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8 Key Reasons to Consider a Hybrid Data Integration Solution

Today's businesses are faced with the increasingly complex challenge of managing and integrating vast amounts of data from a multitude of sources, including on-premises systems, cloud applications, third-party APIs and data stores. The need for real-time data integration has grown significantly with the rise of Internet of Things (IoT) devices, streaming data, and digital interactions.

Managing the lifecycle of data, from creation and ingestion to archiving and deletion, has become more complex in a fragmented data landscape. Hybrid data management and integration solutions have emerged to support crucial strategies that bridge the gap between these diverse data environments. A hybrid data integration solution offers a powerful approach to seamlessly connect and manage data across multiple sources, formats, and locations.

What is Hybrid Data Integration?

Hybrid data management is a comprehensive approach to data governance, integration, and storage that enables organizations to seamlessly manage and leverage data from various sources, regardless of its location, whether on-premises, in the cloud, or at the edge. Data Management encompasses a wide range of activities, including data integration, data quality management, data governance, and data security.

At the heart of hybrid data management lies hybrid data integration, which focuses on the seamless exchange of data between different data environments while ensuring data quality, security, and compliance. Hybrid data integration is essential for organizations seeking to harness the full potential of their data assets, streamline business processes, and make data-driven decisions by ensuring that data is readily available and consistent across its diverse infrastructure.

The Need for Hybrid Data Integration

The need for hybrid data integration arises from several key factors:

1. Data Fragmentation

The rise of hybrid cloud deployments and increasing adoption of cloud, especially software-as-a-service (SaaS) offerings, are resulting in disconnected silos of data and fragmentation of processes. Disconnected silos of data, whether on-premises or in the cloud, are isolated repositories of data that exist independently from one another and lack seamless communication or integration. These data silos hinder an organization's ability to leverage its data effectively and can result in inefficiencies, data duplication, and missed opportunities for insights—all of which result in a lack of trust in the data.

On-Premises Data Silos: On-premises data silos refer to data stored within an organization's own physical data centers or servers. These silos often arise due to historical practices, departmental divisions, or the use of legacy systems. Common examples of on-premises data silos include databases, file servers, and application-specific data stores. Issues associated with on-premises data silos include limited accessibility, difficulties in data sharing, and challenges in maintaining data consistency and accuracy across the organization.

Cloud Data Silos: Cloud data silos refer to data stored within various cloud services, such as different cloud providers, SaaS applications, and cloud storage solutions. Organizations may use multiple cloud services for various purposes, resulting in data fragmentation. Cloud data silos can include data stored in cloud-based applications such as Salesforce, Google Workspace, or AWS S3 buckets. Challenges with cloud data silos include managing data across different cloud providers, ensuring data security and compliance, and avoiding vendor lock-in.

Disconnected silos of data, whether on-premises or in the cloud, pose significant challenges to organizations in terms of data accessibility, efficiency, and accuracy, all of which negatively impact. For example, lines of business (LOBs) such as marketing, sales, customer support, etc. need to consume data from multiple and disparate SaaS applications. Hybrid data integration helps unify and consolidate data from these diverse sources. This capability is critical for creating comprehensive, 360-degree views of data, which is often necessary for analytics and business intelligence (BI) purposes. Data unification enhances data quality, reduces data duplication, and ensures that stakeholders have access to a single version of the truth, leading to better, more confident decision-making.

2. Optimized Resource Utilization

Hybrid data management enables data engineers to leverage the most appropriate resources for their data pipelines. They can choose to process data locally on-premises when necessary or take advantage of the scalability and cost-efficiency of cloud-based resources. For example, data engineers can leverage cloud resources to handle data pipelines that require high levels of performance and rapid scalability. This is particularly beneficial when dealing with large volumes of data or bursty workloads that might overwhelm on-premises infrastructure This optimization of resources helps manage operational costs effectively.

3. Data Security, Compliance, and Business Continuity

Many businesses deal with sensitive and regulated data. Some regions may have data sovereignty laws that require certain data to be stored within national borders. Hybrid cloud allows organizations to comply with such regulations by keeping data on-premises or in specific geographic regions while using public cloud resources globally.

Compliance requirements, such as General Data Protection Regulation (GDPR), Health Insurance Portability and Accountability Act (HIPAA), or industry-specific regulations, can be met by ensuring data handling practices and security measures are consistent across on-premises and cloud environments. Hybrid data management allows data engineers to control and secure data within their own data centers when needed, ensuring compliance with regulatory requirements while still benefiting from cloud-based services for scalability and performance. Organizations can implement encryption, access controls, and auditing mechanisms to protect sensitive data as it moves between environments.

A hybrid data integration strategy enhances business continuity by providing data redundancy and data recovery options. Organizations can replicate data between on-premises and cloud environments, ensuring data availability even in the event of infrastructure failures. Disaster recovery processes can be streamlined and data can be backed up to multiple locations, minimizing the risk of data loss and downtime.

4. Business Agility

Rapid changes in business demands require the ability to access and analyze data quickly. Hybrid data integration solutions provide the flexibility to connect data across on-premises data centers, multiple cloud platforms, and edge devices. This flexibility allows organizations to adapt to changing data requirements and scale their data integration capabilities as needed. With a hybrid approach, you can choose where to store and process data based on performance, compliance, or cost considerations. It's an agile solution for accommodating evolving business needs because it enables organizations to respond promptly to changing market conditions.

5. Cost Optimization

A hybrid data integration approach allows organizations to optimize costs by leveraging the benefits of both on-premises and cloud resources. Data can be processed where it makes the most economic sense. Hybrid cloud enables cost optimization by allowing organizations to leverage the cost advantages of public cloud for certain workloads while keeping critical or sensitive data and applications in a private cloud or an on-premises data center. This mix helps manage operational costs more efficiently. Organizations can take advantage of cloud elasticity to scale resources up during peak periods and down during off-peak times, optimizing operational expenses. This cost control is vital, especially when managing data at scale.

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6.   Rise of Digital Ecosystems and API Economy

Organizations are blurring traditional boundaries by entering into new markets and new industries—driving new levels of growth and profitability. As organizations build or partner in industry platforms, new digital ecosystems are growing around them that will become the foundation for the next major stage of technology and economic disruption. To promote their business in a more innovative way, organizations are focusing on innovative digital abilities, such as mobile enablement for employees, location navigation, leveraging new digital channels (omnichannel experiences), enhanced customer experiences, expansion in online marketing efforts, and digital field operations. This has created challenges harnessing all exposed data across all types of devices.

Companies need to connect and collaborate with third parties, including partners and suppliers in the supply chain, subscribe to data feeds for real-time intelligence, and ensure the products they build integrate with other organizations. As cloud adoption increases, data that exists outside the organization's firewall needs to be managed and controlled while managing bring your own device (BYOD) policies, wherein employees want to access data remotely using any device from anywhere. Organizations that embrace these trends can unlock the full potential of their data assets.

7.   Support for Self-service Integration and Citizen Integrator Capabilities

As organizations embrace digitalization, there is a need for agility, dynamic integration, user interface and customer experience capabilities, and velocity. Old integration methodologies will not suffice to meet the scale of connectivity required to support digital business. Modern organizations must enable adaptive, do-it-yourself (DIY) integration on the part of LOBs, departments, application teams, and business users while allowing the established team of integration specialists to deliver heavy duty, systematic integration.

8.   Future-Proofing

As technology evolves, hybrid data management ensures that organizations can easily adopt new technologies, migrate to the cloud, or implement advanced analytics without undergoing a complete data infrastructure overhaul. This future-proofing is essential for staying competitive in a rapidly changing data landscape. Hybrid cloud solutions provide a balanced approach to IT infrastructure that aligns with the complexities of today and tomorrow's digital business landscape.
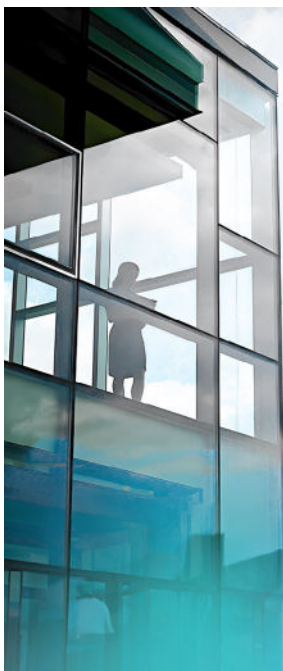
A hybrid integration solution should span and support all four of these dimensions:

Anyone
Empower any persona to integrate

Integration specialists, ad hoc integrators in LOBs, citizen integrators, and digital integrators.

Anywhere
Integrate data anywhere and deploy anywhere

Data in on-premises devices, the cloud, mobile devices, and IoT devices can be processed and managed in the cloud (potentially across multiple environments), on-premises, and hybrid (cloud and on-premises), and embedded in IoT devices.

Anything
Integrate virtually any data source and target

Merge disparate databases and connect diverse platforms to optimize data utilization and workflow efficiency.

Anytime
Integrate data any time you need it

In real time, scheduled, on-demand, or orchestrated within a larger workflow.

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Industries and Businesses that Require Hybrid Data Integration

While the need for hybrid data integration spans various industries, some sectors are particularly reliant on this technology:

Healthcare: Healthcare organizations need to securely integrate patient data from on-premises systems, electronic health records (EHRs), and cloud-based applications while adhering to strict data privacy regulations.

Finance: Financial institutions must merge data from legacy systems, cloud-based platforms, and external data sources for risk management, fraud detection, and compliance reporting.

Retail: Retailers require hybrid data integration to consolidate data from point-of-sale systems, e-commerce platforms, customer databases, and supply chain applications to optimize inventory, pricing, and customer experiences.

Manufacturing: Manufacturers use hybrid data integration to collect data from IoT sensors, factory equipment, and enterprise systems to enhance production efficiency, quality control, and supply chain management.

Telecommunications: Telecom companies rely on hybrid data integration to integrate data from network devices, billing systems, and customer service applications for network optimization and customer experience management.

Government: Government agencies manage data from diverse sources, such as citizen databases, IoT sensors, and cloud-based applications, to support public services and policy decisions.

Real-World Scenarios and Applications

Hybrid data integration finds applications in various real-world scenarios, including:

- **Multi-Cloud Integration**: Organizations use hybrid data iIntegration to seamlessly connect and transfer data between different cloud providers and services, enabling a multi-cloud strategy.

- **Data Warehousing**: Hybrid data integration plays a pivotal role in populating data warehouses with data from a wide array of sources for analytics and business intelligence.

- **Data Lakes**: Organizations build data lakes by integrating data from on-premises systems, cloud platforms, and external sources to create centralized repositories for big data analytics.

- **IoT Data Integration**: Collecting, processing, and analyzing data from IoT devices, sensors, and edge devices requires Hybrid Data Integration to manage the diverse data streams.

- **Real-Time Data Streaming**: Integrating real-time data feeds from sources like social media, sensors, and transactional systems allows organizations to react to events quickly and make real-time decisions.

- **Legacy System Modernization:** When transitioning from legacy systems to modern cloud-based applications, Hybrid Data Integration helps maintain data continuity during migration.

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Assessing Your Hybrid Data Integration Strategy

1. **Assess Current Data Estate**: Begin by assessing your organization's current data landscape, including the types of data sources, formats, and volumes. Identify where data resides, whether on-premises, in the cloud, or at the edge. Understand the data quality, latency requirements, and integration challenges associated with each data source.

2. **Define Business Objectives**: Clearly define the business objectives and goals that the hybrid data integration strategy aims to support. These objectives could include improving data accessibility, enhancing data quality, enabling real-time analytics, or facilitating business process automation. Align the evaluation criteria with these objectives.

3. **Identify Integration Needs**: Identify the specific integration needs and use cases that the hybrid data integration strategy should address. Consider factors such as data synchronization, batch processing, real-time data streaming, data transformation, and data governance requirements.

4. **Evaluate Technical Capabilities**: Evaluate the technical capabilities of potential hybrid data integration solutions. Assess their support for connecting to various data sources and destinations, including on-premises systems, cloud platforms, and SaaS applications. Consider features such as data transformation, orchestration, scalability, security, and compliance.

5. **Assess Scalability and Performance**: Consider the scalability and performance characteristics of the hybrid data integration solution. Evaluate its ability to handle growing data volumes, increasing workloads, and peak processing demands. Test the solution's performance under different scenarios to ensure it meets your organization's requirements.

6. **Examine Data Governance and Security**: Data governance and security are critical aspects of any data integration strategy. Evaluate how the hybrid data integration solution addresses data governance, including metadata management, data lineage, and data quality. Assess its security features, such as encryption, access controls, and compliance certifications.

7. **Analyze Total Cost of Ownership (TCO)**: Analyze the TCO associated with implementing and maintaining the hybrid data integration solution. Consider factors such as licensing fees, implementation costs, ongoing maintenance expenses, and potential cost savings or benefits.

8. **Consider Integration Ecosystem**: Evaluate how the hybrid data integration solution integrates with other technologies, platforms, and tools within your organization's ecosystem. Consider compatibility with existing legacy systems, databases, BI tools, analytics platforms, and cloud services. Assess the ease of integration and interoperability with third-party solutions.

9. **Vendor Reputation and Support**: Research the reputation and track record of the hybrid data integration solution vendor. Look for customer references, case studies, and reviews to gauge the vendor's reliability, customer satisfaction, and level of support. Consider factors such as vendor stability, responsiveness, and long-term commitment.

10. **Free Trial, Pilot and Proof of Concept (PoC)**: Sign up for a free trial or conduct a pilot or PoC to validate the hybrid data integration solution in a real-world environment using a sample of your own data. Test its capabilities, performance, and compatibility with your organization's data and infrastructure. Use the PoC to identify any potential issues or limitations before making a final decision.

11. **Alignment with Future Needs**: Ensure that the chosen hybrid data integration strategy aligns with your organization's future needs and growth plans. Consider scalability, flexibility, and adaptability to evolving technology trends and business requirements. Choose a solution that can scale and evolve with your organization over time.

12. **Risk Assessment**: Conduct a risk assessment to identify potential risks and challenges associated with the hybrid data integration strategy. Evaluate mitigation strategies and contingency plans to address these risks effectively. Consider factors such as data security risks, compliance challenges, and technology dependencies.

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A hybrid data integration solution offers organizations the flexibility, data unification, business continuity, compliance, and cost optimization necessary to thrive in a data-driven world where data resides in both on-premises and cloud environments. It empowers organizations to make the most of their data assets while adapting to evolving business needs.

In today's complex and dynamic data landscape, where data can be dispersed across on-premises and cloud environments, hybrid data management offers several key advantages that are essential for the success of data integration and pipeline management efforts.

Outcomes You Can Expect with Actian

A fully managed hybrid data platform like the one from Actian simplifies complex data integration challenges and gives you the flexibility to adapt to evolving data integration needs. With Actian, you can get started with DataConnect, a standalone, hybrid data integration and quality tool with more than 200 connectors or Actian Data Platform, a unified data integration and warehousing platform. Either way, you'll be confident knowing you have the tool kit to work with a variety of data sources and formats to maintain reliable data pipelines with ease.

The best way for data engineers to get started is with a **free trial** of the Actian Data Platform. From there, you can load your own data and explore what's possible within the platform. Alternatively, **book a demo** to see how Actian can help automate data pipelines in a robust, scalable, price-performant way.

Keep Reading +

Download the CITO Research whitepaper, **5 Reasons Why You Must Embrace Hybrid Data** to read more about five more reasons to consider hybrid data.

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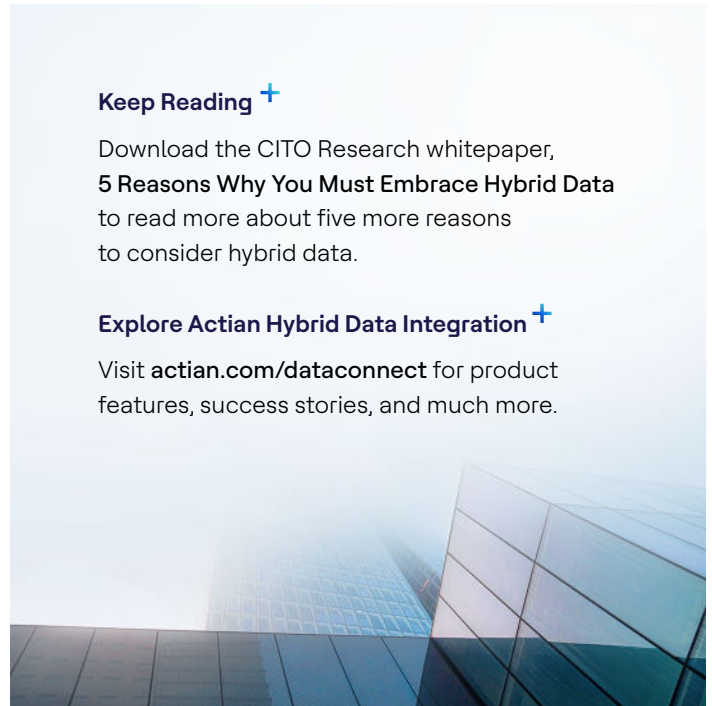
About Actian

Actian makes data easy. We deliver cloud, hybrid cloud, and on-premises data solutions that simplify how people connect, manage, and analyze data. We transform business by enabling customers to make confident, data-driven decisions that accelerate their organization's growth. Our data platform integrates seamlessly, performs reliably, and delivers at industry-leading speeds. Learn more about Actian, a division of HCLSoftware: **www.actian.com.**

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