NAVIGATE YOUR DIGITAL TRANSFORMATION WITH CLOUD

TELECOM INDUSTRY VIEW

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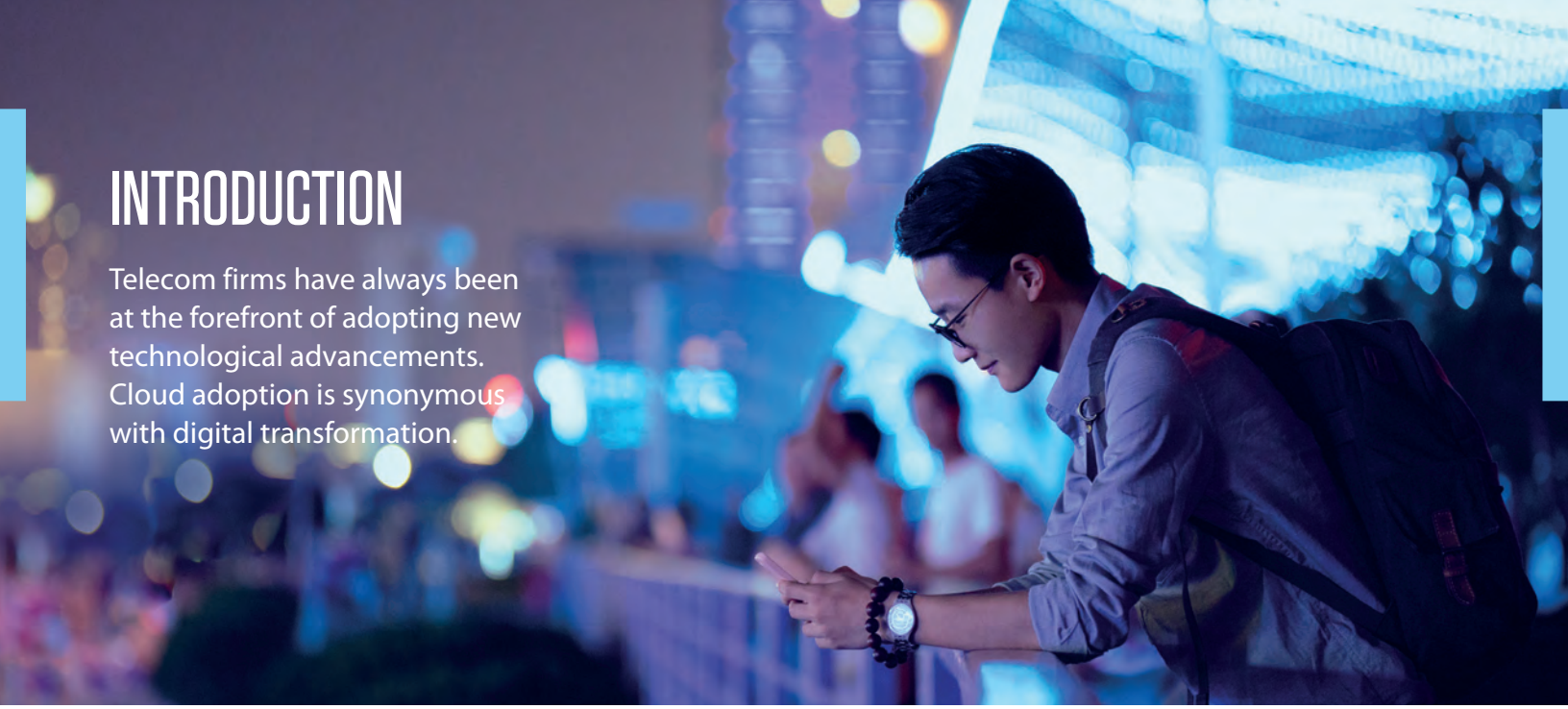


INTRODUCTION

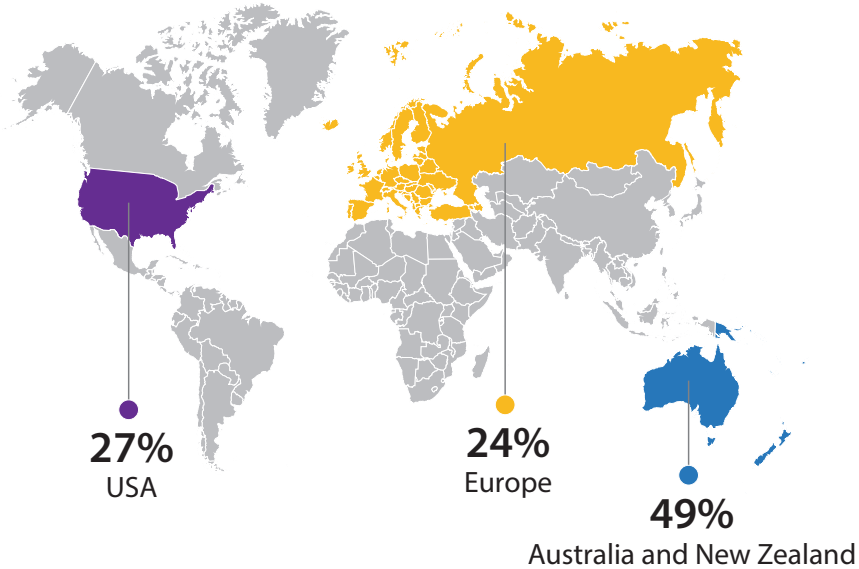
Telecom firms have always been at the forefront of adopting new technological advancements. Cloud adoption is synonymous with digital transformation.

Telecom enterprises globally struggle to cope with serious challenges such as the threat of commoditization, fierce competition and evolving customer expectations. Additionally, telecom firms must find new revenue streams and business models to monetize emerging technologies.

Going digital is an assured way to keep pace with disruptive changes in the industry. Cloud adoption is synonymous with digital transformation. Moving to the cloud brings many benefits, such as improved scalability, efficiencies and lowered costs, providing an opportunity to redefine customer engagement, transform operations, and expand business agility and capability.

Telecom firms have always been at the forefront of adopting new technological advancements. However, Infosys' experience shows that apprehensions over data security, stringent telecom regulations and prevalence of legacy systems prevent large-scale cloud adoption.

Figure 1: Respondent geographies



Infosys surveyed 80 executives from the telecom industry with over US$1 billion in revenues across the United States, Europe, Australia and New Zealand (ANZ). The respondents were senior executives and leaders involved in cloud initiatives representing both technology and business functions.

The study aims to get a thorough understanding of ongoing and future cloud initiatives, both from strategic and implementation perspectives, and present the findings in this report.

THE CLOUD CAST

Types of enterprise players

Infosys sought the respondents' views on cloud adoption intensity as well as their plans for cloud programs over the next three years. The analysis of the responses showed where the cloud programs were headed and helped us identify four types of enterprises.

	Torchbearers 52%	Pathfinders 18%	Defenders 12%	Aspirants 18%
What are the characteristics of this cluster?	Enterprises with high adoption of cloud across functions, and seek to be fully integrated and a cloud-first organization	Enterprises with moderate cloud adoption, and actively seek to derive more business value from the cloud	Enterprises that understand the importance of cloud, but have a siloed approach and unsure about how to derive business value from the cloud	Enterprises with low adoption of cloud across functions, and mostly have a tactical approach towards the cloud
Do they have an enterprise-wide strategy?	Yes, and it is followed strictly	Yes, and it serves as a guideline	Yes, and it is followed strictly or serves as a guideline	Yes, and it serves as a guideline
What drives them to adopt cloud programs?	1. Competitive activity 2. Emerging technologies 3. Scalability	1. Reduced IT costs, emerging technologies 2. Competitive activity, changing partner ecosystem	1. Competitive activity, changing partner ecosystem, system availability and resilience 2. Scalability	1. Emerging technologies 2. Competitive activity 3. Scalability, evolving customer needs, domain-specific cloud solutions

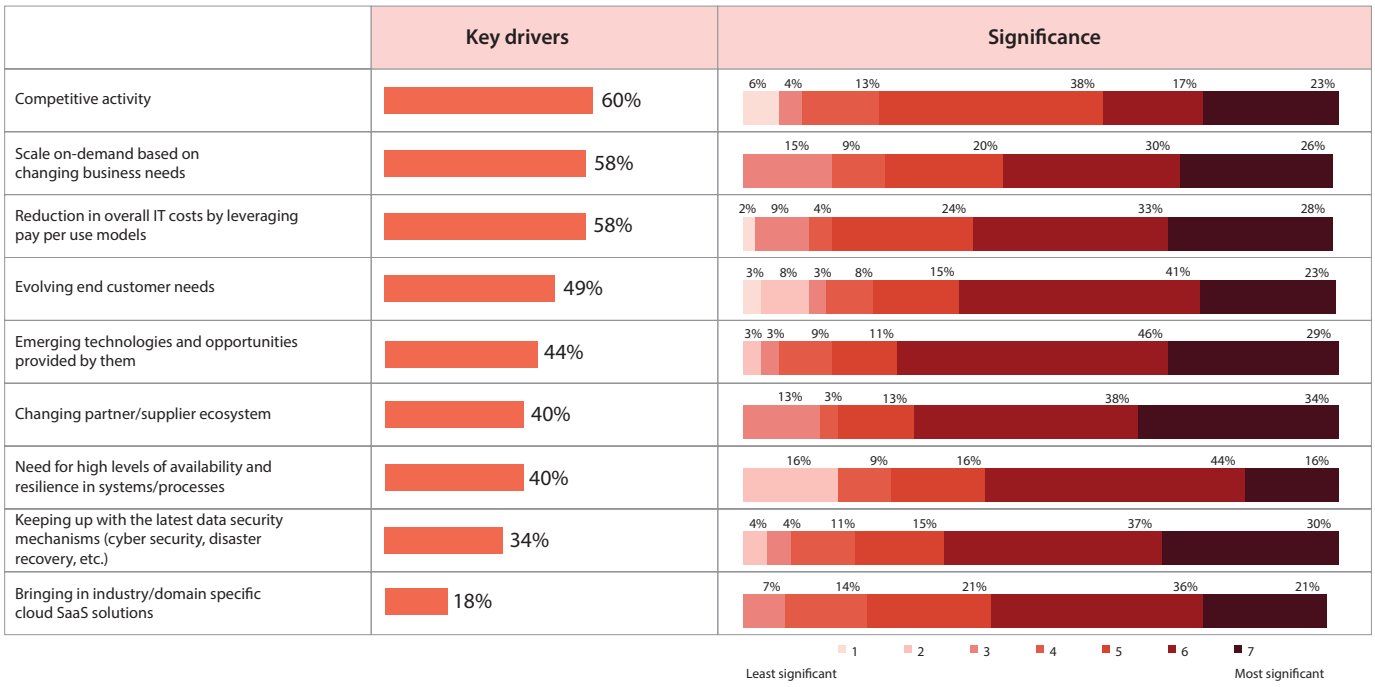
	Torchbearers 52%	Pathfinders 18%	Defenders 12%	Aspirants 18%
What are the expected outcomes from cloud programs?	1. Enhance customer experience 2. Enhance mobility and collaboration 3. Increase business reach, reduce time to market	1. Increase business reach 2. Enhance customer experience 3. Enhance mobility and collaboration, maximize the cloud's capabilities, reduce time to market	1. Innovate to drive competitive advantage 2. Enhance mobility and collaboration, maximize the cloud's capabilities	1. Standardize and integrate the technology landscape 2. Maximize the cloud's capabilities 3. Enhance customer experience

Understanding the drivers and expectations from cloud initiatives

Telecom firms must consider both strategic and operational factors as they undergo unprecedented changes and launch cloud and digital initiatives to address them. The main drivers for cloud programs include competition (60 percent), the need to scale (58 percent) and pressure to reduce IT costs (58 percent). U.S. respondents ranked all three drivers high, but European respondents considered emerging technologies the primary driver.

The factors that impact the pace of decision-making are different from the above drivers and include emerging technologies, a changing partner ecosystem and data security. The need to capitalize on new technologies and keep pace with data security trends helps accelerate the shift to the cloud.

Figure 2: Cloud adoption drivers and their significance on decision-making

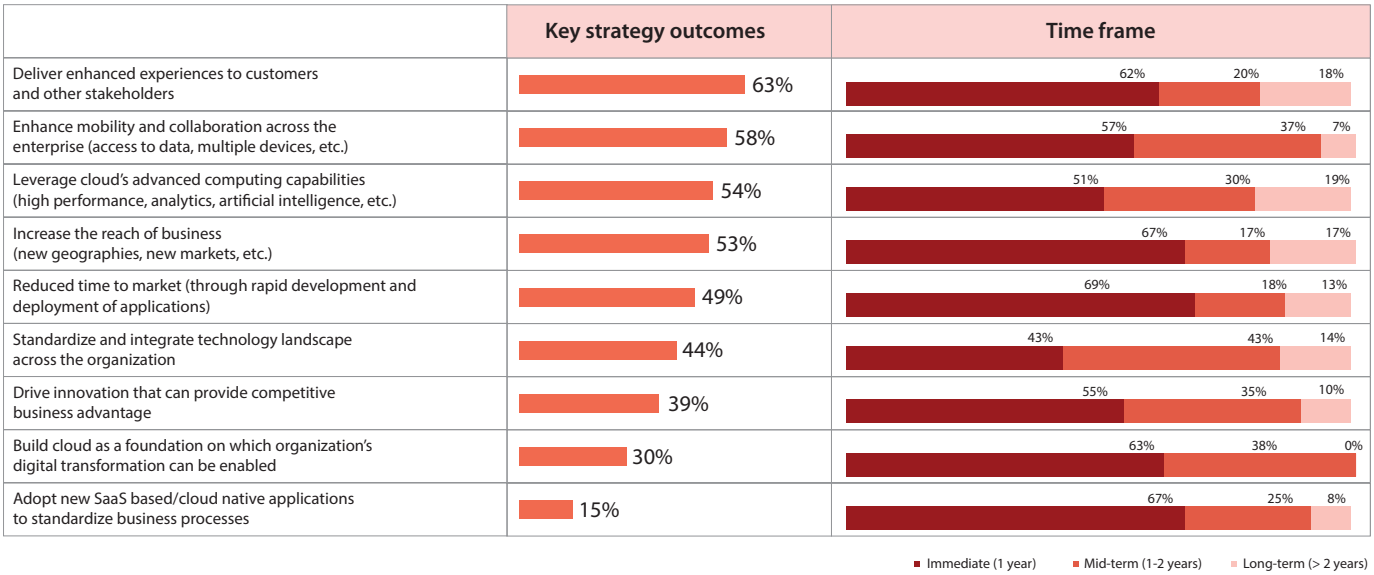


The top outcomes expected from cloud programs include an enhanced experience for customers (63 percent), improved enterprise-wide mobility and collaboration (58 percent), and leveraging the advanced capabilities of the cloud (54 percent).

The focus in the next year is to reduce time to market, adopt new cloud-native applications to standardize business processes and increase business reach. European and Australia and New Zealand participants prioritized enhancing customer experience within a year.

Enhanced customer experience is an essential objective for telecom firms as they struggle with satisfying and retaining demanding customers.

Figure 3: Key expected outcomes and timeframes for achieving them



The respondents harbored concerns such as selecting the right approach (60 percent), need for a dedicated transformation team (51 percent), and alignment between IT and business on the road map (49 percent) before initiating cloud programs. The key concern for U.S. respondents was deciding on the right cloud approach. Telecom firms must balance data security and regulatory requirements with system-related gains while selecting a cloud approach. The cloud journey is challenging and requires both business and technology expertise to ensure success.

Figure 4: Concerns before launching cloud programs

	Total	Geography		
		ANZ	EU	USA
Stakeholder confidence around return on investment	46%	56%	26%	45%
Deciding on the cloud approach to adopt	**60%**	**67%**	**42%**	**64%**
Significant reliance on external solutions providers	46%	49%	42%	45%
Availability of internal talent to manage the transition	41%	54%	16%	41%
Alignment between IT and business on the road map	**49%**	**51%**	**37%**	**55%**
Accountability to drive the transition	**51%**	**69%**	**16%**	**50%**
Organizational readiness and maturity of existing IT landscape	45%	54%	21%	50%
Building strategic and operational road maps	46%	51%	26%	55%
Overcoming post migration challenges	29%	44%	16%	14%
Concerns with respect to enterprise information security	36%	44%	26%	32%
Need to continuously upgrade to new technologies	23%	28%	5%	27%

UNDERSTANDING CLOUD IMPLEMENTATION EXPERIENCES

When implementing cloud programs, respondents view collaboration with external services providers, aligning legacy systems, navigating existing agreements and promoting cultural change internally as significant challenges. Many U.S. respondents voted for these challenges.

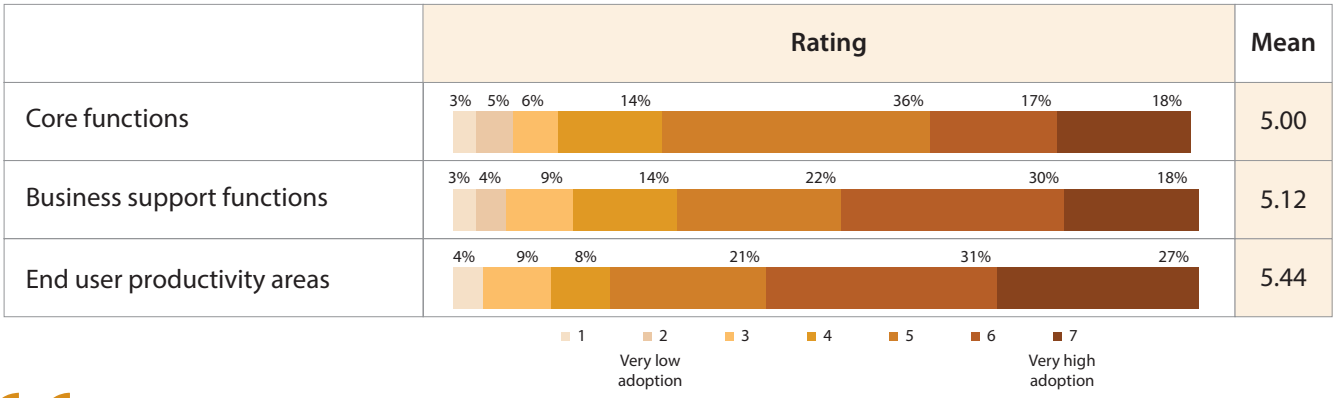
Figure 5: Challenges faced during implementation

	Overall
Application refactoring/tweaking to suit cloud architectures	4.74
Tracking and monitoring systems/processes on cloud	4.86
Aligning existing legacy systems/architectures and technology environments	5.32
Resource skillsets with cloud orientation	5.27
Accurate estimation of time and financial costs involved	5.20
Pace of execution/implementation of the initiative	5.22
Deciding on the choice of tools/technologies to pick from	5.24
Maintaining current service levels during transition	4.97
Lack of high levels of clarity in execution roadmap	5.04
Absence of an internal dedicated cloud team to drive the initiative	5.14
Promoting a culture change within the organization	5.31
Collaboration/integration with external service providers/stakeholders	5.36
Navigating existing agreements	5.31

On the scale of 7

Telecom enterprises have been cautious while adopting cloud programs, as revealed by the degree of adoption across the business. The end-user productivity function (58 percent) led the way in cloud adoption, with Australia and New Zealand (71 percent) and U.S. (64 percent) firms having more cloud programs in this area. The business support and core functions displayed much lower adoption rates. U.S. respondents showed a higher degree of cloud adoption in the core function.

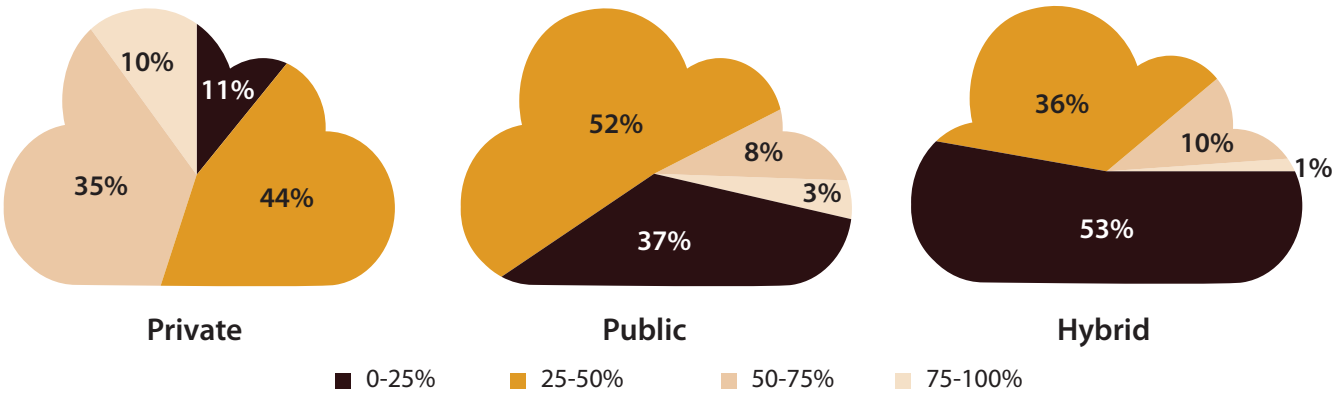
Figure 6: Cloud adoption across functions



> *Data security is a key aspect in the Telecom industry, we are open to both public & private cloud options. Considering that the security provided is good enough. Preference is marginally inclined to private. At my firm, we prefer to use cloud as a service predominantly, this allows us to ensure increased levels of security in addition to the flexibility offered by this mode.*
>
> *– SVP at a large telecom firm in USA*

The study respondents use private, public and hybrid cloud models, and opt to use the private cloud for higher workloads. They prefer public and hybrid cloud models for workloads below 50 percent. Australia and New Zealand firms have a higher adoption of public and hybrid models for workloads between 25 and 50 percent. European respondents have taken initial steps to use hybrid models for workloads greater than 50 percent.

Figure 7: Workload spread across the cloud models



Respondents select the public cloud to maximize benefits such as scalability, better information security, standardized processes, higher adoption of digital technologies and easier collaboration with external stakeholders. Firms chose the private cloud for easier handling of data, lower IT costs and better alignment to regulatory changes.

The study respondents were keen to progress their cloud initiatives to a higher level over the next three years. Given that telecom firms have been cautious in moving to the cloud, only 37 percent of the telecom firms targeted to become fully integrated, cloud-first organizations. Fifty percent of U.S. respondents have the same plan.

The cloud may begin with the boardroom, but it ends with IT leaders

The business executive leadership plays a significant role in defining the requirements and making the final decisions on external vendors. IT executive leadership is involved in all stages. Business heads actively contribute to conceiving the design and strategy, the evaluation of vendors, and overseeing the cloud transformation.

External vendors are mainly used to manage cloud transition and applications. The most common criteria used to evaluate external solutions providers are pricing (49 percent), track record (48 percent) and the effectiveness of proposed solutions (45 percent).

New technologies will have a tangible impact on the cloud

Respondents view DevOps (54 percent), big data analytics (46 percent), and artificial intelligence and machine learning (46 percent) technologies as the most value-adding when adopted with the cloud.

Figure 8: Technologies impacting adoption of the cloud

	Overall	Geography		
		ANZ	EU	USA
DevOps	54%	26%	32%	41%
Big data analytics	46%	42%	41%	44%
Artificial Intelligence/Machine Learning	46%	47%	45%	46%
Containers and Orchestration	41%	47%	41%	43%
Edge computing	38%	21%	41%	35%
Internet of Things (IoT)	36%	47%	32%	38%
Hyperconvergence	31%	26%	27%	29%
Open-source (microservices, APIs)	21%	42%	41%	31%

NEXT STEPS IN THE CLOUD JOURNEY FOR TELECOM FIRMS

Telecom enterprises must embrace cloud programs more aggressively to keep up with a rapidly changing business environment and to survive the digital disruption.

Torchbearers, the progressive telecom services firms constituting 52 percent of respondents in our study, have been more open to adopting cloud initiatives. They aim for the transformational benefits that a cloud-first organization promises and set a high benchmark, both in terms of strategy and execution.

Telecom firms have been constrained by insufficient expertise, lack of focused resources, and inadequately prepared systems and processes to handle cloud programs. These challenges emphasize the need for expert intervention to navigate the various complexities.

Infosys recommends that telecom enterprises partner with a capable external solutions provider. The partner's ability to act as a sound adviser as well as a reliable implementation expert will determine the success of the cloud transformation program.

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