



The CIO Playbook for Hybrid Cloud Success



Contents

- 04 Gathering data intelligence to drive business results
- 06 Gaining ready access to mainframe data
- 07 Successfully integrating your data in a hybrid environment
- 08 Creating cost-effective hybrid storage for z/OS[®] data
- 09 Managing complex content estates
- 10 Refactoring the monolith for the cloud
- 11 Picking the right modernization solutions for your enterprise
- 13 What will you achieve with a modernized hybrid cloud?



Enterprises are on the cusp of a dramatic revolution. Transformative technologies like AI, cloud computing, and the Internet of Things are already creating seismic shifts in virtually every industry – and the changes have just begun. Unfortunately, most enterprises aren't leveraging their IT architecture to make the most of these revolutionary technologies. To truly capitalize on these innovations, organizations that have historically relied on core platforms like IBM Z® and IBM® i for success must integrate them with the cloud for a holistic hybrid strategy.

But this is easier said than done. CIOs contend with:



Skill and knowledge gaps across siloed teams



A web of compliance, security, and performance risks



The need to innovate and drive business value with data and new technologies

Stagnation is not an option. It's imperative that CIOs take full advantage of the flexibility offered by a hybrid cloud model. This includes developing and maintaining your applications on the platform where doing so makes the most sense. Hybrid cloud offers the flexibility to move data to where it is most impactful — all without affecting performance, security, or compliance.

Let's look at six of the biggest areas for improvement facing CIOs when it comes to the hybrid cloud paradigm, and the corrective steps that can upgrade each and add to your enterprise's bottom-line.



Gathering data intelligence to drive business results

To ensure continued buy-in and support for your modernization efforts, CIOs must deliver significant impact to the business quickly. And that fast and significant impact comes from end-to-end visibility into how the business engages with applications and data. A full picture of your workflow and processes facilitates the identification of hot spots for automation and modernization strategies that increase bottom-line value. The more visibility you have the more success you enjoy from triaging modernization projects and finding the biggest opportunities for time and cost savings.

An informed perspective on the relationships between these legacy systems, app components, data, and different members of your enterprise is essential to mapping out an effective hybrid cloud strategy.

Data discovery on legacy systems is extremely challenging

The more you understand your data, the more successful your modernization and migration projects will be. But truly understanding an enterprise's data and legacy systems can be like trying to navigate a maze, while finding user-friendly solutions reduces data complexity.

Alone, discovering data is not enough. CIOs must also capture relevant metadata such as category, PDS library, LPAR, server name, and more to understand the data's origins. Understanding metadata is how you grasp data lineage, data flow, and your data's comprehensive story — which also means knowing what data can and can't be trusted.

But gaining data transparency is like working on a puzzle with missing pieces unless you have the right cost-effective tools. Prioritizing measures like accessible UI and automation capabilities reduces costs associated with manually intensive data discovery tasks, like sifting through large amounts of source code.



Migrate data with a strategic and stable approach

The endless nuances of core systems and distributed data mean that adopting the right data intelligence solution is critical to the success of your migration project.



“Wasting time and resources by migrating irrelevant data or inadvertently creating data swamps is a common misstep. Discover what data you have, how it’s used, and what’s obsolete before migrating vast quantities of it.”

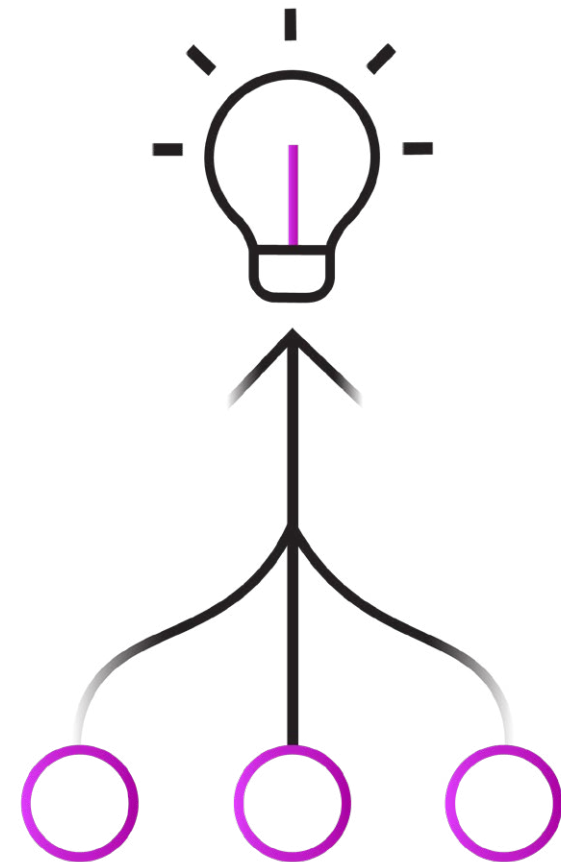
This limits both costs and noise when gathering data for critical decisions.

A sound data strategy also enables a sound impact analysis. Your data doesn't exist in a vacuum. Before any migration projects, understand the downstream effects of data changes and how they impact customers and employees. Visualize the results of your planned data changes and ensure that all migration projects preserve the integrity of your data and seamless operations.

Rocket® Data Intelligence

Rocket Data Intelligence is a self-service data solution built on automation that spans cloud, distributed, and core system infrastructures. With Rocket® Data Intelligence, CIOs gain a powerful tool for bolstering data management and enhancing bottom line-impact through effective modernization projects.

With its intuitive interface, users without a background in data science still enjoy comprehensive views of your data, empowering informed decision making. Rocket Data Intelligence supports more technology connections than any other solution on the market, plugging and playing into the complex environments of the world's largest organizations.



Gaining ready access to mainframe data

Most enterprises have a wealth of data on their mainframe but no effective way to easily access it. Data is typically segregated by the following:

- Business unit
- Format
- Platform

But this architecture prevents companies from accessing a holistic view of their data and drawing meaningful insights. In a hybrid cloud environment, data on secure, transactional systems like IBM zSystems® can be readily accessible for cloud-driven initiatives and analytics.

Traditional data integration is inadequate

The traditional approach to data integration — extracting, transforming, and loading (ETL) — is expensive, labor intensive, and a gateway to substantial latency. It is also associated with greater risks to data security, data inconsistencies, and a rigidity that hampers business agility. And the increasing requirements of real-time advanced analytics, cloud, and mobile make ETL even less viable.

Enterprises need a more efficient solution, given the following:

- Expanding skills gap for legacy z/OS data sources
- Increasing pressure to reduce architectural complexity
- Rising need to bring applications to market faster

CIOs need an agile solution for real-time access to mainframe data

Enterprises with the ability to create virtualized, real-time views of mainframe data hold a significant advantage. By accessing and integrating without ETL, you're able to rapidly draw meaningful insights on potential risks, customer needs, and market opportunities.

Additionally:

- Data abstractions enable leaders without a data analytics background to draw insights for key decisions
- Faster and simpler access to mainframe data allows for improved speed to value
- New agility comes at a lower cost and complexity than traditional data integration approaches

Rocket® Data Virtualization

[Rocket Data Virtualization](#) offers virtualized, integrated views of disparate data by allowing you to access mainframe data in place. Enjoy flexible options for accessing data and support for a broad range of mainframe data sources. Integrating your data for holistic views with Rocket Data Virtualization is how you accelerate beyond your competition with a comprehensive and cost-effective solution.



Successfully integrating your data in a hybrid environment

Successfully integrating your structured and unstructured data in a hybrid environment is key to keeping it secure, readily available, and accessible for initiatives like analytics and AI/ML modeling. Unfortunately, most enterprises don't have an efficient and secure solution for making this happen.

Traditional data integration approaches are costly and limited

Traditional data integration approaches pose a range of problems:

- Expensive and time-consuming
- Average requisite of 10 to 18 months of development
- Disruptive engagement of key internal resources needed for other mission-critical initiatives

You have to weigh how much of your resources you want to dedicate to both building and maintaining such a solution. And after developing a stable solution, organizations still struggle with:

- Data replication, data synchronization, and performance limitations
- The inability to perform one-to-many replication for a diverse range of data types (from mainframes and distributed systems) to a wide range of targets (including the cloud)
- Limited bandwidth and/or interoperability
- Maintenance and reliability challenges

Creating a simple, secure, and powerful approach to data integration

Data integration means IT and data leaders must prioritize a solution with the following traits:

- Encryption
- Site-to-site VPN
- SAF controls
- Filtering
- Secure connectivity

And enterprises with scalable data capture and real time synchronization — through a data integration solution that smartly coexists with native IT architecture — have considerable advantages:

- Use real time data with AI/ML models in the cloud while syncing changes to the mainframe or other core transactional systems
- Reduce maintenance costs with minimal custom programming
- Integrate seamlessly with Z mainframe, distributed, and cloud platforms to simplify data management

Enable your enterprise to not only reduce storage and maintenance costs but also drive innovation. Bring core systems data into the cloud where your team is working on innovative projects and accelerate the launch of new business services and other key initiatives.

Rocket® Data Replicate and Sync

[Rocket Data Replicate & Sync](#) is specifically designed to facilitate data modernization within a hybrid cloud environment. Easily replicate and synchronize data from a single mainframe or distributed data source and apply that captured data to multiple targets — the cloud, on-prem, streaming services, data lakes, and warehouses — without locking into any single platform or cloud provider. Securely and simply use mainframe and distributed data for powerful business outcomes — all without high costs or disruption.



Creating cost-effective hybrid storage for z/OS data

Enterprise data storage is growing exponentially, with storage costs rising in tandem. And controlling mainframe storage costs is a major priority because 75% of enterprise data is generated by zSystems .

The growing quantity and complexity of data makes maintaining a healthy data environment and managing compliance requirements more challenging than ever. Fortunately, though a large portion of data must be kept on the mainframe, opportunities remain to move low-risk or archivable data to different on-premises targets or the cloud.

Enterprises need cost-effective, flexible solutions for data storage

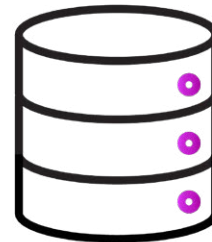
To improve your business' resilience and modernization, you need a hybrid cloud storage solution for z/OS data that is flexible, agile, accessible, and secure. Long-term, archivable data can be moved to the cloud for significant cost-savings as well as flexible backups. With z/OS data backups in the cloud, you can recover this data at any disaster recovery site.

Rocket® Cloud Connector

Rocket Cloud Connector uses virtual tape emulation technology for seamless, cost-efficient movement of your data from the mainframe and tape volumes to other targets. This platform provides an all-software solution for copying and moving data to private or public cloud storage or on-prem storage appliances.

You can reduce costs even further while retaining traditional storage flexibility by storing data in a cloud object format, on-prem, or in your preferred cloud services.

Data drives everything. And Rocket Cloud Connector empowers you to drive modernization — with hybrid cloud storage — into your business and improve its resiliency.



Managing complex content estates

Unstructured data accounts for up to 70% of an organization's total data — invoices, customer onboarding documents, finance and billing reports, et cetera. It also presents opportunities for enterprises to improve decision-making, identify key trends, and better serve customers, partners, and internal operations. And the popularity of unstructured data in larger cloud initiatives is growing because of the cloud's strength in various AI services and the rising demands for new insights with scale and agility. But merging this data to the cloud presents numerous complexities and challenges.

Organizations need pathways between their cloud investments and the unstructured information and services residing on legacy platforms. Then organizations can facilitate low risk, rapid project development. Such pathways are necessary to support initiatives like business self-service, IT standardization, and application decommissioning, as well as ecosystems like SAP HANA and strategic infrastructure investments such as mainframe modernization.

Traditional approaches to merging unstructured data are costly, incompatible, and risky

Traditional approaches to merging unstructured data typically fall into two categories:

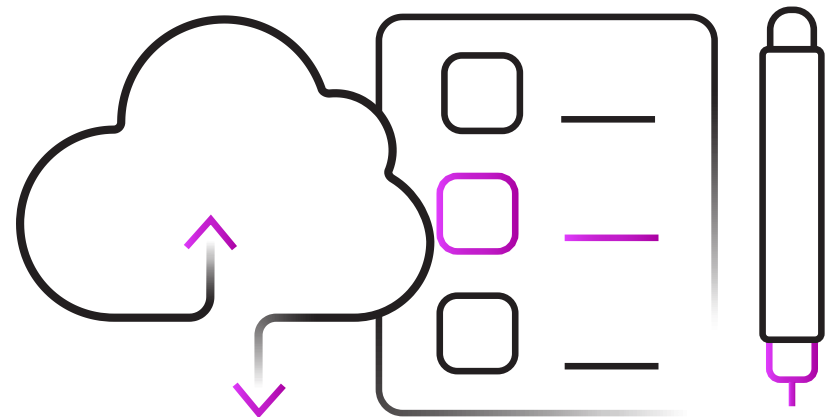
First: Rewriting the application or replacing it with a cloud equivalent. But this comes at a high cost and, even worse, a significant risk of issues with disruption, security, or compliance on account of the myriad complexities of migration.

Second: Leveraging the application in place along with a cloud strategy. But incompatibility issues with inconsistent APIs and formats, a lack of cloud support, and managing a large volume of vendors in a single architecture present significant obstacles.

In order to effectively manage your content and support modernization, enterprises must invest in secure, comprehensive solutions for consolidating content across mainframe, distributed, and cloud technologies.

Meet compliance standards and customer expectations with consolidated content

Meet complex compliance standards and enable your team to best serve your customers by unifying and simplifying content management in a single platform. **Rocket® Content Services** offers a powerful solution for eliminating silos and integrating systems and apps within a single API. This enables you to manage security, compliance, and governance while making it easier to share information with customers, employees, and partners.



Refactoring the monolith for the cloud

The future of every business depends on continuously modernized software. IBM i and IBM Z applications are an enterprise mainstay. But keeping up with, and taking advantage of, the latest OS and system releases can be taxing. And decades-old core applications aren't enough, especially when the limited knowledge of how they were developed is combined with there nary being a documentation in sight. Most importantly, application modernization is necessary for a cloud-centric business transformation.

Accelerate cloud modernization through API services

The processes of building API services and refactoring into microservices for cloud deployment are often tightly woven into the continuous modernization approach. Likely, you're already modernizing your applications by improving user interfaces and automating portions of your workflows. But when and where do you build APIs versus microservices? And why?

If you turn your monolithic applications into APIs by building a layer on top, you can create a new user interface or automate parts of the workflow while keeping the same backend. Once you've refactored the application, you can create services around the API in the cloud. The aim is carving out proper functions from the monolith that will make a substantive difference to the business. However, the only way to do this is to surface the end-to-end workflows for IBM i/Z applications and provide teams with visibility into how the business engages the application.

Rocket Software's Continuous Modernization Kit

With [Rocket Software's Continuous Modernization Kit](#), organizations can quickly evolve from monolith applications to agile services in the cloud that drive real bottom-line value. Our products deliver previously unknown insights into the workflows that engage core IBM i and Z applications, and give you one-click steps to automating, integrating, or building new experiences around them. For cloud, on-prem, or a hybrid environment.

How to drive value by refactoring monolith applications for the cloud via the strangler pattern

1. **Conduct Process Discovery:** Surface the end-to-end workflows for IBM i/Z applications through cloud enablement to uncover engagement with applications and opportunities to drive value. Build a plan that prioritizes workflows that are ripe for offering as services.
2. **Create API:** Build APIs for automating mundane tasks within the monolith application to simplify workflows and point to the new, relevant functionality
3. **Create Microservices:** Modernize underlying code as a microservice in the cloud
4. **Continue Strangler Pattern:** Build more functionality as microservices so the monolith is slowly "strangled" and the workflows run through the microservices
5. **Streamline Agility and Cost:** Over time your reliance on the monolith becomes minimal and you can deploy microservices however is best, both increasing business agility and reducing CapEx

Every choice regarding what gets modernized next should be informed by the data, not a simple analysis of code and relying on dependency trees and function calls to decide. What do people use most? What are they experiencing while using it? Answering these questions enables organizations to understand which workflows should go to the cloud first — without best-guess efforts or months of due diligence.



Picking the right modernization solutions for your enterprise

A key advantage for CIOs is being able to leverage the expertise and tailored solutions of third parties to meet modernization goals. But how do you choose the right third-party solutions?

Consider the following questions:



Will this solution make my IT architecture more usable and accessible?

One of the biggest challenges for modernization is skills and knowledge gaps, so the usability of any solution must be carefully considered. Balance the need to introduce valuable new capabilities against the risk of adding unnecessary complexity. If your data visualization and analytics tools aren't easily usable for the right decision-makers, the value of your data dwindles.

After finding a solution that merits closer evaluation, ask yourself the following:

- Will it make IT workflows, processes, and architecture simpler or add a new layer of complexity?
- How easy is it to navigate the product's user interface?
- What product integrations does it offer?
- What level of expertise will your team need to achieve your hybrid cloud strategy with this product?

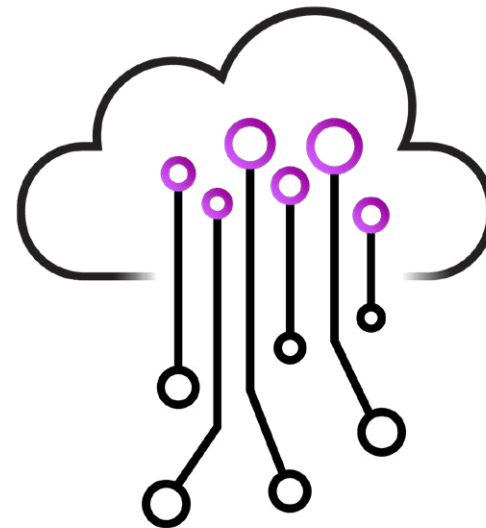


Are this product's capabilities broad enough to meet my needs now – and in the future?

The complexity of enterprise IT estates necessitates the evaluation of the flexibility and capabilities of different products:

- Does the product facilitate data literacy and connectivity across a wide variety of data types and sources, or only a select few?
- Will you need to translate an application's code into a different programming language, or will the product integrate with your applications as is?
- Will you need to juggle multiple solutions for a given task, or does one solution offer all the capabilities needed?

Your IT architecture is a living, breathing ecosystem. It's constantly changing. The product with the most flexible and broadest capabilities will likely offer the most value for your enterprise in the long term.

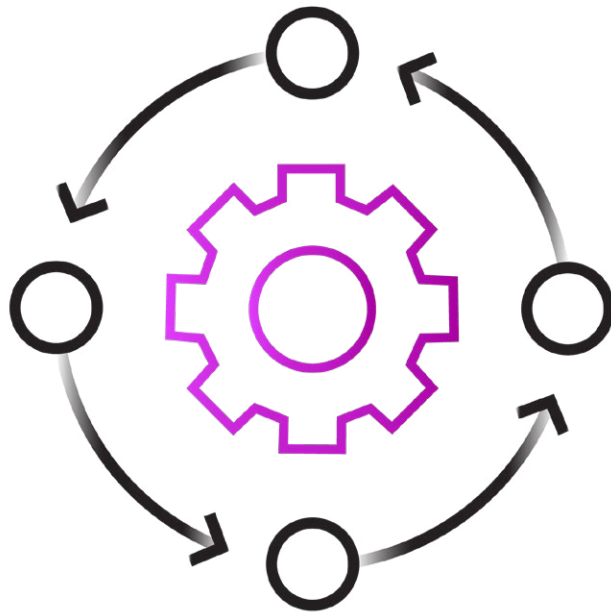




How will this product affect my existing business and IT architecture?

Offering new capabilities and driving innovation is great — but:

- What is the impact of the new solution on operational systems, performance, and cost?
- Will it make it easier or harder to contain expenses?
- Can the solution leverage your IT architecture to further reduce the day-to-day costs of running the business?
- What impact will it have on customer and employee experience?



Will this product make it easier or more difficult to manage security and compliance risks?

One of the biggest concerns about hybrid cloud integration is the security ramifications of moving data off core systems — and rightly so. The ever-changing regulatory landscape has led to tighter standards, and security and compliance must come before anything else:

- Does the solution afford options to keep core system data on-premises?
- When data is migrated to the cloud, what options are available to limit and encrypt the data, as well as to secure connectivity?



What will you achieve with a modernized hybrid cloud?

The vast majority of enterprises have barely scratched the surface of a modernized hybrid cloud's potential. But the businesses that have taken full advantage of modern hybrid cloud solutions are already reshaping their industries with real-time data insights, next-gen customer experiences, and disruptive applications of AI.

What business challenges will you solve with a modernized hybrid cloud?

Click [here](#) to learn how you can add to your enterprise's bottom line with our hybrid cloud solutions.

Modernization. Without disruption.

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