

Case Study:

DataServer migration delivers significant results for Asia Pacific operator

DataServer deployment provides backbone to efficient DTS data storage and workflow from collection to analysis and modelling

Well Data

Location: Asia Pacific Region

Well Type: Multiple

Original Installation Date: 2009

Migration Date: 2019



After using FloQuest 4 and DataHub for several years, an Asia Pacific operator elected to upgrade the software applications to their latest versions.

The Challenge

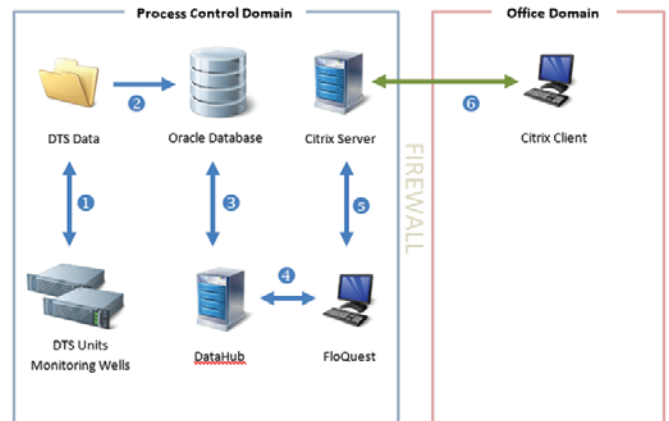
An Asia Pacific operator had been collecting well data and storing it within TAQA's legacy product, DataHub. One of the big challenges for the customer was the desire to eliminate Oracle and replace it with Microsoft SQL Server as a storage medium. In addition, the process by which DTS data flowed from the process control domain to the office domain was not only inefficient, but involved multiple systems that all needed to remain in sync with each other and required an overly broad security hole between the process control and office domain firewall.

TAQA Solution

Pre-Upgrade Architecture

The pre-upgrade architecture allowed access to the data by storing everything within the process control domain and providing a Citrix client connection from the office domain to a machine running the FloQuest software (detailed below).

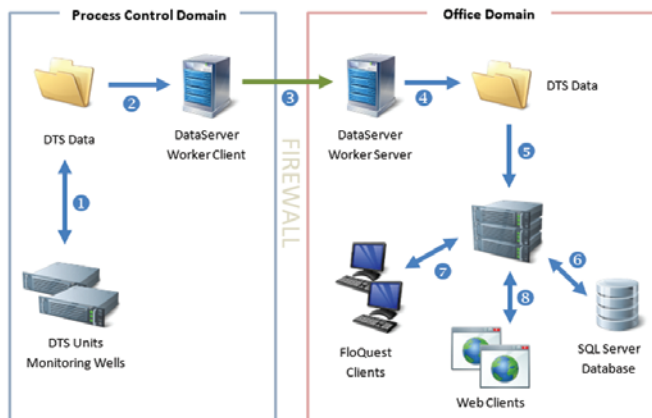
DTS units provide measurement data via one or more fibers which is stored on to a network attached storage device (1). Periodically a custom Oracle database script retrieves the files (2) and imports them into the database where the data is stored. DataHub makes use of a set of custom database views (3) that allows data to be fetched within a given date range for a specified fiber. FloQuest client software specifies



the date range and fiber ID to fetch the data via DataHub (4). A Citrix server located in the PCD provides a connection path between FloQuest (5) and users with Citrix clients (6) in the office domain.

New Architecture

The new architecture moves the data management and storage from the process control domain to the office domain, enabling better performance of client software and greater control over the data. The addition of a new transport mechanism allows the data to be pushed from the process control domain to the office domain via a secure connection (on the next page).



DTS units provide measurement data via one or more fibers which is stored on a network attached storage device (1). Periodically the DataServer Worker Client retrieves the files (2) and transfers them via a secure shell connection to the DataServer Worker Server (3) where they are stored on a network attached storage device (4) in the office domain. At a pre-determined interval, DataServer retrieves the files (5) and processes them per configured rules before importing them into the SQL Server database (6). FloQuest clients connect directly to DataServer (7) allowing queries for data from the database (6) that meet the requested criteria. Browser-based access to DataServer (8) enables remote administration of the server and data as well as high level visualization of trace information.

Migration

The entire solution started with installation of the new software and initial evaluation to ensure that the solution met the required performance, security and workflow goals.

Upon completion of the evaluation stage, a detailed analysis of the existing data was conducted and the new system was setup to reflect the desired data storage hierarchy.

Migrating the data from Oracle began with an analysis of the Oracle database itself. Due to there being limited customer knowledge of the inner working of the Oracle database structure and the scripts performing the work, the database structure needed to be replicated into a development database and back-traced to understand the way the database was storing and using information.

A process of importing original WITSML files from currently reporting wells into the development database provided a mechanism to compare data stored with the production database. Upon completion of the analysis, a custom TAQA application was used to export the data from the Oracle system for migration into DataServer.

After successfully importing the legacy data, the information was verified and live production data was directed to the new system. A stringent data review was performed on both the legacy data and new live production data being recorded before the old system and architecture was decommissioned.

Project Results

Completion of the project provided for some significant and impressive results.

Data from nearly 100 wells was migrated. The culmination of this data had produced over 2million measurement sets comprising nearly 6billion traces.

The entire project took approximately 3 weeks from the start of the initial analysis to completion of the migration.

During the migration, legacy inaccuracies of data were found in some wells and the migration process allowed the data to be correctly imported or for the traces that were affected to be identified in order that they would not be misinterpreted.