Case study:
Virgin Australia Flight State Engine (FSE) Replacement

The Opportunity

Virgin Australia relies on dozens of in-house and third-party systems to track and report on the status of current and upcoming flights. Virgin Australia uses an in-house product called Flight State Engine (FSE) to create an authoritative view of flight status, and to stream flight state events to multiple consumers.

Virgin Australia engaged 4impact to replatform FSE, which was built on end-of-life Oracle SOA technology, with a modern, high-performance, highly reliable, high-throughput event streaming implementation based on Confluent Kafka.

The FSE replacement was driven by the operational restrictions and limitations identified within the legacy system including:

• Limited vendor support options.
• Expensive and slow to modify or add new features.
• No platform for other event streaming applications.
• Limited observability/monitoring of SOA components.

4impact's Approach

To replatform FSE, 4impact analysed components of the old FSE and their relationships to the Oracle SOA and other elements of the IT ecosystem.

This in-depth analysis allowed for a planned and phased implementation and parallel run of new FSE to introduce Kafka streaming technology and replace old FSE in stages.
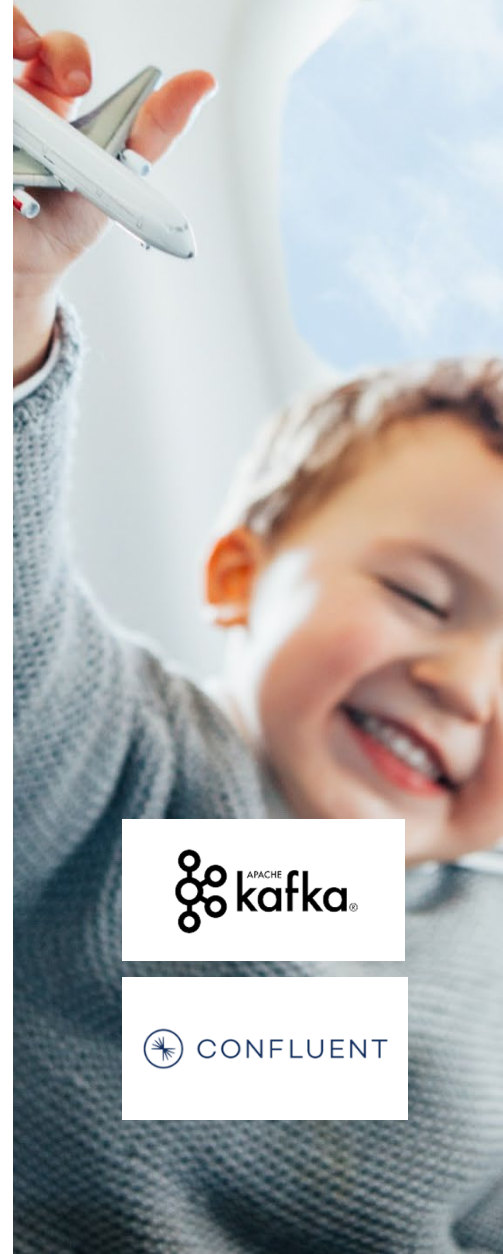
Key Services utilised

• Software Development
• DevOps
• Project Management
• Business Analysis

Key Technologies utilised

• Kafka event data streaming
• Spring Framework
• Confluent.io

Key Toolkit

• Confluent managed Kafka clusters.
• Self-managed Kafka connectors.
• Kafka components implemented as Java applications.

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Key Outcomes and deliverables:

The new Kafka platform implementation of FSE went live in late 2022. Since then, it has met or exceeded performance and reliability requirements. The new FSE has also delivered an event-streaming platform which other business areas have used as the starting point for their own new services and offerings. Speed to market, performance, reliability, and supportability of these other offerings have also met or exceeded Virgin Australia's requirements.

These outcomes were critical to both streamline and enhance the operational objectives for Virgin Australia.

- New FSE up and running with no change to end user functionality.

- Platform, patterns, templates and blueprints for future event streaming applications.

- Clear roadmap to replacing the rest of the outdated Oracle SOA with Kafka components.

Key project statistics and success insights.

REDUCED

COST & TIME TO ADD NEW FEATURES MOVING FORWARD

SCALABLE

PLATFORM FOR NEW EVENT STREAMING APPLICATIONS

ENHANCED

VALUE CREATION OPPORTUNITIES FOR AIRLINE CUSTOMERS

RELIABLE

THE NEW FSE HAS REPORTED ZERO OUTAGES

FUTURE PROOFED

PROJECT CREATED AN ARCHITECTURAL BASE FOR FUTURE KAFKA PROJECTS

APACHE kafka.

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The 4impact Advantage.

4impact is a consulting and technology services business with a primary focus on the delivery and implementation of complex technology projects. We value relationships - with our consultants, with our clients, and with our suppliers and partners.