

# Cloud Transformation Trends 2021

*How the Pandemic is Accelerating  
Cloud Computing Initiatives  
for Enterprise Businesses*



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# Executive Summary

Since the global onset of COVID-19, businesses have had to transform their operating models and rapidly introduce new ways of working for their staff.

The pandemic occurred just as many organizations were looking to cloud computing to enable advanced data-driven operations – a process that will accelerate as a result.

This exclusive report from Corinium and data privacy specialist Privitar explores how businesses are responding to the challenges the pandemic is creating and how

their cloud transformation journeys are being shaped by it.

Inside, you'll read about the experiences of five cloud transformation and data leaders – including three who will speak at Corinium's upcoming **Cloud Transformation Champions, Online USA** virtual event – as they seek to build resiliency and increase efficiency in challenging circumstances.

You will also discover why cloud transformation is set to become an even higher priority for business leaders in 2021 and how that will affect the race to master AI. ■

## Contributors



**Rohit Agrawal**  
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## Foreword

# Delivering Cloud Migration With a Conscience

### KEY FINDING

*The events of 2020 rapidly accelerated cloud transformations across the globe. But without strong data protection strategies in place, enterprises risk falling short of their privacy and security obligations*

Every day, organizations gather vast amounts of information, generated by a population of trillions. Before COVID-19, businesses were already aware of the tremendous value gained by using, analyzing and exchanging data for organizations worldwide. The pandemic has only accelerated existing trends towards cloud transformation.

Almost overnight, work meetings, social interactions, education, exercise classes and shopping shifted to exclusively online. This shift served as a change catalyst for everyone, as businesses adjusted to new market needs. These new market trends and needs have pushed organizations to accelerate their migration to and usage of the cloud.

Cloud migrations reduce costs and IT management requirements, while making it easy for companies to scale data-driven services based on demand, rather than paying up front for hardware and software they may not use. The cloud also provides integrated analytics, data engineering and machine learning (ML) technologies that can dramatically accelerate data-driven insights and innovations. (Of course, you need internal expertise to analyze the data and design new offerings.)

The cloud democratizes access to the raw computing power necessary to perform advanced analytics and deploy ML and artificial intelligence (AI) projects, which simply is not available to many organizations otherwise. ▶

As this report shows, migrating to the cloud provides considerable advantages for organizations seeking to innovate quickly using AI to process and learn from an ever-growing cache of data. That innovation does not, unfortunately, come with a conscience.

AI alone cannot ensure that this data is used safely, legally and ethically. In an era of new and evolving privacy regulations, data-driven misinformation campaigns and increased risks for data breaches, organizations must think through their entire data protection strategies, including elements of both privacy and security.

Indeed, the cloud does not solve every problem. It simply levels the computing and availability playing field.

When companies begin their migration to the cloud, they gain many advantages, but must be prepared for the challenges of keeping data protected, whether it is secured data at rest or data in use that has been de-identified to ensure privacy.

We see that first-hand at Privitar, as we work with organizations

worldwide to help them build and scale their data privacy initiatives, protecting and managing sensitive data, while optimizing its utility for analytic applications.

The opportunities offered by the ability to gather vast amounts of information and perform complex computations are enormous, from detecting and preventing financial crimes to finding new and ground-breaking health treatments. But collecting and processing sensitive personal data also creates significant risks. The same data that can help detect financial crime could, in the wrong hands, be used for social engineering and fraud, while misuse of health data can lead to discrimination and extreme patient distress.

As you'll see in this report, cloud transformation looks set to be a key business enabler in the years ahead. This year impelled business leaders to learn how essential it is to adapt quickly and innovate to meet changing business requirements. But it is vital that they keep security and privacy in mind as they do so. ■



**Steven Totman**

Chief Product Officer,  
Privitar





## KEY FINDING

*The disruption COVID-19 is causing has upended long-established ways of working and reshaped the business landscape. As a result, cloud services and infrastructure are more important than ever*

**B**usinesses worldwide have had to rapidly alter their operations, transform the delivery of their goods and services and introduce new ways of working in the wake of COVID-19.

Moving to the cloud was high on the agenda for many businesses already. But the pandemic has caused an extensive reorganization of priorities that's altered transformation roadmaps and profoundly shifted the mindsets of business leaders.

Rohit Agrawal, Global Head of Cloud and Data Center at healthcare company Siemens Healthineers, has seen attitudes crystalize around the importance of the cloud to the long-term health of the business.

"Sections of the organization where we had late adopters or where people needed convincing

about why we should be using the cloud are now more open, with this crisis," he says.

"They are really seeing the value of the cloud," he adds. "More people are aware of what cloud capabilities are as well as how important investing in the cloud has been to help us build our business resiliency."

"Better business resiliency means that you can easily enable new infrastructure environments for your workforce working from anywhere, from any network, from any device," Agrawal continues. "Something you cannot do easily with legacy or on-premise environments."

The cloud's ability to enhance business resiliency has allowed Siemens Healthineers to pivot rapidly to new ways of working in today's unprecedented business environment. ▶

In fact, organizations that could leverage their previous cloud investments were able to react to the situation more quickly than others when the pandemic first began to unfold.

Douglas Lange, Chief Strategy Officer for the US State of Arizona, has led the state's cloud transformation efforts for more than four years and was able to pivot his agency rapidly in the face of lockdowns and social distancing.

"You took an agency that was close to 100% onsite before the pandemic," Lange recalls. "And we were above 90% remote within two weeks of the pandemic and conducting business as usual."

His organization's work to transfer the state's operations to the cloud enabled this rapid shift to remote management of the state's data workloads. It meant they were able to protect their staff and continue to operate at full capacity through the crisis.

He says: "Our state's technology strategy over the last four years has positioned us very well to be able to respond to everything that's happened with COVID-19 and has allowed us to conduct our day-to-day business without disruption." ▶

*"You took an agency that was close to 100% onsite before the pandemic and we were above 90% remote within two weeks of the pandemic and conducting business as usual"*

**Douglas Lange**

Chief Strategy Officer, Department of Administration, State of Arizona

*“The realization that [cloud transformation] has helped a lot of business to keep afloat during the pandemic has led to an increase in trust from business leadership”*

**Kaveh Djavaheerian**

Director of Global Cloud and Hosting Services, Electrolux

“It’s driving further conversation among statewide leadership about how we can continue to move into the cloud and find more ways to digitize,” Lange concludes.

**Senior Executives are Seeing the Benefits of Cloud Transformation**

Agrawal recognizes that winning the support of senior leadership for cloud transformation initiatives is a crucial step in making sure that those initiatives are implemented successfully.

“If you have senior management buy-in, your case for that investment is so much easier,” he says. “You have a voice behind you in the organization with the right authority to effectively engage the different application, infrastructure or security teams.”

Luckily, the pandemic has reinforced the belief among many executive leaders that the cloud is essential for success in the future.

It is seen as the key to enabling more flexible ways of working, providing better access to data for the business at large and offering the opportunity to take advantage of ML and AI technologies.

For Kaveh Djavaheerian, Director of Global Cloud and Hosting Services at home appliance company Electrolux, the way business operations have had to change due to the pandemic has underscored the importance of the cloud, even while many businesses remain in ‘recovery mode’.

“The realization that [IT and cloud-delivered services have] helped a lot of businesses to keep afloat during the pandemic has

led to an increase in trust from business leadership,” he says.

As a result, Djavaheerian thinks that the business will be more willing to allocate resources to cloud transformation initiatives in the future.

“When IT says it’s time to modernize, the business is more likely to provide the necessary funding and prioritization to do that,” he concludes.

For cloud transformation leaders, the role cloud-based infrastructure and services have played in addressing the challenges this year has thrown at their organizations has provided a case study for the advantages of operating in the cloud.

As we move into 2021, we can expect to see a doubling-down on the cloud as organizations accelerate their transformation roadmaps and lay down new plans to expand their cloud transformation journeys. ■



# Upskilling Staff to Bridge the Cloud Skills Gap

## KEY FINDING

*Technology moves quickly, as do the skills that support it. As more businesses move infrastructure to the cloud, they are finding they must also upskill their staff to maximize their investments*

Enterprise businesses increasingly see cloud-based Infrastructure as a Service (IaaS) as a ‘new normal’ for their data centers, especially in the wake of the pandemic.

Putting data infrastructure into the cloud has clear benefits, such as the ability to quickly scale with demand and reduce capital expenditure on complex physical data centers. However, many organizations struggle to find the necessary skills to effectively manage IaaS and may experience delays to their cloud migration roadmap as a result.

Indeed, global research and advisory firm Gartner [predicts that](#) half of enterprise IT organizations will have their cloud migration plans delayed by two years or more through 2022 due to a shortage of IaaS skills.

Of course, it is far quicker and easier to move a data center to the cloud than it is to retrain a workforce. But failing to invest in these skills can cause significant issues, from cost overruns to bad configurations caused by people attempting to learn on the job. ▶

*“We are immediately transitioning into a world where understanding hardware is far less important than understanding software”*

**James Binford**

VP, Cloud Security Solutions, US Bancorp

*“The big banks are full of talented people who have a ton of experience racking and stacking, but very little experience of writing code”*

**James Binford**

VP, Cloud Security Solutions, US Bancorp

For James Binford, VP of Cloud Security Solutions at bank holding company US Bancorp, moving away from a focus on hardware in favor of upskilling to get the most out of software was a big challenge.

“The big banks are full of talented people who have a ton of experience racking and stacking,” he says. “But very little experience of writing code.”

“We are immediately transitioning into a world where understanding hardware is far less important than understanding software,” he continues. “Making that transition from being a ‘hardware person’ to being a ‘software person’ is the real challenge.”

**Cloud Leaders are Investing in Continuous Upskilling**

For a team member who has an existing skillset in, for example, data security, but has up until now been more focused on the hardware, Binford recommends putting developmental plans into place to help them refine their skills incrementally.

One strategy that can be employed to do this is ‘20% projects’. These are discrete

projects executed over a defined period with clear milestones that should take typically no more than eight hours a week to complete.

This kind of continuous upskilling is also a focus for Siemens Healthineers Global Head of Cloud and Data Center Rohit Agrawal, who also tailors his upskilling efforts to individual staff members.

“Whether they are an architect, a developer or an administrator, everybody needs to be continuously upskilling,” Agrawal says. “This is an area where we manage people’s skill development very actively.”

Given that technology changes so quickly, Agrawal thinks it’s important to have a good overview of many different skillsets, rather than focusing on developing expertise in one core technology.

“You need to have a good breadth of different skills,” he argues. “You don’t need to be an expert in every technology. But you need to have a good overview of how to apply those concepts.”

**Adopting a Cloud Mindset in 2021**

There are significant upsides to transitioning to cloud-based ▶





services. However, legacy technology and traditional thinking persist in many organizations, especially in the public sector.

For Douglas Lange, State Chief Strategy Officer for the State of Arizona, the process of determining where to employ the cloud started with an assessment of what was currently being used.

“When you look across a number of agencies, you see people using applications that are 15 or more years old,” explains Lange. “Often these are custom apps that have been built in-house.”

He continues: “If they’re custom apps and they’ve been in service for 15 years, not only are we sacrificing features and functionality

associated with modern platforms, but our risk around talent and sustaining our workforce also continues to grow.”

In the meantime, the world of technology has evolved, as have the technical skills required to support it.

Of course, migrating to the cloud is not only a technical or skills-based challenge. It is also a cultural one, and that culture must come from the top down.

Cloud transformation leaders like Lange and Binford have been able to capitalize on the opportunities presented by a challenging year.

The next step is to instill a ‘cloud mindset’ in their organizations that shifts the focus from providing hardware to providing services, and from optimizing server capacity to optimizing consumption. ■

*“Whether they are an architect, a developer or an administrator, everybody needs to be continuously upskilling”*

**Rohit Agrawal**

Director, IT – Global Head of Cloud and Data Center, Siemens Healthineers

# Continuing the Cost Optimization Journey

## KEY FINDING

*As businesses look for greater financial stability in the wake of the pandemic, greater cloud adoption will provide the opportunity for further cost optimization*

There are many reasons for businesses to move their IT architectures and on-premise data centers to the cloud. These include better security and data protection, data modernization and the availability of cloud-based software. However, one key driver is the opportunity to optimize the general cost and performance of IT operations to bring down the total cost of ownership (TCO).

In a recent study, software asset management firm Flexera [found that](#) 73% of enterprise businesses saw achieving cost savings by optimizing cloud usage as the biggest driver for cloud transformation initiatives.

Conventionally, cost optimization for on-premise solutions can be a challenge, as it requires businesses to predict future capacity and anticipate business needs. However, the cloud provides a way for businesses to scale their operations as required while only paying for



what they use. This is a powerful incentive for organizations that seek to make an impact on their TCO.

As well as pure cost savings, the cloud also provides a framework upon which to innovate rapidly and at a scale. With traditional on-premise infrastructure, this kind of scalability is far more complex and requires prohibitive levels of capital expenditure.

“We are always working on the cutting edge of medical innovation and that requires the fastest and ▶

*“We moved over a thousand workloads directly into the cloud and retired about 15% of what was in the data center”*

**Douglas Lange**

Chief Strategy Officer, US State of Arizona

most scalable computation and storage,” says Rohit Agrawal, Global Head of Cloud and Data Center at Siemens Healthineers. “We cannot keep filling up our data centers with more and more hardware, and that is what cloud offers us.”

“We can scale up the environment and the infrastructure for R&D departments to use and then quickly terminate them once they are done,” he continues. “Without being locked into four years or five years of in-house capital expenditure.”

### Leveraging the Cloud to Reduce On-Premise Expenses

In his time as the Chief Strategy Officer for the State of Arizona, Douglas Lange has transformed the state’s strategic IT plan and helped

*“We cannot keep filling up our data centers with more and more hardware, and that is what cloud offers us”*

**Rohit Agrawal**

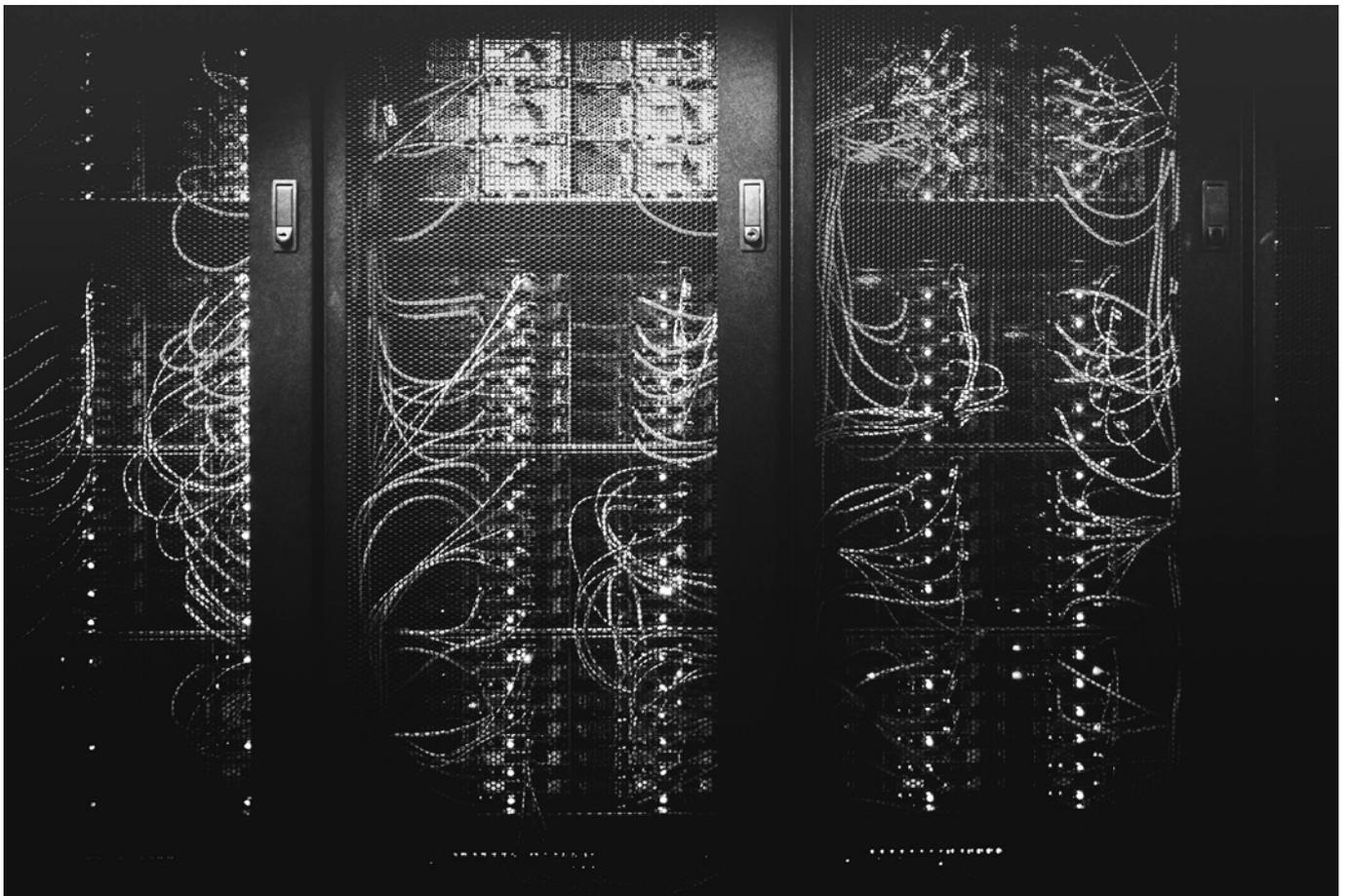
Director, IT – Global Head of Cloud and Data Center, Siemens Healthineers

pioneer its cloud transformation journey.

One of the pillars of his organization’s success over that period has been to make significant savings for the state by closing physical data centers and by ramping up cloud usage statewide to provide further opportunities for cost avoidance.

“[Closing the state data center] was a big win for us,” Lange says. “We moved over a thousand workloads directly into the cloud and retired about 15% of what was in the data center. That resulted in USD \$4.2 million in savings annually for our organization.”

“Not only that,” Lange continues. “We now get to redeploy those ▶





**\$30m**

is what the US State of Arizona could potentially save per year through cloud data migration

Source: Corinium Intelligence, 2020

Lange is not alone in his success at turning cloud migration into tangible financial benefits to his organization while improving performance at the same time. Closing regional data centers and migrating their workload to the cloud has provided significant cost savings for Agrawal.

“So far, we have eliminated two data centers,” he says. “Even by migrating the environment as it is from on-premise to the cloud, we have seen up to a 20% reduction in our operational costs.”

However, it is not enough to simply ‘lift and shift’ data into the cloud. In fact, Agrawal acknowledges doing so can even increase costs. But adopting the kind of ‘consolidation’ approach that both Lange and Agrawal are pioneering can be a great way to drive cost savings. ■

resources in different ways that can add value to the state with more secure, more stable, more feature-rich applications.”

Despite the savings already made by his organization, this is only the beginning of Arizona’s cloud transformation journey. By partnering with other agencies statewide, Lange has identified up to 20 other data centers currently used by the State that could be migrated to the cloud.

“We’re looking at upwards of potentially USD \$30 million that can be saved across all of our agencies that is currently invested in data centers,” he says.

“By transitioning things either off-premise or to a shared hosted data center and migrating most of their workloads to the cloud,” he continues. “We stand to make significant improvements both in terms of performance and cost.”

*“You need to have a strong governance not only for cloud migration but also after you have moved to the cloud. Otherwise, you will not be able to balance costs”*

**Rohit Agrawal**

Director, IT – Global Head of Cloud and Data Center, Siemens Healthineers



# Enabling AI and ML Cloud-Based Services

## KEY FINDING

*Developing bespoke AI solutions is out of reach for many businesses. The cloud provides an accessible path to adoption*

**A** I has captured the public imagination for decades and advances in AI technology regularly make international news.

For example, an AI algorithm developed by Heron Systems, recently [beat a human fighter pilot](#) in a simulated F-16 dogfight five times in a row.

However, the term AI is often used to refer to a host of different technologies. Some of the more widely deployed subsets of AI in a professional context are machine learning, computer vision, and natural language processing.

Despite the potential for AI to impact society at large, many businesses are still at the beginning of their journey toward AI adoption, even those who are relatively advanced in their data journey.

However, this may be starting to change. As more businesses harness the cloud and experiment with cloud-based services, AI and ML technologies are becoming more accessible than ever. ▶

*“I think that the use of [cloud] services to create data-driven or AI-driven analytics will accelerate”*

**Kaveh Djavaheerian**

Director of Global Cloud and Hosting Services,  
Electrolux

A recent Gartner study predicts that AI usage will **increase by five times** between 2019 and 2023, making it one of the most used cloud services. Furthermore, our **own research** from this year found that 63% of CDAOs have already started scaling their AI capabilities within their organizations, suggesting that this process is already underway.

For US Bancorp VP of Cloud Security Solutions James Binford, the greater accessibility of cloud-based AI makes it an attractive prospect.

“[One of the advantages of] the cloud is that you don’t have to bring in a lot of people to set up hardware for your AI and ML models,” Binford says. “I expect organizations like ours to take advantage of those offerings on a rapidly increasing basis.”

### Taking the First Steps with Cloud-Enabled AI

AI technology could contribute up to USD \$15.7 trillion to the global economy by 2030, according to a **recent study** by accounting firm PwC.

But despite the potential offered by AI, **our research** shows that 65% of enterprise businesses say that building a team with the right skills is a large or medium barrier to AI adoption.

That is just one element that could cause a business to think twice about building AI solutions from scratch, especially when there is no guarantee that such projects will successfully deliver ROI.

Data quality is another factor. Specifically, the ability to access enough clean data that is representative of the use-case in question.

# 63%



of CDAOs have already started scaling their AI capabilities within their organizations

Source: Corinium Intelligence, 2020

Although Electrolux is at a relatively early stage of AI adoption, Electrolux Director of Global Cloud and Hosting Services Kaveh Djavaherian is already putting cloud-based data architecture in place for future AI initiatives.

“I think that the use of [cloud] services to create data-driven or AI-driven analytics will accelerate,” says Djavaherian. “We are already

creating data lakes and using cognitive analysis on them.”

Making sure that the data groundwork has been done to enable AI is also a priority for Siemens Healthineers Global Head of Cloud and Data Center Rohit Agrawal in the coming year.

“Once you have the data lake and the correct environment, then you can build on top of it,” Agrawal says. “The key is to have the right data at the right quality. So that is what we are focusing on right now.”

To maximize the chances of success for AI initiatives, cloud transformation leaders must make sure their infrastructure and data fundamentals are solid. However, as more companies take advantage of advanced cloud-based AI services, the pressure will be on to keep pace. ▶





### Cloud Security and the AI Arms Race

Many organizations, particularly those who hold large amounts of sensitive data like banks, have historically been wary about going too far too fast with AI.

Of course, there are many common roadblocks to enterprise AI adoption as we have discussed. There are also valid concerns about data protection and security, as well as the lively debate on AI ethics.

However, there could be a significant upside for financial organizations that can use AI effectively to tackle more substantive issues like credit risk evaluation.

Operating an ML model for credit risk evaluation is a thorny topic in the credit risk industry mainly due to the opaque nature of the AI processes involved. However, the

benefits of adopting AI solutions for more advanced functions like credit risk evaluation may ultimately outweigh the risks.

For example, the Chief Analytics Officer of banking group Banorte, Jose A Murillo, pioneered a data-driven credit risk evaluation program in his organization which helped increase the profitability of

its credit card business by 25% in its first year.

“With data, you can be much more efficient,” Murillo says. “What kind of customers create a lot of risk? And how can you manage those customers better?”

James Binford VP of Cloud Security Solutions at US Bancorp thinks that competition amongst banks could be the spark that ignites the AI arms race in the financial services industry.

“I think the big driver of something like that is going to be someone else doing it effectively,” Binford says. “It takes that first domino to fall to set the others in motion.”

To allow cloud-based AI initiatives to flourish in enterprise businesses, it is essential that cloud transformation leaders do the necessary groundwork now. That means investing in the necessary data management, data governance and data security foundations to use the technology safely and efficiently.

Enterprises that aren’t doing so already are at risk of falling behind the pack. As [our research](#) has shown, the AI arms race is already underway. To the victor go the spoils. ■

*“[One of the advantages of] the cloud is that you don’t have to bring in a lot of people to set up hardware for your AI and ML models”*

**James Binford**

VP, Cloud Security Solutions, US Bancorp

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For more information, please visit [www.privitar.com](http://www.privitar.com)



## About the Editor

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Gareth Becker is an experienced editor and content marketing professional. He produces rich multi-media content focused on data, AI, cloud transformation, e-commerce, procurement, and finance.

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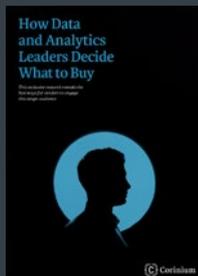
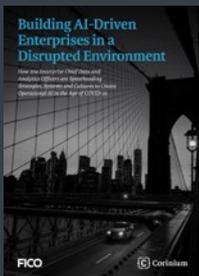
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