



HYBRID IT

THE JOURNEY INTO THE CLOUD

AN OVERVIEW OF HYBRID IT AND THE SKILLS NEEDED TO MANAGE HYBRID ENVIRONMENTS

HYBRID IT

THE JOURNEY INTO THE CLOUD



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CHAPTER 1

HYBRID IT-AN OVERVIEW

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"This reality has become known as hybrid IT: migrating some infrastructure to the cloud, while continuing to maintain some critical services onsite."

Consider the race to the cloud: companies of all sizes across almost all industries are making tremendous changes to their technology infrastructure. The market is evolving from traditional on-premises IT to a hybrid strategy driven by the cloud. Indeed, it's no longer a question of "if," rather, the question for almost all organizations has changed to "when" the move to the cloud will take place.

In fact, "[SolarWinds IT Trends Report 2015: Business at the Speed of IT](#)" identified that nearly 90 percent of IT professionals surveyed have already migrated at least some part of their infrastructure to the cloud. In addition, according to the latest trend forecast for 2016 by International Data Corporation®(IDC), "[IDC FutureScape: Worldwide IT Industry 2016 Predictions—Leading Digital Transformation to Scale](#)," by 2020 spending on cloud services and related hardware and software will be more than \$500 billion, which is three times the current level.

Whether it's the cost savings or the improvement in application agility organizations are after, one thing is for sure—the migration that is happening now cannot be done without skilled IT professionals at the helm, especially in the coming years.

However, in almost all environments, there are workloads that have and will most likely remain on-premises for the foreseeable future. This reality has become known as hybrid IT: migrating some infrastructure to the cloud, while continuing to maintain some critical services onsite. Concurrently, the reliance on applications to conduct business continues to grow, which creates higher performance expectations than ever before.

As a result of this shift happening below the surface as organizations move some infrastructure elements to the cloud, combined with heightened performance expectations in an app-driven business world, IT's role will continue to become increasingly pressured and complex.

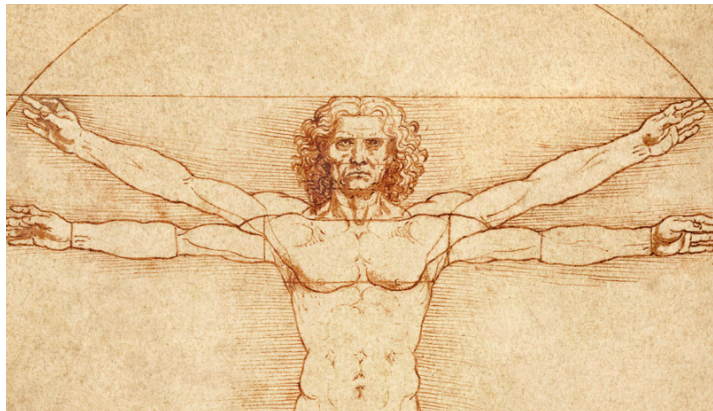
“Hybrid IT pros will need to become polymaths in order to be successful as they will pivot across multiple domains and skillsets.”

HYBRID IT: THE JOURNEY INTO THE CLOUD

THE HYBRID EFFECT

This journey towards the cloud is changing the face of the IT profession. IT professionals in the hybrid IT era must transcend traditional roles and possess a deep understanding of enterprise networks, data centers and application delivery. Additionally, they also need the ability to manage infrastructures, integrate cloud services and ensure quality-of-service (QoS) that meets business performance needs for any given service delivered via a cloud provider.

IT professionals operating in hybrid environments are not only responsible for the automation and orchestration of computer hardware, software, databases, networks, virtualized systems and other software-defined elements of the on-premises IT infrastructure, but are also required to manage the integration of cloud services, as well as ensure acceptable QoS to meet the business performance needs for any given service delivered via a cloud service provider.



The Vitruvian Man by Leonardo da Vinci, The ultimate Renaissance man.

Although the actual role of the “hybrid IT professional” will vary based on every individual business’ needs, the role commonly entails such activities and tasks as managing service-level agreements with cloud providers, optimizing the performance of infrastructure and applications both on-premises and in the cloud, and migrating and provisioning resources to the cloud. Hybrid IT pros will need to become polymaths in order to be successful as they will pivot across multiple domains and skillsets.

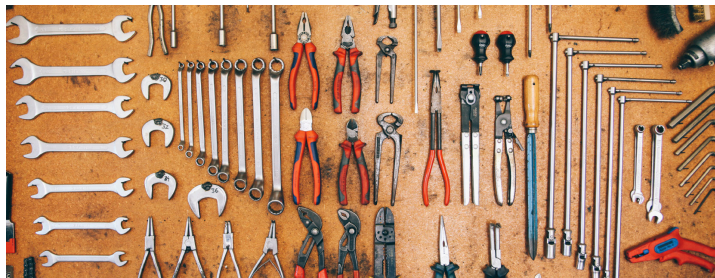
“Respondents identified the need for a completely new set of technical and management skills as a top driver of the increased difficulty brought on by hybrid IT.”

HYBRID IT: THE JOURNEY INTO THE CLOUD IT-IDENTITY CRISIS

To better understand the specific changes hybrid IT is having on the role of the IT professional, SolarWinds recently conducted a [survey](#) among nearly 100 members of our [thwack®](#) community of global IT professionals. In addition to confirming that the vast majority of IT professionals now work in hybrid IT environments, it also found that nearly half (48 percent) now identify with the term “hybrid IT professional.”

In addition, while roughly 20 percent of survey respondents said that the move towards hybrid IT makes IT’s job easier because it eliminates responsibility for maintaining underlying infrastructure, relieves IT personnel of the day-to-day management of at least some infrastructure and provides increasing infrastructure flexibility and agility, a full 50 percent indicated hybrid IT has made their jobs more difficult, with seven percent of those indicating their jobs have gotten much more difficult. The top reasons cited for this increase in difficulty include a decreased level of direct control over data security in the cloud, less control over and less visibility into cloud-based services and increased management and monitoring complexity.

Related to each of these, survey respondents also identified the need for a completely new set of technical and management skills as a top driver of the increased difficulty brought on by hybrid IT. In fact, almost two-thirds (64 percent) said they feel at most moderately comfortable managing hybrid environments.



A whole new set of skills are required.

Overall, this alludes to the great value that exists in hybrid IT, but without IT professionals who have mastered the new skills hybrid IT requires, it will be difficult to realize success.



CHAPTER 2

SKILLS FOR HYBRID IT SUCCESS (PART 1)

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“Only one-third of respondents (35%) feel completely confident in their ability to manage Hybrid IT environments.”

The aforementioned survey also provided insight into the top skills IT professionals say are the most needed to increase their confidence in managing hybrid IT environments. Here, we take a deeper look into the first three, which are:



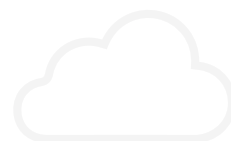
**SERVICE-ORIENTED
ARCHITECTURES**



AUTOMATION



**HYBRID IT MONITORING &
MANAGEMENT TOOLS & METRICS**



“As more companies move to a hybrid IT model, they will need to be more agile, lean and cost-effective.”

HYBRID IT: THE JOURNEY INTO THE CLOUD

SERVICE-ORIENTED ARCHITECTURES

IT professionals who work with service-oriented architectures (SOAs) today have many pillars and layers to consider, but at the core are the service provider and the service consumer. What do they have in common? Service, of course.

Currently, the industry standard pillars of SOA are the consumer interface, business layer, services and their components, and the operational systems connecting the data model and the data flow. Cutting across these pillars are four layers: integration and protocol support, quality-of-service (QoS), business information and governance.

When consumers are using any e-commerce site, they are reliant on SOA. An example of SOA is when consumers are streaming on Netflix®. Key performance metrics such as network bandwidth and network latency from the Amazon Web Services® (AWS®) cloud as well as end-user experience (i.e. issues raised) are constantly being monitored, troubleshooted and remediated by Netflix engineers and their scripts to ensure a smooth experience for all their concurrent users.



AGILE



LEAN



COST
EFFECTIVE

As more companies move to a hybrid IT model, they will need to be more agile, lean and cost-effective. To meet these needs, the barriers to consumption will need to decrease. So IT professionals will need to leverage templates and services from marketplaces such as AWS®, Microsoft® Azure™ and IBM® Bluemix® while understanding how to integrate services via APIs like REST®. To continue improving skills and expertise in SOAs, IT professionals should have a fundamental understanding of application architectures and how to scale them, a strong understanding of distributed systems, as well as how to consume and use APIs.

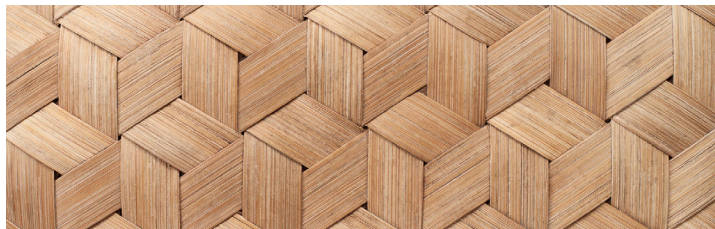
IT professionals should also have strong background knowledge in IT operations. This knowledge is a good foundation for service level agreements (SLAs) because integration of cloud services will include a healthy dose of reading SLAs.

“Automation in the hybrid IT environment will abstract away the operations layer and be integrated with machine learning algorithms...”

HYBRID IT: THE JOURNEY INTO THE CLOUD AUTOMATION

The evolution of automation should be expected as hybrid IT environments become more prevalent. The reason is simple—automation enables the scale, agility and availability that businesses require, but today's automation is done primarily with scripts. As more businesses move towards a hybrid IT environment, where infrastructure resources are only one part of the equation, they will need more than scripts to enable automation as they reduce the friction to consume for their end users.

Cloud service providers are already making changes to move towards removing the barrier to consume services by providing easy-to-use, pre-defined services. This new direction includes options such as templates, blueprints, and APIs. For example, Amazon® QuickSight™ abstracts all the requirements associated with building big data models and business intelligence implementations to allow users to quickly build visualizations and derive insights from their data. This is an example of how services will continue to evolve what automation needs to encompass in order to orchestrate many, concurrent workflows across multiple data centers in an increasingly hybrid IT future.



Integration will be key with automation and machine learning algorithms.

Automation in the hybrid IT environment will abstract away the operations layer and be integrated with machine learning algorithms that will automatically scale, move and remediate services. In addition, IT professionals will need to integrate their automation and orchestration workflows with provider APIs, which serve as the building and connecting blocks of their application stack.

“Any company adverse to change will find process of simplifying their monitoring and managing tools and metrics challenging, but it’s a worthwhile and necessary endeavor.”

HYBRID IT: THE JOURNEY INTO THE CLOUD

HYBRID IT MONITORING AND MANAGEMENT TOOLS AND METRICS

With many of today’s on-premises monitoring and management tools and metrics, IT professionals often have a disparate view of their environments—compute, storage, network, virtualization and application layers. The multitude of different tools and processes across multiple platforms are difficult to manage, let alone scale.

For hybrid IT environments, a complete view of the on-premises data center and the cloud is even more critical. IT professionals can build a tool to aggregate, consolidate and visualize key performance and events metrics, and glean the key points from the data to discern the most valuable pieces of information from their application stacks. Alternatively, they can leverage a monitoring vendor that has an [end to end solution](#) that can provide the single point of truth for their IT needs from their premises to their clouds.

Remember, companies of all sizes struggle with the challenges of successfully implementing and sustaining an efficient and effective hybrid IT ecosystem. Any company adverse to change will find process of simplifying their monitoring and managing tools and metrics challenging, but it’s a worthwhile and necessary endeavor. It greatly helps to have DevOps principles ingrained into the culture, since change management and rapid pivoting are common core tenets.



Although challenging, simplification is worthwhile and necessary.

“...monitoring as a discipline will continue to be the most important and seamless skill IT professionals need because of its ability to transcend all environments.”

Overall, whether an environment is on-premises only, cloud only, or a hybrid IT environment, monitoring as a discipline will continue to be the most important and seamless skill IT professionals need because of its ability to transcend all environments. Under the monitoring umbrella is what we call the DART framework: discovery, alerting, remediation and troubleshooting. Each of these skills are not only applicable in an on-premises only environment, but are even more crucial when the cloud is involved. Plus, they will aid an IT professional's transition to the hybrid IT model.



DART Framework

While service-oriented architectures, automation and hybrid IT monitoring and management tools and metrics may be the top three skills needed to properly manage hybrid IT environments, they're certainly not the only three needed. In the next and final chapter in the eBook, we'll explore three more important hybrid IT skills, rounding out the top six identified by our survey.



CHAPTER 3

SKILLS FOR HYBRID IT SUCCESS (PART 2)

SKILLS FOR HYBRID IT SUCCESS (PART 2)

“More companies are making the journey to the cloud than ever before.”

In the last chapter, we started to explore top skills necessary to successfully manage hybrid IT environments, taking a deep dive into the top three skills identified—service-oriented architectures, automation and hybrid IT monitoring and management tools and metrics. To round out the top six skills IT professionals who responded to the survey say are the most needed to increase confidence in managing hybrid IT environments, here in this final chapter we explore:



VENDOR MANAGEMENT



APPLICATION MIGRATION



DISTRIBUTED ARCHITECTURES

“As contracts become more nuanced, IT professionals must improve upon the following trifecta: business savvy for contract negotiation, technical expertise to understand and use the available cloud services, and project management.”

HYBRID IT: THE JOURNEY INTO THE CLOUD

VENDOR MANAGEMENT

Vendor management in a hybrid IT environment can be defined more specifically as cloud service provider management, and this can range from no additional management—in other words, simply providing a credit card number—to a using a cloud management platform or a cloud services broker to act as the marketplace maker. Vendor management is two-fold, as IT professionals will be required to manage the technology aspect of cloud environments, as well as managing the business side of cloud service provider terms and conditions as well as different pricing models that change over time. Let's just say that this will give them more opportunities to expand their careers and roles.



As contracts become more nuanced, new skills will be needed.

Most IT professionals are not currently required to play a role in business dealings that include legalese and pricing terms, but as the contracts become more nuanced, IT professionals must improve upon the following trifecta: business savvy for contract negotiation, technical expertise to understand and use the available cloud services, and project management. These will all require the ability to effectively manage budgets, dissect terms and conditions and understand the ins and outs of service-level agreements.

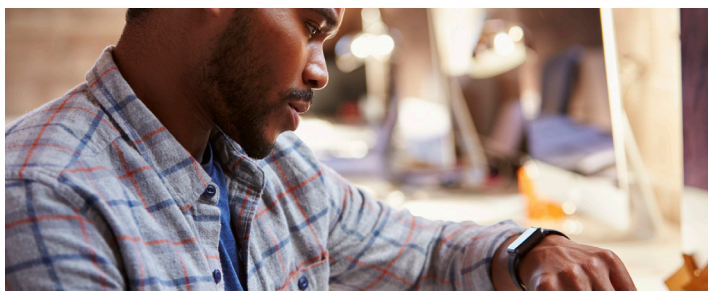
Vendor management is of utmost importance as IT professionals move from strictly consuming vendor services to having to manage them as well. There are a multitude of consumption models and without a keen sense of these models, budgets can easily be overrun.

“With the cloud service provider migration tools available to IT professionals today, a single application can either be built in the cloud or can be migrated in a fraction of the time it used to take.”

HYBRID IT: THE JOURNEY INTO THE CLOUD APPLICATION MIGRATION

Application migration to the cloud can be difficult and time-consuming, with it not uncommon for it to take many weeks for a single application. However, companies such as IBM®, Microsoft® and Amazon® have begun making it much easier to migrate applications to the cloud.

Today, Amazon Web Services® (AWS®) and Microsoft® Azure™ offer a full range of services that essentially allow customers to migrate applications to the cloud. With the cloud service provider migration tools available to IT professionals today, a single application can either be built in the cloud or can be migrated in a fraction of the time it used to take.



Cloud service provider migration tools save a significant amount of time.

Of course, application migration is really just step one—the application management required following initial migration is arguably even more important. IT professionals should apply the core competencies they would employ in a traditional IT environment. These core competencies include monitoring as a discipline, which we discussed in part two, as well as having a firm understanding of the application's key events and performance metrics. Troubleshooting and remediation are also key, because there's only two guarantees in IT—things will change and things will fail. Therefore, having backup and disaster recovery plans in place can help ensure the business continuity.

“Working with distributed architectures will require working across multiple cloud service providers across multiple geographic locations.”

HYBRID IT: THE JOURNEY INTO THE CLOUD

DISTRIBUTED ARCHITECTURES

Working with distributed architectures started out in high performance compute clusters as an on-premises means to get more work done. Working with distributed architectures will require working across multiple cloud service providers across multiple geographic locations. It's important to remember that these architectures abstract the underlying resources, so IT professionals will need to translate speeds and feeds into acceptable quality of service (QoS) for their end users.



Working across multiple geographic locations will be required.

For IT professionals seeking to adapt their skillsets to succeed in hybrid IT environments, they will need to become accustomed to cloud service providers doing the remediation in case of outages or other performance issues, and, as the ultimate failover, having multiple providers (see above). The control and responsibility for maintaining the distributed architecture will shift beyond IT's purview, but in their place will be choice, scale, agility and availability of services to build distributed architectures.

We are in the midst of a once-in-a-decade shift where business technology is evolving from traditional on-premises IT to a hybrid IT strategy that leverages internal and external IT services driven by the efficiency and effectiveness of the cloud. At the center of this shift is the need to ensure always-on application performance—regardless of location.

Managing applications and other IT infrastructure in this new hybrid world requires IT professionals to be armed with a new or adapted set of skills, and the tools and resources that match them. Adding and mastering the six skills outlined in this series— service-oriented architectures, automation, hybrid IT monitoring and management tools and metrics, vendor management, application migration and distributed architectures—will go a long way to ensuring not only business success, but IT career longevity.

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Resources

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ADDITIONAL
SOLARWINDS
RESOURCES





WITH HYBRID IT
THE SKY IS THE LIMIT

