White Paper

Cloud Trends in 2017

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IDC OPINION

Enterprise IT spending is currently dominated by the migration to digital platforms. The key trends impacting this transformation are the adoption of cloud, facilitating secure connectivity, and managing the tsunami of data generated by mobile and connected devices. According to IDC's 2016 *CloudView Survey,* over the next few years CIOs have tremendous challenges ahead. We are still in the early stages of the transition to digital platforms. Legacy IT spending dominated by hardware-centric and point-to-point static networking models will give way to dynamic virtualized infrastructure, with the cloud and hybrid IT models central to real-time dynamic networking. Most global multinational corporations (MNCs) now rely on multiple IT suppliers for global networking coverage and IT services, a situation that will be even more acute with the transition to cloud platforms. The advent of cloud computing and mobility as well as the Internet of Things presages a larger dependence on a diverse range of infrastructure and service providers.

Enterprises will increasingly leverage multiple IaaS, PaaS, and SaaS providers to meet the full range of IT and application requirements. One of the most significant challenges for CIOs will be the management of multiple disparate cloud computing and network service providers. According to IDC's recent *Cloud Connection Survey,* enterprises in North America and Western Europe will increase the number of cloud service providers they leverage for IaaS, SaaS, and PaaS from 9 in 2015 to 13 in 2017.

IDC predicts that the scale up of digital migration strategies will drive more than half of enterprise IT spending within the next 24 months, rising to 60% by 2020."Cloud first" will become the new mantra for enterprise IT. This is because virtually none of the other 3rd Platform technologies or major digital transformation (DX) initiatives are possible in scaled-up implementations without the cloud as the foundation. For example, cloud data storage will grow by 30% over the next 24 months as more workloads migrate to cloud environments (see Figure 1).

FIGURE 1

Cloud Data Storage Trends

Q.   *What percentage of your organization's data is in the cloud?*
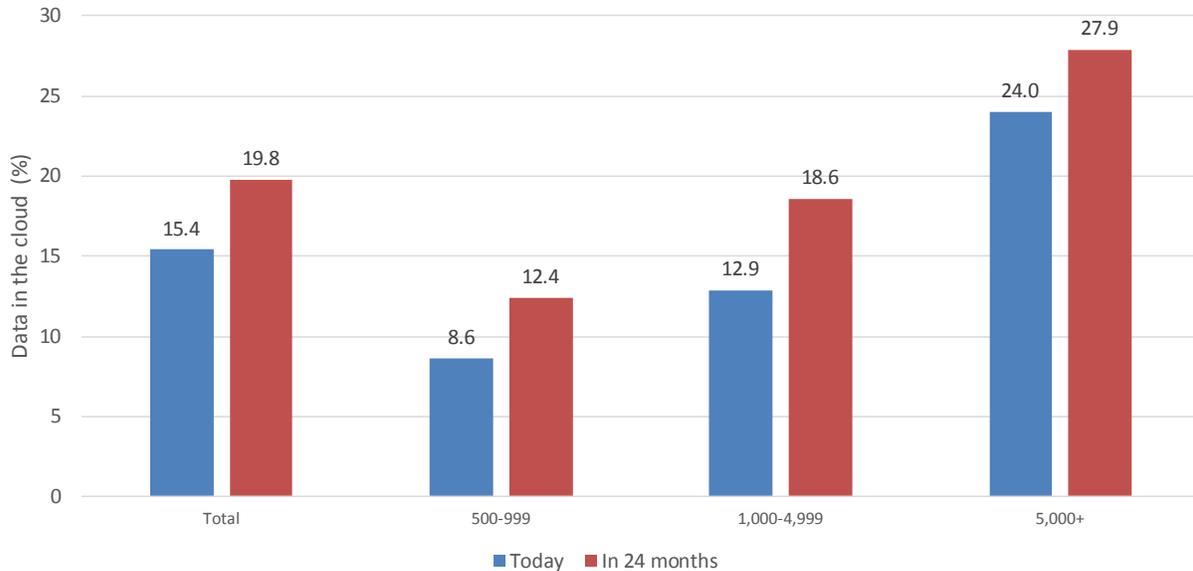
n = 234

Base = all respondents

Notes:

Data is not weighted.

Source: IDC's *Digital Data Consumption and Storage in the Enterprise Survey,* October 2016

Enterprise IT rationalization initiatives undertaken during the past decade or so have resulted in business applications being consolidated in increasingly centralized locations – both public and private clouds. According to IDC's 2016 *CloudView Survey,* nearly 75% of U.S. businesses polled currently use public cloud services for production workloads and applications. In addition, 80% of U.S. companies regularly using cloud services (i.e., for more than a handful of applications/workloads) report having two or more major cloud providers. Cloud adoption is rapidly changing the corporate IT landscape. U.S. companies currently allocate approximately 53% of their total IT spending to in-house IT (enterprise datacenters) and traditional (noncloud) IT outsourcing. By 2020, the situation reverses, with public and private cloud (onsite and hosted) accounting for the majority (54%) of total enterprise IT spending. IDC predicts that by 2020, enterprise spending on cloud services, the hardware and software to support cloud services, and the services for implementing and managing cloud services will exceed $500 billion, more than three times what it is today.

IDC predicts that by 2018, more than 50% of large enterprises – and more than 80% of enterprises with advanced DX strategies – will create and/or partner with industry cloud platforms to scale up their digital supply and distribution networks. This fundamental shift also means that enterprises will require secure high-bandwidth and reliable access to information stored on private and offsite environments.

The management of vast amounts information about an organization's products and customer requirements will be essential for IT infrastructure managers.

Large MNCs increasingly source more IT capability from cloud software services and less from conventional licensed software deployments. IDC data indicates that these organizations are very interested in shifting dollars toward SaaS/public cloud-type deployments. With the growing use of multiple cloud providers, enterprises will also require new capabilities (automated provisioning, hybrid management capability, autonomous VM management capability, etc.) as they seek to orchestrate resources among on-premise facilities, third party-managed private clouds, and public clouds. This combination of onsite resources with hosted private cloud resources and SaaS/public cloud services in a hybrid environment is a major growth trend (see Figure 2).

FIGURE 2

Shift in Spending to Provider Site and Cloud-Based Models

Q.   How will IT budgets change over time?
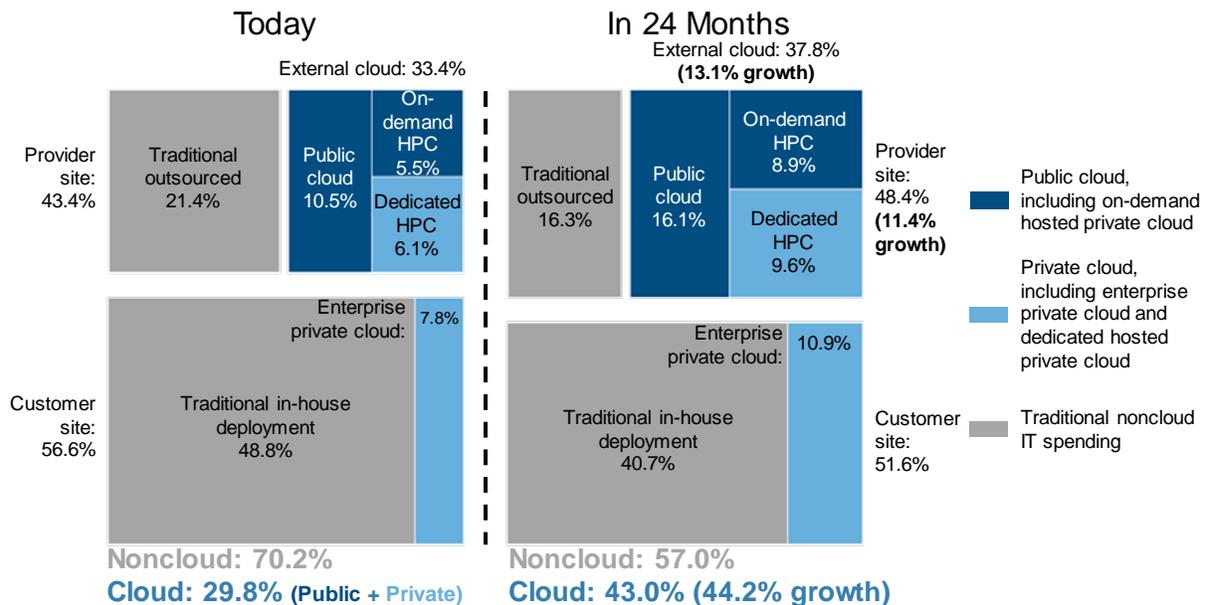
n = 11,350 for 2016 data, n = 19,080 for 2014 data

Source: IDC's *CloudView Surveys,* December 2014 and January 2016

IoT, Connected Devices, and the Cloud

IDC predicts that the worldwide Internet of Things (IoT) market spend will grow from $692.6 billion in 2015 to $1.46 trillion in 2020 at a compound annual growth rate (CAGR) of 16.1%. The installed base of IoT endpoints will grow from 12.1 billion in 2015 to more than 30 billion in 2020. A key component of IoT will be the connectivity and management of IoT devices and the vast amount of data that will be generated and analyzed by these devices. The combination of IoT connected devices and cloud computing platforms will stimulate new and innovative methods for managing multiple data streams.

Monitoring and processing this large amount of data will require massive storage and analytical capabilities, which can be best managed in a cloud environment. In addition, the flexibility of cloud computing will help enterprises migrate from static analysis of data to real-time intelligent monitoring and utilization of resources, leveraging cognitive computing capabilities. The flexibility of managed cloud platforms will offer significant opportunities in this segment.

Cognitive Computing

This is another key driver for growth of cloud-based services. Recent IDC research has indicated that buyer organizations are ratcheting up their intentions to implement cognitive computing solutions into their application portfolios. As part of IDC's 2016 *Application Services Survey,* IDC found that more than 40% of organizations rate implementing custom cognitive applications into their application portfolio as a "high" or "very high" priority today, with more than 50% rating the activity a "high" or "very high" priority in the next five years.

Corporate objectives linked to enhancing customer relationships and speeding up operational efficiency through enhanced decision making are primary drivers for why organizations are making cognitive computing a higher priority. However, enterprises will leverage third-party computing platforms and service provider tools to harness the computing resources that drive cognitive computing applications. This will be another major driver for growth of cloud-based workloads.

Digital Supply Chain Impact on Cloud Consumption

The notion of digital disruption is a provocative one that IDC has been championing for the past few years following the introduction of our 3rd Platform concept in 2013 and the prediction that by 2018, "one-third of all industry leaders will be disrupted by digitally enabled competitors." When one considers that 52% of the Fortune 500 companies listed in 2000 are no longer in business, this prediction strikes a rather ominous note.

Supply chain management (SCM) is evolving as companies migrate to digital and cloud platforms. Organizations are increasingly taking advantage of cloud solutions for specific activities such as cloud orchestration among various cloud resources. The need for network integration and disaster continuity, as well as back-office support to facilitate seamless transportation and logistics management, is a key element of SaaS-based SCM applications. Such access to powerful databases and analytics and cloud-based product life-cycle management (PLM) solutions will be an essential aspect of SCM in the future.

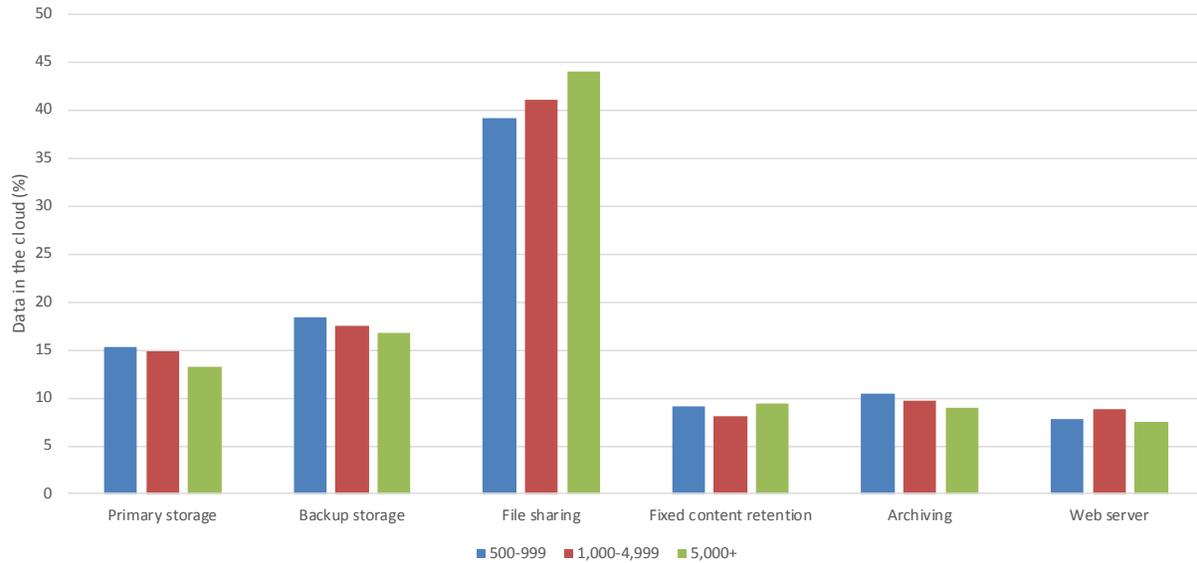## Enterprise Cloud Adoption Trends

The hosting infrastructure services (HIS) market is evolving as cloud-based IT infrastructure models gain momentum. As hosting and cloud infrastructure services are converging, HIS incorporate IaaS into increasingly hybrid IT environments. In response, "traditional" hosting providers are incorporating cloud architecture principles (automation, scaling, and flexibility) and service offerings into their business strategies to support increasingly hybrid IT environments. However, organizations will make IT infrastructure deployment choices on a case-by-case basis, incorporating factors such as workload/application characteristics, data security requirements, compliance mandates, performance specifications, and contracting preferences. Service providers such as AT&T are making the strategic investments needed to "cloudify" their business models (e.g., automation, orchestration, APIs, enhanced self-service capabilities, and service delivery partnerships). These providers will be well positioned to capitalize on the continued demand fueled by organizations' embrace of hybrid IT models that combine managed hosting and colocation with public and private cloud. Collaboration within the

enterprise and with external partners will also drive up adoption of cloud platforms including cloud storage. Figure 3 shows the demand for cloud-based collaboration solutions.

FIGURE 3

Collaboration Drives Cloud Storage

Q.   For your organization's storage that is in the cloud, approximately what percentage is:

n = 146

Base = all respondents

Notes:

Data is not weighted.

Source: IDC's *Digital Data Consumption and Storage in the Enterprise Survey,* October 2016

Public Cloud Adoption

Public clouds are based on the standard cloud computing model in which a service provider makes resources such as compute, applications, and storage available to the general public over the internet. Public cloud services may be free or offered on a pay-per-usage model.

Traditional Hosting

This is defined by IDC as shared web hosting in a multitenant environment in which multiple platforms are typically housed on the same server. Dedicated web hosting is when an entire server is leased and reserved for a single website. In addition, virtual private server hosting is a hybrid of the first two options in which a website is hosted on its own virtual server so that it won't be affected by the websites of other customers. Traditional hosting infrastructure services are morphing into hybrid cloud hosting. Service providers are making strategic investments in transformation (automation, orchestration, APIs, enhanced self-service, and ecosystems) to help companies migrate and leverage

hybrid cloud hosting features. Hybrid cloud hosting will take multiple forms: private network-driven onsite/offsite federation, interoperable cloud management stacks, and integrated service delivery platforms for both managed hosting and cloud services.

Private Hosting Services

Private cloud computing is an environment in which storage capabilities that facilitate IT services are provisioned over servers for the dedicated use of a single organization. A private cloud is usually managed via internal resources. A virtual private cloud is hosted by a third-party organization and likewise has IT servers dedicated to a single organization.

THE FUTURE OF ENTERPRISE CLOUD HOSTING

IDC predicts that infrastructure services delivered via the cloud model will become an embedded feature of cloud engagements as service providers incorporate automation, orchestration, and self-service functionality into their operations to reduce delivery costs, improve provisioning speeds, and support flexible billing/consumption options. However, enterprises should make "cloud versus hosting" decisions on a workload-by-workload basis, depending on workload characteristics, data security requirements, and regulatory/compliance mandates. In addition, while enterprise and cloud-native development operations (DevOps) will likely gravitate toward "pure" cloud infrastructure, IT operations units looking to offload configuration and implementation functions may not want to take on the deployment tasks that come with self-service/DIY cloud infrastructure.

Service providers including hosting and IT outsourcing providers can offer hybrid IT solution portfolios (particularly dedicated hosted private cloud services) as enterprise-oriented managed alternatives to DIY multitenant, hyperscale IaaS offerings. As part of this differentiation effort, new models will emerge, including cloud brokerage/multicloud capabilities, technology platform choice and breadth, orchestration and APIs, and cloud connectivity options.

Cloud adoption trends are shown in Figure 4.

FIGURE 4

Cloud Adoption Trends, 2014 and 2016

Q.   What does the adoption trend of cloud look like?
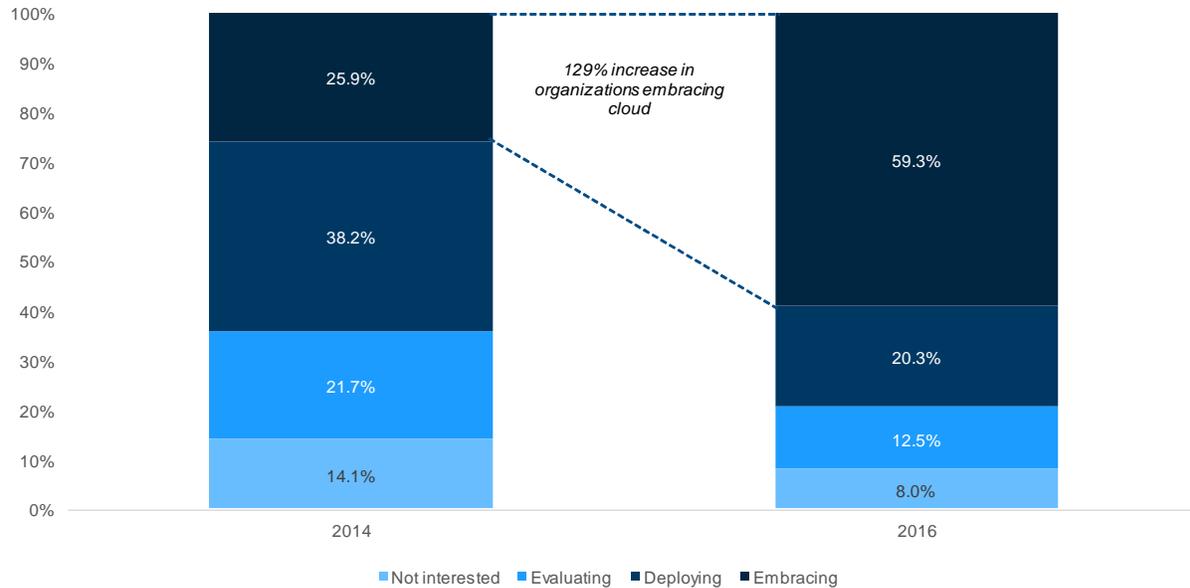
n = 11,350 for 2016 data, n = 19,080 for 2014 data

Notes:

Data is weighted by GDP and company size.

For details, see *CloudView 2016: Customer Budgets Shift to the Cloud* (IDC #US40852416, June 2016).

Source: IDC's *CloudView Surveys,* December 2014 and January 2016

The Importance of Secure Cloud Connectivity and Cloud Orchestration

As mission-critical business processes and applications move to the cloud, they become more network dependent. As a result, highly reliable, secure, and performance-optimized dedicated connectivity becomes an increasingly important part of the enterprise cloud IT mix. While the public internet has the advantage of ubiquity, public internet-based access methods such as IPsec VPNs come with latency, nondeterministic routing, potential exposure to DDoS attacks and malware, limited throughput, and inconsistent performance.

Private cloud connectivity such as the AT&T NetBond for Cloud service facilitates the seamless integration of cloud resources over secure private/dedicated networks including point-to-multipoint enterprise WANs (MPLS/IP- and Ethernet-based VPNs) and point-to-point links such as optical wavelengths and Ethernet-based private lines. Private connections between in-house enterprise datacenters or IT infrastructure colocated in third-party datacenters and public clouds such as Amazon Web Services (AWS), Microsoft Azure, and Salesforce ensure consistent, optimized performance; provide security through physical isolation; and allow enterprises to implement additional performance- and security-enhancing technologies such as unified threat management and application prioritization/acceleration.

However, dedicated private access is only one piece of the puzzle. The other piece involves interconnection agreements between the public clouds and network service providers such as AT&T or cloud exchange providers such as Equinix. The network providers establish interconnection service nodes at the cloud providers' "meet me" locations (often housed in cloud exchange providers' datacenters) to handle the terminations from the customer location to the public cloud provider. Depending on the network service provider used, private cloud connectivity may be a pre-installed service that includes orchestration, automated provisioning, dynamic network scaling, access to multiple cloud providers, and/or some degree of integration with the provider's own network.

While premise-based solutions are still prevalent, cloud-based solutions are a rapidly growing requirement for enterprises. Figure 5 shows the demand for cloud-based storage solutions by company size.

FIGURE 5

Demand for Cloud Storage

Q.   You indicated your storage requirement will increase in the next 12 months. Please rank the storage options your organization will most likely consider for the expected growth in data (ranked 1).
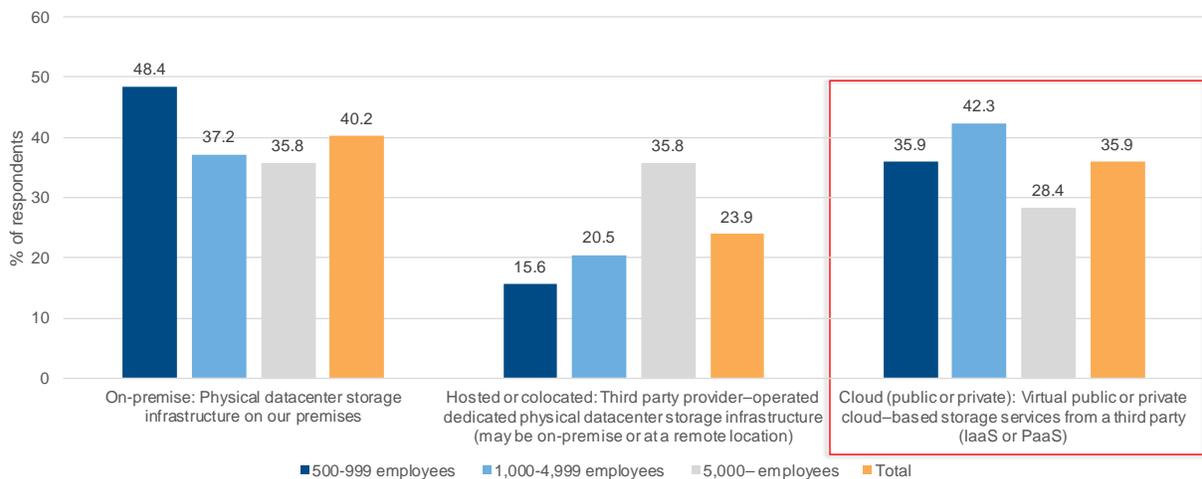
n = 209

Base = respondents who indicated the organization's storage requirements will increase in the next 12 months

Notes:

Data is not weighted.

Source: IDC's *Digital Data Consumption and Storage in the Enterprise Survey,* October 2016

Why AT&T NetBond for Cloud?AT&T is a leading provider of cloud connect solutions that facilitate the orchestration of public and private cloud resources in a secure networking environment. AT&T NetBond for Cloud leverages the MPLS network on the AT&T Virtual Private Network (VPN) to offer

seamless global access from anywhere using any device. This couples the security of the VPN with the flexibility and dynamic configuration capabilities of cloud-based services (see Figure 6).

FIGURE 6

AT&T NetBond with Hybrid Cloud
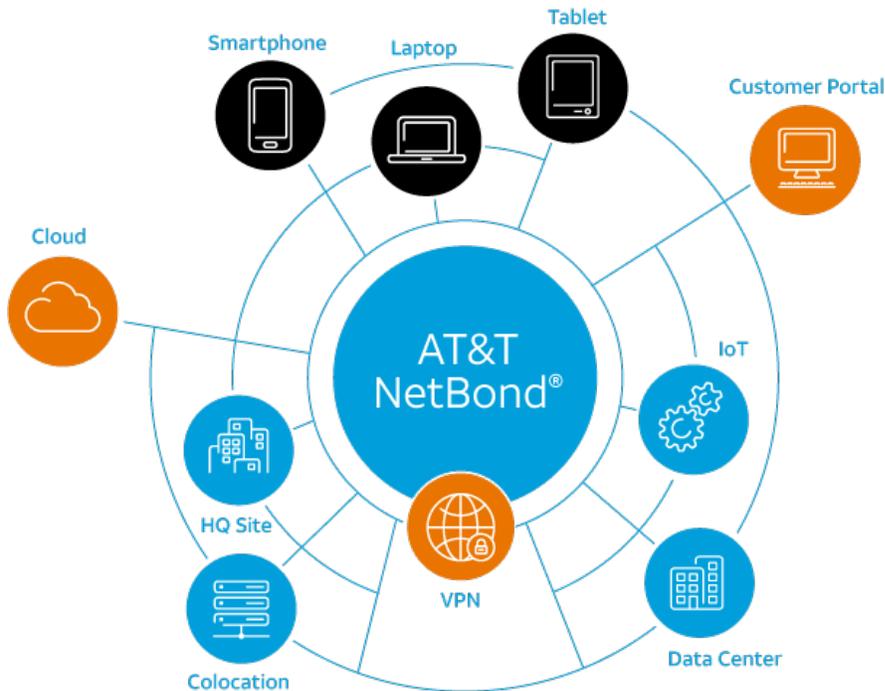
Source: AT&T, 2016

AT&T NetBond for Cloud service offers three major attributes that are crucial to secure cloud connectivity:

- **Enterprise-grade network security, performance, and availability.** The MPLS network on the AT&T VPN provides security via a virtual private tunnel that bypasses the public internet. AT&T NetBond for Cloud supports highly reliable performance, as well as low latency connections with advanced SDN capabilities for dynamic traffic management. And because it's on a private network, your traffic is safe from DDoS attacks and other cyber threats.

- **Scalability and on-demand capabilities.** AT&T NetBond for Cloud offers dynamic bandwidth flexibility in tandem with the cloud resources. AT&T's on-demand network capabilities provide enterprises the ability to scale up or scale down bandwidth in minutes rather than weeks or even months.

- **Self-service management portal.** The portal offers simplicity and ease of use to monitor performance and pricing. It also facilitates dynamic real-time configuration and provisioning of network and cloud resources.

AT&T NetBond for Cloud is also a platform that facilitates integration with other key AT&T services, including the following:

- **Hybrid cloud solutions.** AT&T offers a blended dual-cloud solution that includes on-premiseprivate cloud facilities with an AT&T-managed public cloud. It features SoftLayer computing services for dedicated or virtual server solutions that provide flexibility and scalability. Centralized deployment of security software, updates, and patches over the network and virtual desktop capabilities facilitate a global cloud-based computing platform accessible from almost any device, virtually anywhere.

- **AT&T colocation datacenters.** AT&T NetBond users can leverage over 300 datacenters in key global markets. These datacenters feature redundant power and connectivity. AT&T customers can connect to the cloud from their AT&T-hosted private colocation infrastructure for an integrated hybrid solution using MPLS on the AT&T VPN.

- **AT&T cloud storage.** AT&T NetBond for Cloud users can easily share and collaborate, back up, and restore files from virtually anywhere, anytime using their MPLS on the AT&T VPN. This includes unlimited capacity. Sync and share capabilities for collaboration and business continuity and disaster recovery are included.

- **AT&T Content Delivery Network (AT&T CDN).** AT&T provides content delivery optimization services to enhance customer experience of digital assets. AT&T offers dynamic site acceleration, enhanced performance for mobile devices, streaming services, and front-end content acceleration. AT&T CDN is based on a global network infrastructure that facilitates secure local content caching and optimization in over 100 countries. The platform features self-service tools to manage custom caching and analyze data usage and customer metrics.

- **AT&T Enterprise Recovery Services.** AT&T offers data recovery and business continuity services to provide timely recovery and implementation of business-critical processes in the event of a critical IT outage. This enterprise-grade platform features physical and virtual infrastructure that facilitates replicated data stored in highly secure, AT&T NetBond for Cloud-enabled recovery centers. AT&T offers predictable recovery time and recovery points.

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