Marlabs Case Study

Industry : Energy and Utility

MARLABS Innovation
Customer Success = (excelling employees)

Consumer Driven Energy Management System for Effective Demand Response

The Need

Dwindling energy sources and rapidly increasing energy demand necessitate that utilities innovate by transitioning to a digitally controlled smart grid.

Utilities need to implement demand response systems as part of the overall smart grid.

Marlabs Solution

Marlabs built a next generation demand management solution that lowers peak energy consumption in the electric grid. Consumers set the turn-off schedule for key home devices. Utilities use this schedule to achieve targeted savings as and when needed.

At each household, a gateway controls home appliances – both temperature based devices (such as HVAC systems) and binary devices (such as the hot water pump) – through individual device controllers. Smart meters store meter readings data. The Zigbee protocol is used for wireless communication between device controllers and the gateway.

Customers log into the solution portal and set their personalized energy management profiles through a user-friendly wizard. A dashboard displays current settings. The application communicates the profile to home gateway devices. Each gateway stores this data and sends instructions to device controllers which perform corresponding actions. Actual energy usage data is transmitted back to the portal.

Utilities track load and energy usage in near real time. For the purposes of control, houses are divided into groups. Estimated power available and the total power savings possible from an individual group are computed and displayed.

In its normal mode, the system performs energy management functions as per the pre-set consumer schedule. Bills management functionality enables bill amounts to be controlled within tolerance limits. Consumers can set desired comfort levels and achieve year round savings in energy bills.

When the utility needs to save additional energy, the system can increase conservation beyond pre-defined levels. With a Google Maps interface, affected groups are dynamically displayed. By enabling end-to-end energy management, the solution achieves effective demand response.

Client:

Energy Management Solutions Provider

Technology Platform:

- *IBM DB2 UDB*
- *IBM WebSphere MQ Broker/Server*
- *IBM WebSphere Application Server*
- *IBM Tivoli*
- *IBM Really Small Micro Broker*
- *Net-SNMP*
- *Embedded Development on Atmel Processor*
- *Zigbee Protocol*

Benefits

- Consumers take control of energy usage
- Lowers energy costs
- Improves demand forecasting
- Creates a virtual peak power plant
- Promotes green renewable energy
- Improves efficiency and stability of the grid

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