Workload Awareness and Tiering Vital for Effective Enterprise Hybrid Cloud Strategies

Sponsored by: EMC

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IDC OPINION

Enterprise IT organizations with effective hybrid cloud strategies have high "workload awareness" – which IDC defines as the detailed understanding of performance, security and data management requirements for each workload. This awareness is critical to optimizing the choice of public, private or hybrid clouds to provision and support different applications, databases and end users.

These findings were documented in a recent worldwide IDC survey of 683 enterprise IT decision makers. This blind survey was sponsored by EMC Corporation with participants selected based on the size of their organization and knowledge of their cloud strategy. A small percentage of respondents were EMC customers.

Major survey findings include:

- Worldwide, 93% of enterprises are currently implementing or considering some type of cloud solution

- 73% of enterprises expect cloud to improve IT's ability to support the business

- 81% of enterprises with Cloud Optimized environments – the most mature category – designate workload tiers. By comparison, 41% of organizations with early stage cloud strategies designate tiers

- Enterprises that designate workload tiers based on performance SLAs, security policies and data management best practices often lead their peers when it comes to designing and implementing large-scale, production-ready hybrid cloud environments

- Cloud Optimized enterprises are twice as likely to include data management, backup and data protection, along with data confidentiality and access control as top priorities for their cloud strategy when compared to less mature organizations

IN THIS WHITE PAPER

This white paper discusses the results of a recently completed worldwide IDC survey of 638 enterprise IT decision makers. The survey was designed to better understand the evolution of cloud across the world's largest IT organizations. All participants represented organizations of more than 1000 employees. The majority (72%) have over 5,000 employees. Participants were evenly distributed geographically and spanned a wide variety of industries.

Participants were selected for the study based on knowledge of their organization's cloud strategy and the size of their organization. The blind survey was sponsored by EMC, but IDC has final responsibility for all conclusions and recommendations based on the study results. More detailed demographic information about survey participants can be found in the appendix at the end of this paper.

SITUATION OVERVIEW

Enterprise IT environments are universally characterized by complexity and scale. Very large organizations typically rely on multiple generations of technology including mainframes, physical servers, virtual systems, tiered storage, mobile applications and public and private clouds. Older generations of applications and middleware may not be well suited for rapid migration to newer cloud platforms, yet many line of business decision makers are frustrated by the time it can take central IT teams to respond to demands for new capabilities.

Workload Awareness Drives Effective Hybrid Cloud Architectures

Line of business teams have turned to public cloud services for on-demand access to selected software-as-a-service (SaaS) applications, platform-as-a-service offerings (PaaS) and infrastructure-as-a-service (IaaS) solutions. However, they often find it difficult to manage these services consistently across large-scale implementations. Data management and integration challenges are common and corporate policies related to data protection and confidentiality are often inconsistently applied and hard to audit.

As a result, mission-critical applications supported by central IT teams in traditional on-premise and outsourced data centers are not easily replaced with public cloud services. Service levels are stringent for mission-critical applications where unplanned downtime can result in significant revenue, customer satisfaction and employee productivity losses. Data residing in traditional databases, backup and tiered storage platforms need to be protected, and compliance and audit requirements need to be satisfied.

IT decision makers want to take advantage of the cloud agility and cost savings from self-service provisioning and large-scale resource sharing and pooling. However, they also need to protect critical business information and comply with data management and audit regulations. Hybrid cloud strategies offer these organizations the opportunity to mix and match the needs of various workloads with a range of cost, performance, security and data management options. By definition, hybrid clouds offer enterprise IT teams the option to deploy selected workloads and data sets onto public cloud platforms or onto on-premise or hosted private clouds -- or to keep selected sets of data and workflows in traditional, non-cloud environments.

A solid understanding of the performance, cost, data management and security requirements of each workload is critical to making the right decision about where to provision and support different applications, databases and end users. IDC defines this type of understanding as "workload awareness." As is discussed throughout this paper, the most mature enterprise users of cloud solutions are generally also the most mature when it comes to understanding and supporting the needs of specific workloads and end user groups across their organizations.

## Cloud Dominates Enterprise IT Agendas

Worldwide, most enterprise IT teams are well aware of cloud and are actively implementing and considering a broad mix of public and private cloud options. The vast majority of the 638 survey participants (95%) agreed that the definition of cloud includes virtualized IT environments enabled with automated self-service provisioning, dynamic and elastic scaling, usage metering and consumption reporting or billing; and made available over networks using web browsers or other modern interfaces.

Of the 604 respondents that agreed with the above cloud definition, fully 93% indicated that their organization is currently using or considering using some type of cloud option, although many were still in the early stages of evaluating cloud or educating themselves about the benefits of cloud. Only 7% said they were not interested or were unsure about their organization's expected use of cloud at this time. (see Figure 1).

FIGURE 1

Current Enterprise Consideration of Cloud

Q. *Overall, how would you describe your organization's current approach to cloud?*
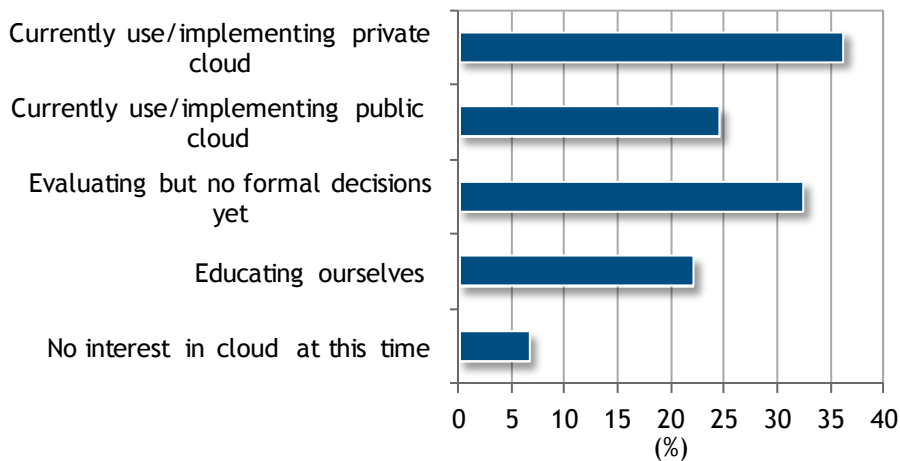
n = 604

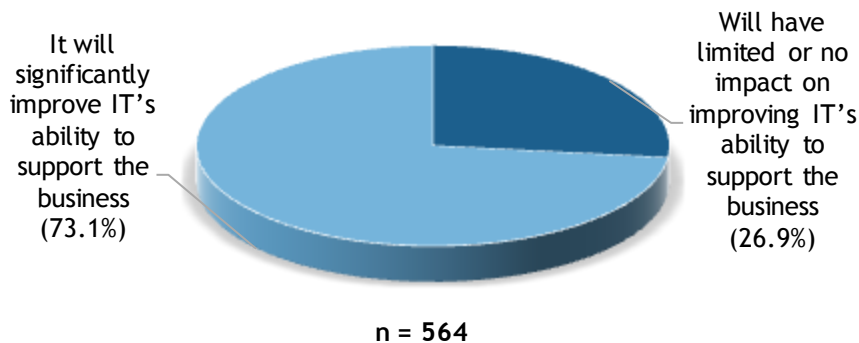Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

The primary motivation for consideration and use of cloud relates to business value and agility. Almost three quarters (73%) indicated that they expect cloud will significantly improve their support for the business. (see Figure 2)

FIGURE 2

Cloud Impact on IT Support for Business

Q.   To what extent do you believe use of cloud computing will improve IT's ability to provide support for the business in the next two years?

It will
significantly
improve IT's
ability to
support the
business
(73.1%)

Will have
limited or no
impact on
improving IT's
ability to
support the
business
(26.9%)

n = 564

Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

Security, Performance and Business Priorities Drive Hybrid Cloud Strategies

Enterprise IT decision makers are becoming more and more aware of how security, data management and performance requirements can vary from workload to workload. When it comes to determining which workloads are deployed in private vs. public cloud environments, the four most important determining factors are:

1. Security and business risk considerations

2. Workload performance and availability

3. Total cost of ownership

4. Business unit preference

No two organizations make the same set of decisions. For some, the decision to locate a specific workload in a public cloud may reflect a need for rapid access to resources that can scale up to support a newly launched mobile application or business initiative. For others, hardware and software depreciation cycles may limit flexibility, or information management requirements may dictate use of dedicated on-premise resources.

Frequently, concerns about data protection, disaster recovery, and confidentiality weigh heavily. As is shown in Figure 3, among the world's largest organizations, private cloud is expected to carry a significant share (45%) of workloads in 2015 and beyond. Non-cloud resources are expected to account for almost a third (32%) of workloads, with public cloud taking the rest. IDC believes these future-looking assessments of deployment choices by these decision makers may be somewhat optimistic in terms of the rate at which organizations will transition to private cloud. As IT teams begin to grapple with the challenges of migrating legacy applications to cloud platforms, enterprise IT may decide the workload is not well suited to full self-service, for dynamically shared and pooled cloud platforms, or will not perform to acceptable levels in a shared infrastructure environment.

FIGURE 3

Plans to Deploy Production Workloads in to Public and Private Clouds

Q.   What percent your organization's production workloads do you expect will be deployed in the following environments by 2015?
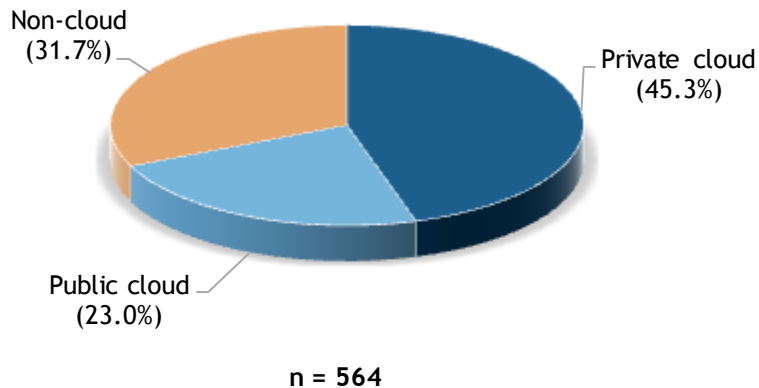
n = 564

Base = Enterprise IT organizations using or considering cloud computing
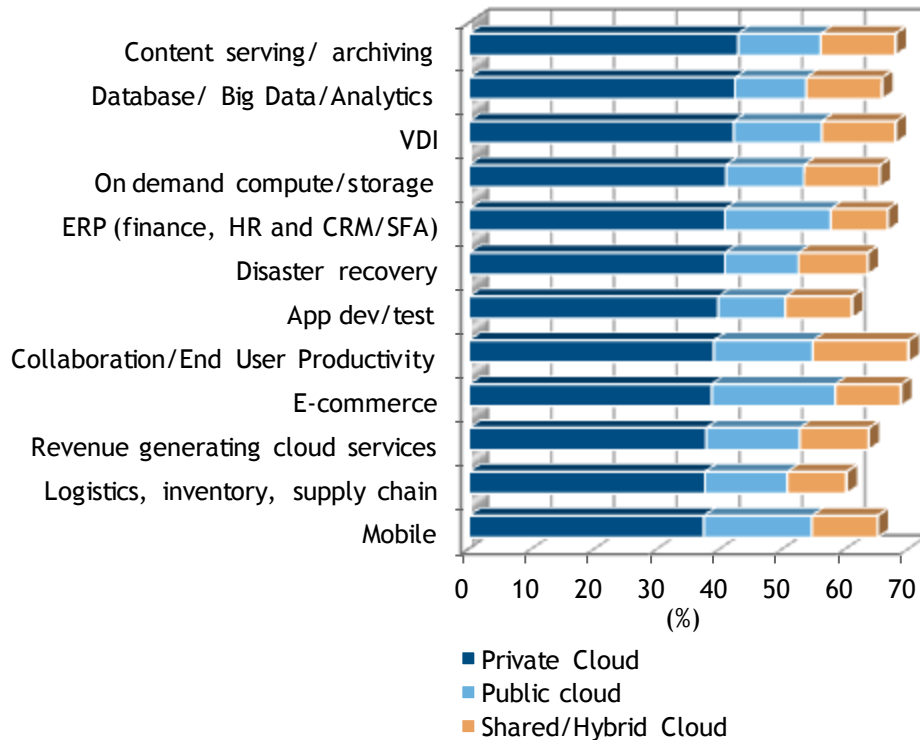
Source: EMC Cloud Maturity Survey, IDC, September 2014

When asked to consider different types of workloads in more detail, participants generally agreed that workloads with larger data management and storage requirements, such as content serving and archiving, big data analytics, VDI and portions of ERP were somewhat better suited for private cloud environments. Mobile and collaborative applications were more often targeted for public cloud support (see Figure 4).

A relatively small number of decision makers indicated that they expect some workloads to be enabled by shared public/private cloud architectures. In IDC's experience this is somewhat typical of certain externally facing eCommerce, sale force automation, and customer support applications that rely on traditional backend databases, security and storage resources but make use of public cloud for web tier user interactions and/or development/test/QA activities.

FIGURE 4

Workload Deployment Plans for 2015

Q.   For the following types of workloads, indicate your organization's plans for where the majority of these workloads will be deployed by 2015

n = 564

Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

The study validates that the ability to clearly define the performance, security, and data management policies needed for each workload is a mark of more mature organizations that have learned to think about cloud implementation in terms of service levels, repeatable configurations and management processes that can be automated and implemented at scale.

IDC's Cloud MaturityScape identifies five levels of cloud maturity:

- **Ad hoc** – focused primarily on pilot projects and validation activities driven by the needs of individual decision makers and teams

- **Opportunistic** – driven by the business needs of individual workgroups and departments with no effort to share resources or create scalable, repeatable implementations

- **Repeatable** – consistent effort made to leverage and reuse best practices and resources across multiple groups and departments
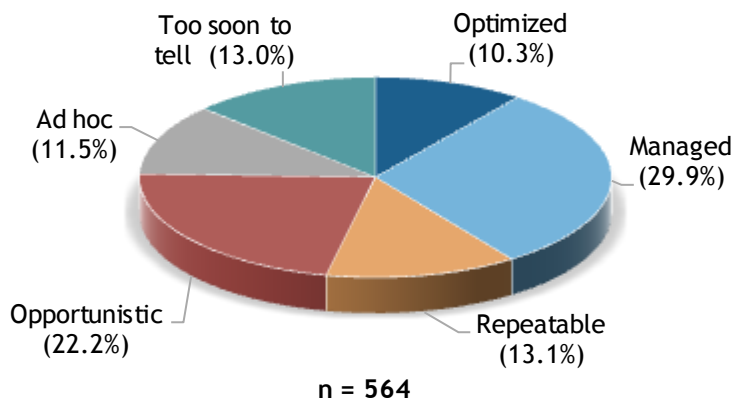
- **Managed** – widespread use of Cloud supported by proactive business and IT leadership driving decisions about Cloud use, operational policies, IT architectures, and contract negotiation and monitoring

- **Optimized** – broadly implemented Cloud first strategy that is proactively managed and is clearly driving business innovation while improving IT operational efficiency

Organizations that have more mature and optimized cloud strategies are generally much more workload aware than those at earlier stages. The most optimized organizations typically define services in terms of policies and standards that can be implemented and maintained using broad-based automation and orchestration solutions. They are able to offer end users consistent service levels and menu-based self-service experiences that rapidly deliver predefined services. The most mature organizations go well beyond defining simple compute infrastructure services. Rather, they define, implement and maintain end-to-end services that address compute, network, storage and data protection needs of workloads. As is seen in figure 5, just 10% of enterprise IT organizations believe their cloud strategy is optimized at this point in time. Most recognize there is much work to be done.

FIGURE 5

Worldwide Enterprise Cloud Maturity Self Assessments

Q.   How would you describe your organization's cloud strategy and operational environment today?

Too soon to tell (13.0%)
Optimized (10.3%)
Ad hoc (11.5%)
Managed (29.9%)
Opportunistic (22.2%)
Repeatable (13.1%)

n = 564

Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

Use of Workload Tiers Support Mature, Optimized Hybrid Cloud Strategies

Automated, workload-specific management is a fundamental enabler of optimized hybrid cloud environments. Ad hoc and opportunistic cloud initiatives typically focus on automated provisioning of a small set of workloads for very specific roles and use cases. As IT teams work to create highly dynamic software-defined data centers, that can pool and share resources across a broad range of workloads, the need to develop standard service definitions, configuration templates, operational policies and orchestrated workflows is required. By eliminating ad hoc configurations and implementing policy-drive automation, workloads can be more efficiently deployed, migrated and reclaimed as needed. This in turn allows IT teams

to increase resource utilization, and respond more quickly to changing business needs while holding down costs.

About 60% of enterprise IT organizations currently classify workloads into priority tiers (see Figure 6). Each tier is typically defined based on workload performance, information management and security needs (see Figure 7).

FIGURE 6

Worldwide Enterprise IT Use of Workload Tiers

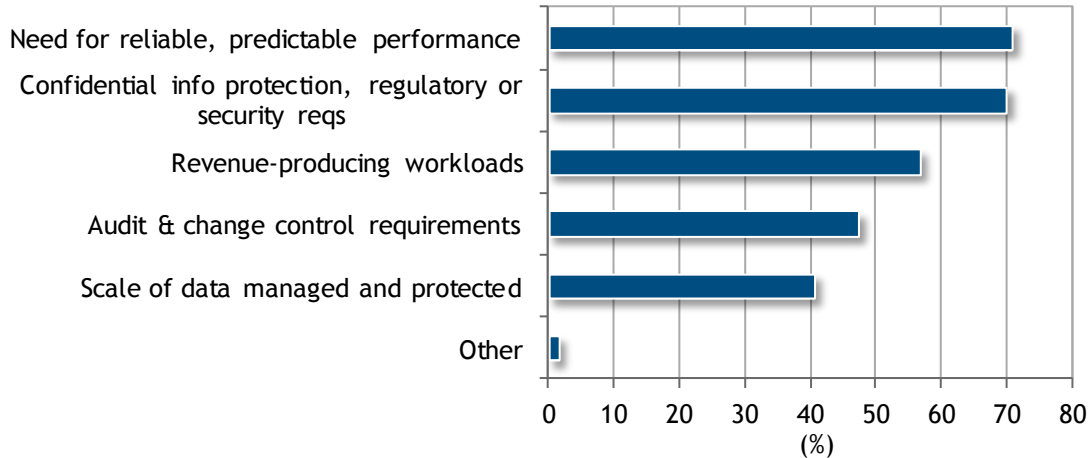*Q.   Does your organization classify workloads into priority Tiers (eg. Tier 1, Tier 2, Tier 3)?*
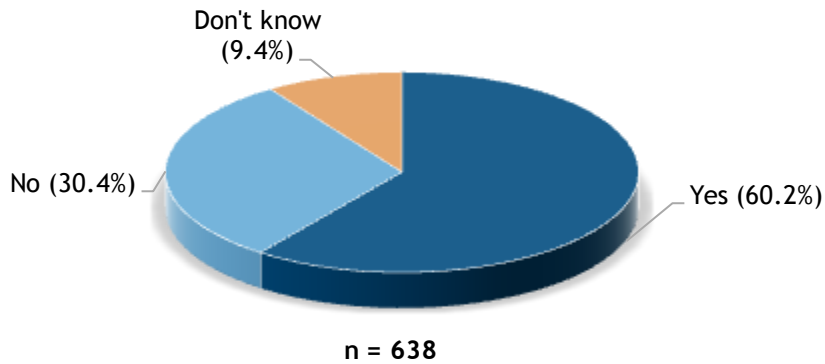
Don't know
(9.4%)

No (30.4%)

Yes (60.2%)

n = 638

Base = Enterprise IT organizations

Source: EMC Cloud Maturity Survey, IDC, September 2014

FIGURE 7

Characteristics of Tier 1 Workloads

Q.   Which of the following are considered primary characteristics of Tier 1 workloads?

Need for reliable, predictable performance

Confidential info protection, regulatory or security reqs

Revenue-producing workloads

Audit & change control requirements

Scale of data managed and protected

Other

0   10   20   30   40   50   60   70   80
(%)

n = 384

Base = Enterprise IT organizations that classify workloads

Source: EMC Cloud Maturity Survey, IDC, September 2014

Classification of workload tiers is proving to be a useful way to ensure that performance and data management requirements are included as part of the core design of cloud environments, rather than as an afterthought. As is seen in Figure 8, the more mature an organization's cloud environment, the more likely it is to already rely on some type of workload tier classification approach. Organizations with optimized cloud strategies are twice as likely to designate tiers as organizations that are in the earliest stages of defining their approach to cloud. The use of professional services with workload tiering expertise can be a way to expedite this classification exercise.

FIGURE 8

Use of Workload Tiers Segmented by Cloud Strategies

Q. *How would you describe your organization's cloud strategy and operational environment today?*
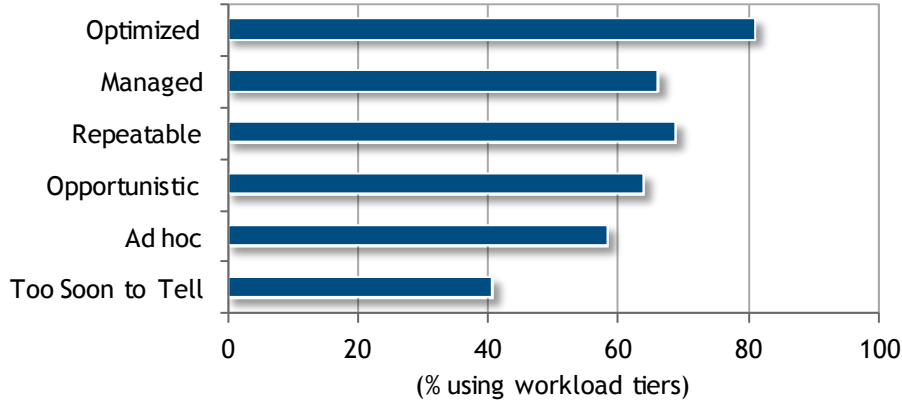
n = 564

Base = Enterprise IT organizations using or considering cloud computing
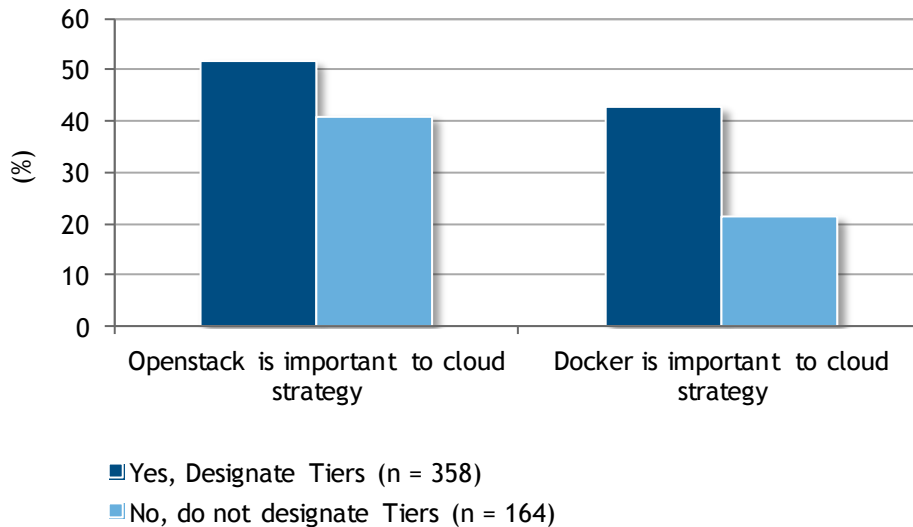
Source: EMC Cloud Maturity Survey, IDC, September 2014

Similarly, organizations that currently designate tiers are likely to be further along in evaluating the contribution that OpenStack, Docker and other open source technologies can make across their emerging cloud environment. Organizations that rely on well-defined workload tiers to define day-to-day operational workflows, data protection and storage management priorities are well positioned to take advantage of open technologies since they typically have a more sophisticated understanding of the value delivered from the use of standardized, repeatable solutions.

FIGURE 9

Importance of Open Source

Q.   How important are the following Open Source and standards projects to your organization's cloud strategy?

■Yes, Designate Tiers (n = 358)
■No, do not designate Tiers (n = 164)

Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

FUTURE OUTLOOK

## Tier Classification Enables Workload Optimization Across Hybrid Clouds

Consistently defined and managed workload tier classification systems allow IT teams to simplify and standardize consideration of public, private and non-cloud alternatives on a workload-specific basis. Rather than debate the qualitative merits of one approach over another, a well-defined classification scheme allows business and IT decision makers to document required service levels and operational policies that can then be evaluated and validated across different options. Having a well articulated workload classification system means that an organization can be confident it is considering critical KPIs and requirements for performance, security, data protection, and backup on a consistent basis across cloud alternatives. IDC believes this type of mature approach to workload classifications can help accelerate evaluation and adoption of hybrid cloud architectures by allowing all decision makers to evaluate options on a consistent basis.

In some cases, line of business decision makers may favor public cloud options that appear to be very inexpensive initially but might find that these options turn out to be rather expensive when additional costs tied to required levels of availability, security and disaster recovery are added into the calculations. Mature organizations are better able to define and evaluate public and private cloud options, as well as non-cloud choices, on an equal footing. As is shown in Figure 10, 35% of organizations that use workload tier classification approaches feel comfortable considering public and private cloud equally for their most critical Tier 1 workloads. An additional 30% are comfortable considering private cloud for their most important workloads. Only a very small group, 12% of organizations that define tiers, said they do not expect to migrate Tier 1 workloads to any type of cloud.

FIGURE 10

Plans for Tier 1 Workloads in the Cloud

Q.   *Which statement best describes your organization's plans for supporting Tier 1 workloads in any cloud environment?*
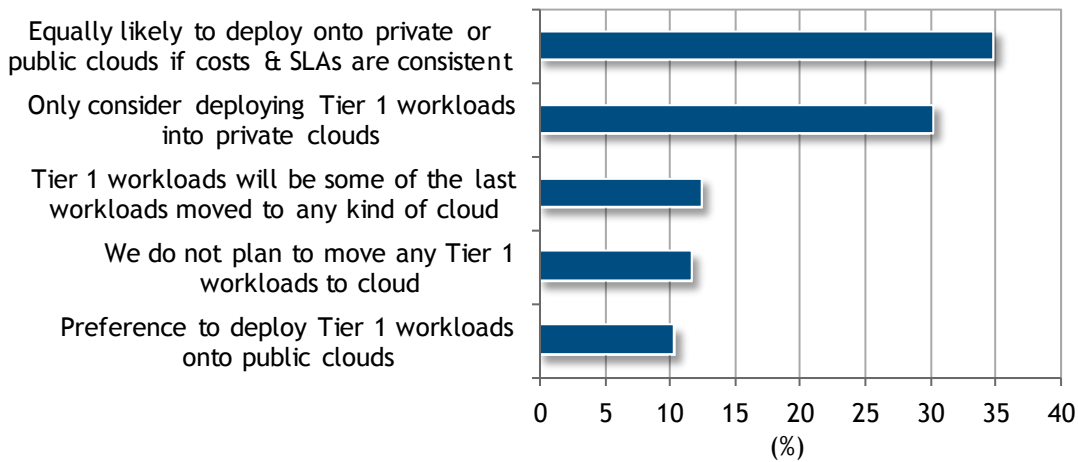
n = 384

Base = Respondents indicated organization classify workloads into priority Tiers

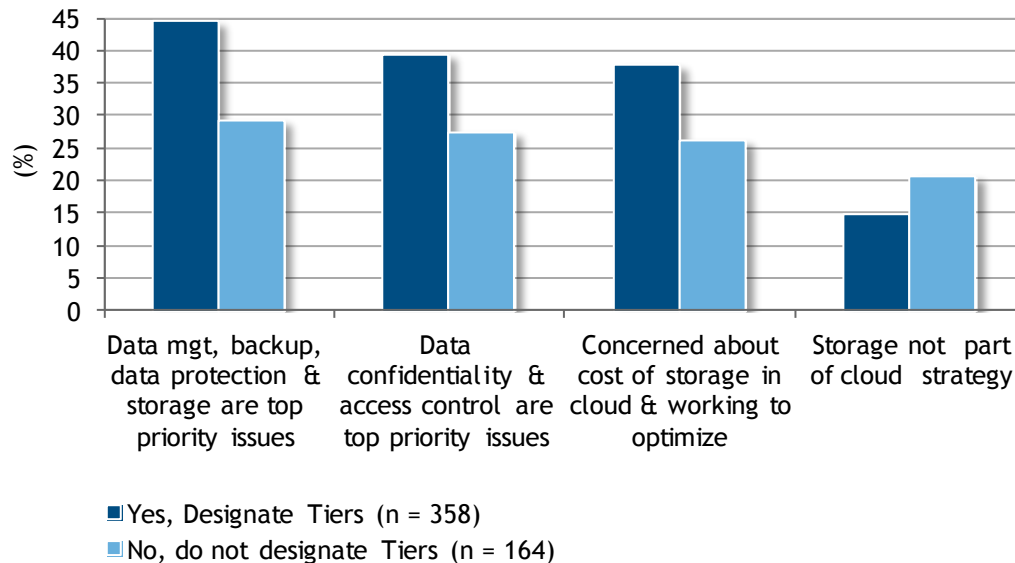Source: EMC Cloud Maturity Survey, IDC, September 2014

Workload Awareness Highlights Cloud Storage and Data Protection Priorities

Workload awareness, as demonstrated by the use of workload tier classification systems, promotes a mature and robust evaluation of cloud options and helps enterprise IT teams balance the need for agility and speed with the security, data management, storage and compliance requirements of mission-critical workloads. As seen in Figure 11, organizations that designate workload tiers are more likely to include data management, backup, storage and data confidentiality as top priorities for their cloud strategies. Similarly, as shown in Figure 12, organizations with more mature cloud strategies, i.e. those that are able to scale and deliver consistent production services on an ongoing basis, are more likely to recognize the need to include data protection, storage and backup into their cloud initiatives. Organizations with emerging cloud strategies are less likely to include storage and data protection in their approaches.

FIGURE 11

Use of Tiers Impacts Cloud Storage and Data Management Strategies

*Q.*   *With respect to storage, which statement(s) best describe your cloud strategy?*

■ Yes, Designate Tiers (n = 358)
■ No, do not designate Tiers (n = 164)

Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

FIGURE 12

Role of Storage in Cloud Strategies

Q.   With respect to storage, which statement(s) best describe your cloud strategy?
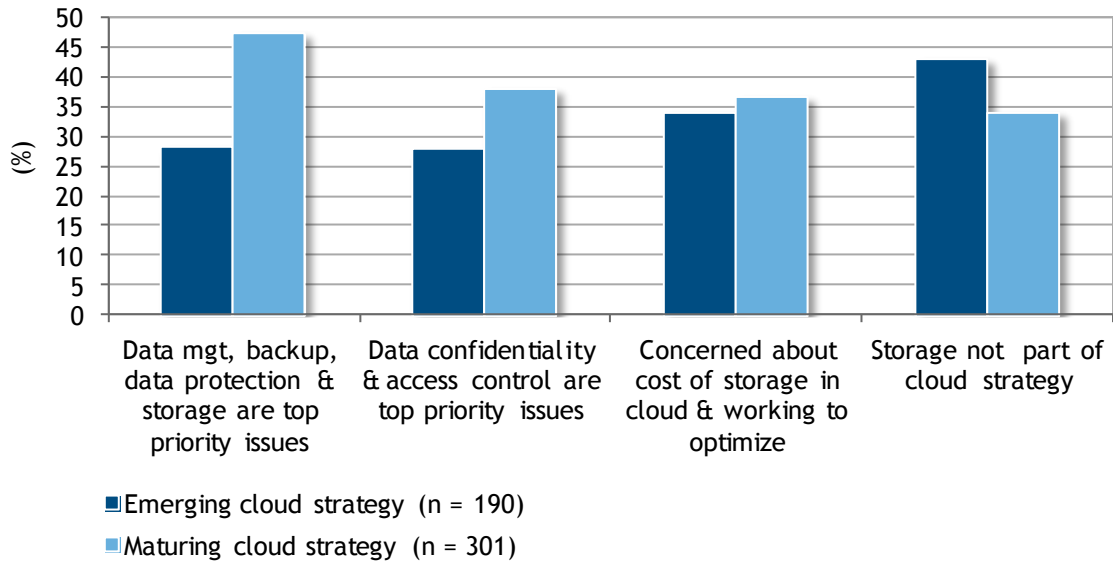
Base = Enterprise IT organizations using or considering cloud computing

Source: EMC Cloud Maturity Survey, IDC, September 2014

CONCLUSION: WORKLOAD AWARE STRATEGIES REQUIRED FOR ENTERPRISE HYBRID CLOUD SUCCESS

IDC expects that around the world, enterprise class organizations will rely on complex, hybrid cloud architectures for a number of years to come. The performance, security, data protection and data management requirements of workloads will dictate the rate and direction of change as each organization considers its current and future requirements and makes its own unique decisions.

Workload awareness and tiering will be critical success factors for enterprise IT teams as they implement hybrid cloud solutions over the long term. For organizations that already rely on some type of workload tier classification approach, IDC recommends those policies and guidelines be included as part of all current and future cloud assessments.

For organizations that do not have an established approach to identifying and managing workload data management requirements using policy based automation and SLAs, the development of a workload aware approach to cloud management is a major challenge that needs to be overcome. Without comprehensive workload awareness, organizations will find it increasingly difficult to scale and optimize their cloud environments. For IT teams that want to move from ad hoc and opportunistic cloud architectures to repeatable, consistent enterprise-grade hybrid cloud solutions, the design and implementation of a workload aware approach, with appropriate tiering, should be a top priority.

The following charts provide a demographic overview of the study participants. Collectively, they represent the perspectives and opinions held by large scale enterprise class organizations around the world.

FIGURE 13

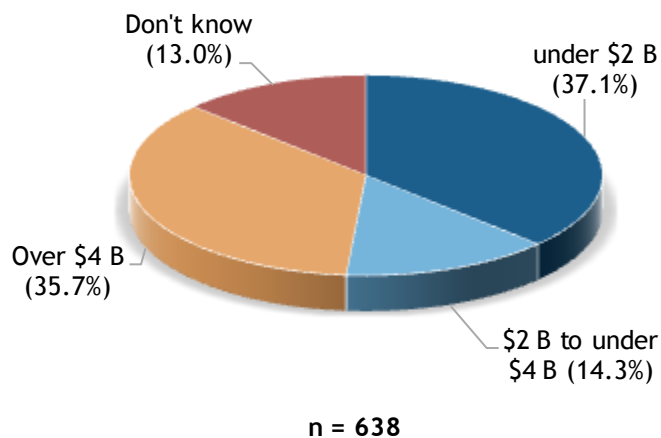**Survey Participants by Company Size (Numbers of Employees)**
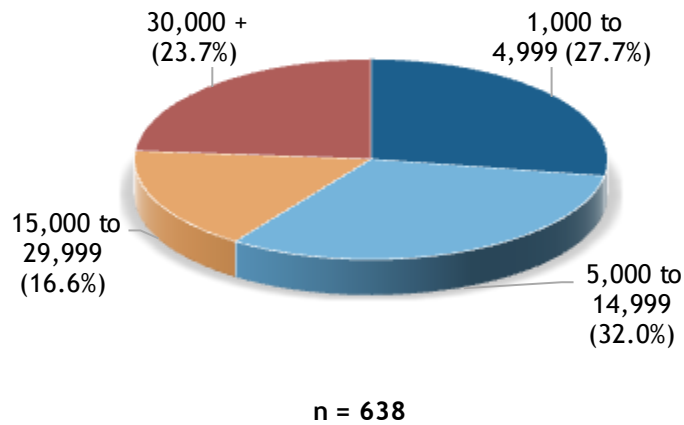
30,000 + (23.7%)

1,000 to 4,999 (27.7%)

15,000 to 29,999 (16.6%)

5,000 to 14,999 (32.0%)

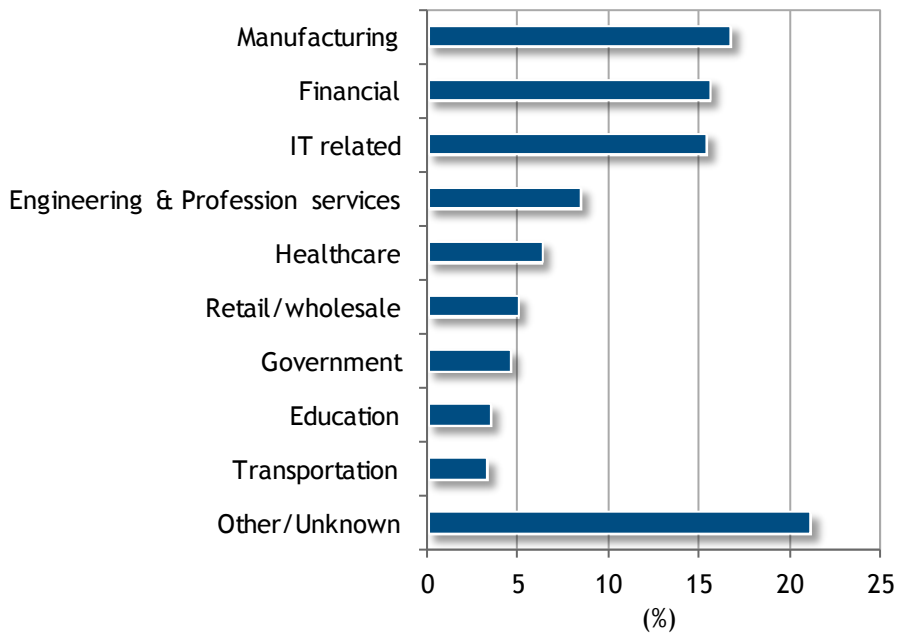n = 638

Base = Enterprise IT organizations

Source: EMC Cloud Maturity Survey, IDC, September 2014

FIGURE 14

Survey Participant Size by Total Annual Revenue

Don't know (13.0%)

under $2 B (37.1%)

Over $4 B (35.7%)

$2 B to under $4 B (14.3%)

n = 638

Base = Enterprise IT organizations

Source: EMC Cloud Maturity Survey, IDC, September 2014

FIGURE 15

Survey Participant by Region
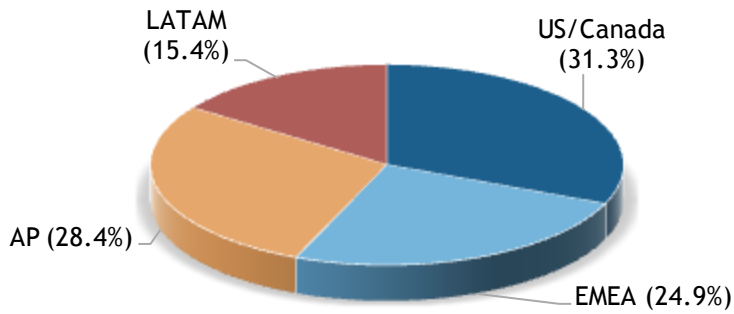
n = 638

Base = Enterprise IT organizations

Source: EMC Cloud Maturity Survey, IDC, September 2014

FIGURE 16

Survey Participants by Industry

(%)

n = 638

Base = Enterprise IT organizations

Source: EMC Cloud Maturity Survey, IDC, September 2014

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.

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