MEETING TODAY'S GROWING NEED TO UNDERSTAND ENERGY CONSUMPTION

Meter Data Management (MDM) web service helps utilities do more with smart metering data

White Paper

Abstract/Introduction

There is growing pressure on the natural gas industry to deliver more energy, increase profitability and minimize financial losses. At the same time, it is important to reduce operating expenses (OPEX) and tightly control capital budgets.

Utility companies must obtain accurate and timely energy consumption information. They're also looking for robust, customizable analytical tools to support smart metering. There is a need for advanced technology that will provide real-time access to critical meter data.

Gas industry organizations require a solution for collecting data remotely from field devices to accurately determine customer usage, and for supplying alarms and event notifications to field technicians.

The objective of this whitepaper is to examine how leading suppliers of Meter Data Management (MDM) technology are integrating advanced, field-proven data acquisition and communication technologies into state-of-the-art, Internet-based e-business and energy management platforms. Leveraging the power of the Industrial Internet of Things (IIoT), a hosted, subscription-based data services solution provides interval meter data (load profile) and, optionally, device alarms and gas system pressure data through an intuitive and interactive web portal.

Energy utilities can employ a hosted data services solution for gathering, processing and storing all types of meter data – helping utilities deal with rising data volumes and succeed in a changing industry. This service is a cost-effective alternative to maintaining an in-house MDM capability for many smaller firms.

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Background

With demand for natural gas on the rise and aging pipelines needing to be replaced, utilities are looking to the Industrial Internet of Things (IIoT) to evolve the industry. Smart gas solutions promise near real-time data and better visibility that can help transform gas systems.

The world is evolving at a rapid pace. Resources and budgets are increasingly limited, and consequently, energy utilities need to do more with less. They must connect as many data points as possible to make good decisions.

A growing number of energy utilities are undertaking smart grid initiatives in order to meet regulatory and political requirements, increase service reliability and manage user demand, plus provide programs to empower customers.

The basis of the smart grid is implementation of an Automated Meter Reading (AMR) or Advanced Meter Infrastructure (AMI) solution. These technologies provide a wealth of reading, usage and event information.

Making Sense of Complex Operations

To maximize the benefits of AMR/AMI investments, a Meter Data Management (MDM) solution should be implemented. MDM software systems are designed to perform long-term data storage and management for the vast quantities of data delivered by smart metering systems. This data consists primarily of usage data and events that are imported from the head-end servers managing the data collection in AMR or AMI systems.

A modern MDM system will typically import the data, then validate, cleanse and process it before making it available for billing and analysis.

MDM systems not only enable utilities to understand overall energy consumption, but also determine the health of their assets and the overall state of their metering system. They are essential for integrating a complex collection of gas transmission and delivery systems. Whereas it was once difficult to obtain detailed usage data, even within the utility, an effective MDM solution makes it possible to provide any authorized user with relatively easy access to crucial energy consumption information.

Gas companies need an effective Meter Data Management (MDM) solution that requests or collects, validates and processes data (e.g. consumption data or events and alarms) and shares this information with applications such as billing systems or data analysis.

Challenges with Data Infrastructure

As the demand for interval smart meter data (i.e., data collected at defined intervals) becomes more prevalent, it brings with it massive amounts of information that utilities must be ready to manage.

Even without smart grid investments, energy providers struggle with managing data volume from existing systems: SCADA systems, grid sensors, data historians, outage management systems, weather monitoring systems and market data.

Many utilities are now seeking alternatives to in-house staffing by outsourcing information technology (IT) functions to third-party providers that offer proven innovation while supporting the infrastructure to enable an extra value-add to their utility customers.

Moving Smart Metering to the Cloud

Within the energy transmission and distribution sector, there is an upward trend in utilizing cloud-based Software-as-a-Service (SaaS) models to enable utilities to lower IT costs by paying only for what they use, enjoy seamless and painless upgrades in functionality, and integrate easily with existing data and systems.

MDM via the cloud is a significant strategic initiative for gas industry firms, ensuring operational simplicity and reduced costs. No longer are utilities required to invest in upgrades and replace their legacy systems with in-house solutions.

The current SaaS model includes software supported by the provider's data center, infrastructure (e.g., network, servers and storage) and IT operations (e.g., network, servers and database administration).

By partnering with dedicated technology companies for software innovation, utilities are free to do what they do best: manage the grid and the customer relationship. Hosted, subscription-based data management services help utilities focus on their core competencies, while relieving IT burden and reducing their spending on software infrastructure. Additionally, the lower initial costs and built-in support add value for utilities of any size.

Web-based Tool for Data Management

Leading MDM technology suppliers such as Honeywell are now integrating advanced, field-proven data acquisition and communication technologies into state-of-the-art, Internet-based e-business and energy management platforms. Leveraging the power of the Industrial Internet of Things (IIoT), Honeywell's hosted, subscription-based data collection/delivery solution, Total Data Services (TDS), delivers interval meter data (load profile) and, optionally, device alarms and gas system pressure data through an intuitive and interactive web portal.

The new breed of web-based hosted data services solution provides all the basic pulse and serial data acquisition necessities, 24x7x365 access to energy consumption and pressure information, the latest communications technologies, and timely notifications of field events. For many smaller utility firms, this solution is a cost-effective alternative to maintaining an in-house MDM capability.

Innovative data services solutions like Honeywell's can be paired with advanced data collection software to bring the power and flexibility of Microsoft's SQL Server for data management and remote monitoring, and provide the database needed to generate reports, billing data and alarm notifications.

Thanks to this approach, utilities without dedicated IT infrastructure can realize new levels of productivity and efficiency in their gas operations:


With a web-based hosted data services solution, users can view interval meter data, device alarms and gas system pressure data via a web portal.

- Achieve near real-time reporting of interval meter data and exceptions
- Improve energy portfolio management, including more accurate nominations for marketers and traders
- Produce hourly, daily or monthly usage reports and compare them to previous periods
- Implement demand-side management and energy conservation initiatives
- Identify abnormal energy usage to improve operating efficiencies and reduce costs
- Enhance cost-based accounting allocation procedures by more accurately pricing products or services based on actual energy consumption

The hosted data services approach enables comprehensive gas consumption data to be collected electronically and used to generate various types of reports, which provide different snapshots to analyze customer gas usage.

For example, operations personnel can receive hourly, daily or monthly usage reports and compare them against previous periods. The services support demand side management and energy conservation initiatives. They enable utilities to identify abnormal energy
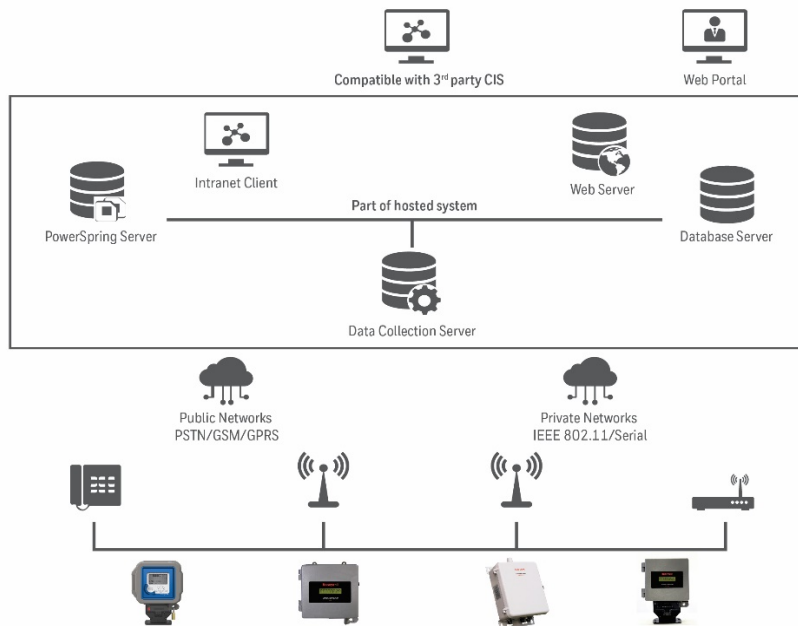
usage to improve operating efficiencies and reduce operating costs. Moreover, they can enhance "cost-based accounting" allocation procedures by more accurately pricing products or services based on actual energy consumption.

This solution also is key to developing more effective energy curtailment strategies. Users gain access to meter data together with weather information, commodity data and industry news directly on their desktop via a secure, customized web page, email or FTP site.

Increase Availability of Asset Information

Honeywell and other MDM technology

developers continue to enhance their hosted data services solutions with new capabilities

for gathering, processing and storing all types of meter data – helping utilities deal with rising data volumes and succeed in a changing industry.

For example, implementation of a notification control center (i.e., an add-on module to data collection software) enables utilities to issue real-time email or SMS messages with notifications to keep personnel up-to-date on any alarms, events or changes to meters. These notifications can be configured based on a "watch list" for individual technicians or an entire maintenance/service group. Users can monitor alarms from multiple metering instruments – as well as all alarms configured in the instrument – with a single comprehensive view. The system may also provide a dial-out capability for instruments configured in the data collection software for fetching information for diagnostics.

An NCC module is typically used for asset maintenance and pressure monitoring of critical equipment.

With this approach, users can obtain electronic operational and device data that eliminates the need for outdated paper charts and manual readings.

Honeywell's TDS is an "IIoT-Ready" solution providing small to mid-size utilities and other customers with an MDM web service without the enterprise cost.
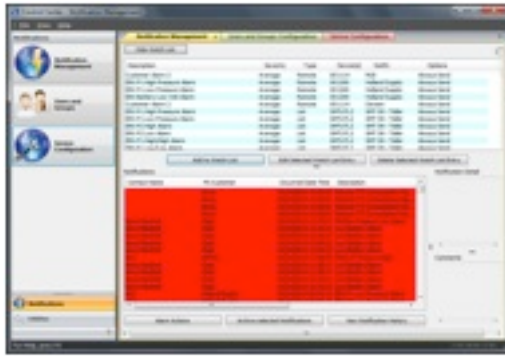
Notification Control Center for issuing messages regarding alarms, events or changes to meters.

In addition, backhaul of data into the data collection system makes it possible to relay and manage collected information, and provide it for secure viewing by marketing and end users.

Benefits to Energy Utilities

The latest "IIoT-Ready" data collection and delivery solutions provide small to mid-size utilities with a robust MDM web service without the enterprise cost. The service optimizes operational performance using accurate data to drive business process efficiency across multiple systems. Companies can manage massive data sets while streamlining IT processes. Plus, they're able to maintain data consistency and accuracy throughout all meter-to-cash operations.

Hosted data services users can also leverage data to drive peak performance throughout the maintenance organization – extending the life of meter and network assets with automated service orders. Information is available to proactively detect leaks and theft, and it becomes easier to synchronize interval consumption channels on smart meters.

The specific benefits of this solution to energy utilities include:

- Save time and money due to limited upfront and ongoing capital investments
- Reduce workforce and operating expenses
- Ensure reliable disaster recovery and redundant storage of key information
- Focus technology budgets on competitive advantages rather than infrastructure
- Scale deployments of end points for maximum efficiency
- Support analog telephone and cellular data loggers
- Employ serial connectivity to electronic gas volume correctors
- Implement standard smart metering alarms and system pressure monitoring
- Rely on robust data security and reliable IT infrastructure

Conclusion

A growing number of utilities are seeking to engage and secure a partner to provide them with services in meter data collection and delivery. The goal is to simplify, automate, and have real-time access to remote field collected information.

Utilities are embracing managed services in increasing numbers to take advantage of lower and predictable operating costs, reduced executions and operating risk.

For More Information

Learn more about Honeywell's Total Data Services (TDS), visit www.honeywellprocess.com or contact your Honeywell account manager.

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