



Customer Case Study

Industry: Government

Overview

The Canadian Space Agency's mandate is to promote the peaceful use and development of space, to advance the knowledge of space through science and to ensure that space science and technology provide social and economic benefits for Canadians

Challenge

In order to increase the precision of testing and qualifying the space-worthiness of satellites and other space-faring systems, the CSA's David Florida Laboratory (DFL) developed a specialized data acquisition system that acquires, monitors, records and analyzes passive intermodulation (PIM) and multipaction events. PIM can interfere with the operation of multi-channel high power communication satellite and terrestrial systems. Multipaction can result in RF vacuum breakdown, leading to component degradation and the eventual failure of a satellite in space. Both conditions must be accurately measured and analyzed to be effectively mitigated. The testing involves understanding measurements against strict tolerances. As data is produced at 200,000 measurements per second, CSA could not capture and store the data points and then query in a timely manner throughout a test. Their previous solution was only able to sample the data at intervals, creating a risk that of missing data that would highlight manufacturing flaws in a satellite.

Solution

CSA selected Infobright for its ability to compactly store hours of measured data in its entirety (200,000 rows of data per second per channel) due its industry-leading data compression capability. Infobright also enables users at CSA to run complex queries on large amounts of data, which has been highly effective in detecting the details of potentially harmful PIM and multipaction events.

"This [Infobright] solution permits real time compression, compact storage and quick retrieval of relevant data segments..What is especially significant is there was also an event where two distinct spikes were detected within the same interval, something that could not have been detected using the previous technology.

From the paper "A DATA ACQUISITION SYSTEM FOR MONITORING OF PIM AND MULTIPACTION EVENTS" authored by Louis-Philippe Girouard, Pierre Charron and Shantnu Mishra of the David Florida Laboratory, Canadian Space Agency