IBM InfoSphere Master Data Management Integration with SaaS Applications using WebSphere Cast Iron Cloud

IBM Redbooks Solution Guide

Enterprises today understand the value of employing a master data management (MDM) solution for managing and governing mission critical information assets. Chief Data Officers and Chief Information Officers drive the MDM initiatives with IBM® InfoSphere® Master Data Management to improve business results and operational efficiencies, which helps lower costs and reduce the risk of using untrusted master information in business processes. The advent of Cloud computing has brought in new considerations where enterprise IT architectures are extended beyond the corporate networks into the Cloud. This IBM Redbooks® Solution Guide explains IBM InfoSphere® Master Data Management Integration with SaaS Applications using WebSphere® Cast Iron® Cloud.

Many enterprises are now adopting turnkey business applications offered as software as a service (SaaS) solutions, such as customer relationship management (CRM), payroll processing, and human resource management. It is anticipated that many "extended enterprises" will keep the MDM solutions on-premises and want its integrations with SaaS applications. This trend puts a key focus on the cloud integration middleware and how it is deemed to fit with hybrid cloud architectures spanning on-premises and cloud services. IBM WebSphere Cast Iron Cloud integration products help enable you to integrate cloud and on-premises applications in days, reduce integration costs, and optimize resources and productivity in SaaS and cloud models (Figure 1).
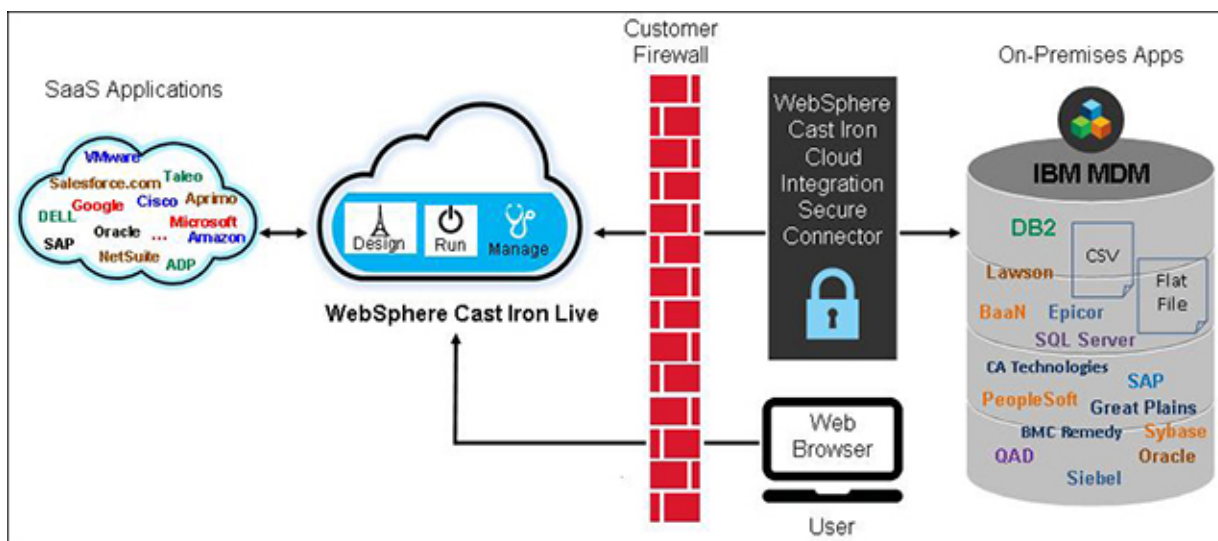

Figure 1. IBM InfoSphere MDM and SaaS application integration with WebSphere Cast Iron Cloud Integration

Did you know?

Delivering a trusted, accurate, and complete view of critical data assets to business users and applications improves business results and operational efficiencies and helps lower costs and reduce risk. Information governance can now be enforced at an organization level using MDM, where business and IT can have a conversation and agree on important topics, such as data quality, which otherwise is not possible. Furthermore, business applications can now be shielded from disruptive forces, such as big data and social data, by allowing MDM to build the golden profile of the client and deliver this profile in context and on demand to the users and applications.

Business value

MDM is a key component to enable a single, trusted understanding of domains, such as customers, patients, citizens, suppliers, locations, products, service offerings, and accounts. It provides the insights that are required to act appropriately. IBM InfoSphere MDM improves application and business process effectiveness. IBM InfoSphere MDM provides the following benefits:

- Supports comprehensive, cost-effective data governance and stewardship

- Makes data governance and stewardship prescriptive and lean by helping to ensure high master data quality via a quantitative, probabilistic approach to monitoring and enforcing policies

- Supports the inspection and resolution of data quality issues in real time, including relationships and hierarchies

- Enables monitoring of master data quality using dashboards and proactive alerts

- Simplifies the administration and enforcement of master data policies

- Seamlessly integrates into existing business processes and technical architectures using intelligent, pre-packaged web services

- Delivers a system that closely aligns with your business practices by using collaborative tasks to set up workflows that reflect existing and new business processes

Integrating MDM with Cloud solutions helps ensure core data is accessible by all applications. IBM WebSphere Cast Iron Cloud Integration helps companies integrate their existing on-premises systems with cloud applications, cloud applications to other cloud applications, and on-premises applications to other on-premises applications. By following a "no-coding" approach, WebSphere Cast Iron Cloud Integration allows you to focus on the business requirements and removes the daunting complexity of integration. It has everything needed to support integrations in a hybrid world in a single integration platform, resolving issues, such as data migration and process integration.

Solution overview

Enterprise applications deployed on-premises are integrated for various reasons. The key reason potentially is to draw synergies on the capabilities offered by different applications purchased or built by these enterprises.

Enterprises today understand the value propositions of cloud platforms. Multi-platform architectures have been adopted rapidly over the past couple of years, that is, IT architectures spanning premises and hosted environments (sometime referred to as hybrid clouds). Enterprises are looking at extending on-premises application functions to hosted applications that serve their operational needs, giving rise to "extended enterprises" whose IT footprint extends into the clouds.

In the content of on-premises MDM solution integrating with SaaS applications, the key area of focus is around how in-house IT consumers work with cloud services and how cloud services use services hosted in-house, that is, on-premises. Enterprises do not expose ports on the Internet for interactions with mission-critical applications because of various security considerations. This is where the use of a cloud integration middleware becomes a requirement.

Applications are integrated to draw synergies and typically, this is done because applications have their specializations. They must interact with other applications, get data from other applications, or pass data to other applications to participate in this synergy. Enterprises typically use reliable messaging or real-time asynchronous integrations, services for real-time synchronous integrations, and some extract, transform, and load (ETL) solution for bulk data operations.

There are multiple solution approaches to solve the problem of having on-premises MDM solutions integrated with SaaS applications. We are focused on the IBM InfoSphere MDM solutions. The cloud integration middleware of choice for any real-time integration with SaaS applications is IBM WebSphere Cast Iron Cloud Integration. InfoSphere Information Server is the ETL tool of choice to support hybrid cloud topologies in an extended enterprise and draw a context on bulk operations between InfoSphere MDM solutions and SaaS applications.

Figure 2 shows a solution layout put together based on the identified software components.
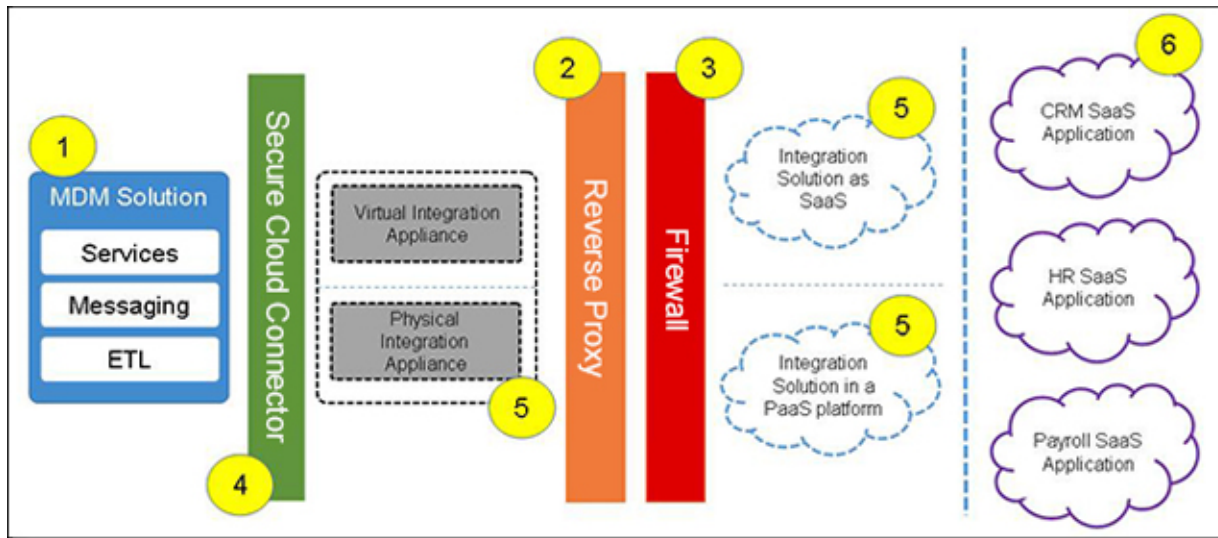

Figure 2. Solution layout

The key items in Figure 2 are defined:

- Item 1: MDM solution, which exposes Representational State Transfer (REST) or web services, has messaging support and uses the ETL tool for bulk operations.

- Item 2: Every enterprise typically uses a reverse proxy solution to hide the IP addresses of all servers in the DMZ.

- Item 3: Every enterprise has a firewall protecting its data centers.

- Item 4: Every interface that the MDM solution uses for integrating with a SaaS application ultimately needs to only connect to a secure connectivity component.

- Item 5: The cloud integration middleware can be of multiple form factors. It can be a virtual applicancy, a physical applicancy, a hosted SaaS offering, or capabilities in a PaaS platform. Depending on the security requirements, any one of the form factors can be used. The suggested option is to use the hosted SaaS offering form factor tying into co-joined Integration Platform as a Service (iPaaS) initiatives.

- Item 6: A set of generic coarse-grained services, messaging, or ETL jobs needs to be served by the MDM solution in preparation to serve multiple SaaS applications that the enterprise might subscribe to, therefore extending governance capabilities to all of them consistently.

Solution architecture

Most of the requirements for the integration of InfoSphere MDM with SaaS applications can be aggregated into three main areas:

- Real-time synchronous integration
- Real-time asynchronous integration or near real-time integration
- Approaches for bulk operations

The following patterns of integration are part of building the solution architecture:

- Data integration patterns, which deal with nuances of data movement between the two solutions, including handling incremental data load from MDM to the SaaS application or vice versa and the use of services or reliable messaging, addressing only data movement in real or near real time.

- Access integration patterns, which deal with certain security requirements when two applications are integrated. The two key categories are access management from on-premises InfoSphere MDM to SaaS applications and access management among applications hosted on the cloud.

- Process integration patterns primarily deal with scenarios where more than one application or solution come together to run a business flow. It can entail runtime data movement with the execution of certain business logic as well, such as validation rules and governance policies.

Although SaaS applications provide greater flexibility and lower costs, enterprises have identified access integration as a key obstacle to adopting SaaS applications. Security remains a key concern for users. A cloud integration solution must be able to authenticate and authorize access to resources, encrypt data, and comply with regulations. With the growing number of SaaS applications, mobile apps, and other services that must access enterprise data, a secure connection between the cloud and the enterprise is required.

WebSphere Cast Iron Cloud Integration is designed to provide a secure, scalable, and robust means to accomplish data integration within and between the cloud and the enterprise and MDM. The WebSphere Cast Iron Cloud Integration Secure Connector is a lightweight piece of software that resides behind the firewall and connects databases, enterprise applications, and message queues behind the firewall in a secure manner with the cloud.

WebSphere Cast Iron Cloud Integration comes with built-in connectivity to many clouds, packaged, and proprietary on-premises applications, including ERP, CRM, databases, web services, and flat files. It is self-contained and includes everything needed to complete integrations in one place. Its Connector Development Kit provides a method for building connectors to endpoints that are not already included in the product, reducing the need to manually build these connections over and over. Figure 3 shows the solution architecture.
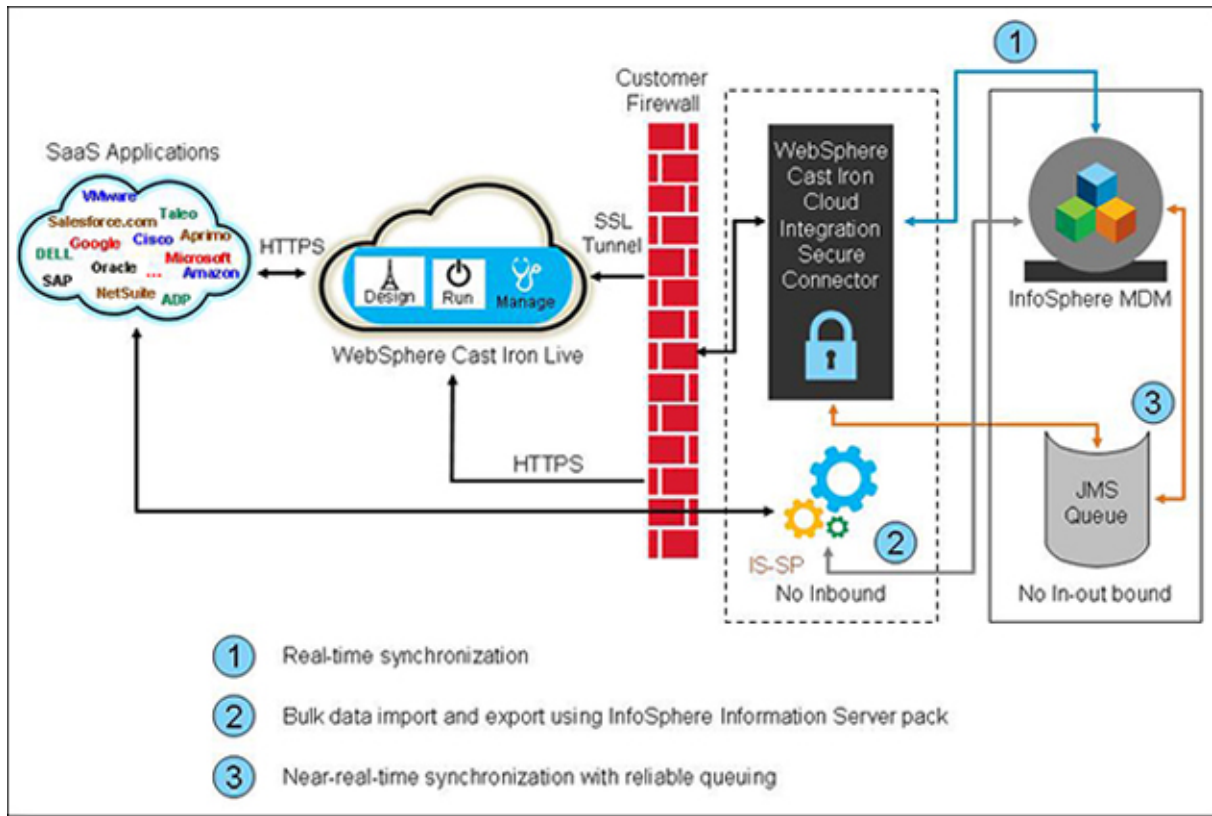
Figure 3. Solution architecture

Integration and usage scenarios

In this scenario, InfoSphere MDM and Salesforce.com are integrated with the help of IBM WebSphere Cast Iron Cloud Integrator, IBM WebSphere Cast Iron Studio, and IBM WebSphere Cast Iron. There is an InfoSphere MDM and Salesforce.com integration sample in the Samples and Assets site for InfoSphere MDM that provides the basis for the integration. The WebSphere Cast Iron Live Secure Connector provides bidirectional data transfer between the endpoints (applications and data) located behind the firewall and WebSphere Cast Iron Live. A secure connector is defined for each cloud environment for security reasons. For this scenario, the data is required to exist in both Salesforce.com and the InfoSphere MDM. After all of the solution components are installed, configured, and integrated, the Salesforce.com application can access client-related information in a secure and efficient manner.

InfoSphere MDM can be integrated with a variety of cloud-based solutions, such as Netsuite Enrolled. Netsuite Enrolled is a cloud-based business management software that includes components for enterprise resource planning (ERP), Customer Relationship Management (CRM), and e-commerce. Netsuite provides its services in the Software-as-a-Service (SaaS) model. Netsuite provides various applications for data processing and integrations with existing systems that are on the cloud or that reside on the client's premises.

The high-level integration of InfoSphere MDM and Netsuite is accomplished using Netsuite Suite Script that develops custom user interfaces for the search functionality. The search functionality invokes InfoSphere MDM web services through the use of the WebSphere Cast Iron Cloud Integration orchestrations. These orchestrations are developed using IBM WebSphere Cast Iron Live Designer. An orchestration invokes the InfoSphere MDM web services through the WebSphere Cast Iron Live Secure Connector and serves back the results.

The InfoSphere MDM-powered probabilistic search helps with real-time scenarios where search parameters do not exactly match the records. In this instance, the solution capability allows enterprises to reduce the duplication of data at the point of entry into their information systems.

IBM WebSphere Cast Iron Live comes with a built-in connector for Netsuite. This connector provides a simplified interface over the Netsuite objects, fields, and operations to speed up the integration patterns built. You can use IBM WebSphere Cast Iron Live Designer to graphically design the orchestration to use the Netsuite connector.

Supported platforms

A wide variety of platforms and combinations are possible for InfoSphere MDM and WebSphere Cast Iron Cloud integration solutions. You can find detailed information about the exact platforms that are supported within the documentation for the products:

- InfoSphere MDM specifics in the IBM Knowledge Center
  https://ibm.biz/BdFiFE

- InfoSphere MDM System Requirements web page
  http://www-01.ibm.com/support/docview.wss?uid=swg27035486

- WebSphere Cast Iron Cloud Integration details system requirements
  http://www-01.ibm.com/support/docview.wss?uid=swg27022431

Ordering information

IBM InfoSphere Master Data Management V11.3 has several editions:

- InfoSphere Master Data Management Enterprise Edition
- InfoSphere Master Data Management Advanced Edition
- InfoSphere Master Data Management Standard Edition
- InfoSphere Master Data Management Collaborative Edition
- InfoSphere Master Data Management Reference Data Management
- InfoSphere Master Data Management Custom Domain Hub Stand Alone

InfoSphere MDM ordering information is shown in Table 1.

Table 1. InfoSphere MDM ordering part numbers

Program name	PID number	Charge unit description
IBM InfoSphere Master Data Management V11.3	5725-E59	Per resource value unit

IBM WebSphere Cast Iron Cloud integration has several offerings:

- IBM WebSphere Cast Iron Live Standard Edition V7.0 (5725-F70)
- IBM WebSphere Cast Iron Live Enterprise Edition V7.0 (5725-F71)
- IBM WebSphere Cast Iron Express V6.3.0 (5725-F72)
- IBM WebSphere Cast Iron Hypervisor Edition Standard V7.0 (5725-C11)
- IBM WebSphere Cast Iron Hypervisor Edition Enterprise V7.0 (5725-C12)

Table 2 contains ordering information for the various IBM WebSphere DataPower® Cast Iron Appliance XH40 offerings.

Table 2. Ordering information for IBM WebSphere DataPower Cast Iron Appliance XH40 offering

Machine type	Model	Description
9235	8CX	IBM WebSphere DataPower Cast Iron Appliance XH40 Standard Edition with OTC license
9235	8DX	IBM WebSphere DataPower Cast Iron Appliance XH40 Standard Edition with term license
9235	8FX	IBM WebSphere DataPower Cast Iron Appliance XH40 Enterprise Edition with OTC license
9235	8GX	IBM WebSphere DataPower Cast Iron Appliance XH40 Enterprise Edition with term license
9235	8HX	IBM WebSphere DataPower Cast Iron Appliance XH40 Development Edition with OTC license
9235	8JX	IBM WebSphere DataPower Cast Iron Appliance XH40 Development Edition with term license

Related information

For more information, see the following documents:

- IBM Redbooks: *A Practical Guide to Managing Reference Data with IBM InfoSphere Master Data Management Reference Data Management Hub*, SG24-8084
  http://www.redbooks.ibm.com/abstracts/sg248084.html

- IBM Redbooks: *Smarter Modeling of IBM InfoSphere Master Data Management Solutions*, SG24-7956
  http://www.redbooks.ibm.com/abstracts/sg247956.html

- IBM Redbooks: *Getting Started with IBM WebSphere Cast Iron Cloud Integration*, SG24-8004
  http://www.redbooks.ibm.com/abstracts/sg248004.html

- IBM Redbooks: *Hybrid Cloud Integration and Monitoring with IBM WebSphere Cast Iron*, SG24-8016
  http://www.redbooks.ibm.com/abstracts/sg248016.html

- IBM Redbooks: *IBM WebSphere Cast Iron Introduction and Technical Overview*, REDP-4840
  http://www.redbooks.ibm.com/abstracts/redp4840.html

- IBM Redbooks: *Connect Cloud and On-premise Applications Using IBM WebSphere Cast Iron Integration*, REDP-4674
  http://www.redbooks.ibm.com/abstracts/redp4674.html

Also, product information is available on the following web pages:

- IBM InfoSphere MDM Solution
  http://www-03.ibm.com/software/products/en/infosphere-master-data-management

- IBM WebSphere Cast Iron Cloud Integration
  http://www-03.ibm.com/software/products/en/castiron-cloud-integration

- IBM WebSphere Cast Iron Express
  http://www.ibm.com/software/products/us/en/castiron-exp

- IBM WebSphere Cast Iron Hypervisor Edition
  http://www.ibm.com/software/products/us/en/cast-iron-hypervisor

- IBM WebSphere Cast Iron Live
  http://www.ibm.com/software/products/us/en/cast-iron-live

- IBM WebSphere Cast Iron Knowledge Center
  http://pic.dhe.ibm.com/infocenter/wci/v7r0m0/index.jsp?topic=%2Fcom.ibm.wci.live.doc%2FSecure_Connector%2Ftoc_using_secure_connectors.html

- IBM InfoSphere Information Server
  http://www-03.ibm.com/software/products/en/infosphere-information-server

- IBM Offering Information page (to search on announcement letters, sales manuals, or both):
  http://www.ibm.com/common/ssi/index.wss?request_locale=en

  On this page, enter IBM InfoSphere Master Data Management Integration with SaaS Applications using WebSphere Cast Iron Cloud, select the information type, and then click **Search**. On the next page, narrow your search results by geography and language.

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