



HYBRID CLOUD 101:

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# A CRASH COURSE FOR EXECUTIVES

Hybrid cloud is all the buzz, but what you don't know could hurt your business. The key to true hybrid cloud success is not black and white. Read on to learn more about specific cloud application and usage scenarios.

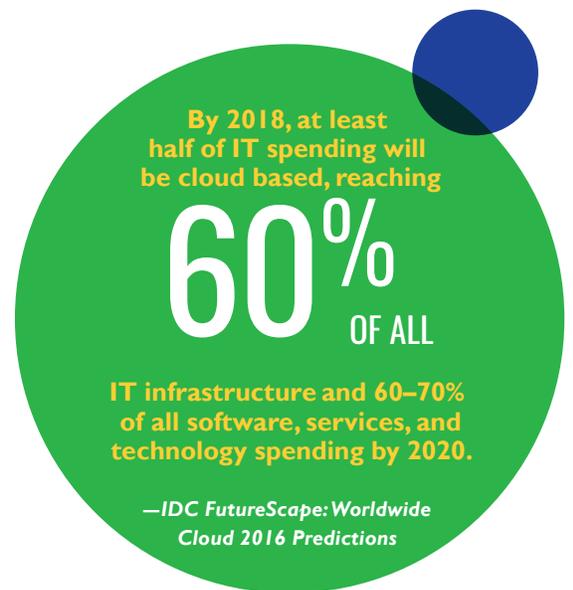


# The forecast calls for clouds.

Businesses large and small are increasingly turning to cloud computing to help them boost agility, improve cost structure and better utilize internal resources.

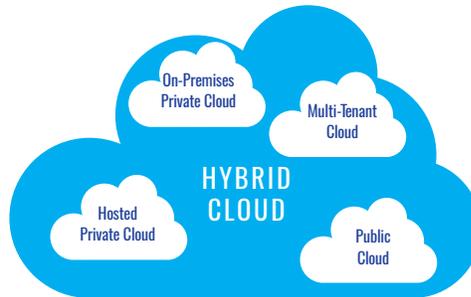
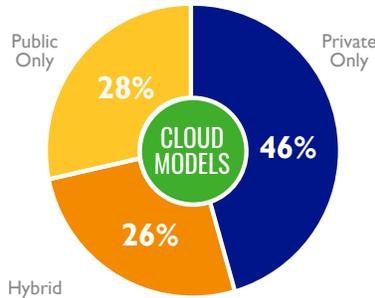
Companies continue to find a wide range of benefits in cloud computing, especially as they move from individual application migrations to overall systems architecture and construction. But as technology advances, the number of available options increases as well. According to IDC, *more than 80% of enterprise IT organizations will commit to a hybrid cloud architecture by 2017.*

In this ebook, we'll take a closer look at what analysts and cloud providers mean when they talk about "hybrid cloud." We'll also provide a framework to structure your thinking around clouds and to help you choose the right infrastructure for your organization and workloads.



# What is a hybrid cloud?

First of all, a hybrid cloud isn't really a cloud. Rather, it is a collection of clouds (and other infrastructure options) that are combined to create an infrastructure that is more responsive, more secure and more resilient. IT leaders and cloud service providers have several types of clouds to choose from when creating a hybrid infrastructure. In addition, on-premises and colocation resources still play a significant role for some workloads.



A hybrid cloud is a **COLLECTION** of clouds that are combined to create an infrastructure that is more responsive, more secure and more resilient.

Source: Trends in Cloud Computing, CompTia Research Report, September 2016

## 4 cloud varieties

Here's a quick definition of some of the terms you'll hear when discussing cloud types. But be forewarned: not everyone uses cloud terminology the same way: there is some overlap, and the meaning of terms can change. If in doubt, ask your service provider to clarify what they mean when they use any of this terminology.



**On-premises private clouds** – A dedicated cloud infrastructure that a company hosts at their privately-owned data center. Resources, such as data storage and applications, are dedicated to a single company and are owned by that company. Synonyms include: internal cloud, corporate cloud.



**Hosted private clouds** – Similar to a private cloud, except the resources are owned and operated by a cloud service provider who manages the dedicated infrastructure at their facility.



**Multi-tenant clouds** – A hosted cloud in which resources are shared by the customers served by the cloud service provider. This sharing of resources can create a lower cost structure while still providing the proper security precautions.



**Public clouds** – A hyperscaler cloud environment with shared resources, all available over the Internet.

# What does hybrid cloud mean to my business?

A hybrid cloud option lets you choose the right infrastructure for each workload. To make an informed decision, it is important to consider several factors such as the design of your applications, your data storage and access requirements, performance requirements, current infrastructure and security and compliance.

## Source:

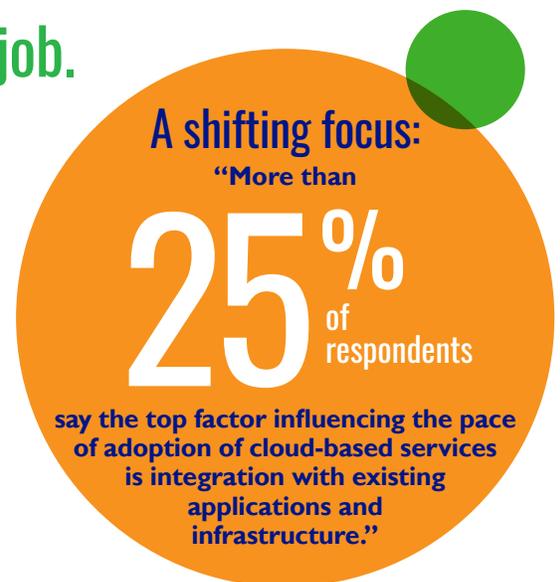
Smarter with Gartner  
February 18, 2015

*Most cloud decisions are not (and should not be) about completely shutting down data centers and moving everything to the cloud... Look at cloud decisions on a workload-by-workload basis, rather than taking an "all or nothing" approach.*

## Choose the right infrastructure for the job.

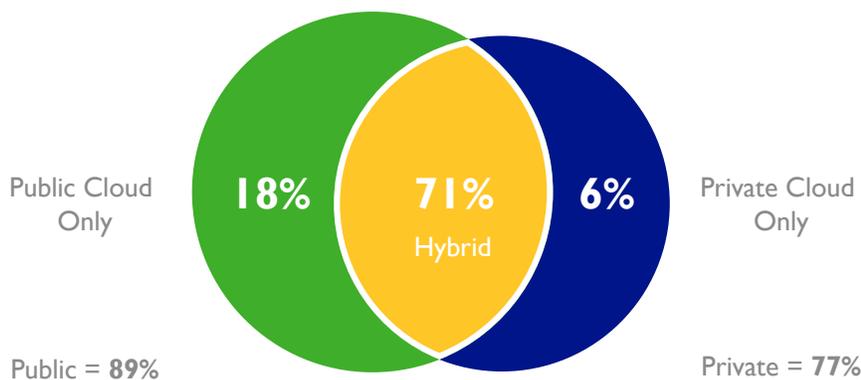
Contrary to what you might hear, the cloud is not right for every workload. At least not yet.

If you're in an area where internet connectivity is unreliable, you might opt for an on-premises data center. In addition, many legacy applications still perform better in an on-premises or colocation environment. We also often work with customers who have made a significant investment in on-site resources and, while eager to transition to the cloud, they prefer to utilize their existing investment. Hybrid clouds work particularly well for these organizations, as they can transition to the cloud as their hardware becomes obsolete or they need to expand capacity.



Source: Deloitte Growth Enterprise Services Report, August 2016

## 95% of Respondents Are Using Cloud



Source: RightScale 2016 State of the Cloud Report

# Consider the application, too.

When determining which cloud is right, it's important to consider application design. For example, many well-designed cloud applications decouple the data from the application, allowing you to run your app locally while storing data in the cloud – or vice versa. That's vital in this era of Big Data because it allows you to quickly scale resources to meet your data storage and processing requirements.

At TierPoint, we often run across cross-platform requirements with productivity applications: the organization needs mobility solutions for some users, but wants to have application available locally for others with only occasional mobile access. Microsoft Office 365 is probably the best example of an application designed to bridge the cloud and on-premises world.

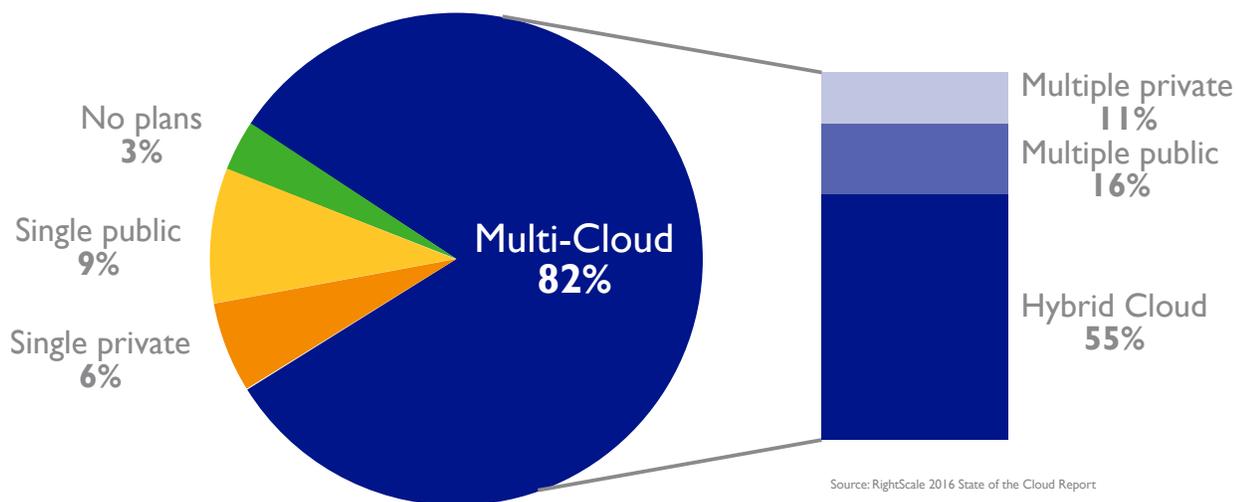
Many IT organizations struggle to

## RECRUIT AND RETAIN THE RIGHT RESOURCES

in-house to manage vital tasks.

## Enterprise Cloud Strategy

1000+ employees



### Enterprises hold firm on hybrid cloud strategy:

As this graphic indicates, percentage of enterprises that have a strategy to use multiple clouds held steady at 82 percent with 55 percent planning on hybrid. There was a slight increase in the number of enterprises planning for multiple public clouds (up from 13 percent to 16 percent) and a concurrent decrease in those planning for multiple private clouds (down from 14 percent to 11 percent).

## CASE STUDY

# Moving to the Hybrid Cloud 101

A major university invited TierPoint to discuss moving one of its on-premises data centers to a TierPoint data center. Once there, TierPoint advisors learned that this university managed approximately 4,500 separate websites that they needed to securely integrate to their back office applications. After bringing the decision-makers up to speed on hybrid cloud, the university awarded the deal to TierPoint. The back office applications would be housed in one of TierPoint's data centers with integration to their online web presence.



# Which cloud is best?

Each cloud type, as well as on-premises and colocation, has advantages and disadvantages. The charts that follow are by no means all-inclusive, but they should give you a feel for some of the major considerations.

## Pros and Cons: on-premises private clouds

Let's start with on-premises private clouds - the term that refers to a cloud infrastructure that is dedicated and is in a data center owned by that company. The resources (data storage, applications) are dedicated to that business.

### On-premises

#### PROS

- Utilizes existing resources.
- Fewer connectivity concerns. (Important in areas where Internet connections are slow or unreliable.)

#### CONS

- Most expensive option.
- You remain responsible for facilities (e.g., HVAC, physical security).
- Infrastructure and data security is 100% your responsibility.
- More internal skills required.
- Takes longer to scale up; harder to scale down.
- Loses CapEx-to-OpEx conversion benefits.

#### Source:

451 Research, Voice of the Enterprise: Cloud Transformation Survey of IT Buyers

*“Among the various types of cloud deployment models, enterprises are most likely to use on-premises private cloud and software as a service (SaaS), each accounting for 14% of all applications. Respondents indicate usage of on-premises private cloud will remain flat while SaaS is expected to grow sharply to nearly one-quarter (23%) of all enterprise workloads by mid-2018.”*

## Pros and Cons: colocation

Colocation is one of the primary services TierPoint offers. It's similar to a hosted private cloud and, in fact, is sometimes used synonymously. In this ebook, we're differentiating the two based on who owns and manages the infrastructure. When you collocate in one of TierPoint's data centers, you own the systems infrastructure while we own the facilities.

*Note: Advantages listed are based on TierPoint's services. Not all services providers offer the same level of support.*

### PROS

- **No need to worry about facilities management.**
- **High availability.**
- **24X7 access to IT support staff.**
- **Easy to add managed services as needed (e.g., OS and application management).**
- **High-security environment (e.g., entry authentication, cameras, motion detectors, 24X7 staffing).**

### CONS

- **Requires an investment in hardware.**
- **Most cyber-security remains your responsibility.**

## Pros and Cons: private, hosted clouds

In the past, private, hosted clouds were extremely popular. They provided reliable access to resources, controllable performance and a higher degree of perceived security. (No resources are shared.) At the same time, by handing off infrastructure ownership and management to a third party, the organization could ease the pressure on CapEx budgets and enjoy the latest hardware without having to worry about upgrade costs.

However, not all cloud services providers are equal. And it's important to ask the right questions and understand the full service agreement before signing on with a provider. The advantages listed below are based on TierPoint's offerings.

### PROS

- **CapEx becomes OpEx.**
- **No need to worry about facilities management.**
- **Hardware kept fresh.**
- **Predictable performance. No resources are shared.**
- **More easily scalable than a private cloud.**
- **Tightly-managed physical security and facility access control.**
- **Network security handled by provider.**
- **Even easier to add managed services as needed.**
- **Scalable: up and down.**

### CONS

- **Security dependent on provider's capabilities.**
- **Applications and application/data security still your responsibility unless managed.**

## Pros and Cons: multi-tenant clouds

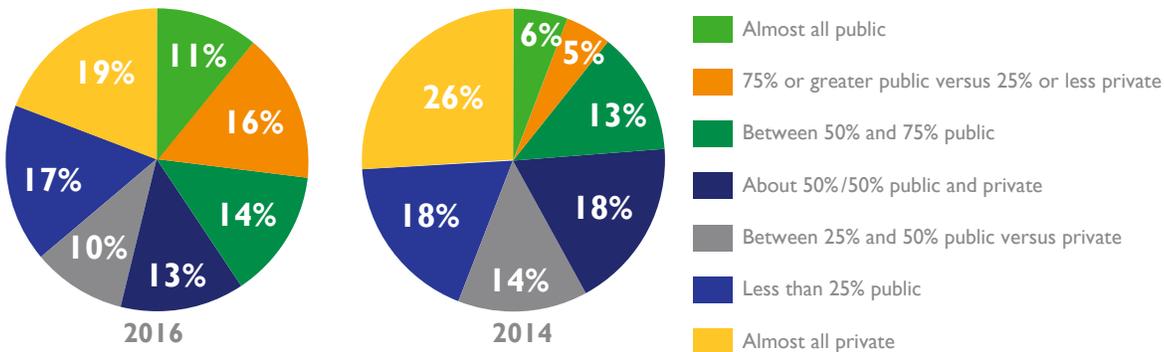
Multi-tenant clouds are virtually identical to private hosted clouds except that resources are shared by multiple organizations. Contrary to popular perception, with a reputable service provider, sharing resources does not increase your security risk. It is important for you to address this concern with your service provider to better understand the exact security measures and protocols they have in place. However, depending on the service provider's capacity, performance can suffer if you are sharing network and compute resources with an organization that has seasonal demand.

Also, while both private, hosted clouds and multi-tenant clouds are scalable, it can sometimes take a longer amount of time to scale up, since your provider needs to allocate resources. If your resource requirements are unpredictable, one way to increase your scalability is to augment your private and multi-tenant clouds with a public cloud.

PROS	CONS
<ul style="list-style-type: none"> <li>• High-performance infrastructure components.</li> <li>• Complete access and control via custom developed portal.</li> <li>• Enterprise class storage.</li> <li>• Pre-configured virtual machine and custom server templates.</li> <li>• Geographically diverse infrastructure connected for ultimate redundancy.</li> </ul>	<ul style="list-style-type: none"> <li>• Not all multi-tenant clouds are regulatory compliant.</li> <li>• Could have potential for a noisy neighbor scenario.</li> <li>• The requirement for extreme performance may not be able to be achieved without a hybrid scenario.</li> <li>• SLA guarantees must be in place; and fully understood by the customer when comparing multi-tenant options.</li> </ul>

## Public vs. Private Workloads

Approximately what is the ratio of total cloud-based workloads running on public vs. private infrastructure?



Base: 160 respondents who have implemented a private cloud or support a hybrid cloud infrastructure in 2016, and 112 respondents using, piloting, or developing a hybrid cloud in 2014

Data: UBM Hybrid Cloud Survey of 383 business technology professionals, May 2014

Data: UBM State of Cloud Computing Survey of 307 technology professionals at organizations that utilize or plan to use cloud computing, October 2016

Source: UBM State of Cloud Computing Survey, October 2016

## Pros and Cons: public clouds

There are numerous public clouds available, however, TierPoint only recommends clouds from the two primary cloud providers: Amazon and Microsoft. When choosing a public cloud, you might never see your provider's data center in person. You're putting a lot of trust in them to keep the infrastructure secure and ensure you don't have to battle other customers for resources. Microsoft and Amazon are up front about their security practices and privacy policies. Both are top notch. They also have the wherewithal and commitment to continue expanding their data center resources and ensuring high-performance availability.

### PROS

- Leverages the security capabilities of big name providers, e.g., Microsoft and Amazon.
- Unlimited amount of resources available to the client for increased compute requirements.
- Direct connect available at an extra charge.
- Most scalable option – almost instantaneous.
- Generally lowest cost (however if not architected properly, or resources are underutilized, can still be costly).
- CapEx becomes OpEx.
- No need to worry about facilities management.
- Fully staffed advanced security teams – the first to know about emerging threats.
- Hardware kept fresh.
- Easy to add managed services.

### CONS

- Not all applications are engineered for the public cloud.
- Often costs extra to have data stored in a specific geo, e.g., in-country.
- Not much hand-holding from providers.
- Applications and application/data security still your responsibility unless managed.

# Hybrid IT: Thinking beyond the cloud

IT organizations are faced with an ongoing shortage of skilled talent, especially in cyber security. In a recent survey, 82% of tech executives said they lacked the necessary skills internally to keep their systems and data secure. But the shortage extends into other areas of IT as well; 62% of respondents to another survey said that the talent shortage would prevent them from keeping pace with technology changes. That's up ten points from the 2015 survey.

**Source:** RightScale 2016  
State of the Cloud Report

*32% of tech executives cited 'lack of resources/expertise' as a primary cloud challenge in 2016.*

## There are several factors behind the current shortage in IT talent.

### 1 Retiring workforce

Technology is usually considered the purview of the young, but the first generation of technology workers is quickly approaching retirement age. This can be a problem if you're still running legacy applications or infrastructure.

### 2 Workforce mobility

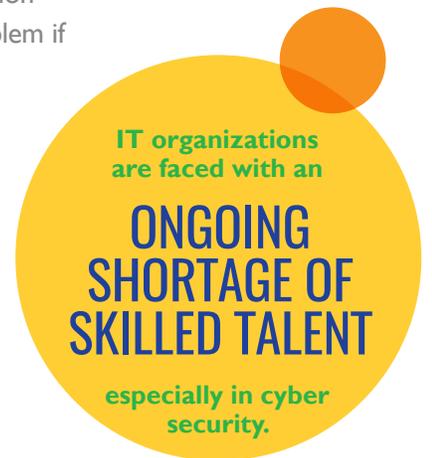
Entry- and mid-level employees don't seem to talk much about climbing the corporate ladder anymore. Instead, job hopping has become the fastest way to a better career (however they define it), especially for younger workers.

### 3 Pace of change

This includes not only the increasing pace of technological advancement, but also the fast-paced evolution of cyber threats. Staffing an IT department is a never-ending exercise in hiring, training and retraining personnel.

### 4 Cost of talent

Last but not least, IT talent is becoming more expensive, with the average cyber-security salary well over six figures. In a 2016 survey, Minneapolis topped the list at an average of \$127,757.



# Addressing the skills shortage.

In the same way that outsourcing some of your infrastructure demands to the cloud can ease the burden on existing resources, outsourcing some of your IT to third party service providers can help fill talent gaps. Managed Service providers like TierPoint can supplement your existing talent and offer services across the hybrid cloud. Here are some of our most popular services:

**Managed Azure**

**Disaster Recovery & Business Continuity**

**Managed Security & Compliance**

**Operating System and Application Management**

**Managed Email**

**Help Desk Services**

Most clients we work with focus on one or two of their most important priorities where they know they have a few in skill gaps. As you might imagine, Security & Compliance services are very popular as are Application Management and Managed Azure. Every IT organization is unique.



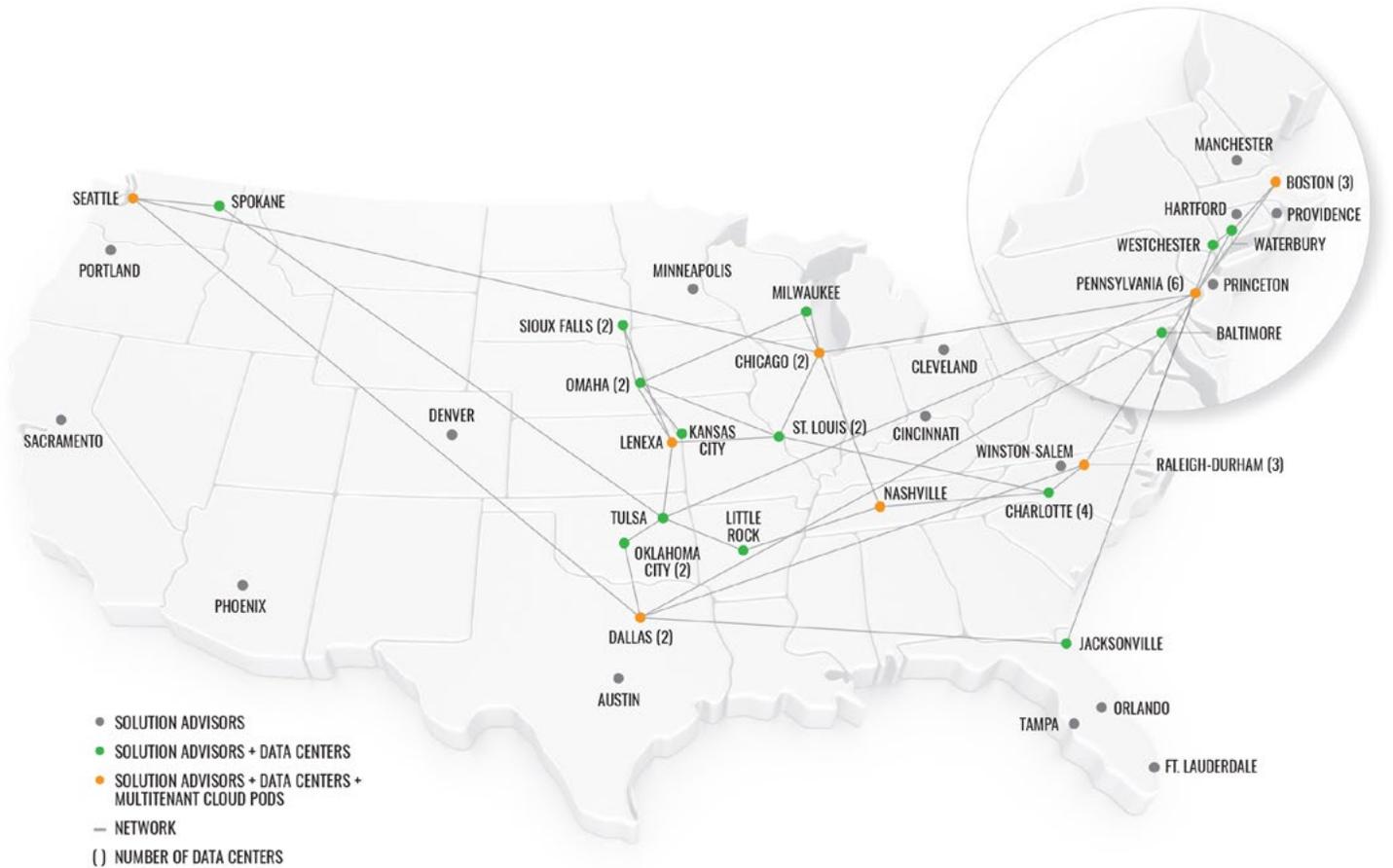
## CASE STUDY

# Building cloud skills

An association with thousands of members was working with a cloud provider with a proprietary platform that was unable to connect to the public cloud or the association's on-premises data and applications. They first called in an outside consultant who suggested they move everything to Amazon Web Services (AWS). However, the association decided they weren't ready: some of their applications weren't architected for the cloud, and they didn't have the internal skill set to deploy and manage their resources in AWS. They chose TierPoint because they felt we could help them bridge those gaps and transition gradually. They've started with the majority of their applications deployed either on-site or in a TierPoint data center, using AWS as a test/dev environment for application development, with the goal of being 100% in the public cloud within the next five years.



Source: Interop ITX State of the Cloud Report



# Thank you!

All of us at TierPoint would like to thank you for downloading this ebook, and we wish you success in your journey to the cloud.

<sup>1</sup> *Cyber-Security Skills Shortage Leaves Companies Vulnerable*, InformationWeek, August 1, 2016.  
<sup>2</sup> *10 Hiring Challenges Confronting CIOs*, InformationWeek, July 28, 2016.  
<sup>3</sup> *RightScale 2016 State of the Cloud Report*.  
<sup>4</sup> *Skills Shortage Means Salaries Soar as US Cities Vie for Cybersecurity Talent*, Forbes, August 30, 2016.

## LEARN MORE

Talk to one of our IT advisors by calling **844.267.3687** or reaching out to us by email: [sales@tierpoint.com](mailto:sales@tierpoint.com).



[tierpoint.com](http://tierpoint.com)

## ABOUT TIERPOINT

A leading national provider of hybrid IT solutions, TierPoint helps organizations drive performance and manage risk. No U.S. provider comes close to matching TierPoint's unique combination of 5,000-plus clients; 40 data centers and 8 multi-tenant cloud pods coast to coast; and a comprehensive portfolio of cloud solutions, colocation, disaster recovery, security and other managed IT services. With white-glove customer service, TierPoint professionals customize and manage agile solutions that address each client's unique needs.