

The logo for GadgEon, with 'Gadg' in blue and 'Eon' in orange, set against a background of a modern glass skyscraper and a bright sky with clouds.

GadgEon

Engineering Smartness

BUILDING MANAGEMENT SOLUTION

April, 2020

Version 1.0

Building Management Solution



A pioneer health care provider in India was looking for a Smart Building Management solution that enables them to manage utilities like water, power, and data requirements for the different sections in their facility effectively

Solution Description

- Developed a building management solution for managing the water, power and data requirement of the entire building
- Integrated this solution with the existing HVAC system via BACnet protocol providing state-of-the-art climate control for the entire building
- Monitoring the facility's internet speed and switch service provider in case of performance degradation
- Ensured that there is no shortage of water by monitoring flow rates and operating specific pump sets constituting to the respective section.
- Generator's fuel consumption and coolant level are monitored
- Quantitative measure the facility's dependency on the installed generator set for auxiliary power requirements

Outcome and Benefits Delivered

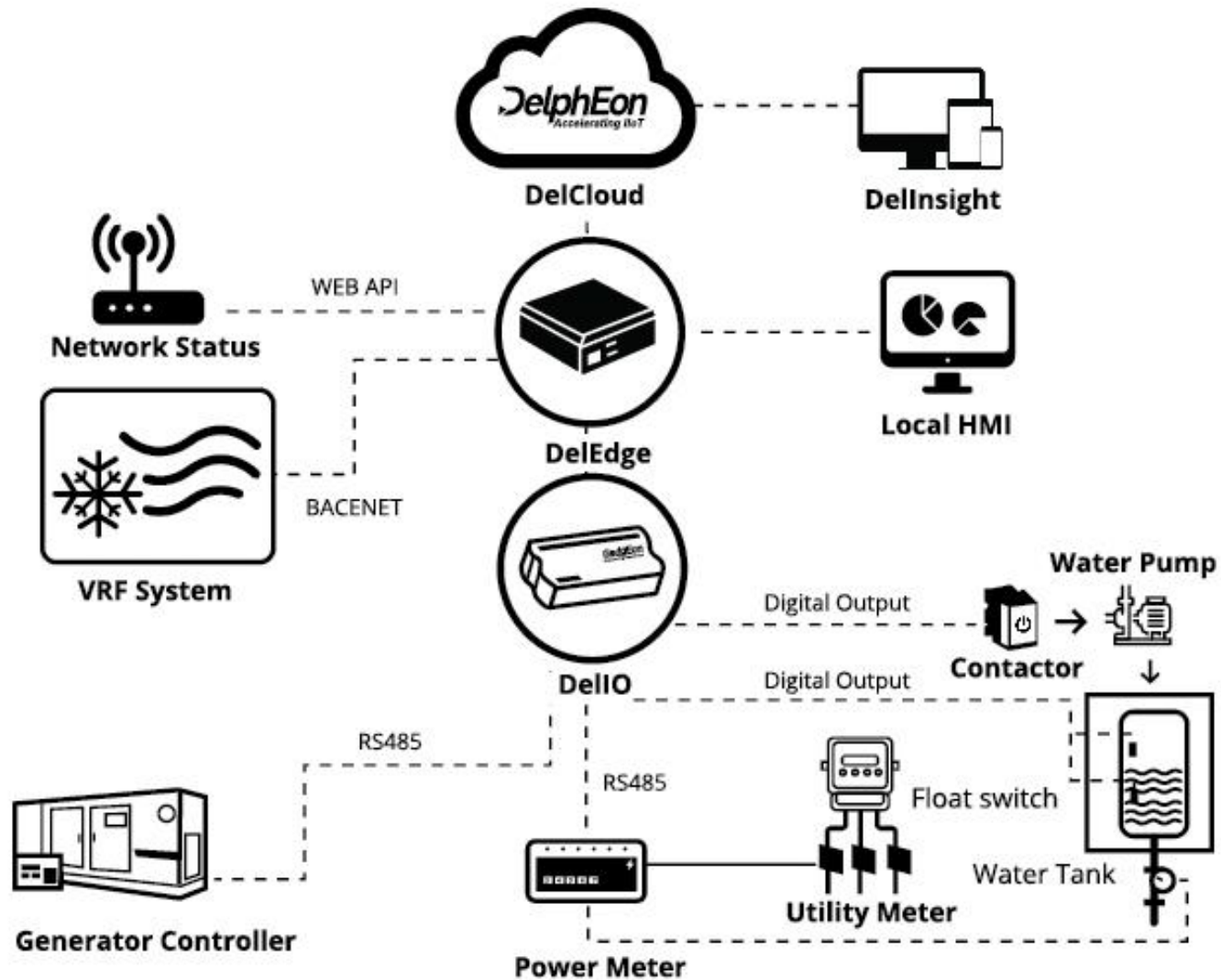
- Local and remote display of key parameters of the building, assisted the technicians and managers to analyse data with context, thereby reducing the time spent in responding to false alarms.
- The system prevented the burden on the power rails by preventing multiple water pumps being turned on simultaneously.
- Effective and simple dashboards enabled the managers to track important KPIs, spot trends and patterns in taking decisions effectively and efficiently
- Continuous monitoring of generator parameters helped to increase the machine's service life
- Automatic switching between best internet service provider helped to improve efficiency of entire system by 40%



Solution / System Description

- The solution could monitor and manage the water, power and data requirement of the entire building. The entire solution was integrated with the existing HVAC system via BACnet protocol providing state-of-the-art climate control for the entire building
- The whole facility's internet speed is continuously monitored and in case of performance degradation, switching of service provider is done automatically in order to connect to best available internet connection
- Generator's fuel consumption and coolant level are monitored to extend the machine's service life
- Ensured that there is no shortage of water by monitoring flow rates and operating specific pump sets constituting to the respective section. The system prevented the burden on the power rails by preventing multiple pumps being turned on simultaneously.
- Quantitative measure the facility's dependency on the installed generator set for auxiliary power requirements
- Local and remote display of key parameters assisted the technicians and managers to analyse data with context, reducing the time spent responding to false alarms and verifying parameter values
- Effective and simple dashboards enabled the managers to track important metrics, spot trends and patterns in taking decisions effectively and efficiently

System Overview and Flow Diagram





System Description

Gadgeon developed the complete system based on Delpheon platform.

DEL-IO Module

- Del IO module is an Industrial Ethernet IO module designed by Gadgeon, equipped with analog I/O, digital I/O and relay outputs offering a variety of options for data collection and machine actuation control. Del IO modules captures the data from various sensors like water levels in various tanks, power consumption of individual sections , flow rate from the tanks, generator set usage and makes this data available on the LAN.

DEL Edge Gateway

- Embedded Linux based Gateway application, communicates with DEL IO Modules and directly with equipment's on BACnet and instantly updates the values from the meters on the Local HMI. Sine the local HMI is on the LAN, there are no delays compared to the cloud application, which may take few seconds to provide the update. A technician can check the status of the system from the local HMI and take quick decisions to prevent service outages on the facility.
- DelEdge is easily configured to polling the status of the water floats, Modbus communication with the Power and Flow meters and control the VRF system through BACnet. Local HMI changes include charts for plotting the flow rate from water flow meters, Gauges to show power consumption and Indicators to show status of the water levels in the tanks.
- The gateway also monitors the networks internet connectivity and switches to an alternate service provider in case of network degradation.
- Functionalities including RabbitMQ based intra docker communication, MongoDB for storage of configuration and Signal R was reused from legacy DelEdge implementation.



System Description

Cloud Application:

- A customized DelCloud application pushes the events to cloud from the gateway via MQTT protocol.
- The DelCloud provide features like report generation, analysis and trend charts. Customised alerts were also designed to check for machine overrun and loss of internet connectivity .

THANK YOU



For More Details, Let's Connect



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