SDI, Containers and DevOps - Cloud Adoption Trends Driving IT Transformation

Research Report

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Executive Summary

As we approach 2020, businesses face a maelstrom of increasing customer demands, disruptive competitive activity and technological hairpin turns. Speed is essential to survival and agility has become an organizational imperative. Against this backdrop, organizations must navigate an ever-greater choice of technologies to support their transformation initiatives.

To better understand how businesses across the globe are responding to these challenges, SUSE commissioned Insight Avenue, an independent market research agency to explore these issues in more depth. This report discusses the findings of a large global study spanning twenty countries and consisting of more than 1400 interviews with IT leaders, in businesses with at least 250 employees. Building on previous research published by SUSE in 2016, this report explores the latest cloud adoption trends and examines what businesses think about software-defined infrastructure (SDI), containers and DevOps and how these are transforming IT.

The research finds businesses focused on hybrid and private cloud deployments in their quest for cost control and agility, particularly where mission-critical workloads are concerned. SDI is felt to be at the heart of data center modernization and momentum towards OpenStack continues. Skills and experience anxieties are intensifying as emerging technologies come to the fore. Alongside this, DevOps and containers move beyond media hype and gain traction as IT leaders look to drive agile transformation in their businesses.

Some of the key stats from the research are as follows:

Cloud growth trends and drivers

- Use of cloud is expected to grow over the next two years – this is particularly the case for hybrid (66%) and private cloud (55%), with 36% seeing public cloud growing in this timeframe
- The four key factors driving growth of cloud over the next two years are cost reduction / budget constraints (61%), improving developer / programmer productivity (59%), data center consolidation (58%) and improving business agility and innovation (57%)

Mission critical cloud and SDI

- In 2017, the preferred cloud services for business-critical workloads are private cloud (43%) and hybrid cloud (42%)
- 89% say would ideally like to go from development in public cloud to production in their own private cloud. Key reasons are security (63%), data sovereignty (52%) and performance issues (52%), followed by cost (30%)
- 95% believe software-defined infrastructure is the future of the data center. Key benefits are faster delivery of IT resources (65%) and simplified data center management (63%), followed by the enabling of modern IT approaches such as DevOps and hybrid cloud (51%) and improved scalability (48%)

OpenStack momentum

- OpenStack is already deployed / in production in 23% of organizations (up from 15% in 2016). In addition, 37% are testing and 22% expect to do so in the next 12 months, meaning a total of 82% are using or plan to use OpenStack
- Organizations see the key advantages of OpenStack as flexibility (61%), reduced cost (52%), agility (47%), adaptability / integration (46%) and freedom of choice (44%). 34% see avoiding vendor lock-in as an advantage
- 82% say implementing OpenStack is difficult. 55% prefer to download and install OpenStack elements themselves and 40% opt for a commercial distribution

Skills and experience concerns

- 72% are concerned about the lack of available skillset in the market when moving to cloud and, closer to home, 72% are concerned about the lack of skillset within their own organization
- IT leaders see it as important to address and enhance skills in a number of areas particularly private cloud (97%), hybrid cloud (94%) and analytics (93%), along with emerging areas such as IoT (91%), DevOps (89%), containers (85%) and OpenStack (85%)
- 55% say the responsibility for developing new IT skills lies with employees rather than the organization

Moving forwards: SDI, Containers and DevOps

- 86% see DevOps as part of their IT strategy moving forwards and 77% say they plan to modify their application development and delivery to a DevOps model
- 27% are currently running containers with a further 44% planning to do this in the next 12 months
- The biggest benefits of running workloads using containers are seen as better resource allocation (53%), improved reliability (51%), cloud portability (50%), application scalability (43%) and speed of application development (41%)
- Potential challenges of developing workloads using containers are storage (53%), security (52%), the need for specialist skills (51%) and complexity/integration (46%)

The research shows organizations maturing in their cloud use and momentum in SDI, containers and DevOps fuelling the transformation of IT. The next two years will be pivotal for IT leaders as plans for technology adoption materialize and businesses take greater control of their journey to digital transformation.

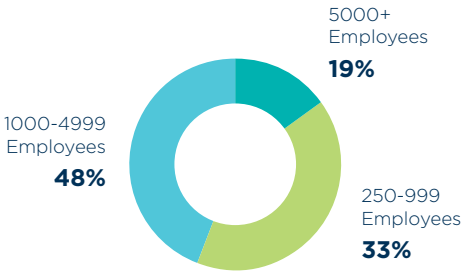
Research Methodology

1412 senior IT decision makers in organizations with 250+ employees across 20 countries completed an online survey in May / June 2017. Research was conducted by Insight Avenue, an independent market research consultancy based in the UK.

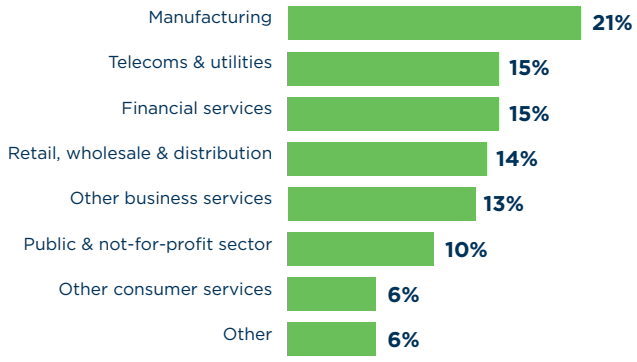
Sample breakdown by country (number of interviews)

US	**203**	Italy	**101**	India	**100**
Canada	**100**	Nordics	**100**	Japan	**100**
UK	**103**	Aurstralia	**100**	East / South Asia	**102**
Germany	**101**	China	**100**	Brazil	**101**
France	**101**				

Sample breakdown by company size



Simple breakdown by industry sector



Cloud growth trends and drivers

It is well documented that cloud has matured to such an extent that many organizations now follow a cloud-first or even a cloud-only strategy. With cloud underpinning many transformation initiatives, forward thinking leaders are redefining how they operate and rethinking their cloud infrastructure.

Momentum continues and the use of cloud is expected to grow over the next two years (see Figure 1). This is particularly the case for hybrid cloud (66%), along with private cloud (55%). In addition, 36% of organizations expect to use public cloud more during this timeframe. Hybrid cloud, of course, includes private cloud. Hybrid cloud allows businesses to cherry-pick the "best of both clouds" maximising the benefits of private and public cloud models while minimizing the risks.

Several factors drive cloud use as we approach 2020 (see Figure 2). Cost reduction and budgetary constraints are perennial concerns for today's IT leader and influential in cloud decisions for 61% of organizations. Linked to this, 39% see rebalancing opex and capex as a reason to move to cloud, giving businesses better flexibility to control their costs. Other cloud drivers include improving developer and programmer productivity (59%), particularly in China (74%) and Brazil (72%) freeing up developer time to build more applications to grow the business, not merely support antiquated infrastructure. This along with data center consolidation (58%) are in line with the DevOps mentality and methodology that is emerging. As in the 2016 report, businesses remain driven by a need to continuously deploy innovations at an accelerated pace and enhance the customer experience and so improving business agility and innovation (57%) is a further influence in the move to cloud.

Figure 1: Expected change in usage of cloud solutions in the next 2 years

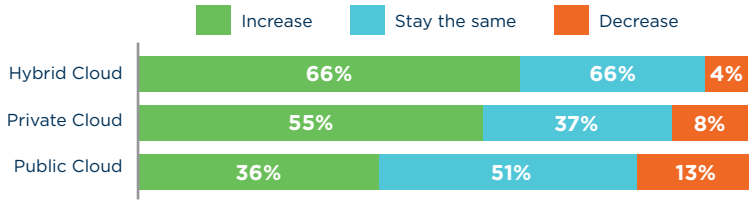
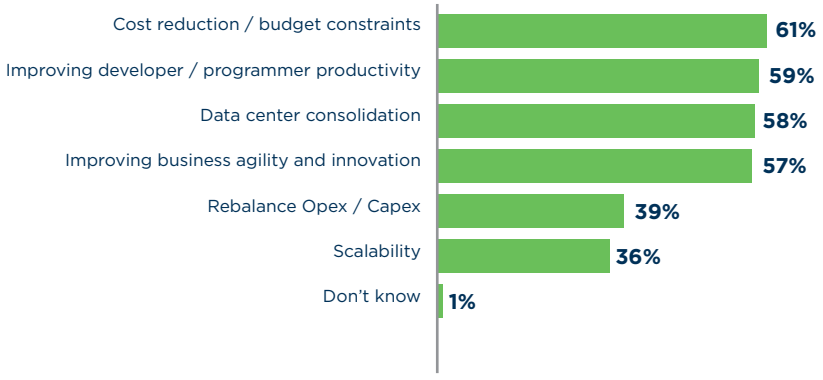


Figure 2: Drivers of cloud use over next 2 years



Mission critical cloud and SDI

Mission-critical workloads are the backbone to businesses, supporting everything from back-office through to employees and customers. These are often the most demanding types of applications where service interruption of any kind are showstopping for business operations. Arguably, as data connectivity and inter-dependence between applications increases, so more workloads fall into the mission-critical category.

Private cloud (43%) or as part of hybrid cloud (42%) is the preferred cloud service for business-critical workloads in 2017 (Figure 3). There is more leaning towards hybrid cloud since 2016 when 23% preferred this. Making use of any combination of multiple public or private infrastructures to access or perform certain tasks, with the orchestration of data between them, the popularity of hybrid cloud reflects a customer requirement for increased flexibility. There is however some market confusion around genuine hybrid and multi or mixed cloud approaches, with 47% saying they mean the same thing to them, increasing to 60% in the US.

89% say they would ideally like to go from development in public cloud to production in their own private cloud. And businesses are acting accordingly. 36% say they have migrated workloads from development in a public cloud to production in private cloud in the last 12 months. This is highest in India (48%), the US (47%) and Brazil (47%). 44% expect to do this in the next 12 months and a further 11% over the next two years. The key reasons for this are security (63%), data sovereignty (52%) and performance issues (52%), followed by cost (30%). Security is a key consideration especially where mission-critical workloads are concerned and, as in the 2016 report, IT leaders expect private cloud to simplify data security issues to some degree (84%).

In 2015, Gartner described the software-defined data center (SDDC) as being crucial to the long-term evolution of an agile digital business[1]. Fast forward to 2017 and 95% of businesses believe software-defined infrastructure is the future of the data center. Key benefits are seen to be faster delivery of IT resources (65%) and simplified data center management (63%), followed by the enabling of modern IT approaches such as DevOps and hybrid cloud (51%) and improved scalability (48%). Even if not on the immediate to-do list, an SDDC can still influence decisions around IT infrastructure and architectural development.

[1] http://www.gartner.com/newsroom/id/3136417

Figure 3: Preferred solution for business-critical workloads

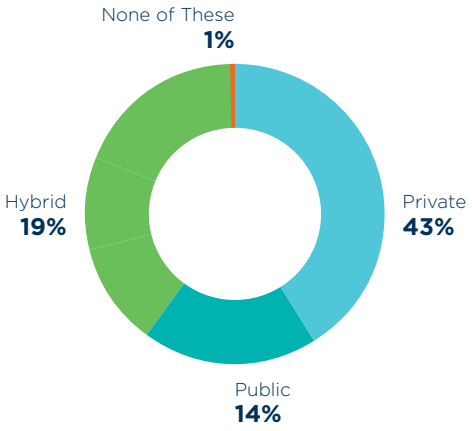
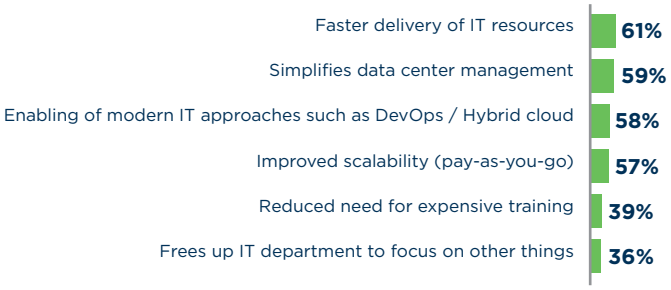


Figure 4: Benefits of SDI in the data center



OpenStack momentum

As we've already seen, many companies view private cloud as an increasingly important part of their cloud strategy, especially for business-critical workloads. One example gaining significant traction is OpenStack. OpenStack is already deployed and in production in 23% of organizations (up from 15% in 2016), increasing to 35% in the US. In addition, overall 37% are testing and 22% expect to do so in the next 12 months, meaning a total of 82% are potentially using or plan to use OpenStack (Figure 5).

Businesses are looking for long-term flexibility, ensuring they have the "right cloud" for each of their workloads and flexibility emerges as the main advantage associated with OpenStack (61%). This is followed by reduced cost (52%). With cost reduction and budget constraints pinpointed as the main driver of cloud use over the next two years, IT leaders also see OpenStack as a compelling option cost-wise. OpenStack is further seen to offer advantages in agility (47%), adaptability / integration (46%) and freedom of choice (44%) whilst 34% highlight avoiding vendor lock-in as a benefit. Figure 6 also shows that once deployed, businesses more readily identify advantages in the OpenStack approach.

While there are evident advantages to OpenStack, 82% say they think implementing OpenStack is difficult. This was also found to be the case in the 2016 report. Part of the difficulty is due to different approaches to implementation. 55% prefer to download and install OpenStack elements themselves and 40% opt for a commercial distribution. The Do-It-Yourself approach while inexpensive, requires considerable in-house expertise to be a viable option and in part, explains the perceived difficulty associated with implementing OpenStack.

OpenStack is evolving from a position of promise and potential to delivering real value on many levels once deployed and supporting more robust DevOps initiatives. With significant numbers testing or expecting to do so in the next 12 months, the next couple of years are likely to prove a tipping point here.

Figure 5: Deployment of OpenStack

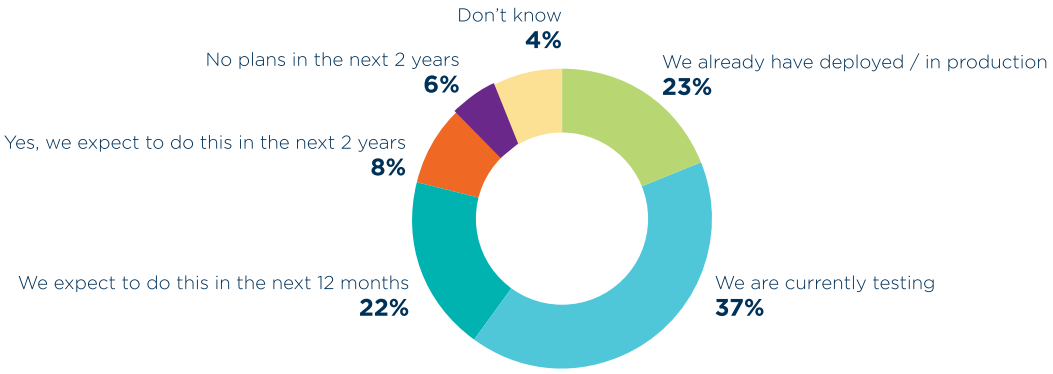
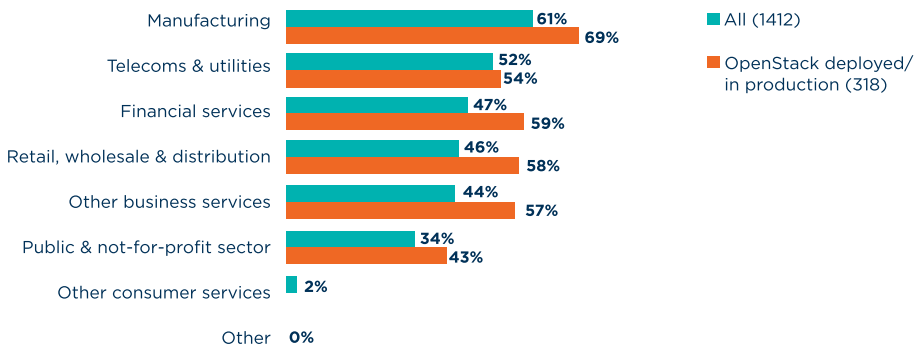


Figure 6: Advantages to implementing OpenStack



Skills and experience concerns

Challenges in OpenStack implementations serve to highlight a wider skills gap in the market. The IT and cloud landscape is shifting quickly and IT leaders must keep abreast of the latest developments and ensure they have the necessary skills and expertise to deliver on key IT initiatives.

Overall, 72% of IT leaders are concerned about the lack of available skillset in the market when moving to cloud. This is particularly pronounced in Brazil (86%) and the US (83%), as shown in Figure 7. Closer to home, 72% are concerned about the lack of skillset within their organization. This has significant implications for how quickly and effectively IT can deliver transformation initiatives to the business.

Against this backdrop, IT leaders are looking to build their own skills and experience too. Areas in which it is considered very or quite important to develop skills and experience include private cloud (97%), hybrid cloud (94%) and analytics (93%), along with emerging areas such as IoT (91%), DevOps (89%), containers (85%) and OpenStack (85%).

A general skills shortage in the market often forces businesses to build employee skills through training and development. However, 55% of IT leaders say the responsibility for developing new IT skills lies with employees rather than the organization. As such, businesses need to be wary of skills issues going unchecked and digital progress being compromised.

Figure 7: Lack of skillset in market a concern when moving to cloud

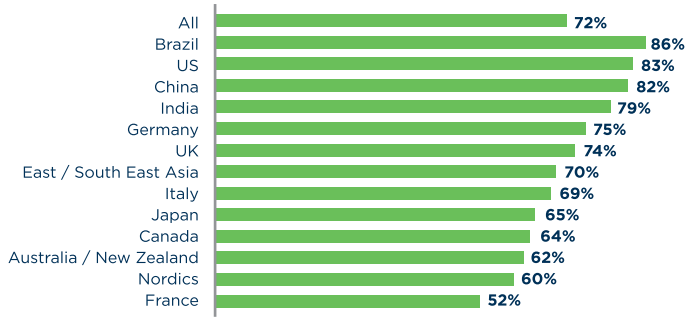
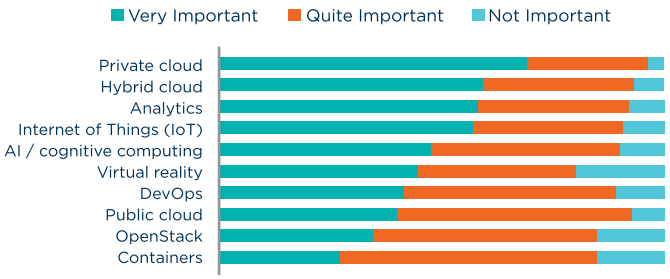


Figure 8: Importance of enhancing skills and experience by area



Moving forwards: SDI, Containers and DevOps

There has been much media hype around DevOps over the last few years. This research sought to explore the extent to which DevOps is now a concrete part of the IT landscape in business. Now, 86% see DevOps as part of their IT strategy moving forwards, increasing to 96% in the UK. 77% say they plan to modify their application development and delivery to a DevOps model.

It seems that in much the same way cloud first strategies have evolved, instead of requiring a business case for leveraging DevOps, organizations are likely to need a solid business case for NOT using DevOps. Although the SDI concept originates from the operational side of IT, the business goals are like those of DevOps: improving agility, reducing risk and decreasing operational expenses. SDI can provide the flexible and modular cloud infrastructure ideally suited to a true DevOps approach.

Although DevOps is not tied to any particular technology, containers have received a lot of interest as being a tool for making it easier, helping to enable DevOps workflows. 27% are currently running containers with a further 44% planning to do this in the next 12 months. Businesses see the benefits of developing workloads using containers as better resource allocation (53%), improved reliability (51%), cloud portability (50%), application scalability (43%) and speed of application development (41%), as shown in Figure 9.

As with any young technology, organizations readily identify potential obstacles in using containers (Figure 10). Storage (53%), security (52%), the need for specialist skills (51%) and complexity / integration (46%) are highlighted as challenges. As use cases increase some of the issues will resolve themselves, while others will require a more considered strategy to address. In the meantime, the best approach with any promising technology is to experiment and to see where and how the business can benefit from containerization in the context of its broader IT strategy.

Figure 9: Benefits of developing workloads using containers

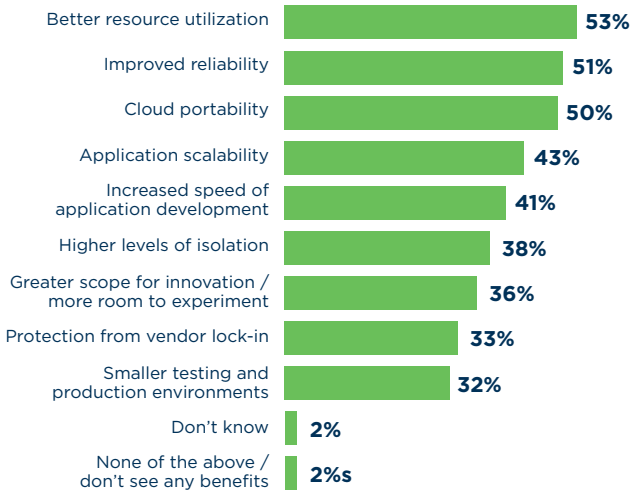
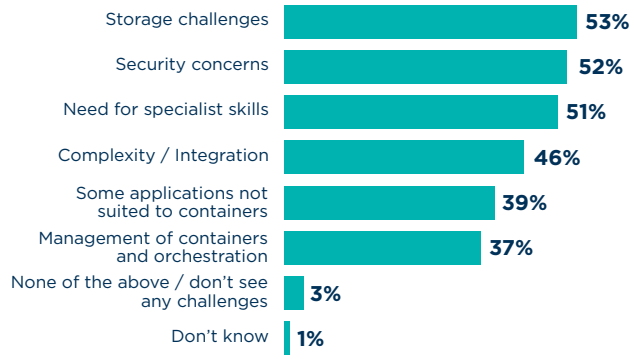


Figure 10: Potential challenges in using containers



Conclusion

Cloud has come a long way in the last ten years. Cautious experimentation in cloud has for many businesses evolved into cloud-first strategies underpinning IT transformation on a far larger scale. Agility is the watchword for competitive survival and success as we approach 2020, and as organizations progress with digital transformation, they are realizing that the human and technology sides of business are intertwined.

Intelligence is increasingly software led. And digital transformation, while largely customer-driven, is now often software-empowered. The growth of mobile and wireless devices, Internet of Things, big data and analytics, robotics and cognitive computing are a handful of the technology advancements impacting cloud usage and forcing a change in best practice. From a customer perspective, the ideal hybrid cloud use case is moving development and test environments to a public cloud to reduce costs and running production workloads in private data centers to ensure the highest levels of performance and security. Flexibility is everything for today's digital businesses.

Alongside developing their own professional skillset, IT leaders must rethink and modernize their data center to maximise agility. The next evolution in infrastructure and data center automation is recognized by businesses to be SDI. Alongside OpenStack momentum and the emergence of DevOps-first strategies and supporting container technologies, SDI heralds a new era for IT leaders looking for an agile and sustainable infrastructure to support transformation.