



Research Report

May 2020

How Today's IT Leaders are Daring to be Different

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Executive Summary

In 2020 businesses of all sectors across the globe and in every industry are facing unprecedented operational disruption alongside the perennial challenges of increasing customer demands, technological advancement and competitive activity. The need to be agile in how we run our businesses and serve our customers has never been more urgent, and transformation initiatives now must deliver for businesses to endure.

To better understand how IT leaders in businesses across the globe are rising to today's challenges and daring to be different, 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-two countries and consisting of more than 2000 interviews with IT leaders and application developers in businesses with at least 250 employees. Building on previous research published by SUSE in 2017, this report explores the latest must-have technologies and approaches, and explores how hybrid cloud and software-defined infrastructure now underpin IT transformation efforts.

The research finds IT leaders under pressure to deliver tangible outcomes in the next two years through technology investments – balancing the need to simplify how the business is run, alongside modernization and scaling the business. Agility is the core driver of IT transformation efforts and IT leaders are laser-focused on core technologies to deliver tangible outcomes. While hybrid cloud and

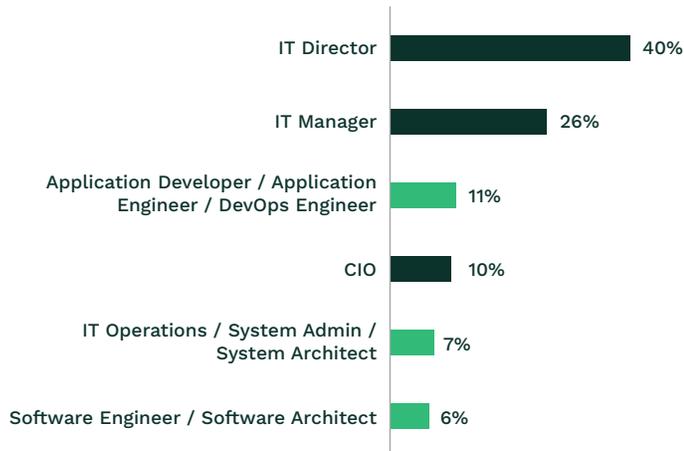
software-defined infrastructure sit at the heart of transformation, IT leaders are struggling to develop and source skills in AI, analytics, IoT and hybrid cloud. Reducing application development release cycles to months even weeks is seen as core to improving agility; and DevOps, micro-services and containers contribute to future-fit infrastructure.

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

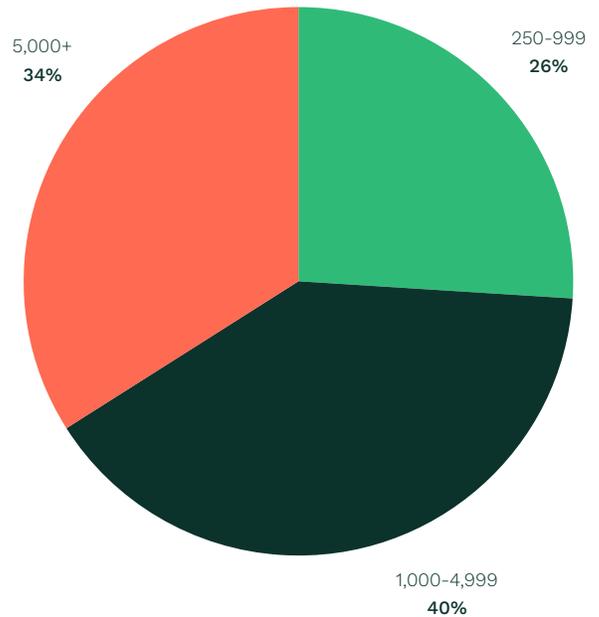
Outcomes-Focused Tech

- 88% of IT leaders see the next two years as critical for making a tangible difference through their tech investments
- Two-thirds (67%) say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how businesses operate over the next two years are simplifying how the business is run (65% say very important); modernizing how the business is run (52%) and accelerating change / scaling the business (51%)
- Tech and approaches seen as most important in helping businesses to deliver this tangible difference are High Performance Computing – HPC (83%), IoT (82%), edge computing (80%), the democratization of tech (75%) and open source (70%)
- Increasing agility is the number 1 driver of IT transformation efforts

Sample Breakdown by Job Function
The Present (and Future) is Hybrid Cloud



Sample Breakdown by Company Size



- In 2017, hybrid cloud use was forecast to increase in 66% of organizations and this appears to have been the case. In 2020, 32% are forecasting an increase in hybrid cloud use over the next two years while 64% expect use to stay the same
- For 66% hybrid cloud represents the future of the data center
- As in 2017, 36% have migrated workloads from public to private cloud in the last 12 months and 36% expect to do this in the next 12 months
- 62% say migrating workloads from public to private cloud is difficult

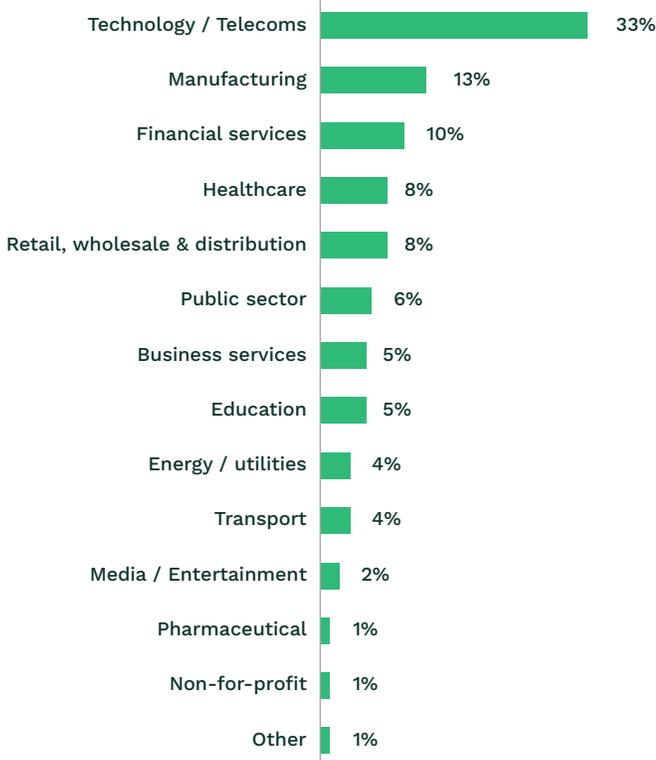
Software-Defined Infrastructure Underpinning IT Transformation Efforts

- 80% say optimizing their data center is critical to their innovation efforts but 68% say that budget allocation is not keeping up with demands from the business to transform
- 95% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are faster delivery of IT resources (65%), simplifying data center management (60%) and enabling modern IT approaches such as DevOps and hybrid cloud (54%), the same as in 2017
- 43% currently use software-defined storage, with an additional 27% expecting to do so in the next 12 months

Hybrid Cloud and AI Skills Issues Thwart Growth

- IT leaders see that a lack of skills in hybrid cloud (45%), AI and machine learning (45%), IoT (43%) and analytics (31%) is making it difficult for them to advance as quickly as they'd like
- Coupled with this, IT leaders see these same areas as important for them to gain more experience to progress personally and professionally
- 78% say tech professionals are increasingly taking responsibility for their own learning and development

Sample Breakdown by Industry Sector



The Great Application Delivery Race

- 78% of IT leaders would like to reduce application delivery cycle times
- 89% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility and 85% expect to release new applications more frequently over time
- 87% of application developers say modernizing application delivery is a top spending priority in the next 12 months
- Agile development methodologies are used by 59%, while 47% are integrating DevOps and processes, 40% are building and deploying microservice-based applications and 32% are using containers (27% in 2017)
- Where containers are used, on average 27% of production workloads are currently containerized. This is expected to increase to 34% in 12 months, and to 47% in two years

The research shows IT leaders and application developers alike keen to make an impact in the next two years. Simplification of infrastructure and modernization and acceleration of application delivery are priorities to boost agility. Harnessing technologies such as hybrid cloud, software-defined infrastructure and storage, micro-services and containers as levers in an outcome-focused approach will set the leaders and followers as digital transformation gathers pace.

Research Methodology

2096 respondents completed an interview in January / February 2020. These consisted of senior IT decision makers (1587) and Application Developers / Engineers (509) in organizations with 250+ employees across 22 countries. Research was designed and managed by Insight Avenue, an independent market research consultancy based in the UK.

Outcomes-Focused Tech

An outcomes-focused approach to tech serves as an antidote to jargon and technobabble, where the results and value resulting from investment take center stage. Two-thirds of IT leaders (67%) say they are under more pressure to deliver tangible outcomes for the business than twelve months ago. This is particularly the case in China (77%), India (74%) and the UK (74%).

The tech investment pillars making a tangible difference in how businesses operate over the next two years are simplifying how the business is run (65% say very important); modernizing how the business is run (52%) and accelerating change / scaling the business (51%), as shown in Figure 1. Simplifying how the business is run closely aligns with an outcomes-focused approach, reflecting a back-to-basics mentality where complexity and waste is stripped back to focus on core foundations.

Businesses across the globe cite increasing agility as the number one driver of IT transformation efforts. Transformation is only agile if it simplifies how you work. Businesses are looking for transformation efforts to deliver a range of other outcomes for the business too, including:

- Enhanced security
- Reduced costs and consolidated management of IT resource
- Improved efficiency
- Faster time to market
- Stability and resilience across the IT estate

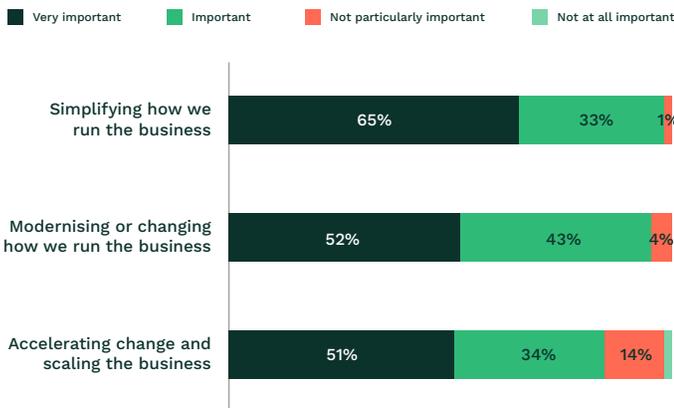


Figure 1. Importance of tech investment pillars in making a tangible difference in how business operates over next two years

Figure 2 highlights the technologies and approaches seen by businesses as being the most important in helping IT leaders to deliver a tangible difference. Most important are High Performance Computing – HPC (83%), IoT (82%), edge computing (80%), the democratization of tech (75%) and open source (70%). These too reflect a focus on fundamentals which serve to enable AI / machine learning and extended reality applications that the businesses and customers now demand.

It is not surprising that IT leaders are feeling the pressure despite a focus on simplification. 88% see the next two years are critical to making a tangible difference through tech investments.

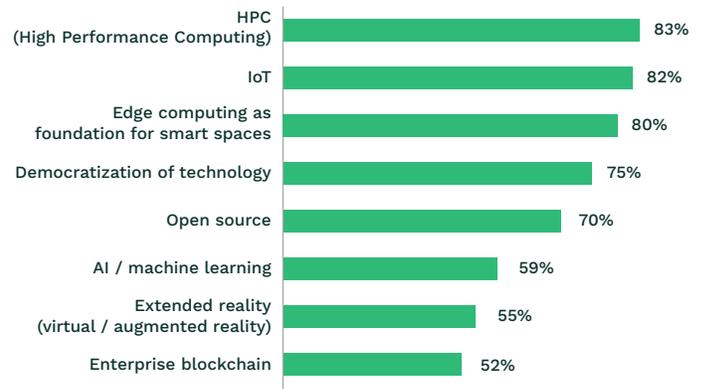


Figure 2. Importance of technologies and approaches in helping business make a tangible difference over the next two years

The Present (and Future) is Hybrid Cloud

Hybrid cloud, where there is a mix of private cloud and public cloud with orchestration between the two, has gained significant traction over the last few years. In 2017, hybrid cloud use was forecast to increase in 66% of organizations. This appears to have been the case with 32%, in 2020, forecasting an increase in hybrid cloud use over the next two years as shown in Figure 3. Hybrid cloud has been, and remains, clearly a compelling option for businesses, providing the “best of both clouds”, maximizing the benefits of public and private cloud models while minimizing the associated risks.

Organizations in Germany (41%) and the UK (37%) are the most likely to predict an increase in use of hybrid cloud in the next two years. Overall, 64% of organizations expect use of hybrid cloud to stay the same. Use of other cloud service types looks set to follow a similar pattern.

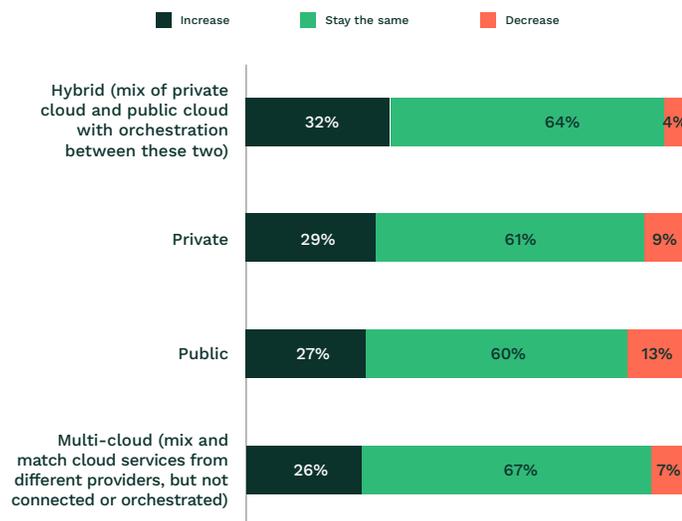


Figure 3. Expected change in use of different types of cloud services over the next two years

As in 2017, 36% have migrated workloads from public to private cloud in the last 12 months (as shown in Figure 4), increasing to 51% in India and 43% in the US. Overall, 36% expect to migrate workloads in the next 12 months. This is still something that is considered challenging, with 62% saying migrating workloads from public to private cloud is difficult. The need for careful evaluation and planning to mitigate these challenges is evident.

With cloud underpinning many transformation initiatives, and a clear focus on HPC – demand for flexible, hybrid, high performance compute cloud is likely to remain strong. Two-thirds (66%) of IT leaders say they see hybrid cloud as the future of the data center, increasing to 81% in China. Software-defined infrastructure and containers also feature in the future vision of the data center.

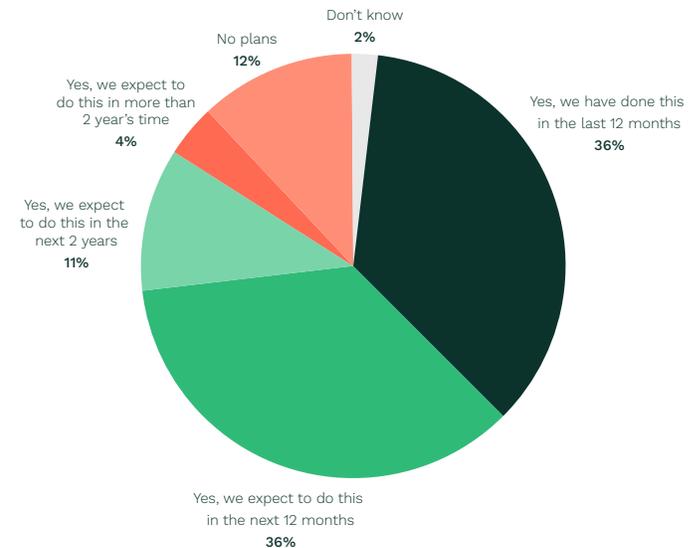


Figure 4. Migration of workloads from public to private cloud

Software-Defined Infrastructure Underpins Transformation

Organizations are almost unanimous in their conviction that software-defined infrastructure (SDI) in the data center can support IT transformation efforts (95%). SDI focuses on software innovation, separating the hardware from the applications and software that will run on the platform, and is seen as better suited to the needs of modern dynamic applications. Figure 5 shows the potential benefits of software-defined infrastructure include faster delivery of resources (65%) and simplified data center management (60%) followed by the enabling of modern IT approaches such as DevOps and hybrid cloud (51%). These are the same core benefits that were highlighted in 2017. As such, the software-defined data center is becoming the standard model for data center operations. For many, cloud computing is synonymous with a software-defined infrastructure enabling ready, speedy access to dynamic resource pools.

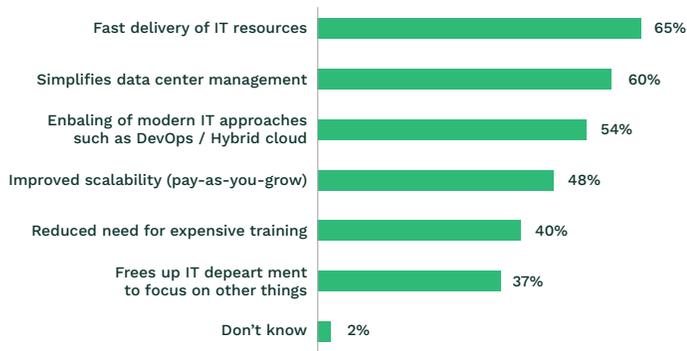


Figure 5. Potential benefits of software-defined infrastructure in the data center

Against this backdrop, another area of evident market momentum is software-defined storage which is moving into the mainstream. 43% of IT leaders say they are now using software-defined storage (Figure 6). This is highest in Germany (54%), the US (49%) and China (49%) and lower in India (37%) and France (38%). 27% say they expect to use software-defined storage in the next 12 months. Being able to readily manage, store and access disparate and data sources is core to the success of AI and machine learning initiatives.

Furthermore, software-defined storage becomes the obvious choice in delivering outcomes such as cost control, reduced complexity and scalability, and to support organizations with IoT and the transition to edge computing.

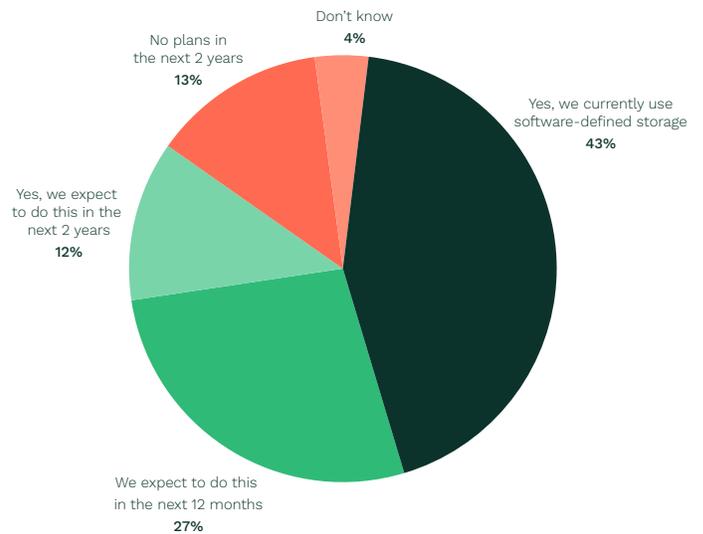


Figure 6. Use of software-defined storage

Hybrid Cloud and AI Skills Issues Thwart Growth

As businesses grapple with an increasing array of legacy and emerging technologies, skills in these areas are needed to make the right technology investments and to ensure these investments work in delivering key outcomes for the business. Accessing these skills is far from easy though, as not only are they scarce within businesses but, more worryingly, also in the wider market. Figure 7 shows those areas where a lack of skills in the market is making it difficult for businesses to advance. Across all markets, three core areas of skills shortages emerge. Almost half of organizations say they are being held back by a lack of skills in the market in AI / machine learning, hybrid cloud and IoT.

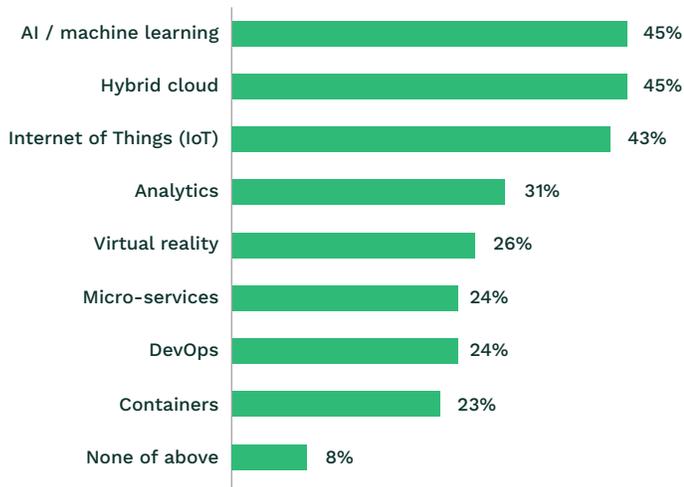


Figure 7. Areas where lack of skills in the market has made it difficult to advance

Of course, where there is a shortage of skills to “buy” into the business, there is the option of “building” those skills through training and development. IT leaders see it as particularly important to enhance their own skills and experience in those very same areas where skills are lacking in the employee marketplace. Hybrid cloud is seen as very important to develop in order to progress professionally (68%), with AI / machine learning, IoT and analytics also areas of interest (Figure 8).

This situation becomes a “double whammy” where skills shortages in the marketplace mirror those very areas that IT professionals are keen to develop in themselves. 78% of IT leaders say tech professionals are increasingly taking responsibility for their own learning and development. Some of this enthusiasm has likely come about through sheer necessity, some through a desire to be employable both now and in the future. Businesses may need to rethink how they resource their technology teams in order to maintain transformation momentum. Not all resources need to be in-house, permanent hires and taking the same kind of flexible, on-demand approach to skills as to tech is likely to become necessary in order to break this skills shortage cycle.

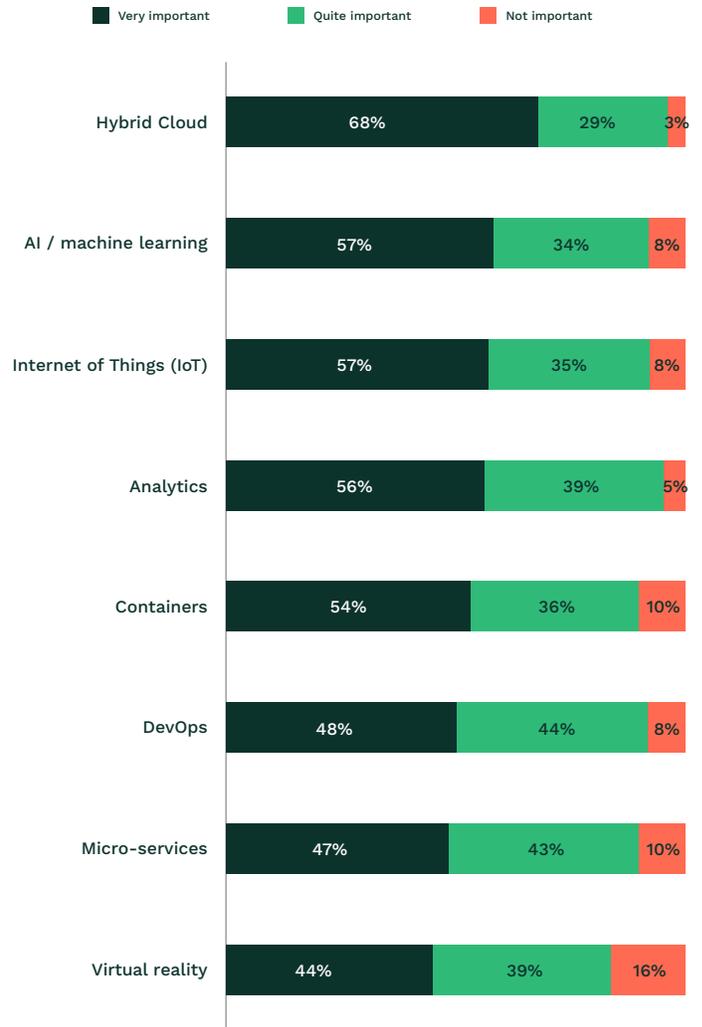


Figure 8. Importance of enhancing skills and experience by area

The Great Application Delivery Race

Application agility sits at the heart of successful transformation. Application developers are under pressure from the business to deliver new applications and features more and more quickly. Almost nine in ten (87%) of application developers say that modernizing application delivery is a top spending priority in the next 12 months. Figure 9 shows top spending priorities do not always equate to increased budget, with more than half of all respondents reporting that budget allocation will remain the same (56%), although 31% expect this to increase.

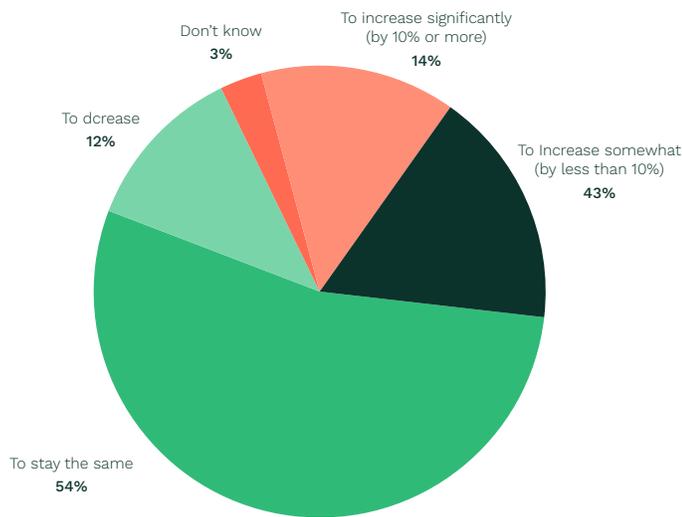


Figure 9. Changing budget allocation for modernizing Application Delivery over the next financial year

91% of all respondents see increasing business agility as important to improving their competitiveness and 89% see delivering new applications and updates more rapidly improving business agility. Application release cycles are widely acknowledged to be too long – 76% of IT leaders say this is the case, ahead of 67% of application developers. 85% expect to release new applications more frequently over time. Currently average release cycles are twelve months or more for two-thirds of companies. Application

developers are expecting to accelerate this timeframe to months, if not weeks, during the next two years, as shown in Figure 10.

Modernizing application delivery encompasses evolving technologies, processes and skills under the umbrella of DevOps. Areas where organizations are currently investing include employing agile development methodologies (59%), integrating DevOps teams and processes (47%), building and deploying microservice-based applications (40%) and using containers (32%). Use of containers has increased from 27% in 2017 and momentum looks set to continue with a further 40% expecting to use containers in the next 12 months. Average production workloads that are containerized are expected to grow from 27% today to 34% in one year's time and further still to 47% in two years' time. Along with increased demand for containerization, we also see appetite for container orchestration reflecting a growing maturity as organizations continue their journey to fully cloud native solutions.

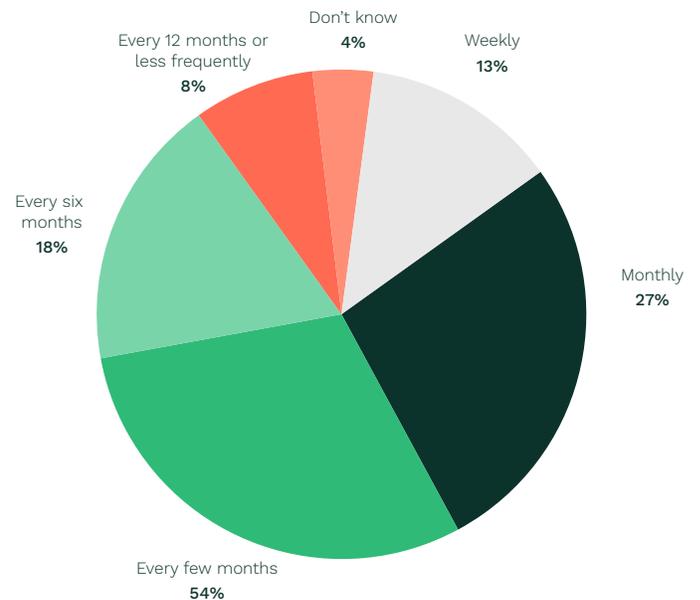


Figure 10. Expected application release cycle in two years' time

Conclusion

Agility has zoomed to the top of business and IT agenda as global events force businesses to adapt at lightning speed and IT leaders are tasked with both “steadying the ship” and navigating uncharted waters.

Simplification is seen as the most important pillar of tech investment to transform how the business operates and serves customers over the next two years. Following this, there is then appetite to modernize and to accelerate. A plethora of technologies and approaches is there for the taking, the challenge lies in stripping back the hype, having a clear but flexible vision and getting back to basics – building technology foundations that actually deliver tangible outcomes.

There is an evident shift away from ageing physical infrastructure and its associated performance degradation and spiralling maintenance costs to a more automated, software-led model. Shiny new applications can only shine if they are supported by strong foundations. Momentum towards HPC, edge computing, IoT and AI reflect an appetite for innovation and hybrid cloud, SDI and containers can enable that journey. With application developers ambitious to modernize and accelerate application delivery and IT leaders hungry to make progress in the next two years, simplification must take center stage.

Sprawling, inflexible patchwork infrastructures can no longer deliver the agility, scalability and resilience that businesses need to address today's challenges and to prepare for tomorrow's opportunities. Tech, however, is only part of the picture. Clear leadership, agile processes and access to skills in emerging technology areas will ultimately set apart the good from the great.

Research Summary – US

Highly driven by the need for agility, the next two years are critical for IT leaders in the US to deliver on simplifying how their businesses are run and accelerating change. HPC and edge computing are fundamental to this along with IoT and open source.

Hybrid cloud has seen much growth in the last two years and, for many, is seen as the future of the data center alongside software-defined infrastructure to ensure faster delivery of IT resources and simplified data center management. Skills shortages at a market and individual level are a challenge particularly in the areas of hybrid cloud, AI, IoT and analytics and there is evidence that individuals are taking more ownership of their own professional development.

Reducing application delivery cycle times and modernizing application delivery are imperatives for US organizations and they are embracing agile development methodologies, DevOps approaches and microservice-based applications to drive change.

Outcomes-Focused Tech

- 87% of IT leaders in the US see the next two years as critical for making a tangible difference through their tech investments
- Almost two-thirds (64%) say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how US businesses operate over the next two years are simplifying how the business is run (65% say very important); accelerating change / scaling the business (55%) and modernizing how the business is run (50%)
- Increasing agility is the number 1 driver of IT transformation efforts in US organizations

The Present (and Future) is Hybrid Cloud

- In 2017, hybrid cloud use was forecast to increase in 60% of US organizations and this appears to have been the case. In 2020, 34% are forecasting an increase in hybrid cloud use over the next two years while 62% expect use to stay the same. For 66% hybrid cloud represents the future of the data center
- 43% have migrated workloads from public to private cloud in the last 12 months (this was 47% in 2017) and 26% expect to do this in the next 12 months
- 68% say migrating workloads from public to private cloud is difficult

SDI Underpinning IT Transformation Efforts

- 85% say optimizing their data center is critical to their innovation efforts but 71% say that budget allocation is not keeping up with demands from the business to transform
- 93% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are faster delivery of IT resources (66%), simplifying data center management (53%) and enabling modern IT approaches (53%)
- 49% currently use software-defined storage, with an additional 27% expecting to do so in the next 12 months

Hybrid Cloud and AI Skills Issues Thwart Growth

- IT leaders in the US see that a lack of skills in hybrid cloud (40%), AI and machine learning (40%), IoT (38%) and analytics (32%) is making it difficult for them to advance as quickly as they'd like. Coupled with this, IT leaders see hybrid cloud (69%) and analytics (54%) as very important for them to gain more experience to progress personally and professionally
- 77% say tech professionals are increasingly taking responsibility for their own learning and development 27% expecting to do so in the next 12 months

The Great Application Delivery Race

- 79% of IT leaders would like to reduce application delivery cycle times. 85% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility and 78% expect to release new applications more frequently
- 85% of application developers say modernizing application delivery is a top spending priority in the next 12 months
- Agile development methodologies are used by 61%, while 49% are integrating DevOps and processes, 43% are building and deploying microservice-based applications and 27% are using containers

Research Summary – UK

UK IT leaders are really feeling the pressure to deliver tangible outcomes for the business through tech and highly focused on simplifying how the business is run, while harnessing HPC, IoT and edge computing in their efforts.

The last two years have seen significant growth in hybrid cloud in UK organizations, and although relatively few have migrated workloads from public to private cloud in the last twelve months, the next twelve months look set for more workload migration. Software-defined infrastructure is critical to innovation efforts, with UK businesses particularly likely to see improved scalability as a benefit along with faster delivery of IT resources and simplifying data center management.

In the UK, a lack of skills in AI, hybrid cloud and IoT is holding businesses back and IT leaders themselves are focused on developing skills in these areas to progress so this is an area requiring a fresh approach. Reducing application delivery cycle times is seen as key as organizations expect to release new applications new frequently over time.

Outcomes-Focused Tech

- 89% of IT leaders in the UK see the next two years as critical for making a tangible difference through their tech investments. 74% say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how UK businesses operate over the next two years are simplifying how the business is run (68% say very important), modernizing how the business is run (53%) and accelerating change / scaling the business (45%)
- Tech and approaches seen as most important in helping UK businesses to deliver this tangible difference are High Performance Computing – HPC (83%), IoT (82%), edge computing (70%). 61% say the democratization of tech and 57% say open source
- Increasing agility is the number 1 driver of IT transformation efforts in UK organizations

The Present (and Future) is Hybrid Cloud

- In 2017, hybrid cloud use was forecast to increase in 65% of UK organizations and this appears to have been the case. In 2020, 37% are forecasting an increase in hybrid cloud use over the next two years while 57% expect use to stay the same. For 59% hybrid cloud represents the future of the data center

- 27% have migrated workloads from public to private cloud in the last 12 months (similar to 2017: 28%) with more (38%) expecting to do this in the next 12 months
- 64% say migrating workloads from public to private cloud is difficult

SDI Underpinning IT Transformation Efforts

- 82% say optimizing their data center is critical to their innovation efforts but 62% say that budget allocation is not keeping up with demands from the business to transform
- 92% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are faster delivery of IT resources (66%), simplifying data center management (58%) and improved scalability (48%)
- 45% currently use software-defined storage, with an additional 26% expecting to do so in the next 12 months

Hybrid Cloud and AI Skills Issues Thwart Growth

- IT leaders in the UK see that a lack of skills in AI and machine learning (44%), hybrid cloud (37%) and IoT (33%) is making it difficult for them to advance as quickly as they'd like
- Coupled with this, IT leaders see hybrid cloud (64%) and analytics (60%) as very important for them to gain more experience to progress personally and professionally
- 75% say tech professionals are increasingly taking responsibility for their own learning and development

The Great Application Delivery Race

- 81% of IT leaders would like to reduce application delivery cycle times. 88% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility and 87% expect to release new applications more frequently
- (Low base: 80, indicative only) 81% of application developers say modernizing application delivery is a top spending priority in the next 12 months. Agile development methodologies are used by 54%, while 49% are integrating DevOps and processes, 33% are building and deploying microservice-based applications and 36% are using containers (32% in 2017)

Research Summary – France

As with other countries, IT leaders in France consider they have a two-year window to make a tangible difference, focused primarily on simplifying how their businesses are run. Edge computing, HPC, IoT and open source are important in helping deliver this tangible difference.

Use of hybrid cloud increased in the last two years, and adoption is now more likely to be stabilizing than growing. More French companies plan to migrate workloads from public to private cloud in the next twelve months than have done so in the last twelve months – many consider this to be challenging though. IT leaders are focused on developing their own skills in hybrid cloud, as well as in analytics and IoT and comment that a lack of these skills in the marketplace is making it difficult to advance.

Optimizing the data center is critical to innovation efforts but budget allocation is not keeping up with demands from the business to transform. The next twelve months sees momentum in the adoption of software-defined storage. Developing new applications and updates more rapidly is considered to improve agility and, as such, reducing application delivery cycle times is a priority.

Outcomes-Focused Tech

- 88% of IT leaders in France see the next two years as critical for making a tangible difference through their tech investments. 63% say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how French businesses operate over the next two years are simplifying how the business is run (62% say very important), modernizing how the business is run (50%) and accelerating change / scaling the business (42%)
- Tech and approaches seen as most important in helping French businesses to deliver this tangible difference are edge computing (85%), High Performance Computing – HPC (82%), the democratization of tech (78%) and IoT (77%). and 65% say open source
- Increasing agility is the number 1 driver of IT transformation efforts in French organizations

The Present (and Future) is Hybrid Cloud

- In 2017, hybrid cloud use was forecast to increase in 63% of French organizations. In 2020, 31% are forecasting an increase in hybrid cloud use over the next two years while 65% expect use to stay the same. For 58% hybrid cloud represents the future of the data center

- 24% have migrated workloads from public to private cloud in the last 12 months (36% in 2017) with more (42%) expecting to do this in the next 12 months
- 63% say migrating workloads from public to private cloud is difficult

SDI Underpinning IT Transformation Efforts

- 71% say optimizing their data center is critical to their innovation efforts but 68% say that budget allocation is not keeping up with demands from the business to transform
- 94% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are faster delivery of IT resources (66%), enabling modern IT approaches (50%) and simplifying data center management (58%)
- 38% currently use software-defined storage, with an additional 38% expecting to do so in the next 12 months

Hybrid Cloud and AI Skills Issues Thwart Growth

- IT leaders in France see that a lack of skills in hybrid cloud (39%), IoT (38%) and AI and machine learning (37%), is making it difficult for them to advance as quickly as they'd like. Coupled with this, IT leaders see hybrid cloud (63%), analytics (46%) and IoT (40%) as very important for them to gain more experience to progress personally and professionally
- 70% say tech professionals are increasingly taking responsibility for their own learning and development

The Great Application Delivery Race

- 71% of IT leaders would like to reduce application delivery cycle times. 89% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility and 81% expect to release new applications more frequently
- (Low base: 60, indicative only) 90% of application developers say modernizing application delivery is a top spending priority in the next 12 months. Agile development methodologies are used by 62%, while 40% are integrating DevOps and processes, 37% are building and deploying microservice-based applications and 30% are using containers

Research Summary – Germany

In Germany, IT leaders are driven by a focus on increasing agility and looking to deliver a tangible difference to their businesses in the next two years. Tech investment centers on both simplifying how businesses are run as well as accelerating change. IoT, edge computing, HPC and open source are important in these efforts.

German IT leaders see hybrid cloud as the future of the data center and are more likely to forecast continued growth in hybrid cloud adoption than other markets. Software-defined infrastructure is seen to support transformation efforts and adoption of software-defined storage is higher than in other markets.

German IT leaders are particularly keen to develop their own skills in hybrid cloud, alongside AI and IoT, with widespread reports of skills shortages in these areas. As with other markets, there is a clear appetite to both reduce application delivery cycle times and to modernize application delivery.

Outcomes-Focused Tech

- 90% of IT leaders in Germany see the next two years as critical for making a tangible difference through their tech investments. 71% say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how German businesses operate over the next two years are simplifying how the business is run (72% say very important) and accelerating change / scaling the business (72%), followed by modernizing how the business is run (51%)
- Tech and approaches seen as most important in helping German businesses to deliver this tangible difference are IoT (88%), edge computing (86%), High Performance Computing – HPC (81%) and the democratization of tech (77%). 73% say open source
- Increasing agility is the number 1 driver of IT transformation efforts in German organizations

The Present (and Future) is Hybrid Cloud

- In 2017, hybrid cloud use was forecast to increase in 62% of German organizations and this appears to have been the case. In 2020, 41% are forecasting an increase in hybrid cloud use over the next two years while 59% expect use to stay the same. For 75% hybrid cloud represents the future of the data center

- 41% have migrated workloads from public to private cloud in the last 12 months (32% in 2017) with 44% expecting to do this in the next 12 months
- 61% say migrating workloads from public to private cloud is difficult

SDI Underpinning IT Transformation Efforts

- 75% say optimizing their data center is critical to their innovation efforts but 69% say that budget allocation is not keeping up with demands from the business to transform
- 98% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are simplifying data center management (66%), faster delivery of IT resources (64%), enabling modern IT approaches (56%)
- 54% currently use software-defined storage, with an additional 34% expecting to do so in the next 12 months

Hybrid Cloud and AI Skills Issues Thwart Growth

- IT leaders in Germany see that a lack of skills in hybrid cloud (50%), AI and machine learning (46%) and IoT (43%) is making it difficult for them to advance as quickly as they'd like. Coupled with this, IT leaders see hybrid cloud (79%), AI / machine learning (73%) and IoT (67%) as very important for them to gain more experience to progress personally and professionally
- 78% say tech professionals are increasingly taking responsibility for their own learning and development

The Great Application Delivery Race

- 77% of IT leaders would like to reduce application delivery cycle times. 88% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility and 84% expect to release new applications more frequently
- (Low base: 60, indicative only) 90% of application developers say modernizing application delivery is a top spending priority in the next 12 months. Agile development methodologies are used by 63%, while 28% are integrating DevOps and processes. 28% are building and deploying microservice-based applications and 28% are using containers

Research Summary – China

IT leaders in China are under pressure to deliver tangible outcomes for the business and focusing their tech investment on simplifying how their businesses are run, harnessing approaches like IoT, HPC, edge computing as well as open source. As in other markets, agility is the key driver of IT transformation and software-defined infrastructure seen as supporting these efforts.

In 2017, many businesses forecast an increase in hybrid cloud usage. This has now largely stabilised. Most see the future of the data center being hybrid cloud and more companies have now migrated workloads from public to private cloud than in 2017.

As in other markets, skills shortages particularly in hybrid cloud, IoT and AI are holding back progress. In China, there is a very strong appetite to reduce application cycle times and this is seen as something that can improve business agility, the key driver of IT transformation efforts overall.

Outcomes-Focused Tech

- 90% of IT leaders in China see the next two years as critical for making a tangible difference through their tech investments. 77% say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how businesses in China operate over the next two years are simplifying how the business is run (67% say very important), modernizing how the business is run (54%) and accelerating change / scaling the business (49%)
- Tech and approaches seen as most important in helping businesses in China to deliver this tangible difference are IoT (90%), High Performance Computing – HPC (85%) and edge computing (84%). 78% say open source
- Increasing agility is the number 1 driver of IT transformation efforts in organizations in China

The Present (and future) is Hybrid Cloud

- In 2017, hybrid cloud use was forecast to increase in 82% of organizations in China and this appears to have been the case. In 2020, 35% are forecasting an increase in hybrid cloud use over the next two years while 61% expect use to stay the same
- For 81% hybrid cloud represents the future of the data center

- 42% have migrated workloads from public to private cloud in the last 12 months (11% in 2017) with 38% expecting to do this in the next 12 months
- 67% say migrating workloads from public to private cloud is difficult

SDI Underpinning IT Transformation Efforts

- 80% say optimizing their data center is critical to their innovation efforts but 63% say that budget allocation is not keeping up with demands from the business to transform
- 98% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are simplifying data center management (70%), enabling modern IT approaches (67%) and improved scalability (63%)
- 49% currently use software-defined storage, with an additional 32% expecting to do so in the next 12 months

Hybrid Cloud and AI skills Issues Thwart Growth

- IT leaders in China see that a lack of skills in IoT (66%), hybrid cloud (65%) and AI and machine learning (60%) is making it difficult for them to advance as quickly as they'd like
- Coupled with this, IT leaders see hybrid cloud (71%), AI / machine learning (67%) and IoT (62%) as very important for them to gain more experience to progress personally and professionally
- 86% say tech professionals are increasingly taking responsibility for their own learning and development

The Great Application Delivery Race

- 83% of IT leaders would like to reduce application delivery cycle times. 89% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility
- 88% expect to release new applications more frequently

Research Summary – India

IT leaders are more focused than other markets on simplifying how their businesses are run as the key tech investment pillar. The democratization of tech and open source, alongside HPC, edge computing and IoT are identified as key approaches to help businesses deliver a tangible difference.

The future of the data center is seen as hybrid cloud, and after two years of strong adoption momentum in hybrid cloud, this is now stabilizing in India as well as in other markets. More than half have migrated workloads from public to private cloud, but this is more likely to be seen as a difficult process in India and businesses here also state that budget allocation is failing to keep up with demands to transform.

IT leaders are highly focused on gaining experience to progress professionally and personally, particularly in hybrid cloud and IoT, and responsibility for learning and development is moving away from the employer to tech professionals themselves. As in other markets, reducing application delivery cycle times to enhance agility is a focus moving forwards.

Outcomes-Focused Tech

- 89% of IT leaders in India see the next two years as critical for making a tangible difference through their tech investments. 74% say they are under more pressure to deliver tangible outcomes for the business than 12 months ago
- The tech investment pillars making a tangible difference in how businesses in India operate over the next two years are simplifying how the business is run (75% say very important), accelerating change / scaling the business (60%) and modernizing how the business is run (57%)
- Tech and approaches seen as most important in helping businesses in India to deliver this tangible difference are High Performance Computing – HPC (92%), the democratization of tech (90%), IoT (88%) and edge computing (87%). 82% say open source
- Increasing agility is the number 1 driver of IT transformation efforts in organizations in India

The Present (and Future) is Hybrid Cloud

- In 2017, hybrid cloud use was forecast to increase in 69% of organizations in India and this appears to have been the case. In 2020, 35% are forecasting an increase in hybrid cloud use over the next two years while 58% expect use to stay the same
- For 78% hybrid cloud represents the future of the data center
- 51% have migrated workloads from public to private cloud in the last 12 months (48% in 2017) with 43% expecting to do this in the next 12 months
- 79% say migrating workloads from public to private cloud is difficult

SDI Underpinning IT Transformation Efforts

- 79% say optimizing their data center is critical to their innovation efforts but 81% say that budget allocation is not keeping up with demands from the business to transform
- 98% think software-defined infrastructure in the data center can support IT transformation efforts
- The key benefits are faster delivery of IT resources (79%), simplifying data center management (77%) and enabling modern IT approaches (68%)
- 37% currently use software-defined storage, with an additional 30% expecting to do so in the next 12 months

Hybrid Cloud and AI Skills Issues Thwart Growth

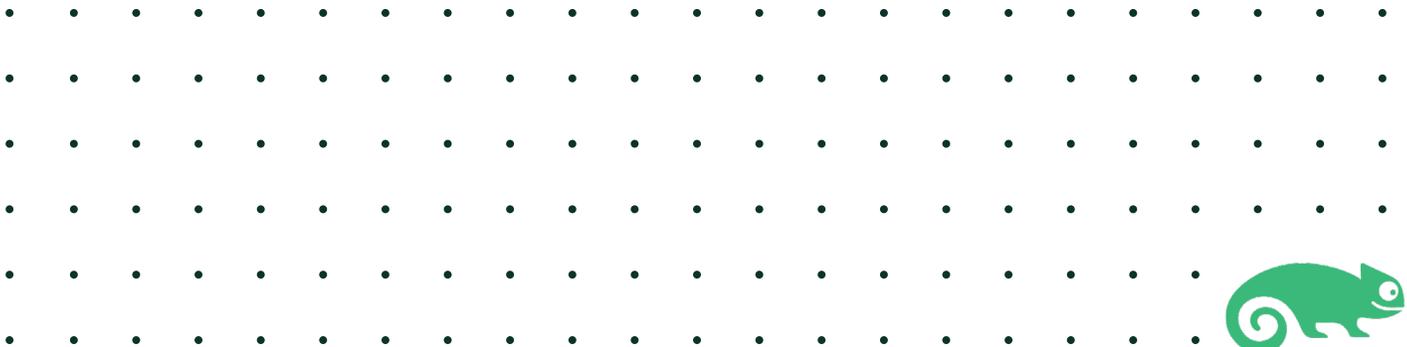
- IT leaders in India see that a lack of skills in hybrid cloud (64%), IoT (62%) and AI and machine learning (51%) is making it difficult for them to advance as quickly as they'd like. Coupled with this, IT leaders see hybrid cloud (84%), IoT (81%) and AI / machine learning (75%) as very important for them to gain more experience to progress personally and professionally
- 89% say tech professionals are increasingly taking responsibility for their own learning and development

The Great Application Delivery Race

- 84% of IT leaders would like to reduce application delivery cycle times. 92% of IT leaders and application developers see delivering new applications and updates more rapidly would improve agility and 93% expect to release new applications more frequently

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