



Transaction Management System™

SmartSynch's Transaction Management System (TMS) is a highly scalable enterprise-grade software application that manages two-way data transactions over multiple advanced communication networks for multiple meter models, both residential and commercial and industrial (C&I). The software provides the energy industry the ability to monitor millions of electric meters for register and interval data, real-time usage during load curtailment events, and real-time meter alarms and events. Now utilities can wirelessly monitor all meter points with a single tool, which seamlessly integrates with their existing billing and meter data management systems and provides easy-to-use and flexible automation not available with any other data acquisition package.

Automated Data Collection

TMS utilizes the following mechanisms to provide the highest level of data acquisition automation.

SmartMeter Managed Schedules

Each SmartMeter knows what data to collect and when to automatically transfer the data to TMS.

Automated Data Recovery

TMS is aware of all data that is scheduled to be transmitted by the SmartMeter. If a SmartMeter does not return its data on schedule, TMS can automatically re-request the data.

Automated Reconciliation

TMS is aware of all expected responses from requests and automatically re-retrieves data that has not been returned as expected.

Advanced Communication Intelligence

TMS utilizes the following methods to ensure the lowest-cost solution to utilities.

Optimized Data Transmission

SmartMeters configured with TMS utilize push technology to allow the SmartMeters to track and automatically initiate the scheduled transmission of data to TMS. This ensures that all data may be collected without requiring the additional processing, time, and data burden used by systems that must send an outbound request from the head-end software to the meters in order to collect the data. Additionally, the intelligence built in to TMS and the SmartSynch SmartMeters ensures that only the specific bits absolutely required to fulfill a request are sent over the air, thus minimizing over-the-air data usage.

Compression

All wireless messages are converted to binary and are optimally compressed before transmission to ensure the most economical data processing rates. The compression ratio can be as high as 50% and overall data usage can be as little as 5% of the total usage of other wireless systems. This allows SmartSynch to provide the most cost-effective data plans to customers.

Ease of Use

- Browser-based User Interface
- Alarm and Meter Event Notification via E-mail
- Flexible Searching Capability
- Comprehensive Online Help System
- Import Tool for SmartMeter and Billing Cycle Information
- SmartMeter Grouping for Easy Management
- Billing Cycle and Customer Event Scheduling
- Automated Meter Registration

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TMS



Wireless Network Optimization

As a pioneer in wireless smart metering technology, SmartSynch built TMS specifically for wireless networks. Many other systems were originally built for hardwired, drive-by or hand-held systems.

Packet Switched Data

TMS has always supported Packet Switched Data, which has proven to be more robust, reliable, scalable and cost-effective than circuit-switched data. Consequently, all of the major public network carriers are eliminating their circuit-switched data network in favor of packet switched networks.

Asynchronous Messaging

TMS supports the asynchronous nature of wireless networks and handles any latency gracefully.

Secured and Encrypted Data Transmissions

256-bit encryption is applied to all messages exchanged between the TMS and the SmartMeter module, utilizing a unique meter-specific encryption key.

Automated Interfaces to Billing and External Systems

TMS seamlessly and automatically interfaces with external systems using industry standard formats as well as custom tailored formats meeting each utility's specific needs. These export interfaces provide a simple mechanism for transferring register and interval data from TMS to other systems used for consumer billing, web presentment, outage management, load analysis and customer support. All exports may be run on a scheduled or on-demand basis.

Software Environment Options

Operating Systems

- Microsoft Windows
- Sun Solaris
- IBM AIX

Application Servers

- BEA WebLogic

Database System

- Microsoft SQL Server
- Oracle

Data Management

- 5, 15, 30 and 60 Minute Interval Lengths
- 32 Channel Interval and Instrumentation Profiling
- Data Purge, Archival and Restoration
- Meter Data Editor and Export Data Validation
- Load Profile Trending Chart/Graph Tool
- Report Generation in CSV format
- SmartMeter Event Monitoring and Notification

Scalable Architecture

- Java 2 Enterprise Edition (J2EE) Standards
- XML
- Multi-Tiered Development Architecture
- Standards Based Open Architecture

Security

- User Authentication
- Multi-level User Authorization
- Security Violations and Logon Tracking
- Database Record Auditing and Change Tracking
- System Auditing
- System Activity Logging

Interval and Register Data Interfaces

S-XML

The S-XML format has been created by SmartSynch to transport all register and interval data in a standard XML format.

Itron Delimited Format (IDF)

The IDF format has been created by Itron to serve as a standard interface of register and interval data between TMS and multiple Itron applications (MRAS/IEE, Integrator, P4, etc.).

Itron Hand-Held Reader File Format (HHF) – Version 2.8

Itron designed the HHF format to provide a mechanism to upload meter data from various vendors' hand-held readers into the MV-90 translation system but has been adopted for transferring data between non-handheld systems as well.

Itron MV-90 Mainframe Format

Itron originally designed the MV-90 Mainframe File Format to upload meter data to mainframe computers. This format has been adopted for interfaces to non-mainframe systems as well.

Real-Time Export (RTE)

The Real-Time Export format provides near real-time availability to meter data by supporting the export data at high frequencies as data is returned to TMS via the Real-Time Interval Retrieval interface.

Interval Data Only Interfaces

California Metering Exchange Protocol (CMEP) – Version 1.20

The California Metering Exchange Protocol (CMEP) is an industry standard intended to transmit gas and electric utility metering, billing and administrative information between companies. TMS supports the transfer of Electricity Interval Data via the MEPMD01 (version 1.20) record type.

Lodestar Enhanced Format

The TMS LodeStar Enhanced export contains load interval data in a format compatible with C/S LodeStar, a load research system used by many utilities to collect, manage, analyze and store load profile data.

Register Data Only Interfaces

Register Data Export (RDE)

The Register Data Export format has been created by SmartSynch to serve as the standard output of all Register Read and Time-Of-Use (TOU) Data from TMS.

Billing Transfer File (BTF)

The Billing Transfer File format exports all register information, including totals, maximum demand and TOU rates.

Custom Interfaces

SmartSynch can create custom export interfaces to best meet each customer's specific requirements.



TMS



SmartSynch Product Functionality Matrix

FUNCTIONALITY AND FEATURES	A3	SENTINEL	kV2c	I-210+c	CENTRON	GridRouter
Point-to-Point	X	X	X	X	X	X
Two-Way Data Retrieval	X	X	X	X	X	X
Bi-directional Metering	X	X	X	X	X	X
Compatible with Meter Programming Software	X	X	X	X	X	X
Current & Voltage Profiling	X	X	X	X		X
Interval Reads	X	X	X	X	X	X
Over-the-Air Firmware Upgrades	X	X	X	X	X	X
Power Outage	X	X	X	X	X	X
Power Quality	X					X
Remote Disconnect				X		X
Security/Encryption	X	X	X	X	X	X
Tilt Detection				X	X	X
Tamper Detection	X	X	X	X	X	X
Time of Use (TOU)	X	X	X	X	X	X
SmartLAN (ZigBee, 6LoWPAN)				X		X

About SmartSynch: Headquartered in Jackson, Miss., SmartSynch has been developing successful Smart Grid Intelligence solutions for the utility industry since 2000. The company's clean-tech innovations in the two-way delivery of real-time energy usage data over cellular networks, in lieu of private network build-outs, have to date simplified SmartMeter deployments for 150 major North American utilities, while enabling green-energy initiatives and delivering significantly higher Returns on Resources.

Unlike proprietary, closed-architecture solutions, SmartSynch's SmartMeters represent future-proof investments in technology. The standards-based IP connectivity enabled in every SmartMeter deployed makes them adaptable and remotely upgradable to support today's sensor and communications needs, as well as tomorrow's opportunities, better than any alternative.