Asset Health Monitoring Using FDT IIoT Server - FITS™ & OPC Pub-Sub

Problem Statement

An oil and gas supermajor had deployed a central system to connect geographically dispersed plants to central headquarter. The plants were using automation systems from different vendors based on the older version of FDT technology on client-server architecture. Each system had its unique methodology to fetch the device health and diagnostics. Due to this mapping the data from a huge number of field devices into specific status categories was a non-trivial activity. Further, exposing critical field information to the IT applications was also challenging. Given a large number of sites (12) and a huge number of field assets per site, the central application was unable to cope with the load, leading to inferior performance and slow reaction to local site alerts and events.

Challenges

- Availability of critical device health information is uncertain
- The client application would often slow down due to heavy processing load
- The client application was often missing out on processing key alerts from the sites
- Proprietary algorithms used by system vendors not aligned with NAMUR NE107
- The current architecture was not scalable to add additional sites/devices
- Managing the custom automation system in the plants required time, effort, and money

Solution

Utthunga examined the underlying issues and offered the following solution:
- Deployed FITS™ OPC UA Server in dispersed plant locations
- Deployed OPC UA Publisher modules in the FITS OPC UA servers. This led to de-coupling of the sites servers and the central client application
- Deployed FITS Device DTMs to acquire device health status
- Linked the FITS OPC UA servers with the middleware (broker) hosted on MS-Azure
- Connected the custom plant applications with the middleware
- Upgraded the central client application with Subscriber module
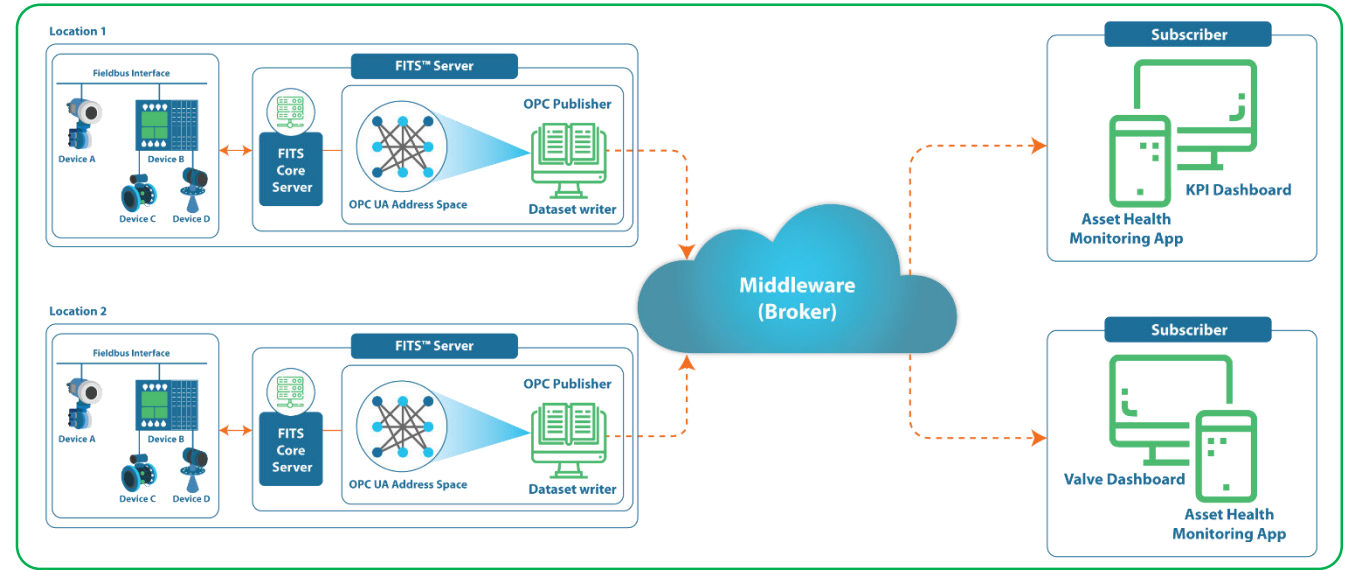
Benefits

- Improved asset life and optimized device cost with better maintenance
- Improved device performance since the device alerts were addressed as per the priories specified in NAMUR NE107
- Responding to all key asset alerts for immediate action
- Device DTMs made field asset health data available automatically to the broker
- No customization required for using any of the existing automation systems in the plants
- The architecture is highly scalable to support several additional pants/devices