



Client Case Study

Enterprise digital transformation & cloud migration accross Multiple Technologies

Industry:	Enterprise service integrator
Core Business:	Core functions across multiple sectors for private & public sector
Employee Count:	Circa 40,000
Geography:	Worldwide
Workloads:	SQL, Azure, Biztalk, App Creation & Migration, Professional services, data analytics, performance enhancements, Security & Compliance
Date completed:	Oct 2022



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1 Case Study Fundamentals

1.1 Story Specifics – Why is this story interesting?

Following a rapid migration (lift & shift) of a large and complex infrastructure including BizTalk Middleware Platform from on-premises to Azure, several issues necessitated urgent remediation and a longer-term Enterprise-Wide Re-Architecture. This was required to enable improved business reliability for key business apps and services, whilst also enabling greater agility and growth potential for the client.

The original BizTalk solution was designed and built for on-premises infrastructure. Since the migration of the client system to the public cloud (Microsoft Azure), attempts had been made to incorporate the cloud's inherent elasticity into the service. Due to the nature of the BizTalk product, these attempts had been unsuccessful and required Sundown expertise to rearchitect the solution and deliver the customers desired outcome.

1.2 What Challenge did the customer have at the start of this project?

The service was running on BizTalk 2016, a version in which mainstream support ended on 11th January 2022. This fact, coupled with the expensive licensing costs and the undesirable hosting model required for BizTalk (because of the poor elasticity capability) led the Client to review the suitability of this technology for the middleware service.

In addition to the issues around a lack of elasticity, the customer had experienced significant performance issues with their core business platform which underpinned the entirety of the end clients system.

Whilst needing urgent assistance to remediate issues following this re-platforming exercise, Sundown was also tasked with the completion of a much-needed Enterprise-Wide Architecture Review (AWAF type

engagement). This informed the re-architecture of the solution to meet current and perceived future needs including a very high profile end client system.

There was an urgent need to design a solution which delivered greater flexibility and alignment with true utility computing for the Client, whilst also addressing the underlying performance issues experienced following the previously delivered re-platforming exercise.

Without the proposed solution, the customer was deeply concerned that the existing platform and services would hit a performance bottleneck which could be critical. Furthermore, if maintained in its current form the service would continue to fail, resulting in financial penalties which the customer would be contractually obliged to pay. These factors alongside the restricted capabilities from the current platform and lack of elasticity necessitated change.

1.3 What Solution did Sundown deliver?

Following the completion of the Enterprise-Wide View (AWAF) the Sundown team proposed a solution which was based around the design and implementation of a new solution which delivers enhanced elasticity, supportability, observability, refactoring, changeability, and portability.

The solution was underpinned by the following guiding principles:

Key Focus:

- Cloud First
- Build New – as opposed to modify existing where possible
- Refactoring SQL when & where necessary
- Rehosting windows servers & services on Azure
- Modular and Portable
- Zero Data Loss
- Simple way to replay transactions

- Elasticity – scalable up and down
- Simplification of supportability and testing
- Design for operation and security from the onset
- Single pane of glass view for the overall process
- Potential for use in other cities

There has been a need to standardise on:

- Test-Driven Development
- Coding templates e.g., exception handling
- Process and event monitoring message formats
- Individual process step and load testing
- Synthetic process monitoring
- Development standards that can be used by Vendors
- Operational procedures e.g., start/stop/replay/etc.

The legacy Middleware Architecture is underpinned by BizTalk Server & IBM Message Queue and is being replaced & refactored by Azure Service Bus / Azure Kubernetes Service (AKS) environment.

This solution employs a loosely coupled, microservice architecture (developed in .Net Core, JSON & XML based requests) to provide granular processing of the Client integration use cases. Where the constraints of the existing architecture of the wider platform allow, the solution adopts event-driven design patterns to maximise scalability and resiliency, and to enable end-to-end process monitoring – something not currently available to the customer.

To summarise, the solution's core structural components are defined as follows:

- Core module library – a .NET class library containing a set of APIs for common integration use-cases.
- Utility microservices – long-running services available via the message bus that carry out common functions, such as moving files
- Interface microservices – services that are responsible for using the core library, core microservices, or both, to service a specific middleware interface

- Service bus – will provide an asynchronous one-to-many message queuing service between microservices.

1.4 What Quantifiable Business Outcomes can we credit to this solution?

The solution has delivered a fully functional elastic environment. This solution future proofs the platform for the end Client, allowing the inclusion of planned enhancements over the next 2 – 3 years which will drive revenues for the client from c. £120M a year to over £350M (200% increase). It will also act as an enabler for offering this new solution to other regions both in the UK and beyond.

By virtue of the increased stability and performance afforded by the new solution, the customer has also been able to avoid contract penalties which would have otherwise been prevalent due to the legacy platforms' deficient performance and outages.