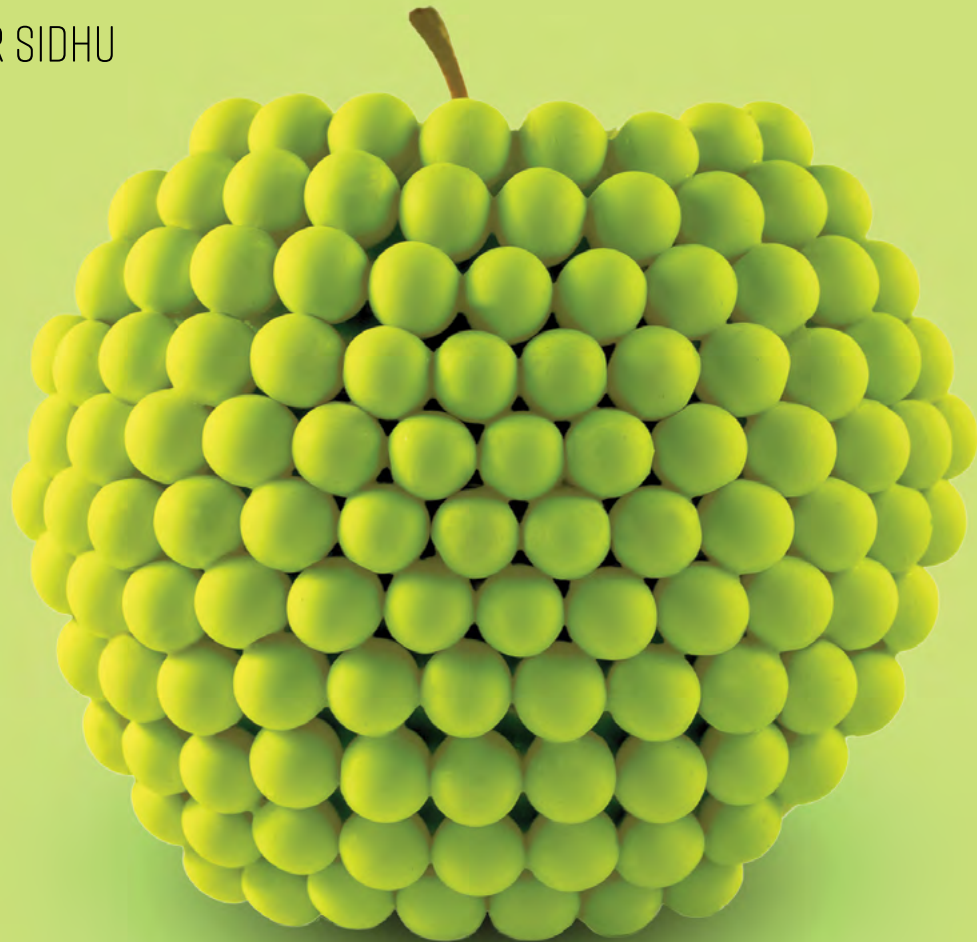
* 2017 Cost of Data Breach Study, Ponemon Institute, June 2017.

* Cost of Data Center Outages, Ponemon Institute, January 2016.
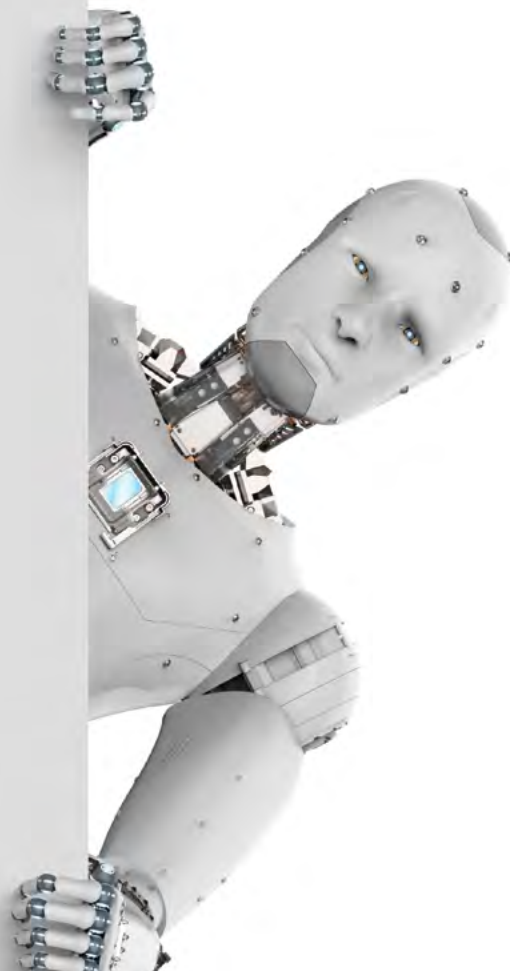
AS SIMPLE AS APPLE: EXPLAINING MY COMPANY TO MY DAUGHTER

BY INDER SIDHU

What's the hardest thing about living and working in Silicon Valley?

It's not the traffic though it's dreadful, nor the home prices, which are outrageous, or even the culture, which practically begs for the parody it gets from the TV series "Silicon Valley."

For me, a 30-year veteran of Valley life, the hardest thing is explaining to people exactly what I do. Make that what my employer, Nutanix, does.

I was thinking about this recently when my college-aged daughter, Sabrina, asked me about my job. Sabrina is the kind of kid every parent can be proud of. She is bright, curious and engaging. After scoring nearly perfect test scores in high school, she was admitted to a top business school and has since pursued her studies in earnest.

"Dad," she asked me, "what does your company do, exactly?"

"Nutanix develops hyper-converged, software-defined and platform-ready business infrastructure that revolutionizes computing as we know it." (I know it doesn't exactly roll off the tongue even though it is true).

"We're a B2B company," I added.

"B2B? Boring products to boring people?"

When I frowned, Sabrina looked me in the eye and repeated, "Dad, what does your company do, exactly? This time in English!" While I wracked my brain for an analogy that would help make it blazingly obvious what made Nutanix special, I watched her gently tap on her Apple iPhone. Then it hit me.

"Well," I started, "Nutanix does for businesses what Apple does for consumers."

When I said that, Sabrina stopped tapping on her iPhone and asked me to continue. The conversation reminded me that no matter how excited and passionate we are about our technology or businesses — our "value proposition" to put it into Silicon Valley parlance — few people will care or understand unless we communicate simply.

Here's how I explained to my daughter what Nutanix does, and why it is doing to business computing what Apple did to consumer electronics.

THE APPLE FORMULA

Smart phones are so ubiquitous these days that it is hard to believe that they have been with us only a dozen or so years. But what an impact on our lives they have had.

Today, the average smart phone user spends five hours per day on their device. That's nearly as much time as the average American sleeps.

Apple, of course, is a big reason why. It made the iPhone so unmistakably sexy when it unveiled the product in 2007 that people camped outside Apple stores just to be able to tell their friends that they were among the first to buy one. But smooth curves and clever apps weren't the only reasons why the devices became some of the most successful consumer products of all time.

If you step back, you realize that the reason that the iPhone became successful over the years was because it followed a five-step formula that Apple has perfected so admirably. Thanks to it, Apple continues to transform product categories, financial markets and, yes, even lifestyles.

Apple's five-step formula includes the following:

- Converge disparate technologies
- Create software that makes everything work seamlessly
- Expand capabilities by turning products into platforms
- Integrate everything using cloud technology
- Extend the reach to the Internet of Things

Nutanix does the same. Here's why.

CONVERGENCE THAT PROVIDES BETTER VALUE

The comedian Jerry Seinfeld likes to joke that the iPhone is wrongly named. "Why do they call it an iPhone?" he says. "No one uses it to call. We just text and email and browse and take pictures."

He may be onto something.

The iPhone, for all its clever name, is, of course, so much more than a phone. It's a camera, video recorder, music player, Internet browser, email device, GPS navigator and then some. It's a workout companion, alarm clock and weather forecaster in the palm of your hands. When it debuted, there were more that 25 million Blackberry devices in people's hands. Today, Blackberry's share is effectively zero. As for the iPhone, there are more than 750 million of them in use.

Convergence is a big reason why. It didn't take long for the fortunes of stand-alone product companies to shrivel once the iPhone demonstrated what it could do. In addition to the Blackberry, the iPhone effectively killed the video camcorder, the point and shoot camera, the MP3 music player, the day-date planner, the address book, answering machine and the flip phone. Billions of dollars of commerce that once went to dozens of companies suddenly flowed to one, Apple.

Nutanix is doing the same thing.

From a convergence perspective, Nutanix recreates enterprise infrastructure that customers typically buy from several companies such as servers, storage devices and virtualization software, and makes it all work together in a much better, seamless integrated way. Nutanix continues by adding networking, security and other technology capabilities, rendering standalone ideas from the likes of EMC and others moot.

Like Apple, Nutanix provides its converged infrastructure with consumer-grade design that offers orders-of-magnitude improvements in ease of use with capabilities such as one-click upgrades.

SOFTWARE THAT TIES EVERYTHING TOGETHER

In 2016, Apple debuted one of its most impactful ad campaigns in years. On highway billboards, web sites and magazine ads, it showcased photographs from everyday people. In addition to their photos, the ads included the line, "Shot on iPhone."

The visuals were a stunning reminder of how technologically advanced Apple cameras had become. But as advanced as its hardware has become, Apple's real magic takes place underneath the surface of its devices. That's where its iOS software, iTunes music store, Photos, iMovie and more do their thing.

In simple terms, these software pieces delicately coordinate with one another, enabling consumers to take photos, store them, edit them, organize and share them. Same with music, video, social media, and more. Apple's software enables its hyper-converged "devices" to deliver value through a single, unified software operating system. While it's almost invisible to the consumer, it's proven to be a devastatingly disruptive force in the market. Having a software defined platform enables Apple to operate at web-scale and provide greater value to consumers than hardware-centric, single-product companies.

With its underlying software architecture, Apple is able to showcase the best of its hardware capabilities.

Again, Nutanix is doing the same thing.

Nutanix's AOS and AHV software make the hyper-convergence of infrastructure technology — think hardware gear — possible. Like Apple, Nutanix delivers value thru a single, flexible, unified software plane — a single integrated stack.

Traditional stand-alone companies such as VMware, are left to defend their stand-alone, proprietary technologies that lock customers in and limit their ability to pivot to

alternative technologies. But Nutanix frees them to work with virtually any combination of technologies they choose. Thanks to Nutanix, customers no longer need to spend their time and energy thinking about infrastructure; instead they can focus on the business applications that propel their organizations.

PLATFORMS THAT LEAD TO NEW EXPERIENCES

A few months after being named CEO of Nokia, Stephen Elop wrote a memo to Nokia employees in February 2011. After it was leaked publicly, it became known as the "burning platform memo." In the memo, Elop lamented how Apple had displaced Nokia in the high-end smartphone market in just three years. "The battle for devices has now become a war of ecosystems, where ecosystems include not only the hardware and software of the device, but developers, applications…," he wrote. "Our competitors aren't taking our market share with devices; they are taking our market share with an entire ecosystem."

How did Apple do it? Look no further than the Apple App Store, which allows millions of users to add capability to the iPhone. By turning a product into a platform, Apple allows millions of developers to extend its functionality and billions of consumers to customize it to their desires.

Today, the Apple App Store boasts more than 2 million different third-party apps, which have been downloaded a whopping 2 billion times. There are apps for almost any situation you can think of. Want to repel mosquitoes? There's an app for that. Need to use the restroom while you're at the cinema but don't want to miss any action? There's an app that will tell you when to go. With apps from the App Store, you can manage your money, advance your career and even find medical advice that can save your life.

The key to the App Store is a consistent, services interface and a self-reinforcing business model. This turned a great product into a ubiquitous platform upon which Apple made billions of dollars. While Nokia was busy trying to win the device battle, Apple won the platform war.

Nutanix is doing the same.

It is building out its CALM Marketplace, where partners, working in conjunction with Nutanix and each other, are creating a robust ecosystem that produces a raft of new capabilities and services that create new and compelling customer experiences.

These experiences have enabled companies to save money on infrastructure, get more from the investments they have already made and extend benefits to their up-and-downstream constituents. When measured against standalone products from Cisco, HPE, Tintri and others,

TECH

the platform wins out every time. What is more, it will only get better as the Marketplace grows.

CLOUD SERVICES THAT TIE EVERYTHING TOGETHER

One of the world's busiest and most capable providers of technology to large enterprise customers is Accenture. Each day, more than 10,000 Accenture customers hit the road to help customers solve business problems or create new customer deliverables using digital technology.

To empower its high-priced technology consultants to the fullest, Accenture has moved as much as 80 percent of its digital assets to the cloud. It's simply not possible for it to provide the level of ingenuity it does with data-center bound apps and data that are locked up inside one location.

Similarly, Apple has moved aggressively to helping customers move billions of photos, songs, videos and documents to its iCloud storage service. Though Apple was late to the game in cloud storage, it has moved aggressively to catch up. This includes providing key features that others do not.

The idea, of course, is to provide seamless integration for Apple customers, some of whom own and use as many as five different Apple devices to connect with their digital assets that are saved in the cloud.

Apple has spent millions of dollars developing capabilities that provide not just seamless integration between its devices, but also seamless integration with infrastructure owned by others. Think AWS, Dropbox, etc.

Borrowing a page from this philosophy, Nutanix is investing in a new cloud service — Xi. Xi makes it easier for customers to protect their digital assets, leverage them from anywhere, and recover them should they ever be compromised. They seamlessly integrate private cloud with public cloud, providing capabilities such as disaster recovery as-a-service.

DEVICES THAT REDEFINE COMPUTING

Every winter in Switzerland, the world's greatest watch makers converge in Basel to review their latest creations. Though business has been good until recently, a pall has hung over Baselworld since 2013.

This year, Jean-Claude Biver, CEO of Tag Heuer, summed the mood when he said the industry was missing out on the one trend that could reverse watch makers fortunes, smart, connected devices. They are the future, at least for the new generation, he said. Many traditionalists decried his outburst. But others expressed support.

Now in its third generation, the Apple Watch is the world's best-selling watch. The reason is that it is not simply a mere timepiece. It's an alarm clock, hear-rate monitor,

communications platform and more. While it took Apple several tries to get the Watch right, the Watch is the closest thing consumers can touch that demonstrates the potential of the Internet of Things (IoT). It includes sensors that track your health, GPS technology that can follow your workouts and communications technology that keeps you

"WHILE NOKIA WAS BUSY TRYING TO WIN THE DEVICE BATTLE, APPLE WON THE PLATFORM WAR."

connected to the ones you love and work with. Given the acceptance of the Watch, connected drones, robots and autonomous vehicles don't seem so exotic.

With the Watch, Apple has not only broken new ground; it has also liberated us to see the future in new ways.

Which brings me back to Nutanix. Nutanix distributed technology extends the Nutanix enterprise cloud operating system to the IoT with industrial sensors and more.

This is significant because in addition to delivering integrated software that makes existing infrastructure run more efficiently and scale in new ways, Nutanix is delivering innovation that will pave the way for the next generation of digital transformation.

This includes providing a flexible, open and secure platform that will make it possible to add literally billions of devices to the Internet. This includes devices that were never designed to be smart or connected. Think street lights, railroad crossing signals, hospital crash carts, agricultural watering systems and more.

Thanks to Nutanix and its ecosystem of alliance and channel partners, these devices can be added to the digital grid as securely as a smartphone, notebook computer or wireless router.

So there you have it: Nutanix is doing for business customers what Apple does for consumers. It does so by following the same five-step formula:

- Converge disparate technologies
- Create software that makes everything work seamlessly
- Expand capabilities by turning products into platforms
- Integrate everything using cloud technology
- Extend the reach to the Internet of Things

FROM APPLE TO GOOGLE AND BEYOND

After hearing my story, Sabrina smiled at me and nodded her approval. "Nice job, Dad," she said. "I get what Nutanix does."

After a pause, Sabrina asked a question I had not anticipated.

"What about those who cannot afford an iPhone or simply prefer Google Android? Is Nutanix just the premium-priced company? Or does your technology work for everyone?" Sabrina asked.

"Good question," I replied. "While Nutanix has followed Apple's business strategy in many ways, it's technology actually works more like Google's."

Again, take the iPhone. While Apple's software runs only on Apple hardware, Google's software runs on hardware from many different vendors including Samsung, LG, Motorola, HTC, etc.

Thanks to Google's strategy, consumers actually have more choices than they do with Apple, and they can generally get their Android devices for less than Apple devices. Little

wonder that more than 80 percent of smartphones sold today run Android software.

Nutanix is taking a similar approach. Those who want an integrated iPhone-like experience can choose the Nutanix appliance. But if someone should want their choice of hardware, Nutanix has them covered.

Nutanix software is available on hardware from Dell, Lenovo, Fujitsu, IBM, HP Enterprise, Cisco and more. This design approach allows businesses to use their favorite hardware vendor and get the benefit that Nutanix offers—including direct access to Nutanix in case they need technical support.

"Delight like Apple, scale like Google," Sabrina said. "Not bad, Dad."

"Delight like Apple, scale like Google?" I asked. "Where did you come up with that?"

"What can I say. I grew up in Silicon Valley," she said.

Like Apple and Google, I thought. And Nutanix.

Thanks to Andrew Brinded for helping this piece take shape.

Nutanix is key to our digital transformation, particularly around IOT and intelligent edge computing.
#EnterpriseCloud #OnMyTerms

TECH

"

VULNERABILITY IS NOT KNOWING VICTORY OR DEFEAT, IT'S UNDERSTANDING THE NECESSITY OF BOTH; IT'S ENGAGING. IT'S BEING ALL IN.

LIFESTYLES

DARING LEADERSHIP: THE FOUR PILLARS OF COURAGE

She's got one of the most popular TED Talks of all time. She's a vulnerability visionary. She's spent nearly two decades "teaching courage." And she's doing it all with one mission: to make the world a braver place. Brené Brown gave NEXT Magazine some specific insights on how she's doing it.

In your TED Talk, you describe your love of measurement. Is there a scientifically robust measuring stick for courage? If not, why is it difficult to measure?

My newest research demonstrates that courage is a collection of four skill sets (vulnerability, clarity of values, trust and rising skills) that can be taught, developed, learned, and measured. The learning requires commitment, curiosity, and a willingness to challenge ourselves both personally and professionally. It also requires operationalizing courage into actual behaviors. Where this becomes powerful is when there is a critical mass of brave leaders at an organization. We know from our work that an organization's collective courage is the best predictor of how successfully we will operationalize and realize organizational values, learning, and strategies.

You say your ideas came from analyzing people's stories. Are there people, living or historical, whose stories demonstrate courageous leadership? For example, one article about your ideas cites a terrific quote from Teddy Roosevelt – he lauds those who are "actually in the arena," something TR himself was admired for. Are there others?

We define a leader as anyone who holds her/himself accountable for finding the potential in other people and developing that potential. I've met incredible leaders all over the world – from high school students to community activists and warehouse managers. The biggest mistake we make is believing that leadership only happens in the C-suite.

One of your 4 Pillars of Courage, "encouraging vulnerability," builds on your TED talk assertion that vulnerability is essential to connection. But is vulnerability itself an impediment to internalizing the 4 Pillars? In a world that seems mistrustful of vulnerability in leaders, how do you get them to embrace vulnerability?

The definition of vulnerability that emerged from the data was very simple: Vulnerability is risk, uncertainty, and emotional exposure. If you want braver leaders, you must cultivate a culture where people are willing to do hard things, have difficult conversations, fail, recover, and start again.

In my personal experience and in my work with leaders, you have to start by debunking the myths of vulnerability. We have to challenge the idea that vulnerability is weakness. Even when I work with the military special forces, I ask the same question: Give me one example of courageous behavior that didn't require vulnerability. Out of tens of thousands of people, no one has ever been able to give me a single example. There is no courage without vulnerability.

You've famously said "stories are data with a soul," a phrase which yields 5.5 million Google hits. You've created many memorable descriptions: "excruciating vulnerability" is another. Can you describe the origin of one of these?

As a Grounded Theory researcher, a central part of my research method is finding a way to name basic human processes that enables people to recognize them in themselves and also realize that everyone else can recognize them too. Rather than starting with existing theories, Grounded Theory researchers build an understanding of a concept based on people's lived experiences. The theory emerges fully from the data collected from research participants and is then placed in the context of existing theories. One of the reasons grounded theories feel relevant to people is simply because the work is built on their experiences. Our job is to stay out of the way, keep our preconceived ideas in check, and use powerful, resonating language to make connections and conceptualize what we've learned.

I think one powerful example of this in my work is Daring Greatly, which became the title for one of my books and in many ways a call-to-action for all of us who are sick and tired of living in a culture of scarcity and criticism.

The phrase 'Daring Greatly' is originally from Theodore Roosevelt's speech, Citizenship in a Republic. This is the passage that made the speech famous:

"It is not the critic who counts; not the man who points out how the strong man stumbles, or where the doer of deeds could have done them better. The credit belongs to the man who is actually in the arena, whose face is

marred by dust and sweat and blood; who strives valiantly; who errs, who comes short again and again, because there is no effort without error and shortcoming; but who does actually strive to do the deeds; who knows great enthusiasms, the great devotions; who spends himself in a worthy cause; who at the best knows in the end the triumph of high achievement, and who at the worst, if he fails, at least fails while daring greatly."

The first time I read this quote, I thought, "This is vulnerability! Everything I've learned from over a decade of research on vulnerability has taught me this exact lesson. Vulnerability is not knowing victory or defeat, it's understanding the necessity of both; it's engaging. It's being all in. It's Daring Greatly. Whether the arena is a new relationship, an important meeting, our creative process, or a difficult conversation with a colleague, we must find the courage to walk into vulnerability and engage with our whole hearts.

We live in a culture of cruelty and cynicism – it can be scary to be real. It would feel safer to be perfect or bullet proof before we walk into that arena, but as seductive as that sounds, perfection and bullet proof don't exist in the human experience. Daring Greatly is an invitation to be courageous; to show up and let ourselves be seen. Even when there are no guarantees. That's why I love the Teddy Roosevelt quote, because it's such a powerful metaphor that if we're going to go into the arena, we're going to get our butts kicked, and we have to make a decision somewhere along the line: Is it worth the risk?

"I've met incredible leaders all over the world – from high school students to community activists and warehouse managers. The biggest mistake we make is believing that leadership only happens in the C-suite."

As I look at what Daring Greatly means to me, I can honestly say that nothing is as uncomfortable, dangerous and hurtful as believing that I'm standing on the outside of my life looking in and wondering what it would be like if I had the courage to show up and let myself be seen. The willingness to show up changes us. It makes us a little braver each time.

Researchers often struggle with resonant language — is this something you enjoy?

For me finding the right words can be painstaking. Maybe it's a sophistication-in-simplicity kind of thing, but it's laborious. I can struggle over the single right word for months. I've had to unlearn what I was taught in my doctoral work – that being too accessible can be dangerous to your career. In the eyes of some people, it means that you're not smart. But I think so many people resonate with my research because I use simple language to describe things and share my own story and struggles. I know from my personal experience that these topics can be uncomfortable and painful. I am not always comfortable relating the research to my own experiences, but I think facing that fear and unwillingness and making the research more accessible can change our lives. Finding the right language that rings true for people is a basic tenet of Grounded Theory research and one that I take very seriously.

As a researcher, you wanted to "make messy topics not messy," to bring scientific rigor to complex concepts. It was your goal following your breakdown (a "spiritual awakening" per your therapist), which you hilariously call "a Jackson Pollack crazy thing." Sounds pretty messy! Courage is another "messy" subject – how have you made it "not messy?" What other "messy" topics would you like to tame?

I've probably changed my goal since then. Now I think I just want to explore the beauty of the mess and why it's worth embracing. I'm not sure I'm a fan of taming anymore. Some things are born in the wild and should stay there. Like courage. If you try to make something brave feel comfortable, it's really no longer courageous.

Your TED Talk is from 2010. Can you explain the process of expanding your original ideas about vulnerability and connection to encompass Daring Leadership? How did you turn your observations into actionable tactics?

I've set one vision for my work and, really my career and life: To make the world a braver place. Daring Leadership is a vital part of that work and developing actionable strategies and opportunities for skills development feels like an ethical imperative for a simple reason: After 16 years and thousands of interviews yielding close to 200,000 pieces

of data, I don't think we can make the world a braver place unless we change the way we work and the way we show up at work.

I've spent the past 7 years in organizations around the world. From oil companies in Singapore and banks in London's Canary Wharf to start-ups in Silicon Valley and companies that are household names like Pixar and Costco. I've even had the privilege to work with great leaders at places like the CIA, the White House, and in the military special forces. Here's what I can tell you: Across organization type, size, and mission – small entrepreneurial start ups, family-owned businesses, or Fortune 100 companies – an increasing number of leaders are asking the same question: How do you cultivate braver, more daring leaders, and how do you embed the value of courage in your culture?

Specifically, organizations trying to navigate the complexities of today's environment are looking for leaders who are:

- Staying brave and constructive in tough conversations
- Giving and receiving meaningful feedback
- Building trust in their teams
- Taking more smart risks
- Sharing bold ideas with confidence
- Resetting after setbacks
- Dealing with conflict rather than avoiding it
- Facilitating accountability rather than turning to blame or back-channeling
- Leading through uncertainty
- Putting values into practice
- Developing processes that are both thoughtful AND decisive

Here's what I can tell you about these obstacles. You cannot go under, over or around them. You have to take them straight on and that requires courage and the capacity for vulnerability. Not just intellectual or moral courage or physical courage or emotional courage – but full contact - all of the above – all in - courage. The vulnerable kind of courage. And teaching that kind of courage is exactly what we do through our Brave Leaders Inc program.

CLOSE THE OPPORTUNITY GAP

True diversity in the workplace won't happen until you do

There's a vital need for diversity in Corporate America. Along with simply being the right thing to do, diversity has a compelling business case. A diverse workforce helps a company better understand and fulfill the needs of its customers. Diverse perspectives strengthen problem-solving and decision-making, fuel innovation, and sharpen a company's competitive edge.

Not surprisingly, businesses are increasingly baking diversity and inclusion into their employee training, onboarding and recruitment, community outreach, and other corporate initiatives.

On the other side of the fence are countless young individuals with great potential who will never see the inside of a corporation. Most of them are economically challenged, and struggle with any number of other pressures that stifle their ability to find and get good jobs. For these individuals, without being presented with a tangible opportunity, "diversity" and "inclusion" are just words on a poster.

For nearly 20 years, Dr. Arthur Langer, Director of the Center for Technology Management at Columbia University, has done a lot to bridge this opportunity gap. In 2005, he founded Workforce Opportunity Services (WOS), a 501(3)(c) nonprofit organization that connects leading companies with a pipeline of early-career individuals from underserved populations and post-9/11 veterans.

"It's a good thing to change one person's life, two people's lives, ten, or twenty," Langer says. "But to do something that's systemic . . . to actually change the course of the way things are going to be. That's what I wanted to do."

WOS works with partner organizations to identify their specific staffing needs and then trains individuals to fill those roles through a uniquely supportive program of coaching, mentorship, and hard- and soft-skills training.

"Underserved populations and veterans need to be on equal footing when they join the workforce," says Langer. "Our program not only prepares them to hit the ground running within a company, but also helps build their self-confidence and esteem, which is key for them to successfully integrate into the workplace."

To carry out this mission, WOS partners with universities and colleges throughout the U.S. to create academic curriculums that align with real-world corporate objectives. Individuals in the WOS program are handpicked and trained to fill roles requested by the partner companies. The majority of roles are in IT, and include programming and design, cybersecurity, project management, services, operations, and business support among others.

"WOS has a unique ability to identify raw talent, many who haven't had any prior work experience, and provide them with the right training," says Warren Kudman, CIO of Turner Construction, a WOS partner company for more than six years. "They get the skills and ongoing coaching that allows them to come in to a company and be productive right away."

"The commitment to personal learning and growth that we see in these individuals is off the charts," adds Kudman.

> "IT'S A GOOD THING TO CHANGE ONE PERSON'S LIFE, TWO PEOPLE'S LIVES, TEN, OR TWENTY. BUT TO DO SOMETHING THAT'S SYSTEMIC . . . TO ACTUALLY CHANGE THE COURSE OF THE WAY THINGS ARE GOING TO BE. THAT'S WHAT I WANTED TO DO."
>
> - DR. ARTHUR LANGER

PARTNERSHIPS THAT GROW AND LAST

In 2005, Prudential was the first company to pilot a partnership with WOS, a relationship that included developing academic curriculum at Columbia University. In the early 2000s, Prudential and many other businesses faced challenges around sourcing young talent in IT. The rise in offshoring led students to shy away from the industry, fearing their job prospects would be grim by the time they earned their degree.

In 2010, unemployment among post-9/11 veterans was two percentage points higher than the national average. The chairman at Prudential assembled a team to figure out what the company could do to tackle the problem.

By then WOS had been sourcing talent within Prudential for nearly five years, mostly individuals from underserved populations. Capitalizing on that success, the Prudential team got the green light to modify the WOS program to focus predominantly on post-9/11 enlisted veterans.

Prudential uses the WOS program to develop talent sourcing opportunities in many regions in the U.S. Buoyed by a white paper in which Langer suggested that El Paso, Texas, would be a good location for the program because of its strong veteran talent potential and good labor cost differential, Prudential conducted its own analysis. Their findings confirmed Langer's data, and Prudential set up an El Paso operation, which now supports more than 250 people.

"WOS provided the initial intel that identified El Paso as a valuable sourcing location for us, but beyond that, they provided us with thought leadership and senior management input," says Dele Oladapo, Vice President and Chief Technology Architect and Innovation Officer at Prudential. "WOS became one of the lead partners that we leverage for how we source talent."

The Fort Bliss Army post headquartered in El Paso offers Prudential an immensely rich talent pool. Prudential uses its partnership with WOS to train not only veterans in El Paso, but also military spouses. Nearly 50 percent of the 250 people at the El Paso site are either veterans or military spouses. Johnson & Johnson is another long-time WOS partner with a focus on helping veterans.

"In my mind, there isn't a better population of people to try to help than the people who've served their country," says Dan Zelem, CTO at Johnson & Johnson. "To be able to give them an opportunity to have a successful career in addition to getting their education is a win-win-win all the way around."

Plus, as Zelem points out, many veterans have military experience and training that's relevant in a corporate environment. "They come with a level of discipline that you're not going to get with most young students who haven't entered the workforce yet. It's a unique advantage veterans bring to the table."

SOCIAL ENTREPRENEURSHIP, NOT CHARITY

There are other programs similar to WOS, but none that provides greater support for the individuals in the program. For those who are motivated, have a strong work ethic, and a true desire to succeed, Langer commits to helping them thrive every step of the way—professionally, financially, and personally.

At times the support has entailed buying a student clothes, getting an apartment for a student living in his car, hiring a sitter for a student who couldn't attend night school because she needed to watch her baby brother, cutting a check to a landlord so a student with four kids wouldn't be evicted from his apartment. There are a lot more stories.

"What always impressed me about WOS is that it did whatever it needed to do to help support an individual's success," says Zelem. "Johnson & Johnson is a very nurturing, embracive environment. Partnering with WOS and supporting this mission syncs with our corporate culture and company credo."

Every company is looking for a talent pipeline, and it has to be diverse. WOS connects companies with a pipeline of diverse talent that's groomed and ready to succeed. Program participants receive phenomenal hands-on support, training, and coaching that doesn't end when they're placed in a corporate setting. And partner companies get a solid return on their investment.

To date, WOS has helped more than 3,800 early-career military veterans and individuals from underserved populations, by partnering with more than 60 corporations in more than 40 locations in the U.S. and abroad and working with 23 local universities and colleges. The partnerships WOS has with these companies and academic institutions go a long way toward closing the opportunity gap.

Not every student in the WOS program will make it. But the ones that do change the course of their life. That's systemic.

> NO MATTER HOW PASSIONATE
> WE ARE ABOUT OUR
> TECHNOLOGY OR BUSINESS,
> FEW PEOPLE WILL CARE OR
> UNDERSTAND UNLESS WE
> COMMUNICATE SIMPLY.

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