

WHITE PAPER

Making the Cloud Your Own: Integrating Cloud and On-Premise Applications with IBM WebSphere Cast Iron Cloud integration

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IDC OPINION

Organizations are facing perhaps the biggest transition in the history of IT — the evolution of pervasive, cloud-style computing. This transition is already well under way. Like the famous analogy of the iceberg, however, what is visible now represents but a small fraction of the potential that cloud will likely fulfill. That larger and more visible cloud presence is on the horizon, and, most critically, IT organizations need to prepare by putting in place the tools and techniques required to link (and in some cases, transition) their existing on-premise capabilities to the cloud.

This need for pervasive integration is supported by emerging products such as IBM WebSphere Cast Iron Cloud integration that have the potential to radically simplify orchestration, which is what Cast Iron calls automated integration (both "orchestration" and "automated integration" are used in this white paper, referring to the same capabilities), and coordination tasks across the organization and across the cloud.

WebSphere Cast Iron Cloud integration has developed a strong record over a period of several years for helping different kinds of organizations integrate and orchestrate across boundaries through an easy-to-use, largely intuitive interface and high levels of task automation.

IN THIS WHITE PAPER

In today's business environment, organizations of all sizes are struggling to maintain the advanced IT capabilities they need to be competitive while reining in cost and complexity. Shifting to off-premise hosted models, such as software-as-a-service (SaaS) and business process outsourcing, is a common activity undertaken to manage costs.

One of the main challenges businesses face in adopting cloud and SaaS delivery models is the task of synchronizing data and integrating the multitude of systems already in datacenters with new cloud-based applications, not to mention within the cloud itself. Traditionally, this required organizations to leverage existing tools as well as custom development.

This white paper looks at how two enterprises encountered problems with cloud integration and adopted IBM WebSphere Cast Iron to solve their immediate problems and extend use more broadly across their organizations.

SITUATION OVERVIEW

The cloud is about flexibility, speed, and cost reduction, yet the practical realities dictate that these advantages are often muted by the complexities of integration. This white paper provides context regarding the cloud and its integration challenges, an overview of the capabilities of the IBM Cast Iron integration product, as well as customer profiles from two user organizations.

Both organizations we profile found significant benefit in speed and productivity through employing Cast Iron.

Both the product and the product category are particularly important now, as the cloud becomes more central to IT operations.

FUTURE OUTLOOK

The Growing Importance of Cloud

A recent IDC survey-based roundtable, "Future Proofing the Cloud," yielded a cross section of viewpoints about the cloud as well as related integration issues. Many participants agreed that for IT, the cloud will become more and more pervasive and — tellingly — that including cloud-based resources will be a "default checkbox" for most new and replacement technology by 2014.

Participants also agreed that at least one-third of IT organizations will become cloud providers, with internal IT organizations acting as service centers, brokering external services internally, or building IT services internally that have cloud characteristics. These IT services will have cloud characteristics that include dynamic service scaling/flexing, self-service provisioning, use metering, some level of chargeback/responsibility to users, and other characteristics. Likewise, cloud-based services, architected and contractually liable for failover and redundancy, will likely be key default parts of many organizations' business continuity plans.

Furthermore, because organizations struggle to set up and maintain a solid disaster recovery environment, due to their necessary focus on production systems, (care, upgrades, patches, etc.), the cloud offers a way to outsource this function and provide the service with less impact on internal resources.

According to other research, notably a landmark IDC/IDG Enterprise survey announced at the 2011 Cloud Leadership Forum, IT executives expect that cloud computing will have significant impact on IT organizations and IT vendors, as well as the enterprises they support. Most significantly for the purposes of this white paper, some 80% of respondents predicted that cloud service brokers that provide integration, management, security, and other services across public cloud offerings will emerge as powerful industry players by 2015.

Integration Is an Achilles' Heel for Widespread Cloud Deployment

The logic and the appeal of the cloud are based on flexibility and reduced costs. However, in the real world right now, it can be difficult for organizations to take advantage of the cloud due to the difficulties of integrating cloud resources with each other and with on-premise resources. Challenges include:

- ☒ Multiple applications
- ☒ Synchronization of data and maintaining a single version of the truth
- ☒ Labor-intensive management of interconnections (e.g., APIs)
- ☒ Lack of flexibility and speed means integration is slowed and some of the value of the cloud is lost

IBM WEBSHERE CAST IRON CLOUD INTEGRATION

IBM WebSphere Cast Iron Cloud integration helps companies integrate applications, whether they are located on-premise or in public or private clouds. Of particular importance in complex environments, Cast Iron is a powerful tool for creating orchestrations connecting a multitude of systems that can run both in batch and on request.

It is particularly useful for integrating systems very quickly while also being easy to use; users report that small teams using Cast Iron are able to develop and implement integrations in hours — spanning on-premise systems and the cloud. It can also provide ongoing management of large numbers of orchestration schemes, addressing the longer-term "maintenance" issues involved with cloud integrations, yet it also simplifies the task of completing subsequent changes.

From a cost perspective, Cast Iron earned praise for delivering extensive functionality without requiring users to utilize outside professional services.

IBM acquired Cast Iron Systems, a privately held software company headquartered in Mountain View, California, approximately two years ago. Founded in 2001, Cast Iron Systems began as a SaaS and cloud application integration company responsible for thousands of customer integrations across multiple industries. Its clients have included Allianz, NEC, Peet's Coffee & Tea, Dow Jones, Schumacher Group, ShoreTel, Sports Authority, and Time Warner. Today, Cast Iron Systems' technology is branded as IBM WebSphere Cast Iron Cloud Integration, and it continues to be used to connect a hybrid environment of public clouds, private clouds, and on-premise applications.

In contrast to point products, Cast Iron offers organizations a comprehensive approach to integrating with the cloud, including on-premise systems, intracloud applications, and even on-premise to on-premise integration. Cast Iron engages with business requirements, user requirements, and technical requirements of individual applications.

Benefits of WebSphere Cast Iron Cloud integration include:

- ☒ Rapidly connects the hybrid world of SaaS or cloud applications with on-premise systems in just days, effectively linking SaaS and cloud-based applications with a company's existing applications and processes
- ☒ Delivers a low-cost solution and (according to IBM) a rapid ROI in cloud and SaaS models through a simplified approach
- ☒ Provides a flexible integration environment and deployment options
- ☒ Allows organizations to extend Web services to capitalize on the API economy in order to meet new markets and increase brand awareness for their products and services

Cast Iron is available in both Standard and Enterprise editions and in three delivery styles:

- ☒ Virtual appliance — WebSphere Cast Iron Hypervisor Edition
- ☒ Physical appliance — WebSphere DataPower Cast Iron Appliance XH40
- ☒ Multitenant cloud service — WebSphere Cast Iron Live

In addition to being optimized around the concept of simplicity, Cast Iron is marked by the following key elements:

- ☒ **Connectivity.** WebSphere Cast Iron Cloud integration products can link hundreds of cloud and on-premise applications, as well as databases, Web services, and messaging.
- ☒ **Transformation.** Crucially, Cast Iron transforms data from source to target applications through an easy-to-use GUI.
- ☒ **Business logic.** Cast Iron provides tools to graphically define data flows between source and target applications and can also help craft business logic and increase data quality.

Above all, Cast Iron promises to deliver rapid integration in days, sometimes even in hours. One interviewee reported completing at least one integration in only one hour. In addition, the product can be managed and monitored from a Web-based console.

INTEGRATING APPLICATIONS AT A TELECOMMUNICATIONS INDUSTRY INFRASTRUCTURE PROVIDER

A leading North America-based provider of high-bandwidth infrastructure and carrier-neutral collocation provides services to a variety of vertical industries across the United States, including healthcare, education, government, financial services, logistics, technology, and nonprofit made a decision to mix cloud and on-premise systems to run its business. Its key systems include:

☒ Salesforce.com for sales and customer service

☒ CustomCall Data Systems for billing

☒ Microsoft Dynamics GP for accounting

This mix of systems posed three challenges to the company, common among many enterprises:

☒ The first problem was the lack of transactional awareness among the systems, yet there was a need to hand off transactions between them.

☒ The second problem was the need to exchange data between the cloud and the datacenter in a manner that was secure, reliable, and timely.

☒ The third problem was the lack of end-to-end visibility across all of the activities and customer interactions distributed across systems that affected their ability to meet expectations.

This third problem was critical and was solved by establishing a fourth system — an event-driven customer data warehouse — to maintain up-to-date critical order status data and a complete history of changes to customer orders. In short, they needed a way to integrate the four core systems.

Initially, the company began using an ODBC driver to connect its various systems to the data warehouse, which was an extremely time-consuming and tedious process. The team quickly realized the ODBC driver would not be able to handle all of the integration required. In addition, data was exported from salesforce.com via the Apex data loader.

The company tracked more than 80 objects, including changes within the sales funnel and all updates to customer accounts. Salesforce.com has capabilities to store changes for 15 days, but they needed to maintain a comprehensive history of all changes and chose to maintain this history in its data warehouse. Because of the number of objects that were being maintained, the process of replicating the data from salesforce.com and updating the data warehouse became an overwhelming task that could not be managed by the small team of developers. It required up to a third of the people to export and upload data.

Selection

At the time of product selection, there were not a lot of solutions available that could easily integrate with salesforce.com. Therefore, the company did not spend a lot of time identifying competitive products. Salesforce.com had a partnership with Cast Iron and recommended the product.

The team also looked into other possible solutions, including using Microsoft SQL Server Integration Services, continuing with its ODBC driver, or adopting Jitterbit, an open source integration offering.

The team decided that Cast Iron was the most flexible. It had a native connection to salesforce.com and the ability to integrate rapidly and build things quickly. The company opted to use the appliance in-house because of the structure of its servers and systems. It has servers inside its firewall, and salesforce.com and CustomCall Data Systems are outside the firewall. Having the appliance in-house allowed the servers to communicate with internal systems, such as Microsoft Dynamics GP.

Implementation

The company deployed Cast Iron without utilizing professional services. They went to Cast Iron's headquarters for a week of training. Within the first six months of deploying the appliance version of Cast Iron, the company had built more than 100 orchestrations, which is what Cast Iron calls its automated integrations. These orchestrations were completed and in production in as little as an hour, with a maximum time of a couple of days.

The project lead managed the Cast Iron system on her own. A year later, she brought on another developer and trained the second person herself. Currently, the Cast Iron platform is managed by two developers.

Key orchestration projects included:

- ☒ One of the primary projects was the integration of change data from salesforce.com to the data warehouse. A change automatically created an outbound message from salesforce.com to the Cast Iron appliance. Depending on the change, different orchestrations occur that move the data to the correct portion of the warehouse. Queries can then be run, such as pulling all the service orders that are in a particular stage, by a particular person.
- ☒ Once a service is turned on, Cast Iron is used to translate all the service order information into what the customer should see on the bill. Delivery is made to CustomCall Data Systems without any need for manual keying.
- ☒ The company also uses Cast Iron to automate the exchange of data between internal systems and its supply chain. For instance, if the company needs an additional circuit to complete a service for a customer, it might need to purchase the circuit. This network expense is called "Net Ex" and has to be paid on a monthly basis. The Net Ex information is processed outside salesforce.com using other applications. The invoice is then processed and is sent to Microsoft Dynamics GP for payment, and that payment information is pushed back to the Net Ex application to show it was paid, with information such as the check number.
- ☒ The company also uses Cast Iron to run 50 to 100 audits a few times a day to ensure data integrity.

Results

Today, most of the company's 300-person staff is benefiting from the integration created through the use of Cast Iron. The project lead estimates that typically 50 to

100 people are connected to the data warehouse at one time, running queries against the data history. Because the data warehouse is designed to identify problems in real time, employees receive different types of notifications to improve time to resolution.

These notifications include the following:

- ☒ **Sales representatives:** Trouble tickets entered into salesforce.com are tracked in the data warehouse, along with notes about the specific issue that needs to be resolved. Sales representatives are notified hourly from the time the trouble ticket is issued. The notification also includes detailed information, including the last action taken. This continues until the issue is resolved.
- ☒ **Development team:** The Web management console allows the team to monitor orchestration activity, including errors. Error alerts are also sent to the development team.
- ☒ **Delivery consultants:** Past deadline notifications are sent to service delivery consultants. These messages are sent on a daily basis.

UNIVERSITY BOOSTS EFFECTIVENESS OF INTEGRATION TEAM

A large American private research university with over 1,400 faculty members, initially adopted the IBM WebSphere Cast Iron integration to manage integrations and customizations to help with delivery of a new advancement project with a 90-day timeline. The project lead was focused on changing the business processes of the advancement team, and made a strategic decision to purchase Cast Iron to make customizations to its customer relationship management (CRM) system, salesforce.com, quickly and to provide bidirectional integrations with its existing systems.

In 2006, the university had decided to use salesforce.com as the system that would manage the university's customer relationships. Salesforce.com is a well-designed CRM system that can handle many aspects of advancement management. However, there is still much customization needed to meet higher education requirements. In addition to this work, the development team had to set up integration with its PeopleSoft Advancement back-end system.

Since speed was important in order to make the integration deadline, the product had to be easy to use without much training time and needed to be able to get up and running quickly.

The university had an in-house product with salesforce.com plug-ins. This product was more difficult to use however and slower than Cast Iron.

By outlining the project timetable and showing developers they would not make the deadline without a new system, the project team was able to overcome initial challenges of getting developers to adopt and use the new Cast Iron system. After using it, developers appreciated its capabilities and now consistently search for ways to use Cast Iron rather than other tools.

Because Cast Iron simplified integration projects, the university was later able to easily change its enterprise resource planning (ERP) system. One of the main reasons they continue to benefit from a new ERP system is because it invested the time to set up the architecture for the new system at the time of implementation rather than setting up a "band-aid" approach and fixing the problems later.

Although the university considered products other than Cast Iron, it found that competing offerings demanded an in-depth knowledge of APIs and SOAP interfaces, whereas those issues were transparent in Cast Iron.

Additionally, the solution offered a user-friendly interface with drag-and-drop features to complete an integration. This graphical interface made integrations simpler and was very appealing.

Results

With Cast Iron, the team completed its advancement project within the 90 days. In four weeks, it was able to integrate 14 or 15 different objects or tables in both directions, with some objects integrated between salesforce.com and PeopleSoft Advancement.

The advancement project was the first project that the university completed with Cast Iron, but the university has subsequently done about 100 integrations with 75 different systems and is using Cast Iron to manage all these integrations. Integrations are happening between salesforce.com, Oracle Database, Microsoft SQL Server, IBM DB2, and numerous other systems.

Cast Iron is run on the VMware Hypervisor. It is now the standard tool that developers prefer for all integrations.

The university was able to decrease the time needed to complete integration projects with Cast Iron because of its graphical and straightforward approach to integrating with salesforce.com. The drag-and-drop features make it easy to use.

Furthermore, Cast Iron allowed the university to avoid accumulating a backload of work because the work can be distributed to different developers with a variety of skills and not just to a small group of developers with expert skills in integration. The university has an integration team, but with Cast Iron, this work can also be completed by database developers and Web application developers. This flexibility in utilizing human resources is especially important to an organization that has varying workloads throughout the year that are hard to predict.

Support for standards (including BPEL) and the ability to run Cast Iron on Linux and scalable systems mean the basic architecture is easily navigated.

Using a virtual machine (VM) to run Cast Iron means the university has less physical hardware to manage, which saves additional time.

FUTURE OUTLOOK

The continued growth of the cloud into what may be a dominant role seems very likely to continue and to accelerate over the next few years. Being ready and able to integrate among cloud resources and between cloud and on-premise resources is destined to be a critical capability in the unfolding deployment of the cloud by individual organizations.

CHALLENGES/OPPORTUNITIES

Many organizations face challenges around not only providing good service to customers but also offering excellent customer experience over the life cycle of the transaction. The challenge is that different systems handle different aspects of the transactions, making it difficult to understand whether a customer is receiving the high level of service that business wants to provide.

A telecom infrastructure provider's management was able to select best-of-breed applications for running the company's operations while gaining a customer-centric view of process performance across those applications. None of this would have been possible without an integration platform that allowed developers to connect to the different systems rapidly and at a low cost.

This telecom provider offers the following advice to organizations that are selecting an integration platform:

- ☒ Take into account company goals when selecting a solution. For example, this company has a small team that needs to be able to run a lot of orchestrations, and it searched for a solution that would allow it to do that.
- ☒ Look for solutions that match the organization's work culture. This company had a very agile environment, and consistently looked for tools that allowed it to get a lot done without many human resources.
- ☒ Look for untraditional ways to do traditional tasks, such as managing the data warehouse and making changes to objects. Traditional methods are often cumbersome and require huge investments in human capital. An organization can accomplish more with few resources by making strategic technology purchase decisions.

For its part, the university's development team noted:

- ☒ In addition to functionality, a graphical interface can be an important factor, even to architects.
- ☒ Cast Iron is a tool, but you have to take the time to design the integration architecture to take advantage of it. By using Cast Iron, you could still do point to point integration. It would just be a graphic tool doing point to point, so you still have to spend the time thinking about how best to design the services for which you need to integrate the data, and design a service-oriented architecture way of doing that.

- ☒ Many times, it is quicker to use a "band-aid" approach and put a system in place quickly, but down the road, that approach will end up costing your organization more time to resolve the problems. It is important to take the time up front to set up the system properly and always look for ways to reuse systems and processes rather than using new tools for each new project.

By putting in the time up front to correctly architect systems, the university has positioned itself to be able to focus on integrating new solutions as needed rather than spending valuable resources repairing broken systems. Furthermore, its strategy of developing sound processes and systems and reusing them allows the development team to have more time to focus on developing other strategic technology advantages for the university rather than redesigning processes again and again to manage similar situations.

The experiences of both organizations lend credence to IBM's own claims of as much as 80% cost reduction on integration projects (compared with custom coding) and also show that the product can help free up productive time for talented IT staff members.

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