Crossing the Chasm:
3 Ways to Connect Your Mainframe to Digital

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Achieving Mainframe Integration

Becoming an agile digital enterprise lies in your ability to quickly and easily reuse what works and build from there. Your mainframe's core applications, their tailored business logic and the data you store on the IBM Z platform already differentiate you from your competitors and act as a reliable backbone for your business operation.

To derive the maximum value from your mainframe, you need to open it up, tapping into the zettabytes of data and decades of business logic. By making applications on IBM Z more broadly accessible and integrated with other platforms, you can respond to changing market conditions faster. Mainframe integration is a practical approach to help you accelerate innovation by building on what works to stay ahead of your competitors and connect to the digital world around you.

Mainframe integration can be achieved on three levels:

At the program layer, where you can reuse business logic, connecting to new channels, services and apps, on-premises or in the cloud, by producing and consuming APIs with COBOL, Assembler, PL/1 and Natural applications.

At the data layer, where you can unlock your high-value mainframe data, transforming it into standard SQL for easy access and integration with data lakes, business intelligence platforms, analytics tools and the cloud.

At the screen layer, where you can modernize the user experience, making your applications available on web and mobile devices with web terminal emulation or web enablement, or producing APIs from 3270 user screen flows.

Software AG provides the capability to target each of these layers in a non-invasive way, exposing information easily while retaining the qualities of service you need.

Now more than ever, the IBM Z® platform's adoption and use are growing. Thousands of companies and government organizations world-wide depend on the mainframe. They continue to invest in the platform because it provides unrivalled data protection and security, near-constant uptime and high transaction volume.

The pressure on IT to innovate and respond faster to opportunities while controlling costs or to create competitive differentiation is ever-present. The desire to go digital, to replace old systems with new, to be agile and fast often leaves enterprises wondering how they will compete with the upstarts who start fresh using open-source technologies.

6 Drivers Behind the Need for Mainframe Integration

Cloud

As organizations shift to a mix of cloud, on-premise and hybrid cloud environments, they need to integrate applications, processes, and data across disparate systems, data repositories, and physical locations.

Global disruption

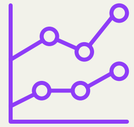
The COVID-19 pandemic is driving sweeping change at a breathtaking pace. Organizations are creating and implementing business continuity plans and accelerating their enterprise digitalization plans.

Appreciation for application value

Organizations understand the value of what's in their mainframe and what it means to make that data accessible across and beyond the organization. The applications running on these systems are bespoke, written for their core business, not off the shelf.

Multichannel, digital experiences

Delivering a cohesive multichannel experience is no longer optional. Making services accessible through web browsing, mobile apps, call centers, kiosks, sensors, cars or even machine connectivity requires quick integration of siloed systems and data in various formats.



Data analytics

The demand for data-driven intelligence never ceases, but data diversity continues to be a challenge. Today, more than 220 databases are available in different formats, with new data analytic platforms continually emerging. To keep up with this need, organizations are using self-service analytics and leveraging the new class of cloudbased, data analytic platforms.

SaaS and packaged applications

The enterprise application landscape is prone to changes. Organizations may turn to on-premise packaged applications or Software-as-a-Service to improve business agility, time to market and reduce costs.

Ready to connect the known with the new? Here are some resources:

Request a demo

Learn more about Mainframe Integration

3 Ways to Connect Your IBM Z

Some enterprises don't embrace opportunities to integrate their mainframe applications and data with the broader digital enterprise. Their initial reaction is that it takes too long, and it's too complicated to connect mainframe applications to new business initiatives.

Fortunately, you can quickly make your mainframe applications a critical component of your digital enterprise by reusing the valuable business logic and data within these systems through mainframe integration. Software AG provides a non-invasive approach—that doesn't require mainframe skills or knowledge—to help you quickly unlock the value of your mainframe using any or all three approaches:

#1 Reuse Business Logic

The first way to cross the chasm between the mainframe and digital is to reuse the tailored business logic written in COBOL, PL/I, Natural and other languages. As a testament to their value, these programs continue to drive mission-critical business processes.

"Commercial and public sector organizations running a mainframe operate it as a system of record, something critical to their business," notes Bob Jeffcott, principal systems engineer, Software AG. "The data, applications and processes driven by the mainframe represent an organization's DNA. The functionality and data within these programs are what differentiates the organization from its competitors."

Generating APIs from your application is the fastest way to make your customized business logic and high-value data accessible and reusable in a digital, multichannel enterprise. With APIs, you can become a player in the digital game by enhancing your multi-channel services or connect to next-generation, adaptable applications like Salesforce and Microsoft Dynamics in a hybrid-cloud environment.

3 ways to connect:

Reuse business logic
Core Applications: COBOL, ASSEMBLER, PL/1, NATURAL, MQ, ETC.

Unlock data value
Core Applications: VSAM, IMS, QSAM, DB2, ADABAS, ETC.

Modernize the user experience
Core Applications: 3270, TERMINAL PROTOCOL

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Discover the 3 Ways to Connect Your Mainframe to the Future of Your Business ›

API enablement

APIs enable the efficient sharing of information and data across real-time, distributed cloud and mobile applications. APIs define what requests can be made, how to make them, what formats should be used and more.

API enablement exposes your core system functions and data as services and integrates it with any other environment. Using standards-based APIs, your coded business logic can be turned into reusable REST or SOAP services, enabling other organizations to connect to the business logic of your mainframe applications.

webMethods Mainframe Integration from Software AG enables access to applications and data query through modern standards-based APIs without making any changes to the core application code. In just a few clicks, you can create APIs from your application to share reusable business functions and data in new digital initiatives, internally or externally.

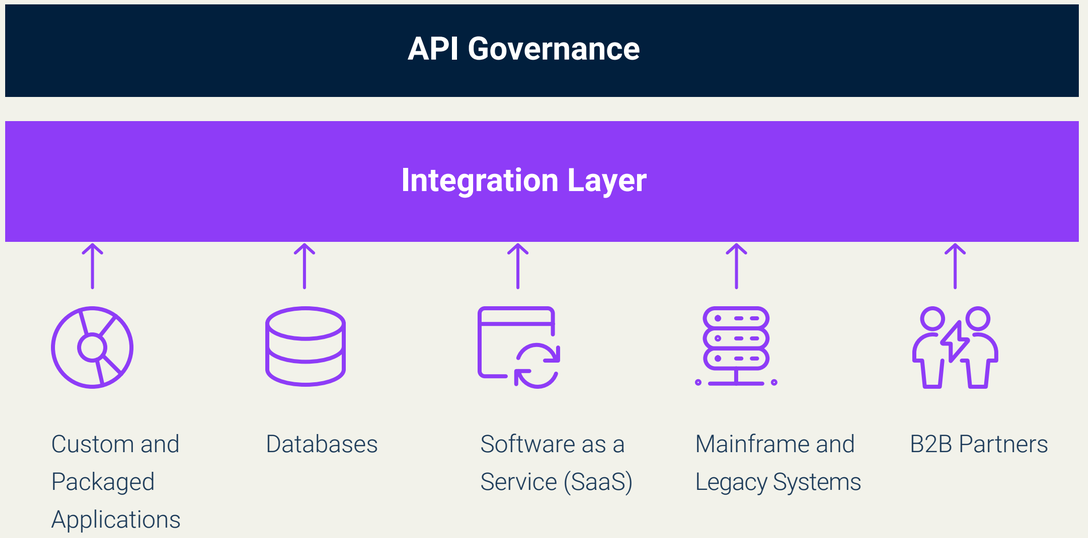
APIs are not just a one-way street. With webMethods' bi-directional capabilities, you can also call out from the mainframe and invoke APIs from other sources. By calling internal or external APIs, you can add new capabilities to your mainframe application without coding. "We're not just opening up your application to the world, we're opening up the world to your COBOL application," says Jeffcott.

Securely manage your APIs

APIs can be published internally and externally. Making the APIs available to the rest of your organization gives the native web developers and mobile app developers access to mainframe data. Externally, you may have layers of access, where the partners in your ecosystem or suppliers in your supply chain can access the APIs.

APIs make your mainframe part of your digital enterprise

Ensuring a fluid flow of data



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Managing and publishing your APIs and services through a standard catalog and library, such as webMethods API Gateway, gives other people, departments and partners access to them while you securely manage and govern your APIs. This approach also opens the door to monetizing the reuse of your business logic.

#2 **Unlocking Data Value**

The second way to unlocking the value of your mainframe is to unlock its data. Organizations that understand the value of what's in their mainframe and what it means to make that data accessible across and beyond the organization will succeed. You derive value from data by accessing, analyzing and sharing it. However, mainframe data is stored in databases of varying formats such as CA IDMS, IBM IMS, IBM Db2®, VSAM or Software AG Adabas.

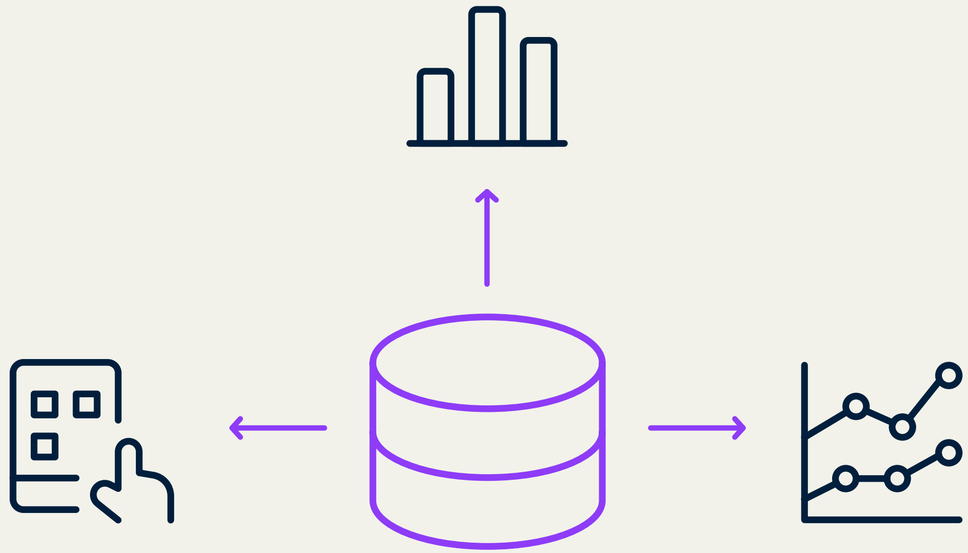
"When data is locked inside systems of record, it's an untapped resource," says Harpal Gill, vice president of CONNX at Software AG. "Unleashing data converts it into fuel to drive actions that translate into better customer insight, more informed business decisions, and improved planning through modeling and predictive analytics. Effectively harnessing the data can help you make better decisions and serve your market."

Access data everywhere

In theory, having all of your data in one place is a great concept. It's just not realistic as data volumes continue to grow. Depending on the data type and quantity, it's being stored in the cloud, data lakes, SQL and non-SQL databases, and on-premises in distributed and mainframe systems. No matter where your data is stored or what format it's in, to maximize its value, your analysts, decision makers and users must access it in real time.

Data access and visualization

Providing self-service query access for desktop tools, dashboards, reporting and business intelligence



VSAM, IMS, Adabas,
150+ DB connectors

Instead of doing extracts, FTPs and uploads to get data out of your mainframe and into Microsoft® Excel® or relational repositories, wouldn't you prefer to empower users to run queries against your databases without taking up valuable time and resources?

CONNX from Software AG offers more than 150 database connectors that translate each unique data structure into SQL. With this component of webMethods mainframe integration solution, you can provide your users simple two-click read/write access to VSAM, IMS, Db2 and more from Excel on the desktop or any business intelligence tool.

Overcoming latency

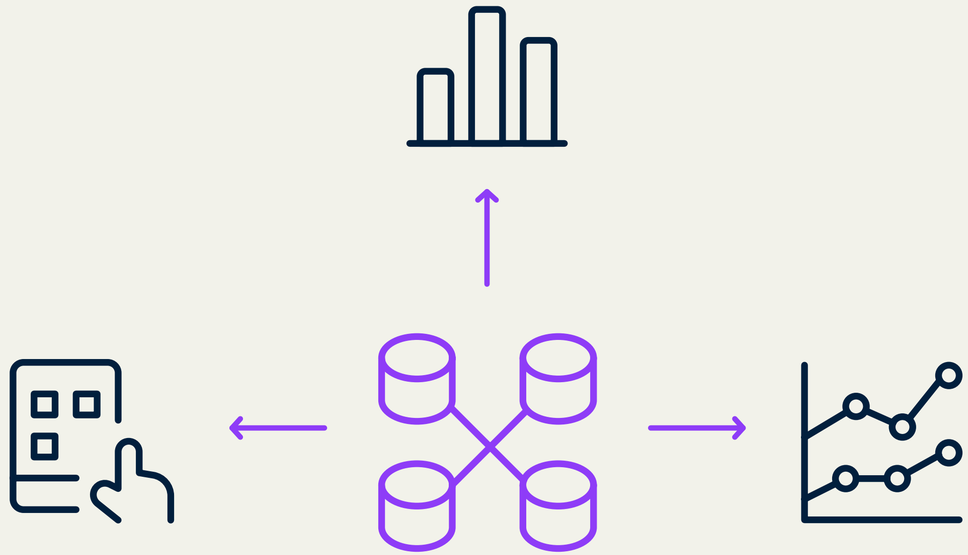
Data warehouses and data lakes bring together a world of varied data structures in one place for reporting and analytics. Unfortunately, the latency caused by the populating massive repositories is a hurdle to real-time dashboarding, analytics and streaming analytics.

Overcoming latency enables you to engage with your data in real time through the correct channel or touchpoint. "When using a data lake, data latency is inevitable," explains Gill. "Moving large amounts of data is typically done using a transfer or batch move once a day. As a result, the data has at least a 24-hour latency. Data virtualization addresses the challenges of latency and data silos."

Data virtualization brings the siloed data from multiple databases on a variety of platforms together, making real-time access, analysis and a single view a reality. Through metadata management, CONNX creates a lexicon that combines all your data into a single, comprehensible structure without altering the source structures. As a result, disparate data sources can be treated as one federated relational database.

Data virtualization

Creating a single relational view from disparate data sources



150+ databases,
on-premises or cloud

Unlike ETL processes, your data remains in place. At the same time, your user is given real-time access to the source data system, which minimizes the risk of data errors and reduces the workload of moving data around. Imagine how empowering it is to have a real-time dashboard that pulls sales data from Db2, order fulfillment information from VSAM and customer history from a data warehouse in just one query.

Integrate data sources

Cloud offers innovations for the future, from data lakes that scale with demand, to new analytic tools. Still, the mainframe remains your reliable system of record, storing sensitive and high-value data mainly on-premises. Maintaining a hybrid environment is the best way to adopt new technologies at your own pace.

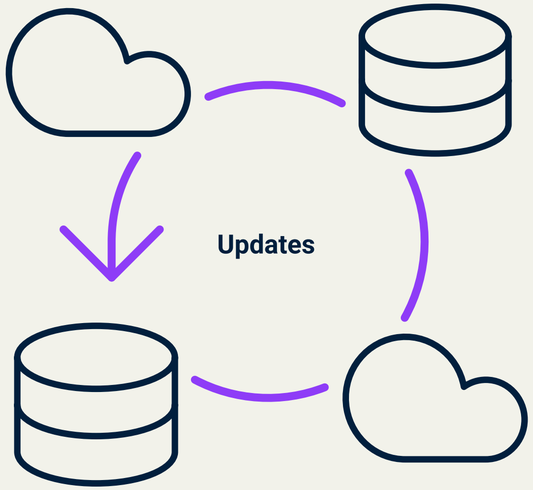
CONNX makes it easy to move and synchronize data from IBM Z databases to the cloud. By using SQL-based transformation and a graphical query builder, a comprehensive mapping of tables and fields between source and destination is created. CONNX will then capture, transform and replicate data from transactional data sources, such as VSAM, to any number of target databases, data lakes, business intelligence or analytics platforms on the cloud.

You will keep your data fresh and current without impacting the performance of your data sources. It takes minimal effort and resources because CONNX incrementally updates only those records that have changed, eliminating the need for large and resourceintensive bulk data refreshes.

You can also integrate data sources in real time, create a single view across disparate databases, avoid data loss and corruption, all while maintaining the level of data protection built into your mainframe.

Data movement

Rapidly synchronize data between 150+ databases, data warehouses, cloud DBs, data lakes and more



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Learn How to Sync Your Mainframe Data to the Cloud for Insights ›

#3 **Modernize the User Experience**

Many mainframe organizations are broadening the access and appeal of the mainframe by transforming green screens to contemporary web pages and applications. APIs are also used to integrate and extend these applications across multiple channels to improve customer or citizen services and employee productivity.

Modernizing the user experience to connect better with your users is the third way to accelerate mainframe integration. From simply making mainframe applications accessible from the home office to redesigning workflows for a more intuitive experience, the goal is to eliminate tedious green screens, reduce error-prone data entry and increase user productivity.

Software AG's webMethods Mainframe Integration can modernize your outdated and cumbersome green-screen user interfaces and workflows, transforming them into modern web interfaces and APIs to improve end-user interactions with your core applications, improving their overall productivity.

Work smarter

When web-enabling your mainframe, you can transform clunky screen flows into an intuitive user experience that helps users work smarter. Rather than having users work their way through multiple screens to achieve a single business task, you can automate a task by aggregating information from multiple screens into one web page. As a result, you can dramatically reduce data entry errors and simplify tasks to increase end-user productivity.

With webMethods Mainframe Integration, you can create instant web apps, build composite applications with Java® or .NET, and connect the mainframe to new responsive web frameworks such as Angular. Consequently, you can create modern web and mobile applications that leverage your mainframe business logic and data without touching the core application code.

Create multichannel experiences with APIs

A digital enterprise aims to provide new services across multiple channels, including web, mobile, care, call center, and Internet of Things (IoT). Encapsulating processes at the screen level as a callable API allows you to integrate your mainframe business logic and data to any channel, even when your application code is lost or untouchable.

Webinar

Learn How to Modernize and API-enable Your Mainframe Applications ›

Why Choose Software AG for IBM Z Integration?

In contrast to traditional integration approaches that are timeconsuming or require mainframe expertise, webMethods Mainframe Integration allows organizations to modernize and integrate at a fraction of the cost and time. It's a non-intrusive approach that taps into the program logic, data level or screen layer without disrupting the underlying application, which would be difficult and costly to replace.

Here's why Software AG solutions are optimal for IBM Z integration:

1. **Rapid results.** With minimal investment, you can get your integration solution installed and set up. From there, it only takes minutes to connect your IBM Z applications to new digital initiatives.
2. **Simple and easy to use.** Software AG's modern development tools are based on Eclipse®-style IDEs. These user-friendly interfaces are easy to set up and use, enabling staff at all experience levels to quickly connect and integrate the mainframe to emerging and contemporary technologies. You don't have to know mainframes to use any of these tools.
3. **Freedom of choice.** Each integration challenge is unique, and every mainframe application has its idiosyncrasies. With webMethods Mainframe Integration, you can choose to access your mainframe applications and data through the channel that best meets your situation, the program business logic, the data level or the screen.
4. **Simplify integration.** The pressure to respond faster to opportunities or to create competitive differentiation is acute. Capitalizing on your mainframe's core applications, tailored business logic and data can help widen the gap between you and your competitors. Leveraging Software AG's end-to-end integration solutions will also let you quickly and easily connect your mainframe to IoT devices, B2B applications, the cloud, APIs and more. Simplifying all of your integration needs.

Rapid results

10 minutes

API-enable COBOL

Connect COBOL to REST API.Perform 50+ million service calls per day.

5 minutes

Access Data

Run SQL on VSAM, IMS, Db2. Process millions of operations across 100+ databases.

2 minutes

Connect Users

Web access to 3270 user screen flows. Connect up to 20,000 users.

Take the next step

Share your data, API-enable the business logic and modernize the user experience with Software AG Mainframe Integration.

Learn more

The digital transformation is changing enterprise IT landscapes from inflexible application silos to modern software platform-driven IT architectures which deliver the openness, speed and agility needed to enable the digital real-time enterprise. Software AG offers the first end-to-end Digital Business Platform, based on open standards, with integration, process management, in-memory data, adaptive application development, real-time analytics and enterprise architecture management as core building blocks. The modular platform allows users to develop the next generation of application systems to build their digital future, today. With over 45 years of customer-centric innovation, Software AG is ranked as a leader in many innovative and digital technology categories.

Learn more at SoftwareAG.com.

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