Case Study: Achieving Faster Time to Integration and TCO Reduction with Open Source Middleware

The value realized by Avianca from the adoption of Red Hat JBoss Fuse
Summary

Catalyst

Avianca was struggling with a point-to-point approach to integration and fragmented integration architecture, and selected Red Hat JBoss Middleware to enable agile integration, while reducing the total cost of ownership (TCO) for integration infrastructure. Red Hat JBoss Fuse offered a lightweight, new style enterprise service bus (ESB)-based approach to integration and helped Avianca realize strategic benefits without having to invest in a full-fledged service-oriented architecture (SOA) implementation or a mix of proprietary middleware platforms.

Key messages

- With Red Hat JBoss Fuse as the core middleware platform, Avianca was able to rationalize and standardize its approach to enterprise integration and shift away from a cumbersome point-to-point approach to integration.
- Red Hat JBoss Fuse delivered 10x faster performance in comparison to other middleware platforms evaluated as part of a proof-of-concept (PoC) evaluation. Because Red Hat JBoss Fuse is an open source integration platform, Avianca had no qualms with regard to the possibility of vendor lock-in.
- Red Hat JBoss Fuse supports business-critical functions, including sales, ticketing, back office, and maintenance, and enables Avianca to deliver omni-channel customer experience across a range of contact points and all of the group’s airlines.
- Adoption of the Red Hat JBoss Middleware portfolio has resulted in a TCO reduction of about 50%.
- With Red Hat JBoss Fuse, Avianca is focusing on designing a package of processes, procedures, and technologies documented and pre-validated to reduce the time and effort required for integration and standardization of a new airline into the group by about 50%.

Ovum view

The proposition of integrating acquired companies and associated applications and systems can be cumbersome if an enterprise follows a point-to-point approach to integration offering very limited scalability and flexibility, while consuming significant IT budget just to remain relevant in operational terms. Avianca’s case is particularly interesting owing to the sheer number of integrations required between more than 1,000 applications including several disparate legacy applications. Avianca followed a logical approach by selecting an open source, lightweight patterns-based ESB to standardize its enterprise integration architecture, while refraining from a full-fledged SOA implementation.

Enterprises that appreciate the capabilities and flexibility of open source middleware understand the risks associated with a wrong choice of proprietary middleware. The cost of exit in a proprietary middleware context is quite high and it is not easy to achieve a significant level of interoperability with application infrastructure and middleware platforms offered by other vendors. Clearly, Red Hat JBoss Fuse is the right choice for Avianca because it supports interoperability with other middleware and application infrastructure components to meet a range of integration requirements.
Key benefits of a significantly homogenous middleware stack include greater infrastructure manageability and developer productivity, and in this context Avianca realized significant benefits with adoption of Red Hat JBoss Fuse. Once Avianca’s integration practitioners/developers were comfortable with the features and capabilities of Red Hat JBoss Fuse, its use was extended to the entire enterprise.

Avianca’s plans for designing a package of processes, procedures, and technologies documented and pre-validated to enable agile integration of a new airline into the group, are good indicators of its confidence in Red Hat JBoss middleware portfolio. Moreover, this implementation is a good example of how open source middleware can be used in a systematic way to solve complex integration issues, without compromising on agility and functionality. It is difficult to argue that similar results (including openness to change) could be achieved via proprietary middleware, without a significantly greater IT spend.

**Recommendations for enterprises**

**Focus on right-sizing integration approach and infrastructure**

Given the nature of Avianca’s business, it was important to shift to a holistic approach delivering integration capabilities in a shorter time and at a reasonable TCO. The expenditure and implementation times associated with traditional integration approaches including service-oriented architecture (SOA) are not always in line with the IT budgets and project plans of many enterprises. Moreover, governance of an SOA initiative can be quite challenging, and many enterprises have spent millions of dollars and waited for several months without achieving anything significant out of their SOA initiatives.

Avianca, with Red Hat Consulting, focused on right-sizing the integration approach and infrastructure, and realized significant benefits from the adoption of open source lightweight modular middleware instead of pursuing an extensive SOA implementation or using a mix of proprietary middleware platforms.

**Open source middleware fosters much-needed interoperability and openness to change**

It is not uncommon to see the use of middleware offered by several vendors for a range of integration requirements and across different parts of the enterprise. It is also likely that IT would involve integration practitioners/developers with diverse skills to cater for enterprise integration requirements and ensure relevance of at least some of these middleware platforms. Then there is a possibility that some of these middleware platforms are “inflexible”, with IT struggling to extend their use to meet new integration requirements.

Given the current operating environment and persistent time and budget constraints, IT does not have the luxury of adding new middleware platforms to the mix to meet pressing integration requirements. These factors frequently drive rationalization of an enterprise’s integration strategy. Open source middleware offers the flexibility to try and experiment with small integration projects and see what works best for a particular requirement or integration scenario. Moreover, enterprises do not need to worry that they have to somehow work with a vendor’s middleware stack to try and deliver desired
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integration capabilities and outcomes, because the cost of exit is not a limiting factor for a shift to a new middleware vendor/platform.

With digitalization driving new integration requirements and, in Avianca’s case, both the need for agile integration and delivery of omni-channel customer experience, it is important to see if the underlying integration infrastructure is flexible enough to allow openness to change. Ideally, the core middleware platform should work well with rest of the IT stack and support interoperability with new software components (even if these are from a different vendor) if this is required for supporting new business requirements. Red Hat JBoss Fuse allows openness to change, be it in terms of supporting new requirements and/or interoperating with other middleware and application infrastructure components.

A collaborative relationship with your vendor is essential for achieving desired outcomes

The success of large-scale integration projects, especially for those involving adoption of new integration infrastructure, depends on several factors, including the level of coordination between vendor and customer, understanding of gaps in “as-is” and “to-be” states, change management, and sustained commitment from business and IT management.

The decision to adopt Red Hat JBoss Fuse was based on a clear understanding of gaps in existing integration capabilities and the value that could be achieved via a shift to an open source ESB-based approach to integration. This ensured a good degree of alignment between expected outcomes and high-level objectives.

Red Hat Consulting demonstrated the robustness, flexibility, and superior performance of Red Hat JBoss Fuse as part of a PoC evaluation, and this was further reinforced by a gradual expansion of its use as the core middleware platform across the enterprise. Red Hat Consulting focused on ensuring customer success and refrained from pushing the case for a broader middleware stack.

Solution selection

Background

Aerovías del Continente Americano (Avianca) Holdings SA comprises 10 airlines incorporated in different Latin American countries. It is headquartered in Bogota, Colombia and is the oldest airline in Latin America. It serves more than a hundred direct destinations in the Americas and Europe. With several mergers and alliances over the years, Avianca faced a difficult proposition of achieving integration between more than 1,000 applications including several disparate legacy applications.

While Avianca had relied on a point-to-point approach to integration (leading to a fragmented architecture) in the past, the proposition of maintaining this “integration spaghetti” was proving to be a time-consuming and cost-intensive exercise. Moreover, this approach was neither scalable nor flexible enough to support key business imperatives of process standardization and support for omni-channel customer experience across a range of customer contact points.

Red Hat JBoss Fuse is an open source, lightweight integration platform combining a range of components including Apache Camel, Apache CXF, Apache ActiveMQ, Apache Karaf, and Fabric8. It uses Apache Camel to offer a pattern-based integration framework for faster development of integration flows, and supports dynamic configuration and management, which allows simplified

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service deployment or updating across nodes even when the ESB is running. The integration platform offers several dozens of pre-built application and technology connectors.

**Selection criteria**

Avianca’s integration competency center (ICC) comprises an integration architect and six developers/integration practitioners. After due consideration of existing and near-term requirements, Avianca decided to follow an ESB-based approach to integration. As part of vendor/solution selection process, Avianca conducted a PoC evaluation of Red Hat JBoss Fuse and other middleware platforms. Red Hat Consulting demonstrated the robustness and flexibility of Red Hat JBoss Fuse and the results of the PoC evaluation were interesting.

According to Avianca, Red Hat JBoss Fuse delivered 10x faster performance in comparison to other middleware platforms evaluated as part of this exercise. The simplicity of deploying and running Red Hat JBoss Fuse was particularly intriguing for Avianca. Avianca was looking for a standards-based ESB, but it was important that the integration platform supported multi-location deployment for high scalability and availability.

While due consideration was given to a potential SOA implementation, there was a realization that a robust ESB would be appropriate for meeting existing and future integration requirements. Avianca’s IT leaders understood that a “big bang” SOA implementation would be overkill and the time and cost imperatives associated with such an extensive implementation did not align well with pressing integration requirements. Interestingly, Red Hat Consulting advised a right sizing of the integration approach and infrastructure, and focused entirely on customer success rather than trying to sell a broader middleware stack.

Interoperability was a key consideration and because Red Hat JBoss Fuse is an open source integration platform, Avianca had no concerns about the possibility of vendor lock-in. Avianca has the flexibility of deploying other middleware platforms on top of Red Hat Fuse or using it along with (both proprietary and open source) application infrastructure and middleware offered by other vendors.

**Solution analysis**

**Solution deployment and outcomes**

Avianca is using Red Hat JBoss Fuse as the core middleware platform which enables integration between applications catering for several business-critical functions including sales, ticketing, back office, and maintenance. With Red Hat JBoss Fuse, Avianca was able to rationalize and standardize its approach to enterprise integration and shift away from a cumbersome point-to-point approach to integration.

Avianca uses Amadeus Altea Suite to automate, manage, and optimize check-in, boarding, and aircraft dispatch processes. With this suite, Avianca can analyze information from user profiles to identify customer travel preferences to offer more personalized services that can drive greater customer satisfaction and which in turn support the objective of customer retention or more loyal frequent flyers.
Avianca has migrated most of its transaction systems to interface via Red Hat JBoss Fuse, and the integration platform supports key business services associated with Avianca's core sales, operations, and reservation processes.

Red Hat JBoss middleware allows Avianca to use microservices/APIs that enable integration with a range of payment gateways and validate user credentials and other key parameters to efficiently process transactions in compliance with regulatory mandates. Red Hat JBoss Fuse supports several business-critical processes, including:

- ticket sales through the Amadeus platform
- the loading of operations files to support decision-making in the context of the aircraft dispatch process
- receiving payments from a range of payment gateways or channels.

As part of its e-commerce strategy, Avianca plans to use Red Hat JBoss Fuse to deliver an omni-channel experience across a range of customer contact points and all of the group's airlines. Red Hat JBoss middleware will also enable the delivery of LifeMile, Avianca's frequent flyer program, which includes significant improvements in terms of user experience (improved processes and better website functionality) over its erstwhile AviancaPlus and Distancia programs.

With Red Hat JBoss Fuse, Avianca is focusing on designing "IT in a box", a package of processes, procedures, and technologies documented and pre-validated to enable agile integration of a new airline into the group. This package is expected to reduce the time and effort required for the integration and standardization of a new airline into the group by about 50%.

Because Avianca's core application infrastructure and middleware platforms work well together, it needs a lesser number of servers and can "do more with less". According to Avianca's estimates, the adoption of Red Hat JBoss middleware has resulted in a TCO reduction of about 50%. Moreover, a uniform approach to integration based on Red Hat JBoss Fuse has significantly improved developer productivity while supporting agile integration. It is easy to understand that Avianca has realized strategic advantages with Red Hat JBoss Fuse and is well positioned to drive further operational improvements and innovation in terms of the development of new applications and services to better serve its customer base.

Appendix

Methodology

Interactions with the IT leader driving the transformation of Avianca's enterprise integration strategy formed the foundation of this case study. The views expressed in this case study are based on our ongoing research into middleware market and take into account observations from briefings with middleware vendors, as well as analysis of the opinions of integration practitioners, developers, and solution/enterprise architects, including those available on public communities and forums.

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