



OpenWay®

Collection Engine

In this new energy economy, interaction between the utility and consumers has moved beyond collecting simple data at the meter and sending out a bill at the end of the month. Millions of meters are collecting more detailed data—data that can be used in a host of new applications to empower consumers, conserve energy and improve back-end utility processes.

In the OpenWay solution from Itron, the OpenWay Collection Engine acts as the centralized hub between the metering system and utility processes such as meter data management, billing, outage management, distribution automation and load control.

In OpenWay, Itron's smart grid solution, the OpenWay Collection Engine manages high-volume, secure communications to the meter population, including reads, disconnect, and Home Area Network (HAN) operations for your utility. It also manages device configuration attributes and firmware downloads directly to OpenWay CENTRON® meters and gas modules, allowing you to add new features and functionality over time as your smart grid vision and needs evolve.

With the OpenWay Collection Engine, utilities benefit by:

- » Collecting five-minute interval data for traditional Load Profile, Voltage Monitoring, and Instrumentation Profile in support of VVO and identification of theft/diversion
- » Supporting time-of-use (TOU) data at the meter or through back-office TOU at the MDMS
- » Supporting retrieval of site diagnostic information for advanced polyphase meters used for C&I customers
- » Future-proofing the smart meter through firmware downloads and configuration updates to network devices, meter, and gas endpoints while maintaining normal operations
- » Supporting IPv6 addressing down to the smart meter on the larger multi-application network for the smart grid
- » Empowering utility conservation programs to affect consumer behavior through participation in demand response and HAN pricing programs
- » Enabling demand response programs using Service Limiting to the meter or the Home Area Network with Zigbee®
- » Supporting operation of the disconnect switch remotely, including verification of position and checking for the presence of load side voltage for safety/theft detection
- » Simplifying IT integration and affording a lower total cost-of-ownership through open standards and enterprise application integration
- » Leveraging operational lessons learned, after managing over 10 million deployed endpoints in production and scaling systems up to 5 million endpoints
- » Supporting parallel OpenWay mesh, Direct Connect cellular, and alternate communication technologies for optimal network coverage, throughput, and usage

FEATURES AND BENEFITS

Advanced Metering Operations

OpenWay and the Collection Engine were specifically designed to securely manage two-way communications to millions of meters for interval data collection and to facilitate customer conservation efforts through demand response. The Collection Engine has built-in retry logic to complete read requests and also support integration with upstream systems, such as the MDMS, for additional retry solutions. With the OpenWay Collection Engine, utilities can:

- » Track and update various meter configurations used in the field—this information is stored, versioned and available upon request from asset management systems

- » Collect up to a total of 29 channels of Load Profile data across polyphase meter forms, including 11 traditional load profile channels and up to 18 channels under Instrumentation Profile and Voltage Monitoring by phase
- » Collect up to a total of 14 channels of Load Profile data across single phase meter forms, including four traditional load profile channels and up to 10 channels under Instrumentation Profile and Voltage Monitoring by phase
- » Eliminate field visits for firmware and configuration updates through over-the-air changes for meters, communication cards, and gas endpoints
- » Implement advanced gas reading modes for retrieving 40 days of daily registers and 24 hours of hourly interval data from the 2.4GZ OpenWay Gas Module
- » Allow pinging of meters in support of outage operations
- » Enable flexible session- and sessionless-communication options with the ANSI C12.22 application standard for metering communications
- » Support multiple WAN communication methods such as IP-based public and private networks and power line carrier
- » Support for non-Itron smart meters

Security

OpenWay's security architecture is based upon a security model that emphasizes the integrity of control, availability and confidentiality needed for two-way command and control of AMI systems using asymmetric cryptography for application layer security, in addition to any network layer security.

The Collection Engine offers an integrated security approach, leveraging Certicom® 7000 series security appliances for securing network communications that offer command and control capabilities. This approach is designed to address

utility critical cyber asset classifications and provides security controls that comply with NSA Suite B cryptographic requirements. The Collection Engine also offers advanced WS Security policies for securing communications and data transfers to other utility systems.

The Collection Engine supports a robust Web service security model that secures integration with other systems, as well as security configurations for authentication and authorization using user-level credentials or security tokens such as WS-SecurityPolicy, WS-Trust and WS-Federation and token profiles (Kerberos, SAML).

Key security features of the Collection Engine include:

- » Support for NSA Suite B cryptographic requirements
- » Integration with Certicom AMI 7200 key management appliance for key management and key rollover events
- » Integration with Certicom AMI 7100 Signing and Encryption Server for downstream network communications, using private and public key encryption for confidentiality and integrity of control of communications
- » Integration to support a standalone or enterprise Security Event Monitor to monitor, filter and alert utility to potential security attacks
- » Active Directory and role-based security
- » Support for securing the C12.18 optical port with a time-based credential for restricting access to meters in the field, known as Signed Authorization

IT Operations and Environment

Because advanced metering infrastructure (AMI) and smart grid applications have enterprise-wide implications, the Collection Engine was designed specifically for deployment within a service-oriented architecture (SOA). The Web services-based design of the Collection Engine

allows for simplified integration with any application within the IT enterprise.

Additional business value benefits of a true SOA platform include:

- » Allowing business functionality to be managed closer to the business units
- » Leveraging existing investments in technology
- » Reducing reliance on expensive custom development

Ease of integration to current IT infrastructure:

- » Windows Management Instrumentation (WMI) to publish application management data
- » IBM Tivoli® and HP OpenView™ to support integration into existing IT infrastructure
- » OpenWay dashboard provides an out-of-the-box view of application and system health for operations team to augment traditional IT monitoring of the datacenter resources

The Collection Engine offers additional features and benefits to IT operations in the areas of integration, system availability and failover, security and scalability. The open architecture is extensible to not only support future metering platforms but also smart grid applications.

System Availability

The Collection Engine architecture is designed with high system availability of 99.99 percent that utilizes an n+1 approach. This method provides seamless fail-over capabilities to ensure that any infrastructure breakdowns will have minimal to no impact on utility operations. The Collection Engine architecture allows for the failure of an individual OpenWay server with minimal impact to any currently operating jobs within the Collection Engine. OpenWay also supports AAA disaster recovery implementations.



Itron is a global technology company. We build solutions that help utilities measure, manage and analyze energy and water. Our broad product portfolio includes electricity, gas, water and thermal energy measurement and control technology; communications systems; software; and professional services. With thousands of employees supporting nearly 8,000 utilities in more than 100 countries, Itron empowers utilities to responsibly and efficiently manage energy and water resources.

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CORPORATE HEADQUARTERS

2111 N Molter Road
Liberty Lake, WA 99019
USA

Phone: 1.800.635.5461
Fax: 1.509.891.3355