Workload Placement Separates the Winners from the Losers in IT

The public cloud is not an elixir that solves all existing IT problems, nor does it address all future needs. As in any IT environment, there are risks to going "all in" with anything.

Workload Placement Separates the Winners from the Losers in IT

EXECUTIVE SUMMARY

Organizations with modernized IT infrastructure make more effective use of current and new technologies. They can move to an agile, flexible, and scalable infrastructure that better aligns with business requirements. Over the past decade, shifting IT infrastructure to off-premises hosting sites and into public cloud IaaS has been hailed as the preferred way to bring important elements of IT modernization to fruition. But too many businesses fall into the trap of concluding that a wholesale shift to public cloud infrastructure is the path to successful IT transformation (ITX). There's another more pragmatic approach.

The public cloud is not an elixir that solves all existing IT problems, nor does it address all future needs. As in any IT environment, there are risks to going "all in" with anything. IDC research shows leading organizations are opting for diversified (i.e., "hybrid") IT environments, mixing cloud and on-premises deployments to maximize agility, performance, and scalability. The most evolved IT leaders understand that moving their firm's entire IT infrastructure to the public cloud deprives them of the ability to customize their strategy and adapt to the accelerated rate of business change. These organizations — advanced in terms of people, process, and technology — operate "IT as a business" and are much more likely to use a hybrid infrastructure approach to support their need for flexibility.

The most evolved IT leaders understand that moving their firm's entire IT infrastructure to the public cloud deprives them of the ability to customize their strategy and adapt to the accelerated rate of business change.

» **Hybrid infrastructure is workload centric and business first.** Unlike an all-in public cloud strategy that can force the business into a one-size-fits-all infrastructure model, a hybrid approach enables infrastructure to be customized to fit the unique nature of the firm's business model. With this approach, workload placement is based on location and deployment capabilities (and limitations):

- Workloads that require *reliability* and *security* are placed on dedicated infrastructure running on-premises.

- Workload elements that require *infrastructure elasticity* are placed on shared, off-premises infrastructure (public cloud).

- With hybrid infrastructure, the IT organization can take a *blended approach* based on the changing nature of business models and application portfolios, including the requirement to deliver high-value, low-latency services in dispersed edge locations.

» **Hybrid infrastructure is multicloud and multipremises.** An automated cloud-based on-premises infrastructure underpins modern hybrid infrastructure. Well-designed hybrid deployments use modern computing environments (server infrastructure), automated management, and software-defined technologies. Organizations utilizing a hybrid approach, paired with strategic workload placement, experience tangible performance and business benefits. They are able to make dedicated private and public cloud investments that are rightsized and strategic for the long term.

By now, nearly all IT organizations have recognized the strategic value of using a shared public cloud infrastructure. IT leaders, however, differentiate themselves by recognizing the integral role that a modern on-premises compute infrastructure plays in delivering optimal digital experiences to their employees, partners, and customers.

> An automated cloud-based on-premises infrastructure underpins modern hybrid infrastructure.

Methodology

This IDC white paper is based on a survey (conducted in August 2018) of 650 IT professionals responsible for management, administration, and/or decision making for their firm as it pertains to on-premises and off-premises infrastructure investments, adoption, attitudes, and requirements. The surveyed firms are currently using hybrid infrastructure — a mix of on-premises and public cloud compute infrastructure — or are considering (i.e., evaluation/planning stages) adding public cloud to their existing on-premises resources.

To maintain consistency in the results, IDC provided each of the survey respondents with definitions of relevant terms and concepts.

Table of Contents

<div>

Three Approaches to Building a Modern IT Infrastructure:

1. 100% On-Premises Deployments

2. 100% Public Cloud Deployments

3. Hybrid Deployments

</div>

Situation Overview

Three Approaches to Building a Modern IT Infrastructure

There are three typical approaches for operating IT infrastructure: 100% on-premises, 100% public cloud, or hybrid. The 100% options represent two extremes and are not suited for companies seeking to gain the maximum benefit from their IT transformation.

IDC considers the hybrid approach to be the most pragmatic and effective in the short and long terms. For half of the respondent pool, hybrid is the preferred approach to manage evolving workload requirements.

1. 100% On-Premises Deployments

» **An established way to host IT infrastructure.** The 100% on-premises group is defined as companies that maintain an on-premises datacenter and implement their IT infrastructure as a private cloud or traditional IT.

- This deployment/operating model represents a small proportion of all IT organizations.

- For this group, IT automation is a "work in progress," with private cloud representing the next-generation IT environment:

  - On-premises infrastructure for these organizations includes branch/satellite locations, edge and Internet of Things (IoT) deployments, and traditional datacenters.

  - On-premises infrastructure is the workhorse for these organizations. It has been extended and optimized over many years for mission-critical business and IT workloads such as supply chain management, enterprise resource planning (ERP), and online transaction processing (OLTP). On-premises infrastructure is seen by the IT organization as secure; when run well, this infrastructure functions like a well-oiled machine for supporting stable, revenue-generating operations. Unfortunately, many organizations fall short of adequate investments in modern on-premises infrastructure and IT training to manage it.

- Within this group, some organizations remain on-premises, not because of legacy but because their business requires it. Examples include certain government, healthcare, and financial institutions that have chosen to maintain only on-premises infrastructure for their core business workloads because of data privacy and security concerns.

- The 100% on-premises group is not utilizing the public cloud in any meaningful way and doesn't plan to in the future.

2. 100% Public Cloud Deployments

» **A newer but not fully evolved way to host IT infrastructure.** This group is defined by companies that either are in the process of eliminating or have eliminated on-premises server infrastructure. It also includes younger firms that were "born in the cloud." Firms in this group are fully reliant on one or more public cloud providers for IT infrastructure.

• Off-premises public cloud–based infrastructure allows organizations to scale infrastructure as needed to support changing business priorities. When implemented well, it can reduce previously wasted IT resources that inhibited past investments in new digital services.

• Unanticipated downsides of a 100% public cloud infrastructure approach include, but are not limited to, access control issues, data security, and unpredictable or higher-than-expected opex.

• IDC research shows that organizations in this group have limited to moderate self-service capabilities. They are more automated than their on-premises-only counterparts, with a mix of automated and manual server configuration and provisioning capabilities.

3. Hybrid Deployments

» **A pragmatic, modern way to deploy IT infrastructure.** Also called multicloud, hybrid cloud, or hybrid IT, this group operates with a mix of on-premises and public cloud infrastructure. The proportional mix of on-premises and public cloud is tailored to meet specific business needs.

• The proportion of compute supported by on-premises versus public cloud can vary widely for this hybrid group. But companies in this group currently have a mix of both and plan to continue with a relatively balanced hybrid model for the foreseeable future.

• IT leaders running hybrid models design their on-premises inclusive of edge, IoT, and branch/satellite locations as well as private cloud running in their own dedicated datacenters.

• Organizations in this group are typically front-runners in ITX initiatives and are characterized by the following:

  - Have an expanded view of the kinds of services and workloads that need to run in edge locations, with a focus on new engagement and analytic services

  - Recognize the need for consistent data control

  - Use the full spectrum of data protection solutions across on-premises, virtual, public cloud environments, and public cloud applications

  - Have automated many more compute, storage, and network infrastructure provisioning, configuration, and change management tasks than the other groups

Also called multicloud, hybrid cloud, or hybrid IT, this group operates with a mix of on-premises and public cloud infrastructure.

Optimizing Workload Placement in a Hybrid Model

While a hybrid infrastructure sounds great in theory, IT organizations are still learning the science of workload placement. It is especially a work in progress as workloads become more composite in nature.

Workloads (applications or use cases) for most IT organizations span traditional workloads (used mostly for existing revenue-generating operations and tend to be monolithic in nature) and composite next-generation workloads (workloads that are transformative and used to ensure that the business remains competitive in the future).

An objective assessment is required before determining the appropriate location and deployment type for a given workload.

» Workloads that require reliability and security — especially if the application itself lacks such capabilities natively — are better serviced on-premises.

» Workloads that require infrastructure elasticity and on-demand scalability can benefit from an on-premises footprint that can be extended off-premises on demand.

For example, for providers of next-generation clinical imaging/testing systems, a firm would place local image processing and storage systems on-premises in each facility to provide local care providers with immediate and reliable access to images and results. They would also leverage systems in their own datacenters to provide metadata and develop new functions while leveraging public cloud to enable more cost-effective long-term archiving, disaster recovery, and longitudinal analytics of data across all sites.

The most sophisticated firms have generally figured out the right balance between on-premises and off-premises deployments and have a placement strategy for their entire workload (applications) portfolio. This hybrid approach entails two key principles:

1. **Workload centric and business first.** A hybrid infrastructure approach evaluates optimal placement options for each subworkload. Workload or subworkload placement is based on location and deployment capabilities (and limitations) and key application and business requirements. Security, compliance, scalability, availability, latency tolerance, and bandwidth requirements are some of the key metrics that are weighed against cost and business importance.

2. **Multicloud and multipremises.** The best hybrid infrastructures provide elasticity by allowing firms to optimize their mix across on-premises and public cloud options. This enables organizations to take a long view of their investments, examining investments in emerging technologies by validating their business impact first and then making the kind of public cloud and on-premises investments that are rightsized and strategic for the long term.

> The most sophisticated firms have generally figured out the right balance between on-premises and off-premises deployments and have a placement strategy for their entire workload (applications) portfolio.

IDC asked IT decision makers at firms that employ a hybrid IT model to identify where they are currently deploying various workloads and why they have chosen those locations. While some patterns emerged, the responses make it clear that there is no black-and-white answer to where a given workload should be placed. Organizations can utilize guidance provided in this white paper to develop a workload placement strategy that works best for them. Summary findings from this section of the research are detailed in Table 1.

TABLE 1

Workload Placement Strategy

	On-Premises	Public Cloud	No Preference
Application development and testing		●	
Business applications	●		
Collaborative applications		●	
Content applications		●	
IT infrastructure	●		
Structured data management and analytics			●
Unstructured data analytics			●
Web infrastructure		●	
Engineering/technical	●		

Source: IDC, 2018

Creating Your Firm's Hybrid Infrastructure Playbook — Seven Key Considerations

A well-built hybrid infrastructure is customizable to fit the unique nature of the firm's business model. It enables IT organizations to develop an on-premises and off-premises mix based on the changing nature of their application portfolio. The 100% on-premises or 100% public cloud approaches, by their definition, cannot and do not match the flexibility of a hybrid IT model.

Hybrid Infrastructure Playbook

There is no single right answer for workload placement. Each IT organization owns its firm's hybrid infrastructure strategy. Each company's composite workload mix will be different. Every industry, every company, and every digital service will be different. IT organizations need to create a playbook for determining the right mix of on-premises and off-premises resource deployments. Use the considerations mentioned in the following sections to create your firm's hybrid infrastructure playbook.

1. Intelligent Management

When selecting a vendor for your on-premises servers, evaluate the management capabilities built into the servers themselves. Whether your IT team prefers to manage from a console, via scripting, or with APIs, it's important to have the right management tools in place in order to get the most out of your hybrid infrastructure. When managed well, hybrid IT yields tangible benefits.

Benefits of running workloads in a hybrid infrastructure are:

- **34%** of respondents reported simpler IT management.
- **29%** of respondents experience more efficient IT staffing.
- **60%** of respondents confirmed a 20%+ reduction in time spent by their staff in performing routine IT infrastructure tasks.

2. Governance, Risk Management, and Compliance

Governance, risk management, and compliance (GRC) is mandatory in a multicloud world where sensitive information is exchanged between applications, workload tiers, and clouds over the network. In some cases, additional compliance requirements on data locality (e.g., EU GDPR) come into play and necessitate on-premises infrastructure.

- **29%** of respondents said their firms improved compliance with policies and regulations via a hybrid infrastructure.

3. Asset and Data Security

The safekeeping of IT assets — which include data — is a business imperative. Cyberthreats loom large and must be addressed preemptively. In the digital economy, data is capital. Information is an asset that requires investment so that it is handled and protected with great care.

- **35%** of respondents reported that a hybrid infrastructure provides improved data security.
- **34%** of respondents said they have greater confidence in the security of their data when running workloads on-premises.

4. Service Quality (Application Performance)

Service quality or application performance, measured in terms of latency and response times, can be viewed as a macroentity and a microentity. Service quality applies to intraworkload, in which case, it is a function of the physical infrastructure, as well as interworkload, in which case, it is a function of the network connecting the two together. Both are important to maintain balance.

With hybrid infrastructure:

- **28%** of respondents said they have more predictable application performance.
- **27%** of respondents said they have improved application performance.
- **30%** of respondents said they have achieved a 30%+ reduction in application errors as a result of running workloads on-premises.

5. Service Continuity and Objectives

Lack of attention to service continuity, recovery time objectives (RTOs), and recovery point objectives (RPOs) can jeopardize the business during an unplanned downtime. Taking a data-centric view of service continuity connects application data availability requirements with infrastructure design to provide uninterrupted data access.

With hybrid infrastructure:

- **32%** of respondents said they have improved data recovery capabilities.
- **52%** of respondents said they lowered unplanned service outages by 21–40% overall.
- **25%** of respondents said they could support scalability requirements that were off-limits to them before.
- **34%** of respondents said they now have improved availability/reliability.

6. Time to Market/Reputation

Time to market is inversely proportional to business reputation. The lower the time to market for new products and services, bug fixes, or service improvements, the greater the business reputation. This is a one-way street — it is very difficult to restore a company's reputation once it has been tarnished because of poor response times.

- **19%** of respondents said that they have a shorter time to market with their hybrid infrastructure.

7. Cost Management

In the shift from capex to opex costs, predictability is often a key factor. "Seesaw" operating expenses are often the bane of existence for IT organizations. A top benefit of a hybrid infrastructure is the option to run workloads on-premises whenever it is cheaper to do so. In fact, the bigger the size of business or the larger the infrastructure size (e.g., number of servers), the greater the savings. Hybrid infrastructure paired with a workload placement strategy can lead to lower and more predictable overall IT expenses.

With hybrid infrastructure:

- **28%** of respondents said they have more predictable operating expenses.
- **29%** of respondents said they have lowered their overall IT infrastructure costs.
- **40%** of respondents said they run a workload on-premises because they save more than 10% in operating costs.

Future Outlook

Hybrid Infrastructure Is the Cornerstone to Enable Next-Generation Needs

As addressed throughout this paper, the hybrid IT model is ideal for bringing outdated single-mode IT up to speed to compete in today's business environment. But what about the future? Hybrid infrastructure founded on a modern on-premises datacenter is the cornerstone for organizations seeking to address next-generation technologies and workloads. By focusing on hybrid infrastructure as the platform for current *and* next-generation applications, leaders are well positioned to capitalize on the inevitable acceleration of the digital economy. Three key developments will be at the heart of this next phase.

1. Servicing Emerging Technologies and Workloads

First, emerging workloads such as analytics (e.g., Spark on top of Hadoop), artificial intelligence (AI; machine learning, deep learning, inferencing, and training), high-performance computing (HPC), massively parallel computing (MPC), and unstructured data analytics are being used to deliver better customer experiences or improve outcomes. Hybrid infrastructure is the best way to enable these emerging workloads.

2. Delivering Digital Services at the Edge

Second, massive data repositories are being built and used to enhance customer experiences and improve operational efficiencies. These engagement systems are more likely to be deployed at the edge of the business. They will require ever-greater investments in advanced IT systems at edge locations. It's critical to ensure the availability of easy-to-deploy, self-managing infrastructure optimized to support data- and compute-intensive edge workloads in smaller, localized datacenters. Again, hybrid infrastructure that includes on-premises edge deployments is central to prepare for the proliferation of *smart everything*.

3. Enabling the New Private Cloud

Third, a new generation of private cloud options is emerging. New private cloud offerings address long-standing issues with private cloud: inconsistency across private cloud implementations, inflexible deployment options, and limited usefulness as a platform for new, cloud-native applications. Built on a software-defined foundation, new private clouds will provide a standard portfolio of cloud services (instances, containers, and serverless) and automation tools. Such capabilities will improve cross-cloud manageability and, therefore, attractiveness of private clouds as a platform for new service development. These new dedicated clouds will serve as a superior platform for modernizing core on-premises datacenters.

Essential Guidance for the IT Buyer

Many companies mistakenly believe that the shift to cloud-based IT is equivalent to growing a portfolio of public IaaS, PaaS, and SaaS solutions. They incorrectly assume that shifting on-premises apps to IaaS rids them of any issues that may be plaguing their datacenter operations. They neglect to realize their opportunity to implement a dedicated (private) cloud environment leveraging modern infrastructure in their own facilities.

This lack of recognition creates significant risks for companies. Availability of a modern, automated computing environment in corporate datacenters and increasingly digitized edge locations will be critical for companies that want to take full advantage of next-generation technologies to deliver modern composite workloads.

IDC offers the following recommendations for IT organizations aspiring to make the most of on-premises and off-premises infrastructure:

» Use a hybrid infrastructure model that includes both on-premises servers and public cloud to maximize IT elasticity and position your company to compete in the digital age.

» Make the effort to really understand workload requirements for optimal placement. A workload placement strategy is not easy and cannot be a one-size-fits-all approach. But done right, it will pay major dividends in the long term. Take the time to invest now in creating a workload placement strategy that fits your firm's business needs.

» Link software-defined datacenter (SDDC) to hybrid IT. Committing to SDDC as a long-term strategy means more automation for server infrastructure tasks. It is extremely important to have SDDC in place to get the most value out of on-premises infrastructure investments and maintain cost control over off-premises spend.

» Get senior business leadership buy-in for investment in IT staff, training them in skills needed to manage multiple on-premises and off-premises resources and SDDC concepts and tools. Invest in IT automation software that can help IT respond more quickly to business needs and reduce unplanned downtime for mission-critical applications.

Availability of a modern, automated computing environment in corporate datacenters and increasingly digitized edge locations will be critical for companies that want to take full advantage of next-generation technologies to deliver modern composite workloads.

Appendix

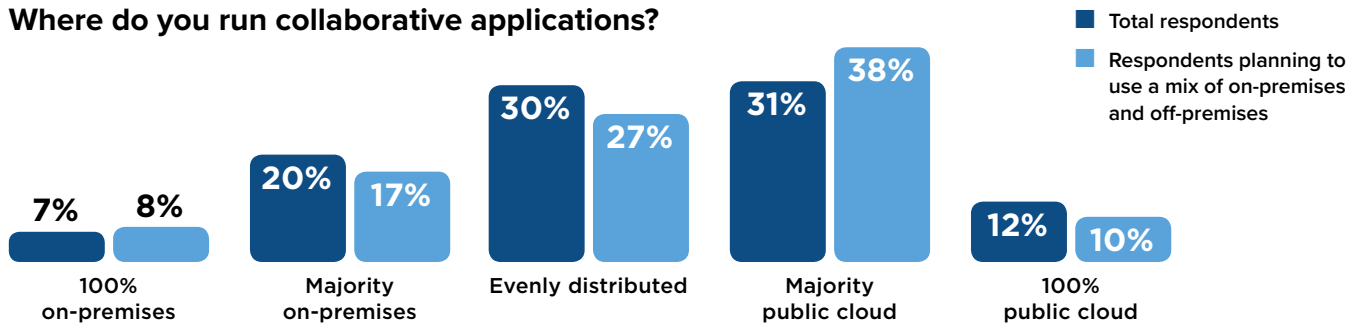## Considerations for Workload Placement

Collaborative Applications

Collaborative applications enable groups of people to work together by sharing information and processes. These include:

» Conferencing applications
» Email applications
» Enterprise social networks (ESNs)
» Team collaborative applications (TCAs)
» File synchronization and sharing

Where Do Collaborative Applications Typically Run?

Historically, collaborative applications were run on-premises, but that has changed with cloud-based productivity suites such as Microsoft Office 365 and Google G-Suite. Today, there is a strong preference for running collaborative applications in the public cloud. Firms with hybrid infrastructure show an overwhelming preference for the public cloud.
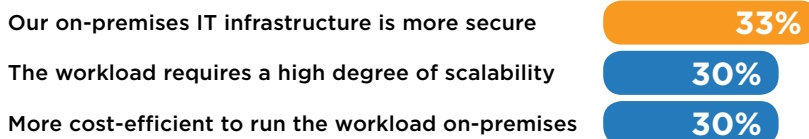
Where do you run collaborative applications?

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

	100% on-premises	Majority on-premises	Evenly distributed	Majority public cloud	100% public cloud
Total respondents	7%	20%	30%	31%	12%
Respondents planning to use a mix	8%	17%	27%	38%	10%

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Collaborative Applications

Data stored in collaborative applications can be sensitive in nature. If the data is not secured properly in the public cloud, firms can be exposed to undue risk. Firms that operate in industries with mandated governance, risk management, and compliance requirements (e.g., healthcare and HIPAA) must take special precautions with collaborative applications. One user lapse can expose the entire firm to legal trouble. It may be more cost efficient to run collaborative applications on-premises with mechanisms in place to ensure that data is secure, the infrastructure is scalable, and the environment is compliant.

Top 3 reasons why hybrid IT organizations choose to run collaborative applications on-premises

Our on-premises IT infrastructure is more secure	33%
The workload requires a high degree of scalability	30%
More cost-efficient to run the workload on-premises	30%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure

IDC | ANALYZE THE FUTURE
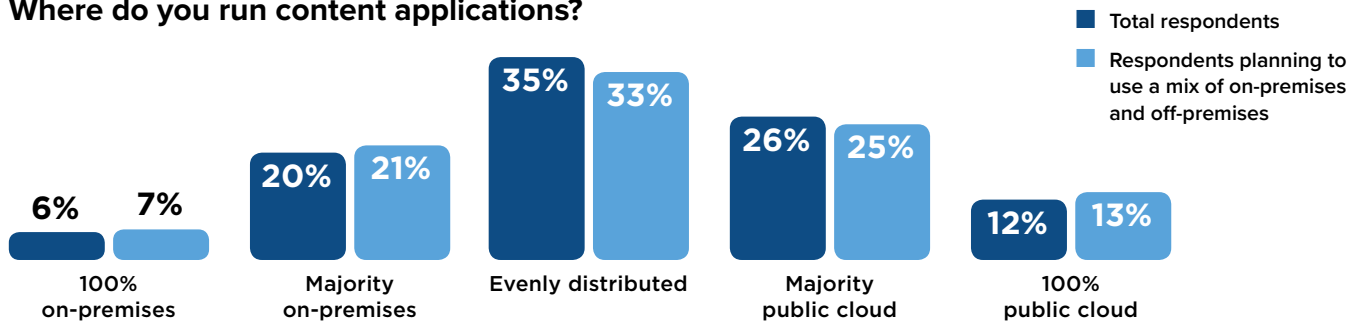
Content Applications

Content applications are where content is born and managed. Content can be digital content, goods and services, rich media, or simply information. For many firms, this content is their intellectual property and the very basis of their existence. These include:

» Content management
» Authoring and publishing
» eDiscovery
» Enterprise portals

Where Do Content Applications Typically Run?

The effort required to build and manage a content delivery infrastructure is one of the most challenging projects for IT organizations. Content workloads require the ability to scale up or down in a secure environment. There is a slight preference for running content applications in the public cloud.
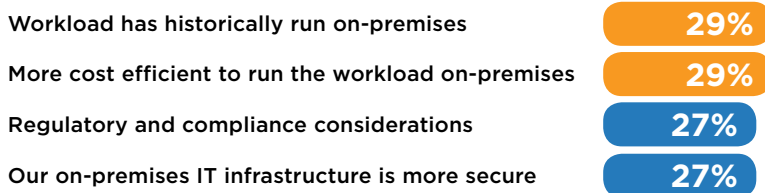
Where do you run content applications?

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

	100% on-premises	Majority on-premises	Evenly distributed	Majority public cloud	100% public cloud
Total respondents	6%	20%	35%	26%	12%
Respondents planning to use a mix	7%	21%	33%	25%	13%

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Content Applications

A content delivery network that leverages hybrid infrastructure uses on-premises to host the golden master and multicloud options to deliver the content. This approach is secure and enables the firm to stay compliant and quickly address content integrity or availability issues associated with one or more cloud-based copies. The preference for an on-premises infrastructure also has to do with the fact that content creation or curation occurs on-premises; therefore, the infrastructure hosting the content needs to be close to where the data is generated.

Top reasons why hybrid IT organizations choose to run content applications on-premises

Workload has historically run on-premises	29%
More cost efficient to run the workload on-premises	29%
Regulatory and compliance considerations	27%
Our on-premises IT infrastructure is more secure	27%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure

IDC | ANALYZE THE FUTURE
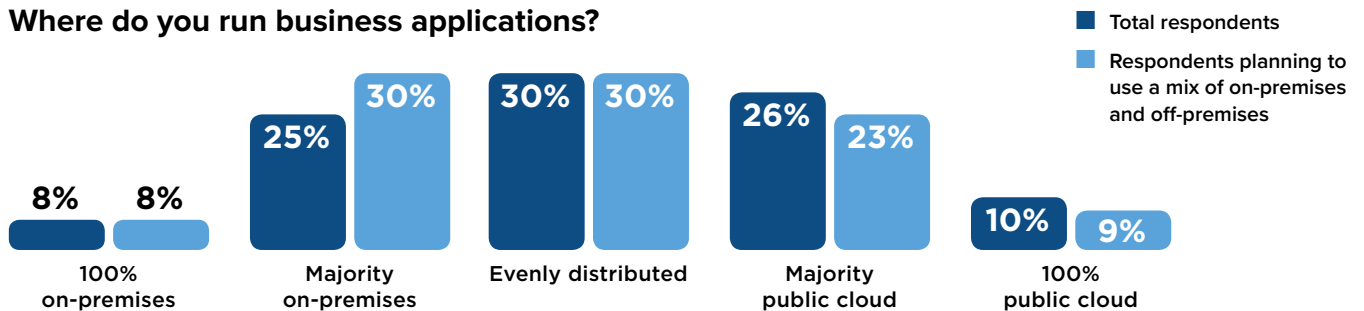
Business Applications

Business applications form the backbone of most business operations. They are considered revenue generating and required for maintaining steady-state revenue-generating operations. These include:

» Enterprise resource management applications
» Supply chain management applications
» Operations and manufacturing applications
» Customer relationship management (CRM)

Where Do Business Applications Typically Run?

Traditionally, most business applications — especially those that are mission critical in nature — are run on-premises. Not surprisingly, IDC noted a strong preference among respondents to continue running those applications on-premises. Firms with hybrid infrastructure show even more preference for continuing to run business applications on-premises.

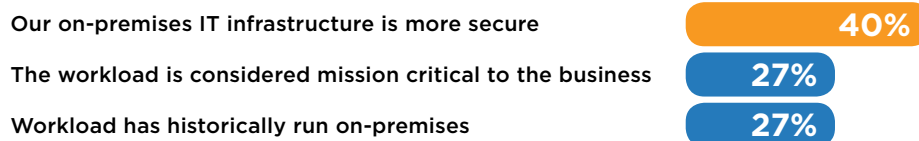**Where do you run business applications?**

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

8% / 8%	25% / 30%	30% / 30%	26% / 23%	10% / 9%
100% on-premises	Majority on-premises	Evenly distributed	Majority public cloud	100% public cloud

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Business Applications

Business applications are considered to be revenue generating and generally built with traditional components such as relational databases. They require a reliable infrastructure environment, often for the sole purpose of running these applications, because of their demanding nature in terms of performance, scalability, and availability. They also require traditional data protection and copy data management tools, where copies of the application can be snapped for development and QA. In such cases, these applications are best hosted on dedicated on-premises infrastructure, where the server and storage infrastructure is designed specifically with these applications in mind. Unless such an isolated and reliable environment can be procured off-premises and in the public cloud, it is best to run these applications on-premises.

Top 3 reasons why hybrid IT organizations choose to run business applications on-premises

Our on-premises IT infrastructure is more secure	40%
The workload is considered mission critical to the business	27%
Workload has historically run on-premises	27%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure
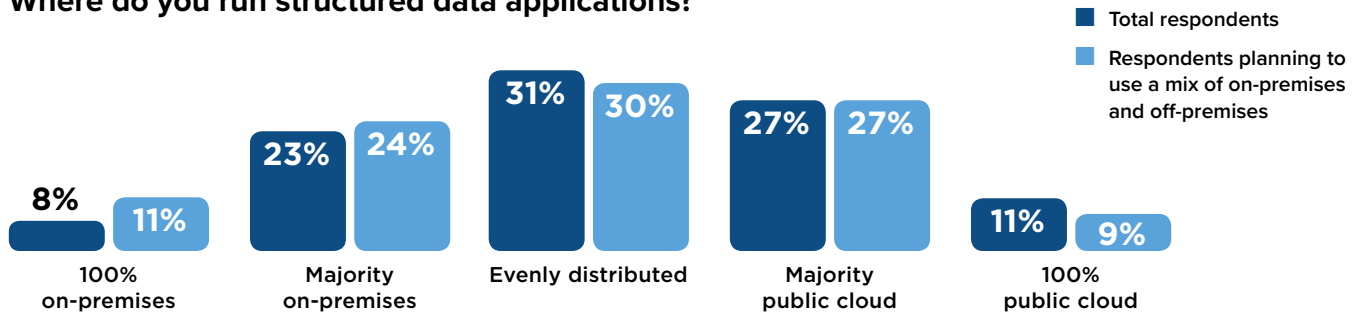
Structured Data Management and Analytics

Structured data management software includes products that manage a common set of defined data that is kept in one or more databases (structures of managed data shared by multiple application programs) and is driven by data definitions and rules, whether this involves a single database accessed directly by applications or distributed databases accessed by multiple applications in multiple locations. Structured data analytics involves data access, analysis, and delivery products for ad hoc data access, analysis, and reporting as well as production reporting. These include:

» Relational database management systems (RDBMS)
» Nonrelational database management systems (NRDBMS)
» Dynamic data management systems
» Database development and management tools
» Dynamic data grid managers

» Data integration and integrity software
» End-user query, reporting, and analysis software
» Advanced and predictive analytics software
» Spatial information management software

Where Do Structured Data Management and Analytics Typically Run?

There is no definitive skew toward on-premises or public cloud for structured data management and analytics workloads.

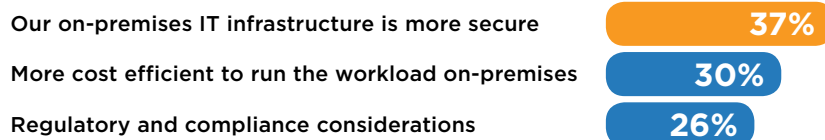**Where do you run structured data applications?**

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

8% / 11% — 100% on-premises
23% / 24% — Majority on-premises
31% / 30% — Evenly distributed
27% / 27% — Majority public cloud
11% / 9% — 100% public cloud

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Structured Data Management and Analytics

Structured data analytics goes together with structured data management and unstructured data analytics. However, structured data analytics is using sensitive information. Some firms take precautions to scrub the data of sensitive information, though that process is not often fully automated. The process often yields inconsistent results across business units and the entire firm. IT organizations often have issues associated with inadvertent data exposure in the public cloud. A hybrid infrastructure solves these challenges by placing the structured data analytics environment adjacent to the structured data management environment. IT organizations must also work with their business units to ensure that the data fed into the analytics environment is scrubbed of sensitive information in a consistent manner.

Top 3 reasons why hybrid IT organizations choose to run structured data applications on-premises

Our on-premises IT infrastructure is more secure	37%
More cost efficient to run the workload on-premises	30%
Regulatory and compliance considerations	26%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure
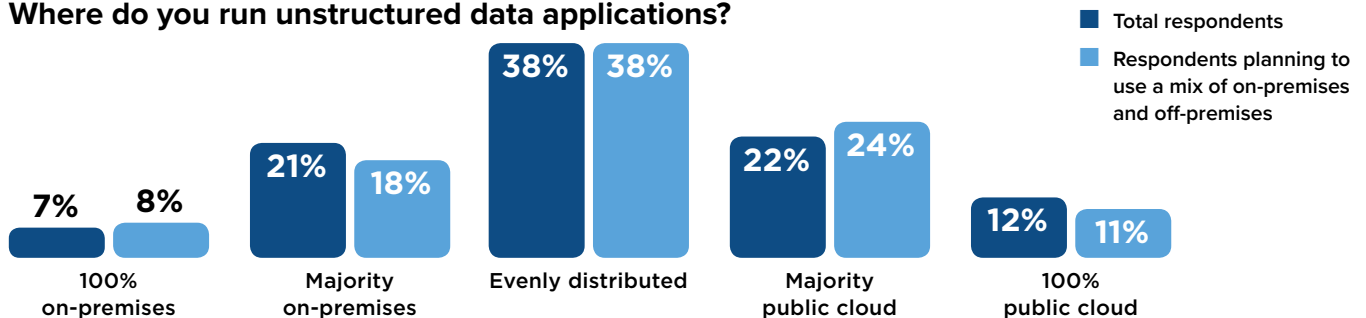
IDC | ANALYZE THE FUTURE

Unstructured Data Analytics

Unstructured data analytics aligns with content applications. Cognitive/AI systems and content analytics software analyze, organize, access, and provide advisory services based on a range of unstructured information and also provide a platform for the development of analytic and cognitive applications. Unstructured data analytics includes point-in-time, batch, or streaming data analytics of data generated from sensors and endpoints, log data, user preferences, and other data that does not conform to a predefined structure or schema. Hadoop and Splunk are examples.

Where Do Unstructured Data Analytics Typically Run?

The majority of firms evenly distribute their unstructured data analytics workloads across on-premises and public cloud. However, many firms choose to utilize public cloud infrastructure for this workload given its agility and elasticity requirements. Chiefly, public cloud allows shadow and line-of-business IT organizations to directly deploy such analytics applications, bypassing the rigidity of corporate IT.
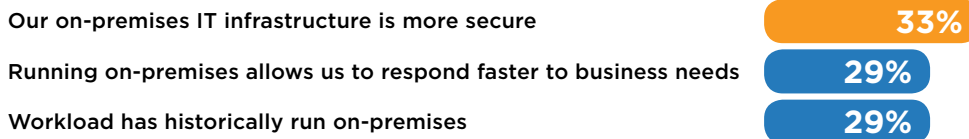
Where do you run unstructured data applications?

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

| 7% | 8% | 21% | 18% | 38% | 38% | 22% | 24% | 12% | 11% |

100% on-premises | Majority on-premises | Evenly distributed | Majority public cloud | 100% public cloud

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Unstructured Data Analytics

With a suitable on-premises infrastructure deployed to behave like a public cloud, IT organizations can make a compelling case to run unstructured data analytics on-premises in a cost-efficient and secure fashion and in a manner that meets just-in-time business requirements. Firms should consider utilizing the public cloud when data sources are geographically dispersed and aggregating them in the public cloud is more opex friendly. Also, the data must be devoid of any sensitive information.

Top 3 reasons why hybrid IT organizations choose to run unstructured data applications on-premises

Our on-premises IT infrastructure is more secure	33%
Running on-premises allows us to respond faster to business needs	29%
Workload has historically run on-premises	29%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure
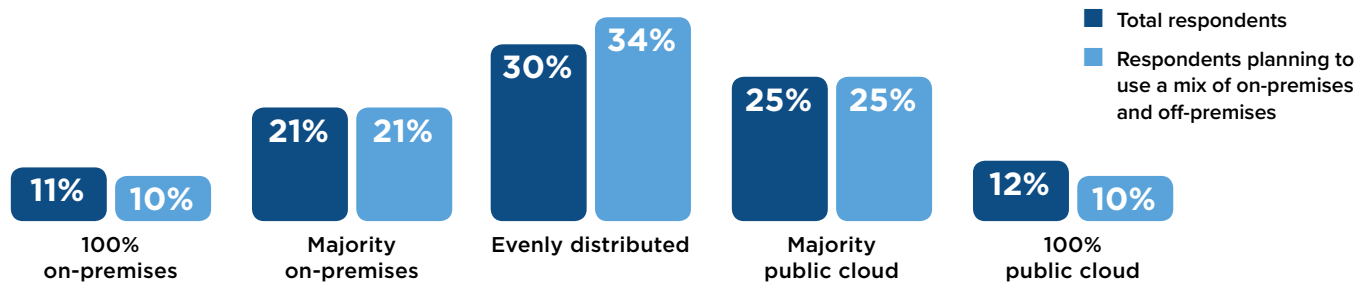
Application Development and Testing

Like engineering and technical workloads, many application development and testing applications are custom in nature and form a part of the firm's core intellectual property portfolio. Many of these applications are also a source of competitive differentiation. These include:

» Application development software
» Quality and life-cycle tools
» Application platforms
» Integration middleware

Where Do Application Development and Testing Workloads Typically Run?

A slight majority of IT departments run more of these workloads in the public cloud. Firms with hybrid infrastructure are skewed more toward public cloud.

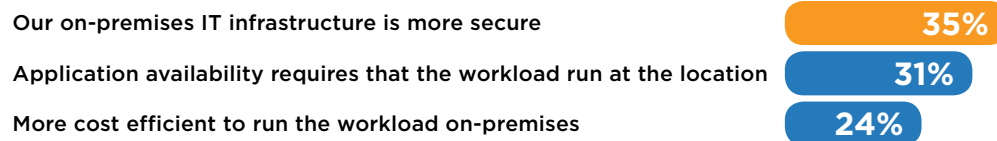**Where do you run app development and testing applications?**

- Total respondents
- Respondents planning to use a mix of on-premises and off-premises

11% / 10%	21% / 21%	30% / 34%	25% / 25%	12% / 10%
100% on-premises	Majority on-premises	Evenly distributed	Majority public cloud	100% public cloud

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Application Development and Testing Workloads

Running application development and testing in the public cloud is a matter of scale — at a smaller scale, it is manageable and cost efficient. As these dimensions change, running these workloads in the public cloud could get unwieldly and unmanageable and, more importantly, costly. The issue isn't just rising costs. It's also how unpredictable these costs become. Therefore, IDC recommends an assessment wherein application scale, availability, and security are considered when shifting some or all of these workloads back to or keeping them on-premises.

Top 3 reasons why hybrid IT organizations choose to run app development and testing applications on-premises

Our on-premises IT infrastructure is more secure	35%
Application availability requires that the workload run at the location	31%
More cost efficient to run the workload on-premises	24%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure
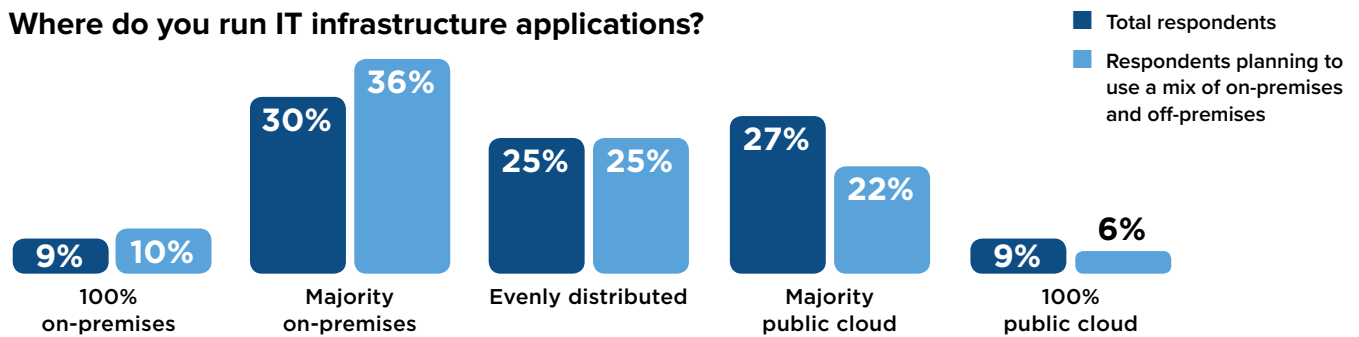
IDC | ANALYZE THE FUTURE

IT Infrastructure

IT infrastructure workloads include orchestration and automation applications as well as monitoring applications and tools. These include:

» File/print
» Networking
» Security
» System management software
» Virtual desktop infrastructure

Where Do IT Infrastructure Workloads Typically Run?

Across all IT environments, IT infrastructure workloads are evenly distributed across on-premises and public cloud, with a slight skew toward on-premises. However, firms with hybrid infrastructure strongly prefer to run these workloads on-premises.
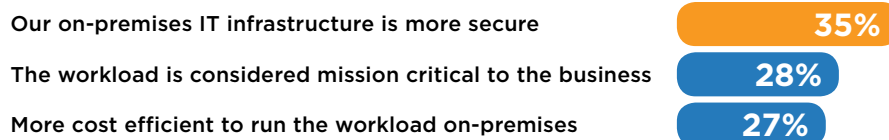
Where do you run IT infrastructure applications?

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

| 9% | 10% | 30% | 36% | 25% | 25% | 27% | 22% | 9% | 6% |

100%
on-premises

Majority
on-premises

Evenly distributed

Majority
public cloud

100%
public cloud

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run IT Infrastructure Workloads

Maintaining IT infrastructure workloads on-premises, as preferred by the majority of respondents, is a good way to provide a firm with highly available grounding for the hybrid infrastructure. This means firms can create a hub-and-spoke system in which the primary on-premises location acts as a hub and the various off-premises public cloud locations act as spokes — controlled and managed from a central location. This is what IDC considers to be a stable and scalable multicloud operating model.

Top 3 reasons why hybrid IT organizations choose to run IT infrastructure applications on-premises

Our on-premises IT infrastructure is more secure	**35%**
The workload is considered mission critical to the business	**28%**
More cost efficient to run the workload on-premises	**27%**

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure
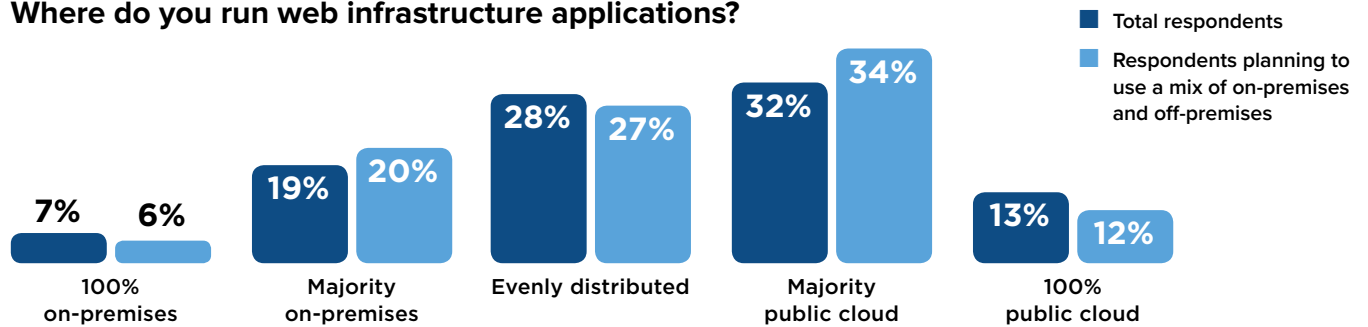
Web Infrastructure

Web infrastructure includes web serving and media streaming.

Where Do Web Infrastructure Workloads Typically Run?

Many firms have continued to run their web infrastructure off-premises, following a "web hosting" trend that started in the mid-1990s. Some firms shifted these workloads into public cloud as a matter of evolution. Today, the overwhelming majority of web infrastructure workloads run in the public cloud.
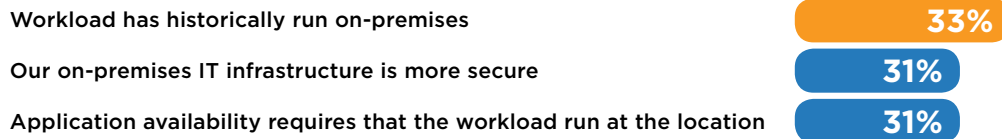
Where do you run web infrastructure applications?

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

	100% on-premises	Majority on-premises	Evenly distributed	Majority public cloud	100% public cloud
Total respondents	7%	19%	28%	32%	13%
Respondents planning to use a mix	6%	20%	27%	34%	12%

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Web Infrastructure Workloads

Web infrastructure is much more than websites. For many firms, it is the primary conduit through which they conduct business. When this web infrastructure is extended to include mobile access, it offers firms a crucial means of interacting with users and gathering insights into their behavior. With a hybrid infrastructure, firms can base their web infrastructure on-premises and use a multicloud approach to maintain consistency of access worldwide.

Top 3 reasons why hybrid IT organizations choose to run web infrastructure applications on-premises

Workload has historically run on-premises	33%
Our on-premises IT infrastructure is more secure	31%
Application availability requires that the workload run at the location	31%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure
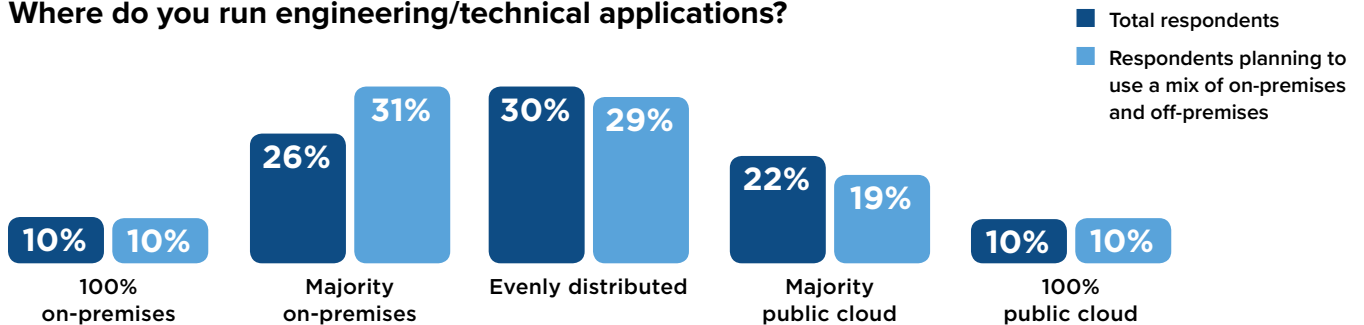
IDC | ANALYZE THE FUTURE

Engineering/Technical

Engineering applications automate all of the business processes and data management activities specific to ideas management, concept planning, and design and handoff of the design to execution (manufacturing, construction, or other). This category includes iterative workloads such as high-performance computing, accelerated computing, massively parallel computing, and experimental research and development computation workloads. These include:

» Mechanical computer-aided design (MCAD)
» Mechanical computer-aided engineering (MCAE)
» Mechanical computer-aided manufacturing (MCAM)
» Collaborative product data management (cPDM)

Where Do Engineering/Technical Workloads Typically Run?

The vast majority of all IT departments run these workloads on-premises. Engineering/technical workloads have custom computing and data storage requirements, which makes it very difficult to host them in a public cloud.

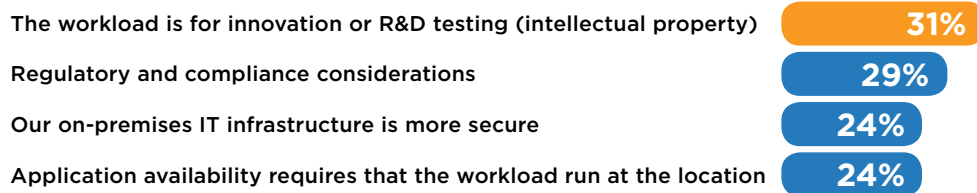**Where do you run engineering/technical applications?**

■ Total respondents
■ Respondents planning to use a mix of on-premises and off-premises

	100% on-premises	Majority on-premises	Evenly distributed	Majority public cloud	100% public cloud
Total respondents	10%	26%	30%	22%	10%
Respondents planning to use a mix	10%	31%	29%	19%	10%

Source: IDC, 2018, n = 650

What to Consider When Choosing Where to Run Engineering/Technical Workloads

Most of these workloads are highly custom in nature and are considered to be the core intellectual property of a firm. They are also subject to regulatory and compliance laws, should there be any compromise of data, which in turn can jeopardize user privacy. IDC recommends that organizations continue to host these workloads in a secure and highly available on-premises enclave.

Top reasons why hybrid IT organizations choose to run engineering/ technical applications on-premises

The workload is for innovation or R&D testing (intellectual property)	31%
Regulatory and compliance considerations	29%
Our on-premises IT infrastructure is more secure	24%
Application availability requires that the workload run at the location	24%

Source: IDC, 2018, n = 650; Hybrid IT includes organizations that are using a mix of on-premises and off-premises IT infrastructure

IDC ANALYZE THE FUTURE

IDC Global Headquarters

5 Speen Street
Framingham, MA 01701
USA
508.872.8200
Twitter: @IDC
idc-insights-community.com
www.idc.com

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.