

Seamless and secure data tunneling between systems in a leading oil refinery

Problem Statement

The client is one of the largest oil refinery in the world. The various functional areas inside the refinery continuously exchange operational data using the existing software applications. Majority of these applications use OPC Classic for communication. The backbone of OPC classic systems is the now deprecated COM/DCOM technology. The client was facing regular issues to maintain effective communication across the different networks. The client also wanted to future proof their systems and reduce the downtime during system upgrades.

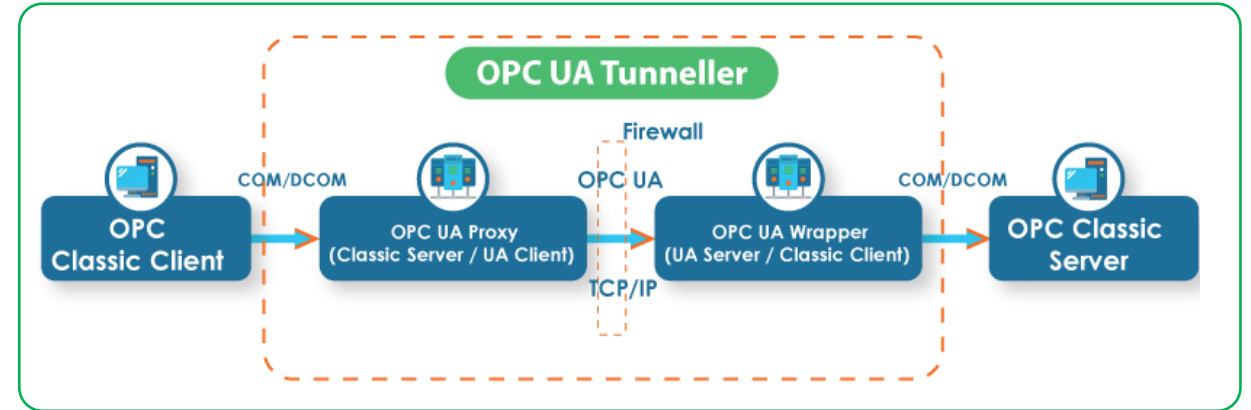
Challenges

- **Windows (OS) dependency of OPC Classic:** With every new OS patch/update, it was increasingly tough to maintain and configure the OPC Classic systems. DCOM is difficult to configure as it resets to the default settings whenever Windows is upgraded.
- **DCOM and security concerns:** DCOM has long and non-configurable timeouts. DCOM interface also requires the firewall to open multiple ports and configure numerous COM/DCOM permissions for the OPC based systems to communicate, leading to security threats for the entire architecture.

Solution

Utthunga delivered a robust solution using its **uOPC Tunneller as an alternative to DCOM** for effective communication between the OPC systems (clients and servers). uOPC Tunneller is a **combination of UA Proxy and UA Wrapper** working to ensure seamless communication across networks bypassing the troublesome DCOM. Solution components:

- OPC UA wrapper connects the OPC Classic server to OPC UA Client
- OPC UA proxy connects the OPC Classic client to OPC UA Server
- Leveraged OPC UA's built-in security algorithms with X509 certificate exchange along with user authentication and authorization
- Developed a custom user interface to configure the OPC Servers



Benefits

- OS updates or system re-boots no longer impacted connectivity across various systems and networks. This improved productivity and faster decision making.
- Elimination of time spent by engineers to configure/maintain OPC Classic based applications
- Avoided rip-and-replace of their classic OPC systems thus enabling substantial cost saving
- Future proofed their existing software systems for connectivity to external cloud based IIoT applications for analytics and remote visualization