



Research Insights

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Unlock the business value of hybrid cloud

How the Virtual Enterprise
drives revenue growth
and innovation

IBM Institute for
Business Value



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Key takeaways

Hybrid drives greater value

As organizations progress on their journey to cloud, the ability to integrate multiple cloud environments becomes essential. Hybrid cloud generates 2.5 times greater business value than a single cloud platform approach.

Full benefit is delivered through reinvention

The revenue impact of cloud investments can be amplified by up to 13 times when orchestrated as an end-to-end reinvention of the enterprise. And the more that hybrid and multicloud are tightly coupled with enterprise transformation, the greater the revenue impact of all technology investments to the business.

Reaching new heights with cloud

The ability to change and digitally adapt has been a defining feature of business success in the past 18 months. As early as September 2020, almost 60% of business leaders said they had already begun dramatically accelerating their companies' digital transformations during the pandemic.¹ With adversity serving as a catalyst for change, fully two-thirds of business leaders tell us the pandemic has allowed them to pursue specific transformation initiatives that, pre-pandemic, had encountered stiff resistance.²

In an earlier analysis, we found that high technology adopters had on average a 6 percentage-point revenue growth premium over their peers across 12 industries during the pandemic.³ With that kind of return, it should be no surprise that transformation continues to accelerate.

Across industries, enterprises are more likely than ever to build organizations that can pivot seamlessly between virtual and analog worlds. They also look to take advantage of the new possibilities offered by their investments in technology, which means extending and operating beyond traditional organizational boundaries.

They can achieve these more open strategies through an increased engagement in disruptive business platforms and ecosystem partnerships. By adopting these strategies, organizations can create and tap into new sources of value within a new type of organization—what we refer to as a Virtual Enterprise.⁴

Cloud technologies are central to this digital acceleration. And cloud is a fundamental enabler of successful transformation. But cloud adoption alone is insufficient to motivate significant gains in revenue and profitability. The ability to integrate functions and processes, and to enable intelligence and interoperability, is a key determinant in fully exploiting the potential value of cloud.



97%

of enterprises have either piloted, implemented, or integrated cloud into their operations.



92%

of the revenue potential from cloud is expected to be generated through its interaction with other transformation capabilities.



81%

of organizations indicate that culture makes a positive contribution to their digital transformation.

Recent analysis suggests that hybrid cloud—which provides the basis for interoperability and integrated capabilities—now generates 2.5 times more value than adoption of a single cloud platform.⁵ But even more significant, across industries, we have found that investment in cloud computing, when executed end-to-end in combination with other levers of business transformation, can generate up to 13 times greater benefits than cloud alone.

Cloud—or, more specifically, hybrid cloud—can support levels of openness and collaboration far beyond what was possible in the past. Hybrid cloud, coupled with digital and business transformation, can generate unprecedented strategic and financial benefits for an organization. In short, the democratization of data and the dramatically increased intelligence and insight brought about by open hybrid technology and architecture promise to redefine the economics of business.

Shifting to hybrid and multicloud

Most enterprises have been pursuing their cloud journey for more than a decade. 97% of enterprises in our most recent C-suite executive survey have either piloted, implemented, or integrated cloud technology in their operations. In 2020, cloud computing accounted for 27% of their overall IT spend. Surveyed organizations forecast cloud's share of IT spend to grow 5% over the next 3 years. Executives surveyed expect their organizations to operate more than 10 distinct clouds by 2023, up from 8 in 2020.

Despite this clear embrace, as many as 40% of organizations experience difficulty making the business case for cloud. And for good reason.

Many of the leading cloud-adopting organizations have already transitioned more than half of their existing applications and workloads to cloud. But because of the technical or operational fragmentation in cloud execution, the transformative potential of cloud remains largely untapped.

The ability to integrate clouds and shift data and workloads between them and other on-premises operating environments becomes ever more crucial. Establishing and maintaining interoperability and openness through hybrid cloud is a key to success. Changing investment patterns around cloud reflect the new reality.

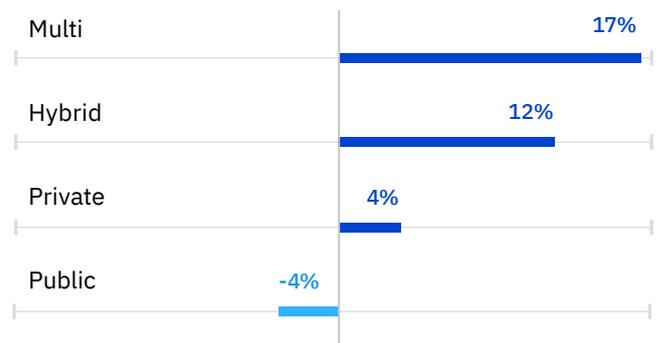
Figures 1 and 2 reveal that while the share of IT spend dedicated to public cloud is expected to decline by 4% between 2020 and 2023, hybrid and multicloud spend is expected to increase up to 17%.

The economics of this new pivot are significant. When applied to the projected global IT spend,⁶ these estimates translate into an annual hybrid cloud spend of more than \$275 billion by 2023. Meanwhile, the annual multi cloud spend is expected to reach approximately \$21.2 billion over the same period.

Figure 1

Hybrid and multicloud on the rise

Changes in the share of IT spending by type of cloud, 2020-2023



Source: IBM Institute for Business Value analysis

Hybrid and multicloud spend as a share of IT spending is expected to increase up to 17% by 2023.

Figure 2

An industry view

Changes in the share of IT spending by type of cloud and industry, 2020-2023

	Total cloud	Private	Public	Multi	Hybrid
Agriculture	2%	8%	-5%	9%	0%
Automotive OEMs	8%	-5%	-5%	45%	33%
Automotive suppliers	3%	10%	-10%	16%	4%
Chemicals	5%	11%	-11%	13%	16%
Consumer products	4%	0%	-5%	19%	13%
Electronics	6%	-1%	-6%	26%	17%
Energy and utilities	3%	-8%	-6%	25%	22%
Financial markets	6%	7%	-5%	14%	14%
Healthcare payer	11%	26%	-25%	33%	32%
Healthcare provider	7%	9%	-2%	15%	13%
Industrial products	5%	0%	3%	11%	12%
Information technology services	3%	12%	-9%	13%	-1%
Insurance	6%	17%	-13%	14%	13%
Life sciences/pharmaceutical	6%	2%	8%	14%	4%
Manufacturing	9%	-7%	1%	42%	34%
Media and entertainment	4%	-4%	8%	6%	8%
Mining	4%	-10%	7%	12%	12%
Petroleum	9%	2%	5%	19%	14%
Retail	2%	-11%	-3%	21%	22%
Retail/consumer banking	10%	-14%	34%	35%	26%
Telecommunications	9%	6%	-4%	22%	24%
Transportation	5%	-6%	15%	4%	6%
Wholesale/business banking	3%	-2%	3%	14%	2%
Total average	5%	4%	-4%	17%	12%

Source: IBM Institute for Business Value analysis

Seeking the greatest value from cloud

Cloud's contribution to business expands dramatically with business transformation. Reinvention involves adopting both state-of-the-art technology and an innovation-friendly, employee-centric organizational culture.

Our analysis suggests, with high levels of adoption of both public and private cloud among most organizations, that new cloud investments are likely to yield relatively low direct benefits. Indeed, we find that cloud adoption alone will yield, on average, only 8% of the total potential revenue from new cloud investments.

The vast majority of the revenue potential from cloud—92%—is expected to be generated by the interaction of new cloud investment with the following enterprise capabilities:

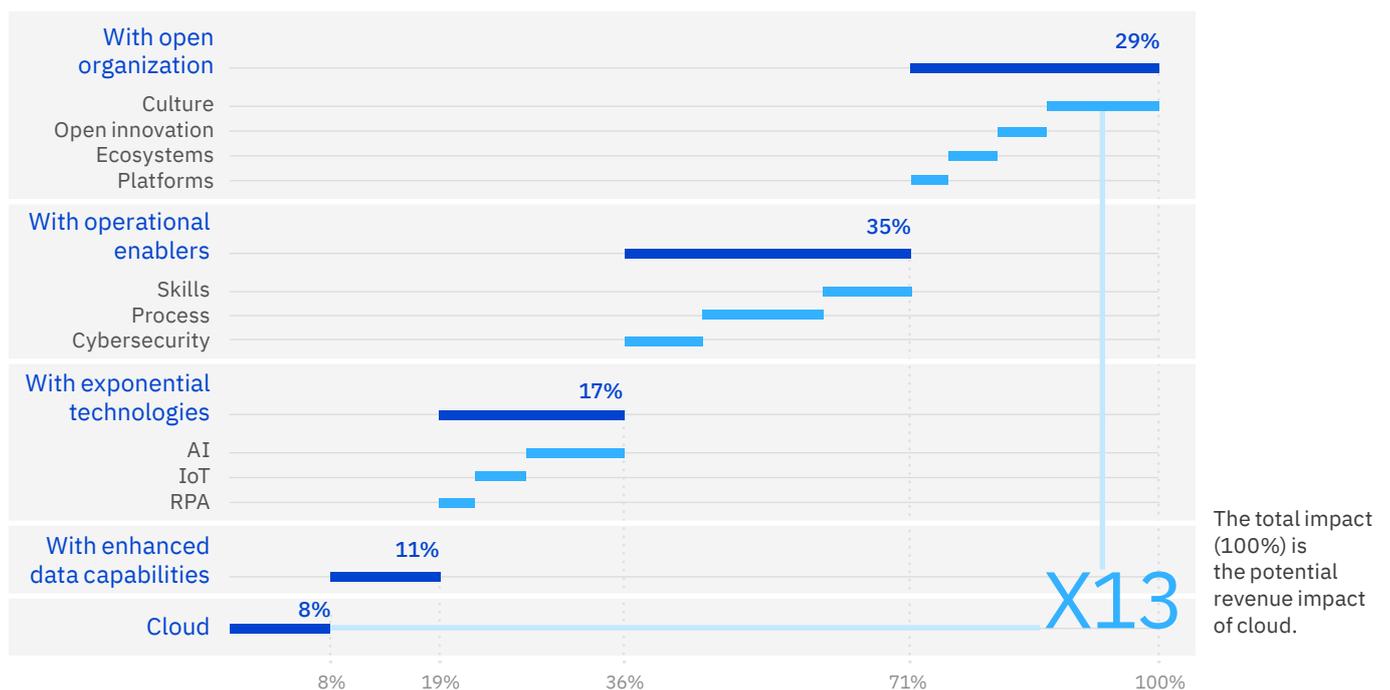
- Mastery of data (11%)
- Level of adoption of other exponential technologies, including artificial intelligence (AI), Internet of Things (IoT), and robotic process automation (RPA) (17%)
- Maturity of operational enablers, such as workforce skills, processes and extended intelligent workflows, and cybersecurity (35%)
- Embrace of open organization principles, such as cultural transformation, innovation, platform strategy, and ecosystems engagement (29%).

Altogether, these elements account for 100% of the potential revenue impact of cloud investment. If an organization excels at implementing all these elements of transformation, the revenue impact of a dollar invested in cloud is 13 times greater than the revenue impact of cloud without transformation (see Figure 3).

Figure 3

The potential of cloud plus transformation

The relative contribution to revenue growth from cloud alone and from cloud with other capabilities



Source: IBM Institute for Business Value analysis

Data and exponential technologies expand the value of cloud

Combining the mastery of data capabilities with cloud technologies can more than double the revenue impact from your cloud adoption. What matters is not just the availability of data, but how that data is put to use for the enterprise and converted into disruptive business platforms, and how it fuels open ecosystems and enables intelligent workflows.

The ability to move data and have appropriate data governance in place is crucial. For example, advanced cloud adopters with strong data governance saw a 10% higher rate of revenue growth than other advanced cloud adopters. And advanced cloud adopters with more sophisticated data capabilities gained a revenue growth rate premium of 29% over other advanced cloud adopters.

But data mastery alone is not enough. Capturing and converting data into value requires exponential technologies such as AI, IoT, and RPA. Our analysis suggests the network effects of these technologies can amplify cloud's value potential by more than 3 times.

Airtel: Hybrid cloud, AI, and new telco services⁷

Airtel—one of India's largest integrated telcos—faces rapidly growing data consumption at a compound annual growth rate (CAGR) of over 70% by 2022. The company is turning to a modern hybrid cloud architecture to deliver more responsive networks that tap into automation and AI. This can help address growing customer needs and deploy new services at the right location and network tier.

Airtel's open hybrid cloud platform is expected to help enable new revenue streams with the onboarding of third-party services, including gaming, remote media production, and enterprise services. Airtel aims to improve the time-to-market of services and reduce operating and capital expenses. The network cloud also could position ecosystem partners, including B2B and B2C application developers, to create value-added services, including new edge offerings.

Additionally, the network cloud is embedded with AI, designed to facilitate automation in onboarding and improve monitoring and predictive capabilities for different services from network equipment providers.

Operational enablers and cloud

Organizational embrace of other non-technology drivers of business transformation further amplifies the value of cloud investments. Leveraging cloud to create intelligent workflows or processes and to build new skills and advanced cybersecurity capabilities enhances the revenue impact of cloud by more than 5 times.

Cybersecurity and cloud-based digital capabilities complement each other in support of sustainable performance, end-user trust, and reduced exposure to disruption. Once viewed as increasing risk, the adoption of cloud brings new opportunities to create a more secure and open digital environment at scale, which is borne out by the data. We found that advanced cloud adopters with strong cyber threat detection capabilities have a 12% higher rate of revenue growth than other advanced cloud adopters.

As technology redefines tasks and augments work, employees inevitably need to be reskilled, retrained, and supported as they adapt to the new ways of working. An open cloud-enabled organization can harness the skills potential of both its own people and the wider partner ecosystem. Advanced cloud adopters that excel in their ability to develop talent and skills as a learning enterprise realize a 9% higher rate of revenue growth than other advanced cloud adopters.

University Medical Center Mainz: Hybrid cloud and digital transformation in healthcare⁸

When COVID-19 hit, medical centers everywhere were thrust to the front lines and needed to speed their digital transformations using a hybrid cloud approach. One of Germany's largest teaching hospitals, University Medical Center Mainz, is using cloud to digitize clinical processes.

Within weeks, the hospital built several apps on Cloud Satellite. It is now able to securely share patient data between care providers, schedule and streamline COVID-19 testing and results, and schedule vaccine appointments for employees.

The solution allows the organization to securely deploy cloud services in any environment where data resides: on-premises, on any public cloud, or at the edge. This enables the hospital to transform its ways of working and extend its workflows to relevant ecosystem partners and stakeholders, while ensuring it meets data privacy regulations and requirements.

Embrace of open organization, transformative culture, and cloud

The shift toward a more open and extended organization and culture amplifies cloud's revenue impact by more than 4 times.

A key ingredient is ecosystem engagement through platforms. Moving beyond digital-first businesses into more traditional organizations in largely analog industries, engagement in business platforms and adoption of platform business models help organizations expand the value from cloud. Our analysis suggests that cloud users that invest in platforms realize 33% higher revenue growth compared to other cloud users.

Platforms enable new ways of engaging ecosystems, further augmenting the benefits of cloud. With hybrid cloud as an open technology foundation to integrate operations, securely share data, and provide trust among ecosystem participants, organizations can collaborate, co-create, and innovate for increased value delivery. In fact, our research shows that 3 out of 4 executives point to the possibility of drawing ecosystems closer together as a key strategic driver for establishing a hybrid cloud.

Culture is the organizational glue that brings internal and external actors together to motivate innovation, collaboration, and value creation. It is the critical ingredient that connects people, technology, and organizational capabilities in pursuit of transformational outcomes and better business performance. As many as 81% of our respondents indicate that culture makes a positive contribution to their digital transformation.

Our analysis confirms the importance of combining technology with operational and organizational transformation. The embrace of the Virtual Enterprise as a strategic and operational compass is the key to unlocking the full potential and value of your hybrid cloud investments.

Delta Air Lines: Cloud and digital business transformation⁹

A US airline industry leader, Delta understands the critical need to constantly evolve its digital presence. This can help enhance its customer and employee experience—enabling it not only to respond quickly to dynamically changing conditions but also to reinforce its customers' brand loyalty.

As one of many integral steps Delta's leaders are taking to advance their digital business transformation, Delta is creating a new cloud operating model that transforms and modernizes its technology platform. Delta expects to increase its agility, speed to market, and innovation capabilities around digital transformation.

As many as 40% of organizations experience difficulty making the business case for cloud.

Industry variations

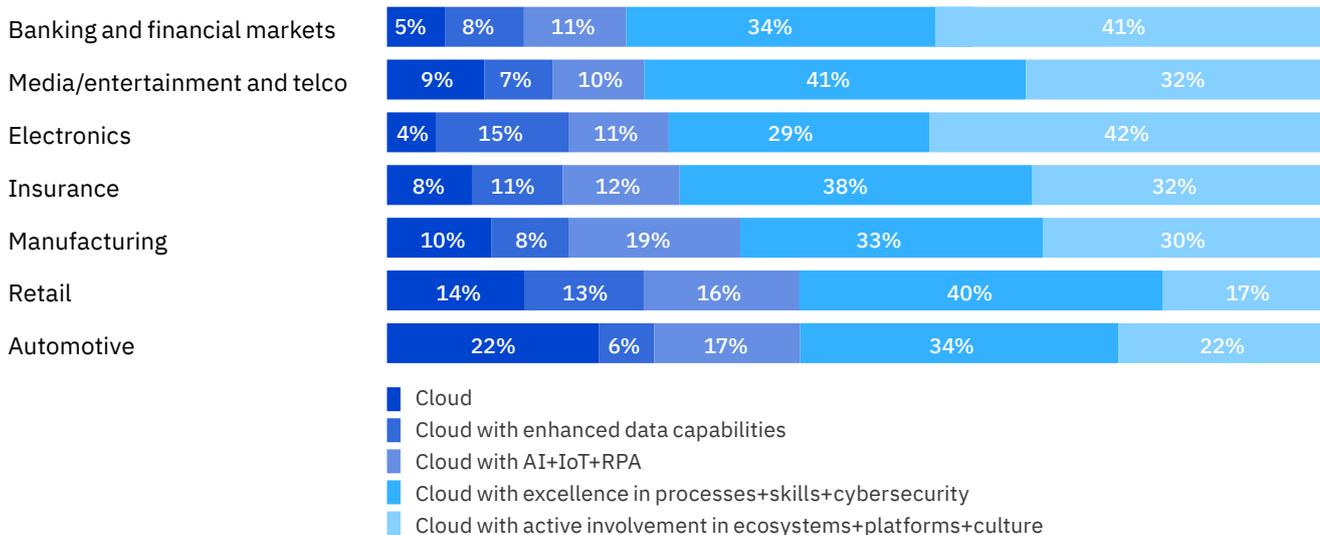
The multiplier effect on revenue growth from combining cloud investments with other transformative levers varies across industries. In banking and financial markets, the potential value of cloud is 20 times greater than the value of cloud implemented alone. In the retail industry, the multiplier effect is 7.

Beyond raw numbers, the relative role of different transformational levers in amplifying cloud's revenue value also varies significantly by industry. No one size fits all. The conversion of cloud to value will be specific to an industry and to an organization (see Figure 4).

Figure 4

Industry indications

The relative distribution of the contribution to cloud revenue impact by industry



Source: IBM Institute for Business Value analysis

Action guide

Unlock the business value of hybrid cloud

The analysis confirms that transformation needs to be holistic, comprehensive, and strategic. The recent IBV study on the Virtual Enterprise identifies this as a “Golden Thread” of value and purpose that animates and connects partners internal and external to the organization. Openness is its defining characteristic. With extended intelligent workflows, and underpinned by cloud, other exponential technologies, and data capabilities, the Virtual Enterprise affords new opportunities for co-creation, collaboration, and innovation orchestrated across platforms and ecosystems.

Here are 4 strategies to extract more value from cloud:

1. Invest in the right technology mix, with hybrid cloud as the foundation

- Invest in cloud—and hybrid cloud in particular—to enable integration and connections.
- Establish a data fabric to allow data to flow through a broad network “on tap,” where the right data is available to the right location and the right application at the right time.
- Prioritize the technologies that have the highest compounding value when combined to drive the greatest impact for your business.

2. Develop the necessary operational enablers

- Transform processes to intelligent workflows, infused with data and enabled by exponential technologies, to capitalize on the business potential of digital acceleration.
- Enhance your cybersecurity capabilities as you extend your digital acceleration and engage ecosystem partners to enable collaboration, co-creation, and sharing of relevant data and insight.
- Embed learning and continuous re-skilling within the enterprise as an integral part of your transformation journey.

3. Open your organization and extend your digital capabilities outward

- Invest and actively participate in platforms that can enable your organization to connect with partners, customers, and other stakeholders in new and improved ways.
- Leverage ecosystem partners to enhance your digital and operational capabilities. Look to partners to scale at speed.
- Invest in ecosystem development and orchestration capabilities to convert sources of ecosystem value into improved outcomes for your business.

4. Drive cultural change in your organization

- Foster an open culture that encourages constant experimentation and is ready to embrace the fact that new ideas can come from anywhere.
- Clarify strategy and establish clear criteria for prioritizing the most valuable ideas while fostering an understanding of how best to engage with ecosystem partners.

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Methodology

In late 2020 and early 2021, the IBM Institute for Business Value, in collaboration with Oxford Economics, conducted a double-blind survey of almost 7,200 C-suite executives across 28 industries and 47 countries. Focus topics included the business impact of technologies and their relationship with business transformation.

Survey responses were combined with publicly available financial data to establish the relationship between cloud investments and revenue growth through time. Analysis was collated from full year 2018, 2019, and 2020 actuals, as well as planned investments and expected financial outcomes through 2022.

Analysis comprised a combination of multivariate regression and neural networks review. Revenue performance as a dependent variable was used to analyze relationships between cloud investments and enterprise revenue against:

- Mastery of data capabilities.
- Level of adoption of technologies, including AI, IoT, and RPA.
- Maturity of operational enablers, including workforce skills, processes and extended intelligent workflows, and cybersecurity.
- Extent of shift toward an open organization, including cultural transformation, innovation, platform strategies, and ecosystems engagement.

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