

ERA OF INTELLIGENCE SERIES

The challenges of Modern Cloud Landscapes

From fog to clarity: addressing cloud
platform challenges

Where are we today?

Modern Cloud solutions are imperative to be competitive in today's fast-paced business landscape. We define the core platforms within the modern cloud as:

Public Cloud

The hyperscalers such as AWS, Microsoft and Google. These continue to grow exponentially year-on-year as more customers move workloads to the public cloud or transform existing applications to become cloud native.

Private Cloud

The implementation of private clouds in customer or co-located data centers that use either customer owned hardware or make use of services such as HPE GreenLake.

Edge

Over recent years, several factors have combined to really drive the adoption in this space. Customers across various vertical industries not only use Edge solutions but also rely heavily on them.

We design and build solutions for our customers that are agile and secure these locations. Our goal is to enable workloads and applications to operate seamlessly between them enabling flexibility, scalability, and resilience. This approach enables the full advantage of different deployment models and optimises IT infrastructure for unique business needs and goals.

In recent years we have begun to see a shift in approach from 'cloud first' to a more 'cloud smart' approach, driven by an application-first mentality. Questions around security, data, regulation, and latency inform these decisions, and we believe the goal should always be to put the right workload with the right data into the right place thus delivering better long-term business outcomes.

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Applications and AI is fuelling huge growth

A huge number of new applications will be developed and deployed across Modern Cloud Platforms in the next few years, from cloud native applications in the public cloud to containerised intelligent applications at the edge.

When combined with the arrival of disruptive technology such as AI, this is rendering many Modern Cloud Platforms outdated and in need of modernisation to achieve the business outcomes organisations require whilst using many of the new underlying technology components needed to support them, such as the high levels of compute now required (i.e. GPUs), advanced data/storage technologies, and application development and delivery platforms.

This is compounded with many organisations' strategic desire to move away from infrastructure services (IaaS) to platform services (PaaS) thus reducing the reliance on infrastructure and letting the cloud provider's native services perform the heavy lifting of provisioning, operating and managing the compute, storage and application layers.

Over the next five years, IDC expects workloads to double to more than 1 billion, that's more new applications in the next five years than we have seen in the past 50 years.¹

The need to modernise these platforms and start to use AI, build applications and move towards PaaS services is fuelling a huge growth curve across the Modern Cloud Platforms. With the drive to implementation being driven from a board level it's now

incumbent on IT and engineering departments to ensure their platforms are fit for purpose and workloads both optimised and seated in the right location to achieve the maximum benefit at the lowest operational cost.

The growth opportunity

Data center

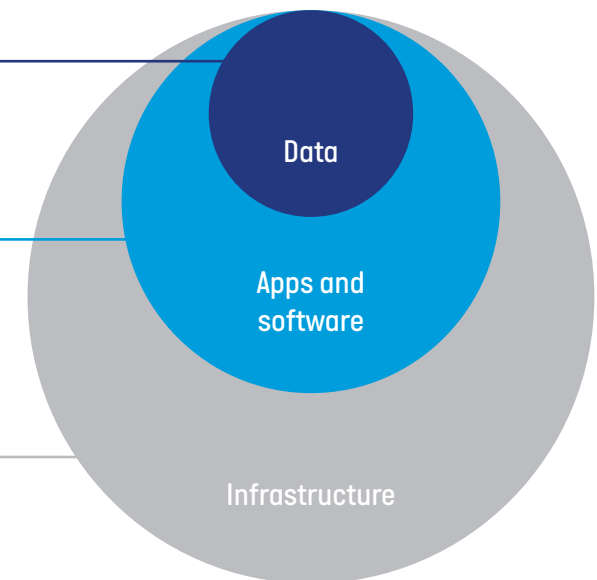
CBRE - The European data center market grew by nearly 20% year-on-year in Q1 2024.²

Public cloud

IDC predicts that worldwide spending on public cloud services is forecast to reach \$805bn in 2024 and double in size by 2028.³

Edge

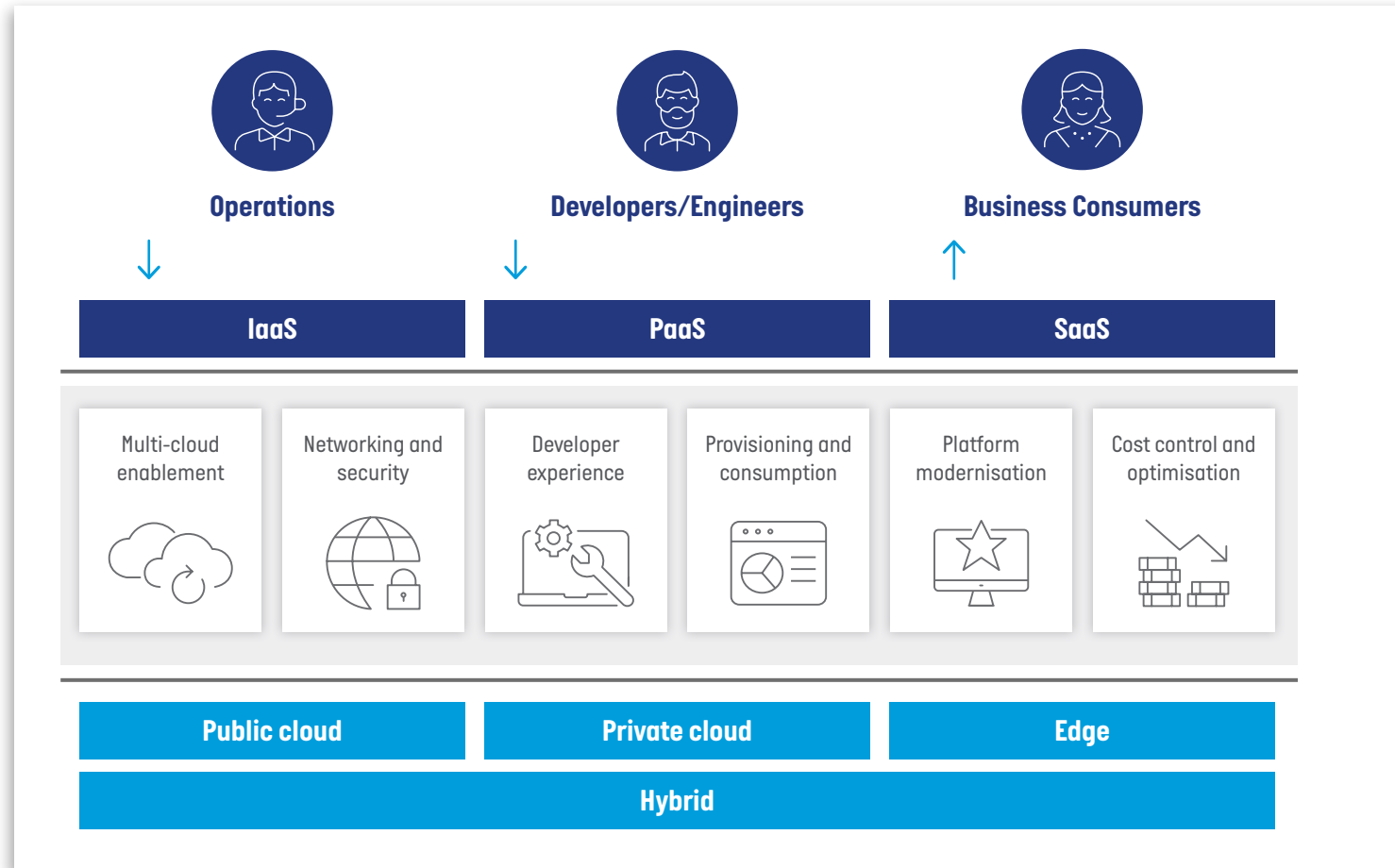
Gartner predicts that by 2025, enterprises will process and create more than 50% of their data outside of the cloud or centralised data center.⁴



The challenges of modern cloud

To successfully operate across the modern cloud, we believe it is critical to surround these platforms and the underlying technology with effective management and governance solutions to enable customers to operate platforms holistically and at optimum cost establishing the right operational people, processes, and tools.

However, as the pressure mounts to drive out the delivery of these platforms and the workloads such as AI that need to run on them, we are seeing several recurring challenges customers are facing in making this a reality.





Multi-cloud enablement

From our engagements with enterprise organisations, we have seen a noticeable increase in the consumption of services from multiple cloud providers. These are often delivered in silos, with different tools, teams, processes and patterns - leaving IT security, operations and support teams with a highly decentralised portfolio of services to manage at increased risk and cost.

Modern cloud has evolved the landscape from traditional on-premises private cloud to a complex array of platform locations operating simultaneously. As organisations increasingly adopt multi-cloud strategies and extend their public, private and edge platforms, managing these multiple environments can lead to misconfigurations and the incorrect deployment of cloud resources. We describe each cloud provider as a 'snowflake' offering services that in effect deliver the same outcome but get there via different tools, settings, and protocols, making it challenging to ensure consistent configurations across all platforms. This may include security tools, networking, storage, or data services. The lack of visibility and control over these multiple clouds exacerbates these risks, making it imperative to correctly enable multi-cloud.

This complexity is slowing down the adoption of Modern Cloud Platforms and the subsequent migration of workloads, not allowing businesses to realise many of the benefits the cloud providers offer. And as organisations continue to diversify this decentralisation of services and a lack of standardisation around tooling, processes and governance merely increases the complexity and cost of IT operations.

What's required is a consistent architectural approach across the modern cloud using common tooling that abstracts common services away from individual cloud providers, via best of breed ISV tooling, simplifying operations and enhancing end-to-end visibility. This will help align IT operations with business goals along with the efficient management of costs and resources. And this commonality and standardisation should be extended into policy definition and technical standards.

Businesses that successfully manage the complexities of multi-cloud management will be best positioned to thrive in an increasingly digital and interconnected world.⁵

Networking and security

The rise of complex applications, distributed across modern cloud endpoints, has meant networking across the modern cloud has never been as critical as it is today. There is an ever increasing need to interconnect these applications across platforms within a service mesh-based approach. We have also seen an explosion of devices at the edge, with a need to pass data back to more centralised locations for storage and data processing, best served by remote connectivity options such as 5G. All of this equates to a movement towards decentralised network patterns that support highly distributed modern cloud computing. To address these challenges, customers will have to look at transforming their networks to modernise operations and automate/integrate to drive commonality and efficiency.

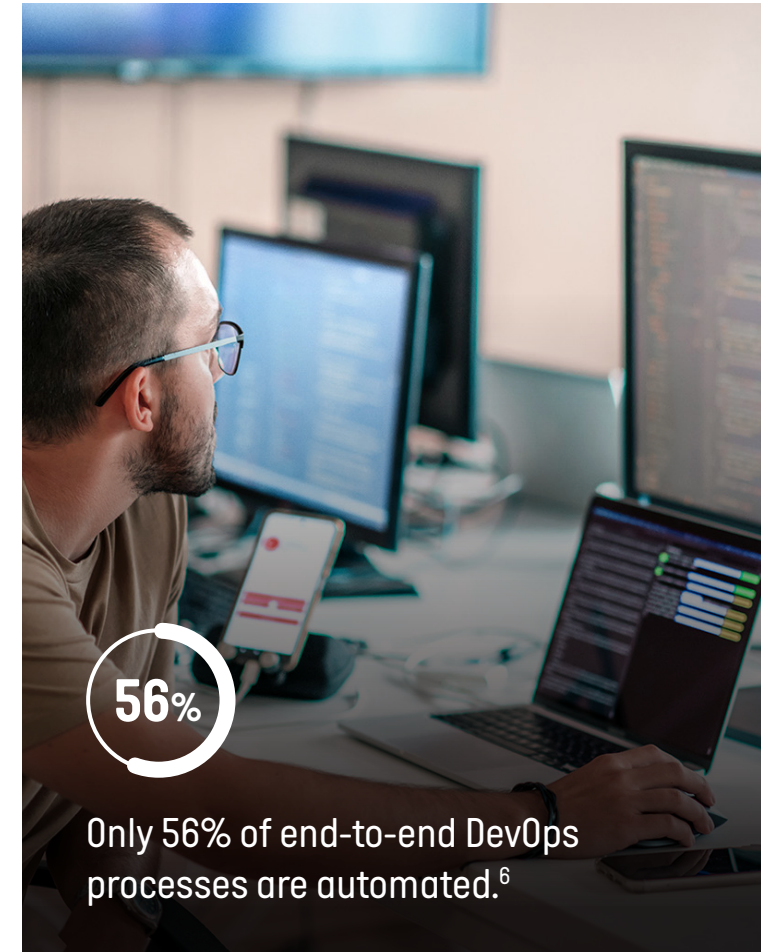
Security in modern cloud is equally challenging, due to the expanded attack surface and the need for consistent security measures across different cloud platforms. Organisations need to deploy consistent and automated security controls with standardised configurations. They need to enforce governance rules and ensure regulatory compliance, and they need to use strict access controls such as Secure Access Service Edge (SASE) and Zero Trust Network Access (ZTNA) along with well-defined identity management. The challenge is ensuring that these security measures are uniformly applied across all cloud environments, minimising the risk of security breaches and reducing the attack surfaces of workloads.

Enhancing the developer experience

The expected exponential growth in applications/products that will be developed and deployed across the modern cloud in the coming years requires the successful enablement of development teams to enhance collaboration and communication, create common toolsets and facilitate more automation of processes and common tasks allowing teams to become proactive rather than reactive.

To achieve this, many organisations are coalescing around the creation of platform engineering as the method of streamlining application development and delivery by providing a unified, self-service platform for developers to consume. This platform is often referred to as an "Internal Developer Platform," or IDP which at its core is a set of tools, services and processes that support and accelerate software development. In best practice terms, the IDP itself is seen as a product and is treated by the platform team in the same way as other applications. To be successful organisations don't just need the 'platform', they need to focus on the developer experience by ensuring the tools and processes are easy to use and adopt at scale. Platform engineering looks to achieve this by providing developers with 'golden paths' which are, in essence, highly automated, self-service workflows that abstract away the complexities of building and delivering software (such as the deployment and management of infrastructure) ensuring the developer only need worry about writing code.

As organisations adopt multiple platforms across multiple locations, centralising, standardising and accelerating application delivery will be key, allowing developers to focus more of their time on creating better products and customer experience.





Provisioning and consumption

We have discussed building cloud services and products through increased automation and platforms, but organisations need to consider how multiple personas can provision and consume these services via a controllable and auditable self-service mechanism. Successful cloud provisioning should bring together automated build processes and surround them with process workflows consumable via catalogue-based portals or APIs that allow consumers to choose the pre-built services they need when they need them. The convergence of cloud automation and cloud provisioning is becoming a significant trend in modern cloud and being able to do this successfully bring these concepts together holistically creating real synergy for customers.

So how can we provide this provisioning capability? Many of our customers use ServiceNow, as their platform for IT service management (ITSM), which offers powerful capabilities for self-service-based cloud automation and provisioning using concepts such as policy-driven automation to build business workflows and enforce governance policies, compliance requirements, and security controls across their cloud infrastructure. By embedding these workflows into catalogue-based provisioning, we have seen our customers remove manual tasks and reduce provisioning time for cloud services from weeks or days to hours, increasing release velocity and ensuring the automated deployment of centralised policies around areas such as security and networking.

Platform modernisation

Customers are realising their cloud platforms have become outdated. This is due in part to two contributing factors. The first we see borne out from how workloads were migrated using a predominantly 'lift-and-shift' approach which did not take an application-led view, leaving many of these applications in a suboptimal state, failing to take advantage of the cloud native services the hyperscalers offer. Customers built their cloud landing zones to host this first wave of migration activity but with the rapid advance in both hyperscaler and ISV services these now require modernisation to support the new applications, platform services and distributed data elements the business wants.

The second, and closely related, factor is how customers' cloud strategies want to transition away from IaaS to PaaS to reduce reliance on managing infrastructure and let cloud native services do the heavy lifting of provisioning and managing underlying platform elements. Container services are a good example of this as more intelligent applications are created along with the rise of PaaS-based AI solutions that autonomously act on the output from AI models. Vendors across the modern cloud space are increasingly developing PaaS and out-of-the-box solutions in response to this change in demand.

As a result, we will see the rise of second generation cloud platforms - or cloud v2 - to build out data-driven, PaaS-based platforms which facilitate this growing wave of new services like AI and support application development. These will further extend into the concept of industry clouds that address the specific needs of verticals, such as financial services to provide suitable resilience to comply with the DORA regulations, or security-specific requirements in public sector to manage highly sensitive data.

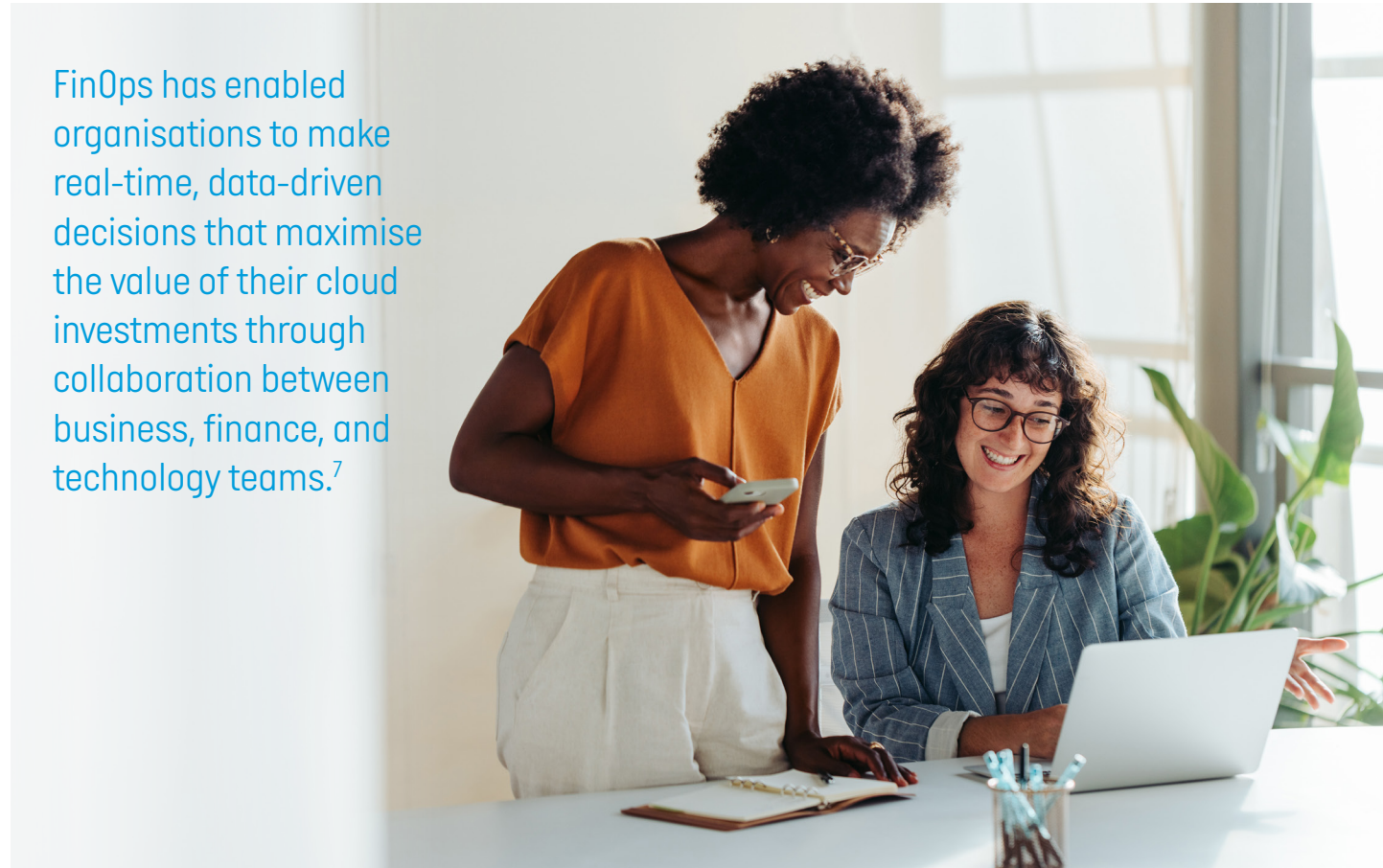
Cost control and optimisation

It's widely recognised that optimising costs in the modern cloud environment is essential. FinOps practices encompass the technical, business, and operational aspects of cloud spend. These should be utilised to develop and implement policies and guardrails that drive the automation of cloud cost management, including monitoring, forecasting, and governance.

Whilst FinOps was born to address the cost management challenges that come with the variable costs of the public cloud providers we are starting to see an ask across the data center and private cloud for managing cloud-like consumption-based costs, particularly "as-a-service" IT costs. Further this extends into other related technology areas such as IT Asset Management (ITAM), software licensing and SaaS allowing organisations to get a more complete cost picture across their entire IT estate that drives value-based decision making. FinOps therefore needs to move out of the public cloud into a more holistic IT-based function, providing value across all platforms.

A key ask in this area will be to derive a more granular view of unit economics across distributed workloads. Units can be defined as business functions, services or even applications to derive the costs associated with the revenue generated. With an understanding of unit economics, businesses can make data-driven decisions about resource usage, workload placement, and product viability. As an example, we hear customers trying to get to a point of a 'cost per application' allowing them to determine how to run that application more efficiently and cost-effectively.

FinOps has enabled organisations to make real-time, data-driven decisions that maximise the value of their cloud investments through collaboration between business, finance, and technology teams.⁷



Let Computacenter take you on your journey to the Modern Cloud

How Computacenter can help

As more technology drives to the edge, platforms are modernised for AI and applications are built and deployed, we have a defined set of interconnected portfolio services designed to deliver the transformation our customers need. Computacenter have dedicated business units and specialists focused on public cloud, private cloud, data center, networking, security, and intelligent applications that address the challenges outlined above, placing us in a unique position to help our customers.

Multi-cloud enablement blueprint

We help our customers centralise and abstract services across multiple platforms, removing the complexity of adopting multiple cloud platforms through standardisation and commonality across a set of core areas including operations, networking and security. We run multi-cloud maturity assessments with our customers to identify areas of improvement and look at specific areas of focus that may include elements such as multi-cloud automation, observability or multi-cloud networking.

Developer experience services

Organisations wanting to thrive in the digital age need to build brilliant products and quality services at speed. Our range of developer experience services which empowers developers and engineers to work with less friction and more productivity is essential to this goal. We are helping our customers adopt platform engineering, build Internal Developer Platforms (IDP), and secure the software development lifecycle. We lead engagements with customers via user adoption, support change

via concierge-based technical onboarding, and drive new ways of working via Adoption Squads, and advisory engagements such as Value Stream Assessments (VSA).

Network and security

We have a range of network and security services designed to support our customers across the secure interconnected enterprise such as SASE, Cloud Native Application Protection Platforms (CNAPP), Compliance and Governance, Threat Detection Response (XDR), Identity Management, and Network Automation.

Multi-cloud automation service

Our multi-cloud automation service brings together our unique skillset with ServiceNow and cloud engineering to provision cloud services securely and quickly, embedding business workflows into the provisioning process to significantly reduce the time taken to deploy. These can be made available via self-service or API-based catalogues ensuring consistency and enabling role-based access to services so only the right consumers can deploy the services they have access to.

FinOps services

Our FinOps services help customers adopt and mature their FinOps capabilities bringing in associated elements like ITAM and looking across both the public and private cloud. We have services such as the creation of a FinOps practice, quick wins and maturity assessment, and the ability to help customers choose, procure, deploy and manage their FinOps tooling.

Sources:

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Office of the CTO

The Office of the CTO (OCTO) team leads in the exploration and application of technology products and delivery methodology to aid the digital transformation of our customers.

As a team of cross-functional technologists with extensive industry and IT experience, we deliver thought leadership, advice and real-world implementation experience to help our customers achieve their goals.



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