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Executive Summary

1. As cloud adoption accelerates and the sophistication of cloud applications and services increases, organizations are evaluating the best fit for elements of their critical business applications including moving into maturing IaaS and PaaS services or onto private cloud landing zones.

2. While customers continue to deploy public cloud infrastructure and PaaS solutions at a rapid rate, they are also significantly increasing investments in on- and off-premises private cloud solutions where dedicated systems better address security, performance/latency, cost and control requirements.

3. Multi-cloud deployments are now the norm for enterprise organizations - less than 30% of customers report using single cloud environments. Most customers leverage different cloud platforms across multiple service providers.

4. The interoperability of data and applications between these varied cloud environments is growing in importance, yet access to hybrid cloud capabilities remain elusive for most enterprises. Where interoperability exists, private cloud (either on-premises or with a service provider) is typically the on-ramp to public cloud interoperability.
80% of customers report repatriating workloads from public cloud environments. On average, those respondents expect to move 50% of their public cloud applications to hosted private or on-premises locations over the next two years, but this doesn’t mean customers will consume 50% less public cloud.

These same customers also expect their application portfolio to increase 50% over five years and are making a significant shift to modular application development. Many of these modular applications will land in public cloud environments, but these applications will be more easily extensible to dedicated private cloud environments as well.

The complexity of managing an increasingly disaggregated application portfolio across multiple landing zones is driving a sharper focus on TCO and performance for discrete elements. The advent of new, more mature private cloud solutions presents customers with the capability to migrate workload components back (or near) on premises.

While IDC does not expect the growth in public cloud adoption to slow or decline due to new service innovation, there is a significant proportion of customers that will leverage private cloud options to modernize their large installed base of non-cloud applications and will continue to reassess the applicability of public cloud for those applications.
Executive Summary

1. The early success of public cloud providers was built on servicing cloud-first customers, application developers and ISV’s that often experienced massive application growth. The follow on expansion was built on enabling major enterprises to develop and extend their of competing digital services..

2. The modern enterprise, wants to extend the value of its classic applications. It has multiple options as it evaluates best fit and as its technical expertise with emerging cloud technologies improves. All enterprises have more opportunities and capabilities to migrate or extend applications by leveraging alternate landing zones.

3. Respondents from more agile organizations will have the best opportunity to move applications because they are already confident that they can accommodate the right cloud option while less technically-savvy organizations that lack such capabilities will not have the same opportunity. Their applications will largely stay in place.

4. The need to develop/deploy complex hybrid cloud services is a game changer. Today, these are deployed by technically adept organizations where moving/rebalancing applications is minimized through automation and an orchestration architecture that allows interdependent applications to run across multiple landing zones.
Research Objectives

This IDC presentation includes analysis of IDC’s 2018 Cloud and AI Infrastructure Perceptions Survey

- IDC’s Enterprise, Datacenter, Cloud infrastructure research practice conducted a survey of end-users to understand current and planned use of cloud and artificial intelligence (AI) in their organizations.
- The primary goal of the survey was to uncover cloud adoption, segment types of buyer and uncover the impact that multi-cloud adoption will have on enterprise deployments.
- Secondary goals sought to understand the impact of AI in conjunction with cloud adoption.

Additional detail and data available via request.
Key Analysis and Findings
Substantial Workload Shifts to Cloud Environments

Private Cloud a strong focus for on- and off-premises solutions

Q. What percent of your organization's applications are currently deployed in the following venues: sum to 100

<table>
<thead>
<tr>
<th>% of Applications</th>
<th>Saas</th>
<th>IaaS/PaaS</th>
<th>Hosted Private Cloud</th>
<th>On-Premises Private Cloud</th>
<th>Off-Premises Non-cloud</th>
<th>On-Premises Non-Cloud</th>
</tr>
</thead>
<tbody>
<tr>
<td>TODAY</td>
<td>11%</td>
<td>10%</td>
<td>14%</td>
<td>30%</td>
<td>10%</td>
<td>26%</td>
</tr>
<tr>
<td>IDEAL STATE</td>
<td>13%</td>
<td>12%</td>
<td>17%</td>
<td>31%</td>
<td>10%</td>
<td>17%</td>
</tr>
</tbody>
</table>

Focus shifts from efficiencies & cost savings to speed & performance

Application churn, particularly for non-cloud on premises apps favors private clouds

Cloud management the glue for the increasingly complex application portfolio

n = 400
Source: IDC's Cloud and AI Adoption Survey, January 2018
Customers Default to Multi-cloud Environments
The Journey Begins with Private Cloud

Multi-Cloud Adoption by Type

Q. Over the next two years, how would you describe your organization’s use of different on-premise & off-premise cloud environments? [SR]

- Single Cloud: 28%
- Multi-Cloud Low Interoperability: 40%
- Multi-Cloud High Interoperability: 24%
- Hybrid: 7%

Multi-Cloud Connection Points

Q. Has your organization enabled any of the following clouds to interoperate? [MR]

- On-premise private cloud to hosted private cloud: 43%
- Hosted private cloud with a public cloud: 39%
- On-premise private cloud to public cloud: 29%
- Public cloud with a different public cloud: 25%

Source: IDC's Cloud and AI Adoption Survey, January 2018
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80% of Customers Report Cloud Repatriation Activities

More customers expect to repatriate workloads next year

Public Cloud Repatriation Rates

Q. In the last year, has your organization migrated any applications or data that were primarily part of a public cloud environment to a private cloud or on-premises environment?

2018:
- Yes, 81%
- No, 19%

2019:
- Yes, 85%
- No, 15%

Percent of Public Applications Expected to Repatriate Over the Next Two Years (Average)

Q. Using your best guess, what proportion of the public cloud applications installed today will move to a private cloud, hosted private cloud or non-cloud environment over the next two years?

50%

Top Repatriation Drivers
- Security: 19%
- Performance: 14%
- Cost: 12%
- Control: 12%
- Centralize/Reduce Shadow IT: 11%

Source: IDC's Cloud and AI Adoption Survey, January 2018
Cloud Repatriation by Organization Type

Agile Organizations are Repatriating Workloads at Higher Rates than Less-Agile Organizations; Hybrid Cloud is a Game-Changer for Public Cloud Stability

Repatriation Activity by Company Age

- Younger organizations (less than 10 years) are significantly likely to repatriate public cloud workloads than those that have been in business for 25+ years.

Repatriation Activity by Company Persona

- Disrupters, Makers, Under Reinvention have the highest rates of repatriation (92%).
- Transitioning (92%) and Staying the Course (66%) also show high repatriation rates.

Repatriation Activity by Cloud Architectures

- Companies deploying true hybrid cloud capabilities have some of the LOWEST rates of repatriation. These organizations have the ability to run a single application across multiple cloud environments and hence do not need to move workloads at the same rate as organizations without automation.

Company culture is a strong determinant of repatriation. Companies that are self-described market disrupters, market makers, under reinvention or transitioning have the highest rates of repatriation.

Source: IDC’s Cloud and AI Adoption Survey, January 2018

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n = 400
Cloud Repatriation by Segment

Application Architectures, Perceptions of Cost and Job Role Impact Cloud Repatriation Activity

Repatriation Activity by Application Interdependencies
- High 84%
- Medium 81%
- Low 78%

Companies reporting high levels of application interdependencies are the most likely to repatriate workloads, likely due to needs to connect to on-premises data or applications.

Repatriation Activity by Perceived Public Cloud Cost
- Public Cloud Higher Cost 55%
- Public Cloud Lower Cost 80%
- 85%

When Public Cloud costs are perceived to be higher than other computing costs, repatriation rates increase.

Repatriation Activity by Job Role
- Senior IT 84%
- All Other IT 83%
- Line of Business 66%

Line of Business decision makers are the least likely to repatriate workloads. The IT organization is most likely to repatriate applications and data from public cloud environments.

Source: IDC's Cloud and AI Adoption Survey, January 2018
Shifting, Disaggregated Application Portfolio

Complexity in management rises quickly over the next two years

- 50% growth in the typical application portfolio
- 38% of applications will be built using modular development frameworks
- 50%+ of all applications at remote/edge or provider datacenters
- 49% expect high application interdependencies (up from 19% today)
- Each business application already has 4 – 8 other application dependencies

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Related Research

- **DR2018_GS4_MB**
  - When Computing Becomes Human: Automation, Innovation, and the Rise of the All-Powerful Service Provider
  - March 2018

- **US43941918**
  - CloudView 2018: Visualization of Worldwide Survey Results
  - June 2018

- **US44086018**
  - IDC Cloud BuyerView: IaaSView Survey Results
  - PowerPoint Attachment
  - June 2018

- **US42014217**
  - Worldwide Software as a Service and Cloud Software Forecast, 2017–2021
  - July 2017

- **US43978918**
  - IDC PlanScape: Local Clouds to Deliver DX at the Edge
  - July 2018

- **EMEA44074418**
  - IDC Service Provider Pulse 1Q18 Quarterly Summary
  - July 2018

- **US43842118**
  - 2018 Worldwide Public Cloud Services Competitive Landscape: Concentration, Stability, or Diversification?
  - June 2018

- **US43625818**
  - Worldwide and Regional Public IT Cloud Services Forecast, 2018–2021
  - May 2018
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Methodology

- IDC conducted a survey targeting infrastructure and operations end-users. The survey sample included:

<table>
<thead>
<tr>
<th>Country</th>
<th>50-&lt;250 employees</th>
<th>250-&lt;1,000 employees</th>
<th>1,000+ employees</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>81</td>
<td>65</td>
<td>104</td>
<td>250</td>
</tr>
<tr>
<td>UK</td>
<td>23</td>
<td>22</td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td>India</td>
<td>5</td>
<td>12</td>
<td>8</td>
<td>25</td>
</tr>
<tr>
<td>Singapore</td>
<td>5</td>
<td>11</td>
<td>9</td>
<td>25</td>
</tr>
<tr>
<td>Australia/NZ</td>
<td>8</td>
<td>10</td>
<td>7</td>
<td>25</td>
</tr>
<tr>
<td>Total</td>
<td>122</td>
<td>120</td>
<td>158</td>
<td>400</td>
</tr>
</tbody>
</table>

- Field Time: January, 2018
- Method: Internet
- Screener Requirements
  - Familiarity with your organization's cloud computing infrastructure and applications
  - Familiarity with your organization's IT strategy and future technology investments
  - Knowledge, influence or authority over IT investment decisions
Q. How many full-time employees work in your entire company?

Q. What industry classification best represents your site’s principal business activity?

Survey Overview

Company Size

- 5,000+ 16%
- <50 0%
- 1,000-<5,000 24%
- 50-<250 30%
- 250-<1,000 30%

Vertical Industry

- Other
- Government
- Education
- Heathcare
- Telco/Media
- Professional Services
- Retail/ Wholesale
- Manufacturing
- Financial Services

Source: Cloud and Artificial Intelligence Perceptions Survey 2018, IDC, January, 2018