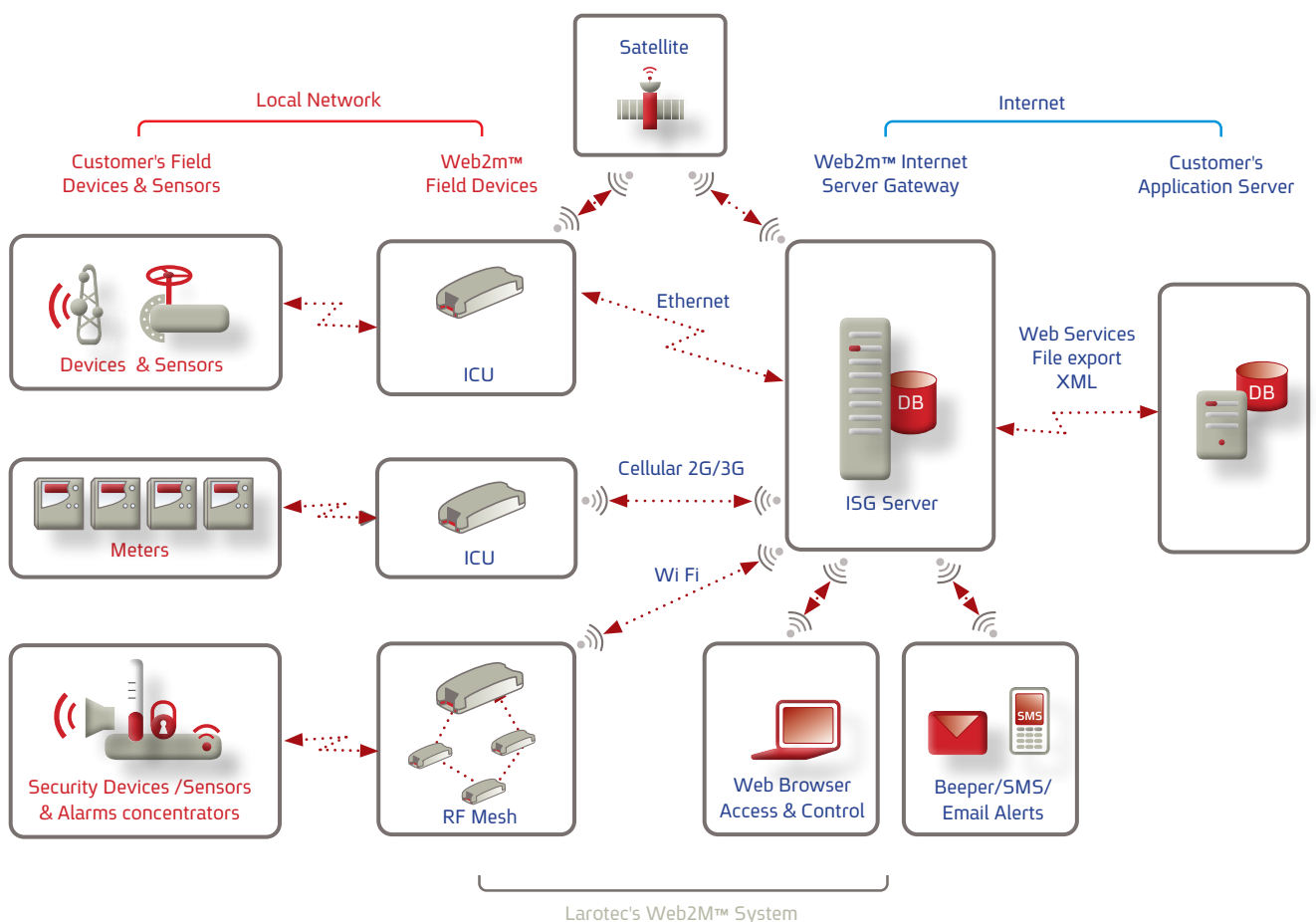


# Mini SCADA / Meter Reading System

Online Management System, Internet Server Gateway, ISG

The SCADA Light / Meter Reading System developed by Larotec is an integrated end-to-end software and hardware platform for management of multiple, widely distributed devices through a central web-based management system. It is a scalable Point-to-Multipoint platform featuring an open architecture design, standard protocols and databases and a variety of standard communication infrastructures.

The general architecture of the system is presented in the following diagram.



The system is based on two main components:

## ICU (Interface & Communication Unit)

A wired/wireless data acquisition and control unit with an integrated cellular/Ethernet module and embedded software capabilities that enable remote devices/sensors to securely communicate through a central management software (ISG)

## The ISG Online Management System

A web-based software platform that remotely manages and monitors the ICUs by securely collecting, storing, analyzing and presenting the data, the ISG provides real-time notifications, updates and alerts via SMS and email.

## Online Management system, Internet Server Gateway, ISG

Online Management is a web-based server application that supports a wide range of applications for utilities and industries including meter reading, energy management, water, sirens, security & alarm systems, etc. The system is designed to work together with the Larotec ICU field unit. It communicates, manages, monitors and controls both the ICUs in the field and the end devices, e.g. meters, sensors, etc.

Online Management SW, the Internet Server Gateway (ISG), supports requirements for Advanced Metering Management (residential and industrial), sub-metering, prepaid electricity and enterprise energy data management systems, as well as mini-SCADA, command and monitoring applications such security, alarm systems, street and traffic lights, water, sirens, vending machines, refrigeration and many more.

Main features performed by the online application include:

- Continuous automatic consumption reading by minutes, hours days and months
- Real-time reading of meters, sensors, instruments "get data now" (polling by server)
- Reports by exception, ICU initiated reporting of abnormal situations or scheduled actions
- Transparent polling of raw data acquisition from a device and transmission to a separate Meter Control Center computer.
- Log file and activity report creation for supervising the entire system (reading, transaction, user access, activity, etc.)
- Reporting capabilities, including consumption reports, analysis by kWh and cost and customized reports
- Automatic recognition of type of meter/sensor and build its data base.
- Multiple tariff smart metering support

- Automatic Alerts of any abnormal behavior, such as theft and leakage, via SMS and email
  - Remote Firmware download initiated from the online management interface to remotely update operating software of a specific ICU or group of ICUs
  - Remote device diagnostics and configuration
  - Secure access from any Internet Browser
  - Multiple authorized user levels, four levels of passwords for read-only or full operation and configuration.
  - Multiple applications on same server allows several operators using different applications to use same server in VPN operation. For example, a municipality can use same the same ICU and server for traffic control, street lights, water management, power meters reading, etc.
  - Continuous Cell ID & Rx-level tracking allows the Cellular Base Station ID to be used by an ICU both for GPRS communication and for monitoring the level of Radio Frequency signal reception. This feature alerts when the GPRS communication level is inefficient in order to increase system reliability.
  - Remote control capabilities, such as remote power cut-off, water, etc.
  - Template assignment allocates default pre-defined properties and behaviors to various system elements preventing the need to re-defining properties for each item
  - Activation process and tracing remotely enables/disables meter reading services
- Standard protocols – TCP/IP, XML, HTTP, etc.