Google Cloud

DORA
DEVOPS RESEARCH & ASSESSMENT

BT

Winner

Leveraging loosely-coupled architecture

Recognizes successful transition from tightly coupled architecture to service-oriented and microservice architectures

About

BT Group Plc is the largest provider of fixed-line, broadband and mobile telecommunications services in the UK. The company also offers subscription television and IT services.

Challenges

Serving customers of all sizes across the United Kingdom and in 180 other countries requires BT to be nimble and efficient in a technologically complex environment. The company had a large legacy footprint of on-premises data infrastructure—one of the largest physical data stores in the UK— which presented a barrier to agility.

The challenges included:

- High costs for on-premises data estate
- Manual workflows that slowed responsiveness
- Inefficiencies and difficulties maximizing the value of its data
- Cumbersome deployment processes

The challenges reduced efficiency in providing data access to new users, slowed the initiation of new managed projects, made deployment more difficult, and decreased service reliability

Objectives

BT wanted to develop a low-cost, rapid, and flexible computing environment, and it recognized that service-oriented, cloud-based architecture was the best way to achieve this aim. A new data platform built on Google Cloud was an important part of this vision.

The specific goals of BT's efforts were:

- Automated, frequent deployments
- Real-time responsiveness to user requests
- Reduced cost structure
- Elimination of manual processes
- Logical data storage with greater discoverability

In this transformation, some 50 teams across BT would transition to Google Cloud. To achieve BT's goals, the team needed to create a seamless method of managing user requests submitted through its portal, onboarding new users, and abstracting common deployments to enable automated, repeatable workflows.

BT's Cloud Data Hub team achieved end-to-end automation of its project factory in **five months** and can set up as many as **420 managed projects**.

Solution

BT's Cloud Data Hub squad put in place key pillars for the next-generation data platform built on Google Cloud.

Among the main components were:

- **Project factory.** The BT team designed a fully automated, event-driven project initiation process that supports the company's large-scale adoption of Google Cloud. The factory automates the response to user requests through the team's portal, and it uses serverless architecture and container-based pipeline orchestration. BT took advantage of Google Cloud products such as [Cloud Functions](#) to build and connect event-driven services, [Pub/Sub](#) for messaging between applications, and [Cloud Scheduler](#) to automate tasks.

- **Abstraction framework.** The team developed an abstraction to facilitate specific cloud deployments. The resulting template offers high reusability and efficiency but still allows for customization to user requirements such as for policies and permissions.

- **Data storage.** Rather than use on-premises data storage, BT built a [Big Query](#) multi-cloud data warehouse, where previously fragmented information is logically organized. BT data scientists can now discover and make use of more data. In turn, this has led to more robust machine-learning models as well as [MLOps](#), automated continuous training of models, and deployment of model refinements using Google Cloud's [Vertex AI Pipelines](#).

The larger context for these changes was BT's shift away from monolithic architecture, which has improved flexibility, extensibility, and scalability. BT knew that moving to the cloud and [loosely coupled architecture](#) would improve resilience, decrease technical debt, and support automation. Loose coupling enables developers to reuse implementations and avoid custom integrations.

Components work independently without close orchestration. This lean architecture is the hallmark of modern computing trends such as microservices, containers, and APIs.

Results

BT's adoption of Google Cloud and loosely coupled architecture has had a profoundly positive impact. Speed, responsiveness, and agility have advanced significantly. The company's cloud solution removes manual work, streamlines project creation, and automates deployment.

Focused on serverless technology, BT is moving toward a fully automated NoOps microservices stack. The Cloud Data Hub team achieved end-to-end automation of its project factory in five months and can set up as many as 420 managed projects. **The team can respond to user requests in real time and create projects on demand. Previously, this took at least seven days**. Deployments are no longer stressful, large quarterly releases. Instead, high-frequency, small changes are the norm. This has improved service reliability and stability.

Microservices architecture has enabled the company to migrate its on-premises data warehouses to Google Cloud. Managed pipelines ingest data for putting machine learning into production, a first step toward real-time analytics.

A web application for managing services for 3,000 DevOps engineers has cut wait times for both engineers and business users and increased efficiency. New users gain access to data warehouses in hours with an automated approvals process compared to a month or more in the past. **The time required to allocate resources for networked computing has dropped by 200 percent. The internal survey (similar to NPS) for users of the service portal exceeds 70 percent satisfaction rating.**

Working with Google

Google's [Professional Services Organization](#), which provides technical expertise and guidance to customers on cloud implementation, supported BT's initiative. For example, PSO connected BT with Google specialists who gave advice on how to centrally manage project creation and shared code from a similar implementation.

To learn more about BT Group's successful project, [check out this video](#).