



## Case Study:

### TELUS Backbone Service Replacement and Cloud Migration

[telus.com](https://telus.com)



## Executive Summary

TELUS faced the critical task of replacing one of its core backbone services that had reached end-of-life, essential for supporting its national cellular network infrastructure. Don Milligan from Cloud Pathfinder Services Inc. was engaged as a senior consultant and architect to lead the design, implementation, and seamless migration of the service onto Google Cloud Platform (GCP). Don also provided mentorship to TELUS's cross-discipline architects who were transitioning into cloud environments. The project launched successfully, enabling TELUS to reliably support cutting-edge cellular technologies nationwide.

## Background

TELUS, one of Canada's major telecommunications providers, delivers a comprehensive array of wireless, wireline, healthcare, and digital solutions. Operating under Telus Corporation, its subsidiaries include Telus Communications Inc., Telus Mobility, Telus Health, and Telus Digital, collectively serving millions of Canadian customers across multiple sectors. Maintaining service reliability and cutting-edge infrastructure is critical for TELUS's ongoing success and competitive positioning.

## Challenge

TELUS required the replacement of a core legacy platform residing in an on-premise data center. The new solution had to run concurrently with the existing service, accessing shared network resources, and necessitated a flawlessly executed transition to avoid service interruptions. Complex network requirements and compatibility with third-party solutions presented substantial design and implementation challenges.

## Solution

Don Milligan developed a highly available, scalable infrastructure solution within Google Cloud Platform (GCP). His design effectively accommodated:

- A micro-service based approach
- Complex, niche IP protocols.
- Nested and wrapped HTTP sessions.



- A variety of required third-party vendor products

Don's network design uniquely solved sophisticated network challenges that GCP's out-of-the-box solutions did not address. Notably, despite alternative internal solutions being available, TELUS recognized Don's approach as more elegant and strategically advantageous, ultimately adopting his innovative design.

Using Terraform, Don automated infrastructure deployment, ensuring alignment with the latest CIS security standards and enabling rapid redeployment and auditable configuration updates.

Outside the main project, Don also contributed to separate initiatives leveraging Kubernetes Engine and Apigee in similarly specialized deployments.

## Implementation

Don led the infrastructure development using Terraform while also training some of TELUS's senior cross-disciplinary architects who were new to GCP regarding complex infrastructure requirements and cloud platform nuances.

A novel, highly available reverse load-balancing strategy utilizing HAProxy was deployed to direct traffic efficiently, surpassing the pre established single-point-of-failure solutions used elsewhere at TELUS.

During the QA phase, an unexpected week-long incident emerged due to an automated Red Hat security update causing RAMFS-related errors in production servers. Don's thorough investigation identified the root cause, proving it was not vendor error but an inherent issue stemming from the update. His diagnosis enabled a clear resolution path, ensuring project continuity and gaining critical stakeholder trust.

## Results

The successful implementation of the new backbone service allowed TELUS to seamlessly transition away from the legacy infrastructure. The new platform significantly enhanced TELUS's capability to reliably support next-generation cellular technologies across Canada.



## Client Testimonial

"..Don's inclusion in the project team had a very constructive impact on the project delivery. Don was the key architect of our cloud solution and he went the extra mile to ensure the robustness of our cloud solution. Don was an absolute pleasure to work with and we would have no hesitation in working with again for future projects.

Sincerely,

Habib Halabi  
Manager - Technology Strategy  
TELUS"



**\*\*A full recommendation letter from Habib is available upon request.**