

Unified Intelligent Energy Management Software Suite

Middleware for the Smart Grid System



The Unified Intelligent Energy Management (UIEM) Software Suite is a high-performance middleware for operation of Smart Grid Systems. The standard-based, open architecture of the system not only permits efficient integration into existent IT infrastructures, but also supports all essential processes necessary for rollout, operation and maintenance of the Smart Grid.

UIEM Software Suite is a modular system solution for the liberalized energy market, covering

- Meter Data Management
- Load Control Management
- Home- and Building Automation
- Street Lighting Control

integrative within one system approach. In contrast to classical AMR systems focused on meter reading, UIEM supports fully bi-directional control of field components and responsiveness into the Smart Grid.

Features

Characteristics

- Master System for Field Component Management
- Multi-Utility Meter Support covering electricity, gas, water and heat
- Technology Abstraction for EDM- and Billing-Solutions
- Integrated Energy- and Load Control Management capability
- Modular and adaptable solution for easy adoption in existing IT infrastructures
- Management of street lights that range from light control for entire street of houses to individual control on lamp level
- Open solution with capability to integrate field components (meters, load management devices, gateways, etc.) of different manufacturers
- Scalable from pilots to rollouts by its distributed system architecture
- Graduated authorization concept and multi-tenant support
- Protection of investment through backwards compatibility of system interfaces
- Comprehensive, central maintainable graphical User Interface

Standard-based, open and scalable Platform

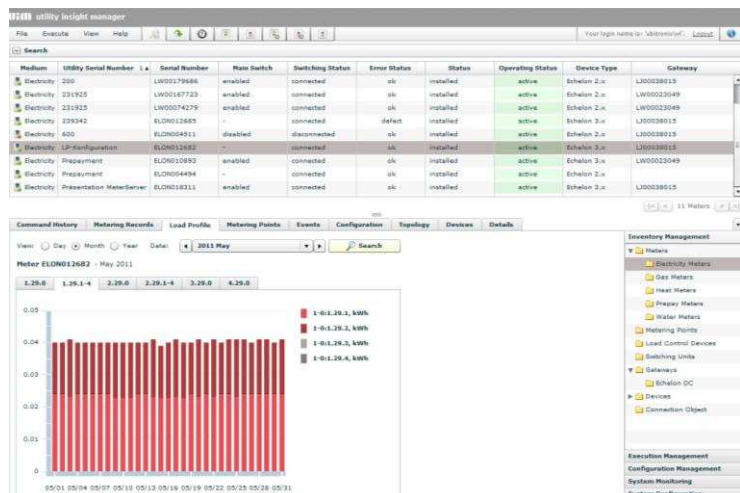
- Well-defined modular software architecture built on three constitutive layers
- Efficient coupling to Enterprise Applications by using System Adapters
- Consistent orientation on standards and platform independent interfaces
- Abstracts from hardware specific details when integrating field components from different manufacturers

By design, UIEM Software Suite may be distributed on servers of a multi-server and even virtualized IT infrastructure to address

- Scalability
- Performance
- Data Availability.

Graphical User Interface

The Utility Insight Manager (UIM) enables operational management of the UIEM Software Suite.



Following features characterize UIM:

- Compatible to Adobe Flash Player 10.1 or higher
- Rich-Client Web Application for management of all domains of the UIEM system
- Executable in standard web browsers (including Internet Explorer and Firefox)
- Features to support retrieval in large volume systems (paging, universal data filtering, etc.)
- Reports and exports data into file formats including HTML and CSV
- Data encryption and graduated Authentication/Authorization
- Simple service of the application by reason of central installation.

### 3rd Party Developer Program

UIEM Software Suite is composed of a Core System with well-defined interfaces. The 3rd Party Developer Program permits partners to

- Adapt additional Business Support- and Operation Support Systems
- Extend the system's functionality by specific modules
- Integrate additional field components by means of device- or supplier-specific System Adapters



### System Layers

#### Enterprise Integration Layer

- Provides Adapters to Business Support Systems (Billing-, EDM-, CRM-systems, etc.) and Operation Support Systems (Workforce Management-, Ticketing-, Network Information-, GIS systems, etc.)

- Offers graphical user interfaces (View Management) that support operational management of the system

#### Management Integration Layer

- Provides functionality and the Application Programming Interface (API) for the domains of the UIEM Software Suite (e.g. Meter Data Management, Home- and Building Automation, Load Control-Management)
- The domain's functions are fully accessible by standard-based web services

#### Field Component Integration Layer

- Abstracts and ties technical systems from different suppliers (e.g. NES, DLMS, etc.) together by the use of System Adapters
- Abstraction management distributes job execution into the individual existent technical systems and is responsible to assure management of peak loads

installation and exchange processes

- Bi-directional communication over different media such as Ethernet, GPRS, Power Line and Radio, etc.
- On-demand inquiry of device information (switching states, topology information, etc.)

#### Operation Management

- Communication Engine to enable reliable execution of commands on all types of field components
- Ability to schedule command execution
- Device type-specific command sets offering a wide range of functions such as on-demand meter reads, load sheds and firmware updates
- Central monitoring of command execution
- Load balancing capabilities to compensate peak load situations

#### Configuration Management

- Management of device type-specific Field Component Configurations
- Ability to support device specific parameterization in full detail
- Scheduled re-configuration of single units and support for bulk configuration updates
- Dynamic re-configuration of field components triggered by Billing-, CRM- or any other system

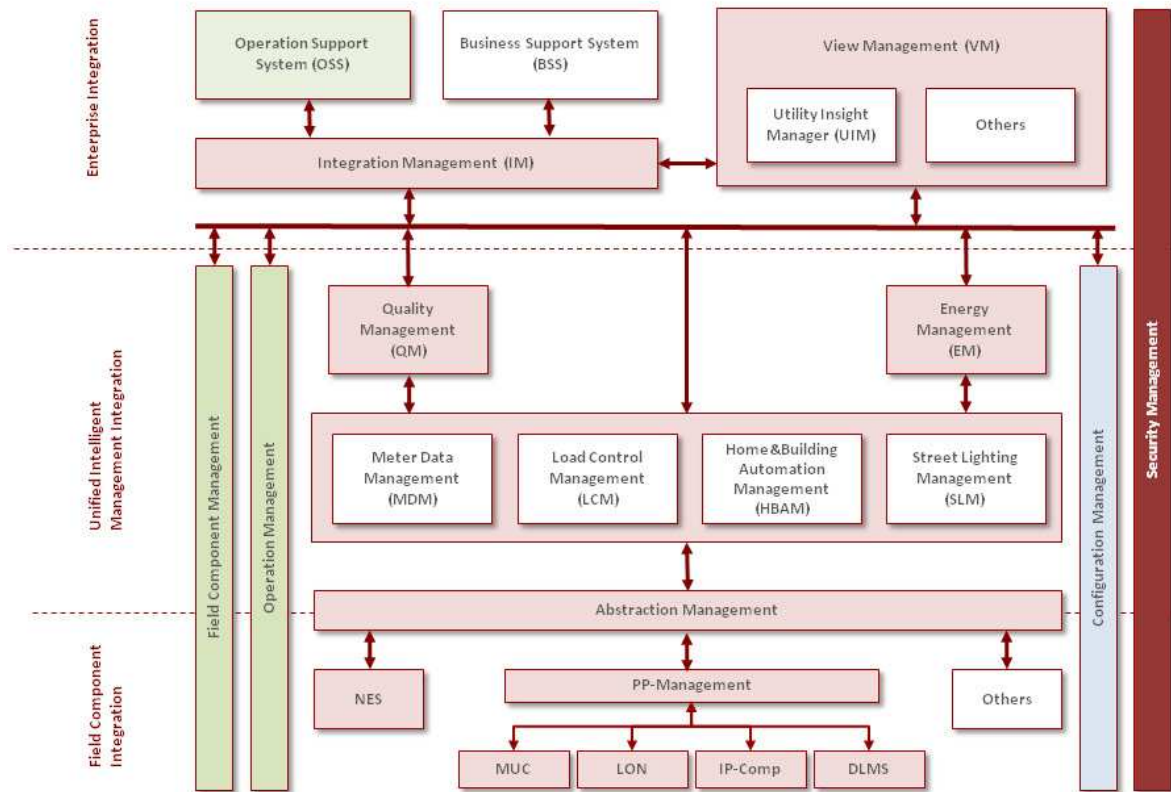
#### System Monitoring and Configuration

- Monitoring capabilities to track over-all system activity covering message exchange to Enterprise Applications
- Event-based indication of remarkable respectively critical situations
- Definition of system- and user-specific groups, e.g. an aggregation of devices having assigned a specific configuration
- Central management of system parameters and event configurations

### Overlapping Functions

#### Filed Component Management

- Management of all kind of field components including Multi-Utility Meters, Load Management Devices and Gateways
- Uniform Life-Cycle management supporting field component



## Specifications

### Hardware requirements

The UIEM Software Suite scales from pilot projects to rollouts. Following minimum requirements apply for a system with up to 5000 field components:

### Application Server

- 1 quad-core Intel® Xeon® processor (x64)
- 8.0 GB RAM
- 2x120 GB SCSI hard drives (RAID configuration)
- 1 Gbps network adapter

### Database Server

- 1 quad-core Intel® Xeon® processor (x64)
- 8.0 GB RAM
- 2x120 GB SCSI hard drives (RAID 1 mirror configuration for OS and database logs)
- 3x120GB SCSI hard drives (RAID 5 striping configuration for database files)
- 1 Gbps network adapter

For larger installations please contact ubitronix to align hardware requirements exactly with project

specific demands such as field device quantity, WAN connection types, meter reading intervals, number of collected load profile channels, etc.

### Software Requirements

- Windows Server 2008 x64 Service Pack 2 or higher or Windows Server 2008 R2 Standard, Enterprise or Datacenter Version, Service Pack 2 or higher, U.S. English
- Microsoft SQL Server 2008 Standard or Enterprise Edition, Service Pack 1, U.S. English

### Extended System Requirements

Additional requirements address specific needs of adopted systems/devices, adaptors to enterprise applications and WAN types used and may include opening of individual ports for data communication, system adapter configuration, prerequisite of special communication equipment and/or SIM cards, etc.

### Client Application Requirements

Rich Client web application Utility Insight Manager (UIM) implies the following requirements:

- Web Browser
  - Firefox 3.6 or higher
  - Internet Explorer 7 or higher
- Adobe Flash Player
  - Version 10.1 or higher

### Ordering Information

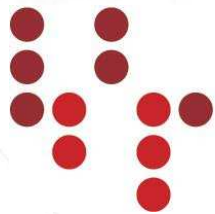
Product: UIEM Core System  
Model Number: 20301-ST

Product: Utility Insight Manager  
Model Number: 20401-ST

Product: UIEM Meter Data Management  
Model Number: 20201-ST

Product: UIEM Load Control Management  
Model Number: 20202-ST

Product: UIEM Adapter NES  
Model Number: 20302-ST



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