Smart metering is transforming the utility industry globally and Victoria is the first state in Australia to give the go-ahead for the wide spread roll-out of smart meters. This initiative will put 2.2 million homes and 300,000 businesses at the forefront of this global change.
Smart meters are being rolled out to all Victorian households and businesses over the next four years. This will enable consumers to monitor power consumption and utility retailers to implement pricing tariffs that will incent consumers to reduce power use. Recognised globally as an early adopter of this new technology, energy company Powercor Australia and Citipower (PCP) called on a long-time relationship with CSC for the design and deployment of this technology.

As the largest power distribution company in Victoria, PCP manages the supply of power to 1.1M households and businesses across Western Victoria and Melbourne CBD. PCP commenced deployment of the smart meters in October 2009 and will complete deployment to all consumers by 2013. Smart Metering underlying technology - also known as Advanced Metering Infrastructure (AMI) - will provide two-way communication between the electricity meter and the power distributor company, making more immediate information about electricity use available to consumers and utility companies.

PCP engaged CSC to develop system architecture, establish and manage the technology integration layer, provide security assurance and contribute to the overall planning and management of its AMI program.

**TRANSFORMATION CHALLENGES**

The AMI is a major initiative and it was clear from the outset that the Smart Metering rollout would significantly alter the utility business and technology environment at PCP. Success would depend on the introduction and deployment of not only the metering infrastructure and communication technologies to capture and monitor power consumption data, but also the integration with existing operational and enterprise systems.

Legacy systems needed to be transformed so that outage, billing, meter management systems and business functions could make use of large volumes of more descriptive data being captured and processed in 30 minute rather than three month intervals. Collaboration was key as an AMI program requires co-ordination of multiple solutions and vendors to deliver a single enterprise wide solution. PCP’s program included vendor partners, such as smart meter manufacturers Landis+Gyr and PRI Australasia and Silver Spring Networks providing network infrastructure, communications devices and software that would connect the smart meters to PCP’s core business systems.

Like other major industry transformations, such as ATMs within the banking industry, PCP had to consider wide spread business and technology challenges, specifically:

- Infancy of AMI industry solutions and their application within an Australian context would impact vendor and product selection and integration
- Absence of any benchmarks upon which to base business cases, financial analysis or funding submissions
- Increase in the number and complexity of application integration points as data capture is automated, data correlation is enhanced and meters are managed remotely
- Increase in the volume (and type) of consumption data creating new requirements for data storage/recovery, system performance and data management
- Expansion of security and privacy requirements as consumer data is collected by IP enabled devices within households and transmitted across wireless networks to the utility company
- Revision of business continuity requirements as cycle times for processing and exchanging information with third parties increased

**AN INTEGRATED AMI SOLUTION**

In identifying these challenges, PCP reached out to CSC for assistance in managing the technical integration layer, developing architecture design, ensuring security and business continuity standards were met and contributing to the program management and planning functions.

“**CSC WAS ABLE TO ASSESS THE CURRENT SITUATION AND MAKE RECOMMENDATIONS ABOUT DESIGN AND IMPLEMENTATION, WHILST LEVERAGING OFF THE EXISTING RELATIONSHIPS PCP HAD WITH THIRD PARTY TECHNOLOGY VENDORS – SO NOT REINVENTING THE WHEEL.”**

Ian Williams, IT Infrastructure Manager, Powercor

**INTEGRATION**

CSC established an Integration Competency Centre (ICC), to manage the integration of PCP’s new AMI and legacy enterprise systems. The ICC provided an organisational structure, architecture framework, development standards, vendor management and single point of accountability for all application integration activities. The integration team clearly defined integration responsibilities and exercised strong vendor management on behalf of PCP to ensure compliance across all application teams and optimisation of the integration layer.
Together, PCP and CSC adopted a pragmatic approach to application integration and employed integration technology (based on Oracle SOA suite) to meet the program objectives.

ARCHITECTURE

Taking the lead in systems integration for the AMI program, PCP pursued a hosting model not previously used for the AMI technology suite and set precedents in deploying the selected technology to Australian industry requirements.

In constructing the AMI system architecture, CSC applied its long standing experience in the design and development of technology for PCP, overcoming a number of architectural design challenges, including by:

- Mapping business functions to the application landscape to confirm completeness of the solution and drive business process transformation
- Defining data requirements and an infrastructure solution to accommodate the storage and use large volumes of time-based metering data
- Performance testing of the integration layer
- Network design for the wireless SSN communication solution

CSC now hosts the AMI solution for PCP and manages all supporting infrastructure.

PLANNING AND PROGRAM MANAGEMENT

With the AMI program touching almost all systems and functional units within its utility business, PCP drew on CSC’s project management experience to assist in the development of program management office governance, reporting and collateral.

In the course of this, CSC identified the requirement to bolster Release Management capability for the program and provided recommendations to establish necessary processes and structure to service AMI and future projects.

AMI programs require government funding and a level of due diligence and independence is required in constructing financial models and submissions to government. As a trusted partner, CSC assisted PCP in completing financial models, business cases, and government submissions and reporting for the program as well as to PCP’s financial planning.

Drawing on its understanding of PCP working culture and organisation, CSC continues to lead many PCP projects and initiatives involving staff from PCP, CSC and third party vendors.

DISASTER RECOVERY

With the overhaul of PCP’s legacy systems and the introduction of new solutions, it was important that the integrity of the disaster recovery capability was not compromised. Having been responsible for PCP’s disaster recovery program for several years, CSC performed extensive review and revision of the infrastructure and application disaster recovery strategy, plan and processes to ensure compliance to regulatory standards.

SECURITY

The implementation of smart meters introduces numerous threats that previously did not exist with mechanical meters on legacy distribution grids. PCP engaged CSC at an early stage to help assess security risks, develop an ongoing information security management system, and validate the effectiveness of existing security controls.

CSC implemented the full suite of its AMI Security Program to provide a holistic approach to the entire AMI implementation, from the selection of a vendor, to the development of an ongoing operational security program. Based on identified security risks, it created a risk assessment of the proposed solutions from each smart meter vendor.

During the implementation phase, CSC performed an end-to-end risk assessment of the new AMI technology solutions, including hardware testing in its AMI hardware testing laboratory, and a review of proposed operational procedures. From this review, a series of security approval criteria and KPIs were identified to ensure secure implementation and operation of the AMI solution.

“SYSTEM RELIABILITY, CONSUMER PRIVACY, NETWORK INTEGRITY, INTERCONNECTIVITY AND THE INTEGRATION WITH CRITICAL BACK OFFICE APPLICATIONS ARE FAR MORE VULNERABLE NOW THAN WITH TRADITIONAL METERING SYSTEMS. PCP RECOGNISED THAT WITH PROPER PLANNING AND STRATEGY, THESE RISKS CAN BE EFFECTIVELY MITIGATED TO AN ACCEPTABLE LEVEL.” Chad Alpert, Principal Security Consultant, CSC Australia

A TECHNOLOGY FRAMEWORK DELIVERED

With its AMI program, PCP has established a technology framework upon which the marketplace and regulators can introduce Smart Metering solutions, appliances and pricing that will change the shape of power consumption within Victoria. PCP now has a firm base from which to explore technologies to further optimise their power distribution and management.

“CSC PLAYS A VITAL ROLE IN ENSURING OUR 24*7, MISSION CRITICAL, ‘MUST BE ON’ IT. THE AMI PROGRAM IS COMPLEX STUFF AND THE CSC PEOPLE INVOLVED WORK IN BOTH OUR INTERESTS, ARE VERY BALANCED AND FAIR AND ABOVE ALL, WE SEE THEM AS THE EXPERTS IN WHAT THEY DO - THEY DON’T LEAVE ANY PROBLEM ON THE TABLE.” Glen MacLean, CIO, Powercor
Specifically, the program has brought PCP:

- Robust middleware platform and capability to effectively manage application integration
- Scalable and secure architecture upon which downstream technology solutions can be deployed
- Program management capability and methodology to scale for future technology challenges.

The AMI program is testimony to PCP’s reputation as market leader in the application of technology for the power utility industry.

“THE PROGRAM COMMANDS THE DELIVERY OF ENORMOUS AMOUNTS OF INFORMATION AND THE ACCURACY AND TIMELINESS OF INFORMATION IS A CHALLENGE. ENSURING THAT OUR DATA MANAGEMENT PROCESSES ARE FAST, RELIABLE, SUSTAINABLE AND EFFICIENT WITH MINIMAL ERRORS AND INTERVENTION HAS BEEN A KEY FOCUS. OUR BUSINESS PROCESSES AND KEY IT SYSTEMS HAVE UNDERGONE TRANSFORMATION TO MEET THESE NEW DEMANDS.”

Peter Bryant, PCP Smart Meter Services Division General Manager, extract from Energy Source & Distribution Nov/Dec 2009.

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CSC’S AMI SECURITY PROGRAM

Today’s utilities face orchestrated, intelligent threats that must be handled by an integrated and fully coordinated security approach, extending throughout the business. Compliance with evolving regulations and standards is an adaptive, iterative process, thoroughly ingrained into daily business operations. Proper assessment practices and tools and effective mitigation of security risks must be considered at the very earliest stages as well as during the deployment of an AMI program.

CSC provides a variety of security services for major energy and utility companies in North America, Europe, Australia, and public sector clients including the Department of Energy’s Strategic Petroleum Reserve.

Our Protected Enterprise solution is a complete suite of risk and security services to assess and protect the enterprise. It combines the business expertise of our information risk managers, utility and public sector expertise with an extensive set of technical capabilities across a wide range of systems and platforms.

Our global Security Solutions practice comprises over 1,200 security professionals with a wide range and depth of skill sets across every major industry segment as well as U.S. federal agencies and state and local government. In addition to maintaining a leading Security Center of Excellence, we maintain a variety of security labs in all major regions.

1. CSC is Powercor’s prime provider of infrastructure outsourcing services:
(Midrange, Backup, Exchange & Messaging, Network, Security Services, Disaster Recovery)

To find out more about how CSC can help your organisation, please visit www.csc.com.au or email talk_to_us@csc.com.au

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