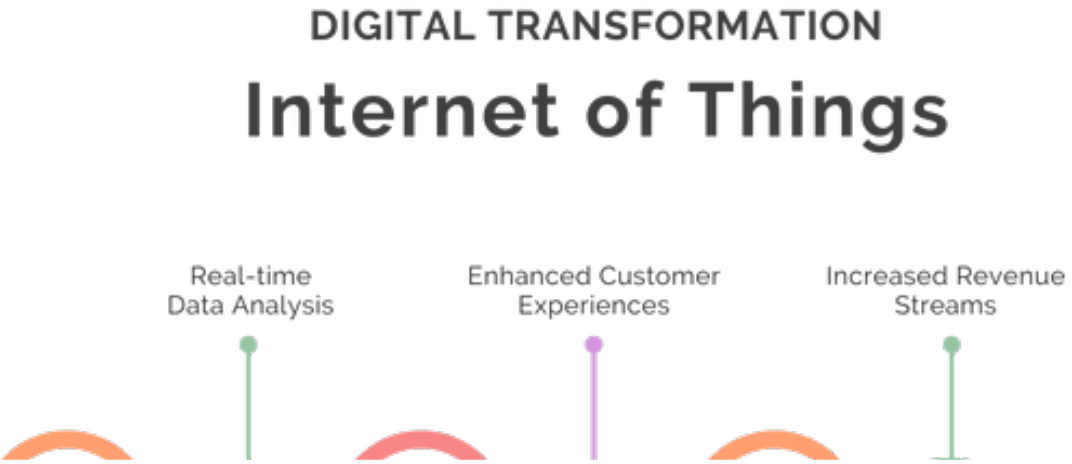

Case Study

India Based Client Gets Central level Monitoring of Wind, Solar & Hydro Plants - Cloud Integration

---

Client Overview:
We have global clients in the Renewable Energy sector - Power industry such as Wind, Solar & Hydro plants.

Problem Statement:
The power plant's infrastructure and data storage was entirely on-premises.

The following challenges were observed at the ends of the client.

- Need for high availability, scalability, security, and storage capacity.
- Need real-time data access and store it in the database (10 Secs)
- Need Web/mobile-based Visualization software.
- Need for Advanced data analytical tool for performance optimization.

Resolution:
It's a challenging project for us, requiring domain knowledge to understand the technology. All are Renewable plants, and wind + Solar + Hydro differ from one to another.

We have Domain expertise in the Power Industry and Internet of Things (IOT) as well. Our team tailored a comprehensive and structured solution to each client w.r.to their infrastructure.

Here are the following steps taken for cloud integration

- **Understand the existing SCADA architecture:** Collect the existing architecture of SCADA and view the list of components & fields available in the plant.
- **Complete Overview of network access and limitations:** To check the local LAN connectivity, Network devices, firewall blockings, and internet access.
- **Deployment:** Placed an Edge computing device to collect the data (OPC UA/OPC DA/Modbus/Modbus TCP IP) from filed components and push the data to cloud platforms Azure and AWS.
- **Internet Connectivity:** Based on the client & site level infrastructure, provided the internet solution to the edge device.
- **Data ingestion:** Data ingestion happens in AWS IOT Core / Azure IOT HUB cloud platforms.
- Data process in the cloud: Based on the type of the plant, we have defined dedicated architecture for the Data process.
- **509 Certificates management:** AWS & Azure issues a unique set of X.509 certificates, which are used

to authenticate the connectivity with the Edge devices mutually.

- **Data visualization:** Inhouse developers and using BI tools developed the screen to visualize real-time data(near)

Client Benefits

- After Cloud integration, the client has high availability, scalability, security, and storage capacity.
- All plant data is integrated and configured in a cloud environment, and data is available in cloud storage. Anyone can easily access the data using the services available in the cloud.
- Developed Web-based + mobile-based dashboards.
- Prepared a set of dashboards using the BI tool where we can see performance loss + improvement areas