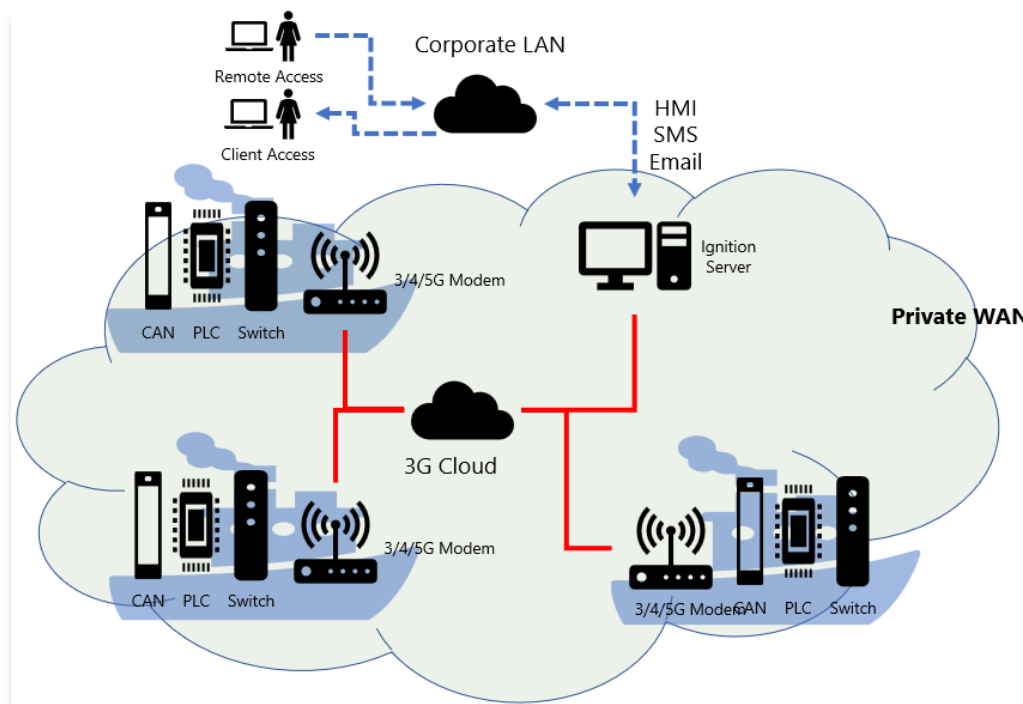


Marine Engine Monitoring

Our client operates an armada of twin-engine pilot vessels operating out of Sydney Harbour, Botany Bay and the open water around Sydney. They required a **cost-efficient** method of collecting engine data, cabin environmental data, analog alarms and assorted digital I/O. These data had to be available in near **real time** from the shore in good conditions but not lose data in the event of the WAN not being available.

The solution was to install an IP66-rated enclosure in the motor control panel housing protocol converters, I/O modules, control unit, data logger and 4G modem. **Security** was paramount, the modems connect to a private WAN with no internet capability and are additionally protected by being limited to a **single communications channel** to an on-shore Ignition SCADA server housed in the client's datacentre.

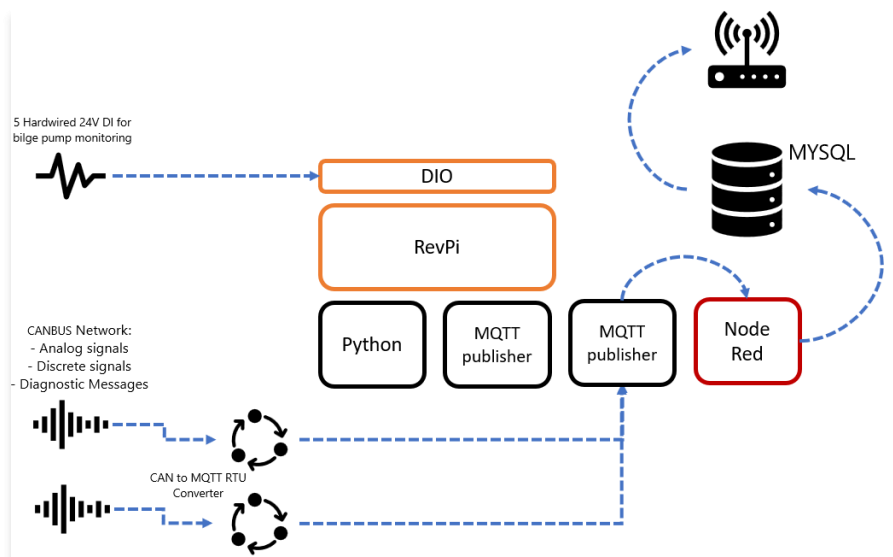
External connections for email and SMS alarming plus HMI access and SCADA are channelled via this central server.



The solution had to be as **open, flexible** and as **extendable** as possible, using off the shelf components. While the initial role out was across SCANIA DI16 marine engines the solution had to cater for different engines models and makes. The solution could not interfere with engine control and should be as passive as possible.

The solution was to interface directly with the engine CANBUS and capture the data flow between the engine control unit (ECU) and instrument co-ordinator. We then convert the raw CAN data packages to MQTT and capture them using Node Red running on a [ReviPi](#). Digital and Analogue signals are capture using RevPi expansion cards and passed into Node Red.

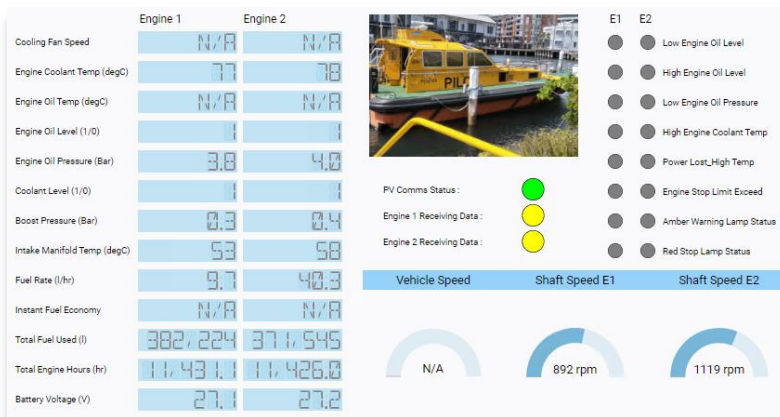
Marine Engine Monitoring



Pre-processing of data is done in Node Red before storing locally in a MySQL database therefore ensuring that there is no data loss in the event of WAN failure.

The central Ignition SCADA server polls the data and retrieves any new records. All data

manipulation (decoding, scaling) is done on the central server thereby keeping the load on the remote systems to a minimum.



The HMI is rendered using the Perspective Engine in Ignition 8 and accessed via a web browser.

