

# Ember Smart Energy Suite

Simplifying Smart Energy Application Development

Tools

## Fact Sheet

Ember Smart Energy Suite is a collection of embedded software, tools, and silicon that dramatically simplifies the delivery of devices certified to ZigBee Alliance's Smart Energy (SE) Profile.

**Easy-to-use graphical tool and highly secure environment provides fastest path to developing certifiable products using ZigBee Smart Energy (SE) Application profiles**

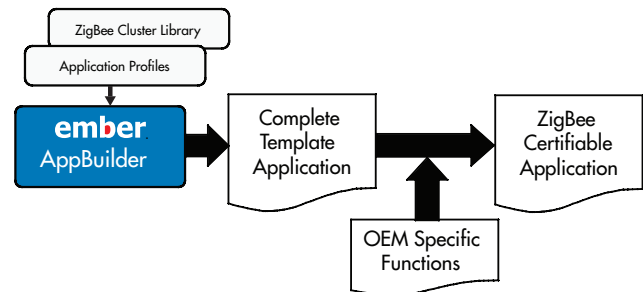
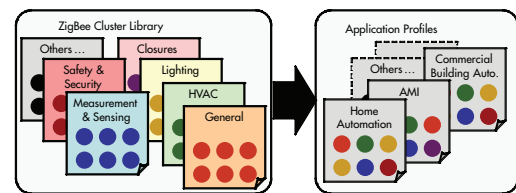
The increasing gap between the demand for energy, especially peak demand, and the available resources are forcing utilities to adopt new technologies to address the problem without having to build exorbitant new power plants, not to mention the associated environmental issues of doing so.

ZigBee is the standard enabling two way communications between Advanced Metering Infrastructure (AMI) which incorporates smart meters or some other energy gateway and Home Area Networks (HANs) which connect thermostats, in-home displays, smart appliances, and other load control devices. This allows consumers and utilities to collaborate to address this vexing issue by enabling wireless connectivity between smart electricity/water/gas meters to a Home Area Network (HAN) comprising devices such as thermostats, lights, in-home displays and appliances.

The ZigBee SE Profile enables wireless communication between the AMI network and HAN, linking homes with utilities. Ember provides all the components required for developers to deliver complete products ready for "ZigBee Certified Product" testing and designation.

Ember's Smart Energy Suite includes:

- A complete, fully certified ZigBee Smart Energy Profile reference application
- Ember's AppBuilder tool for ZigBee SE certified device development
- The latest version of the EmberZNet PRO networking stack, supporting the ZigBee PRO Feature Set
- Certicom's Security Builder MCE for ZigBee Smart Energy software
- Ember's EM250 system-on-chip and the EM260 network co-processor



## Reliable, flexible, industry leading ZigBee platform

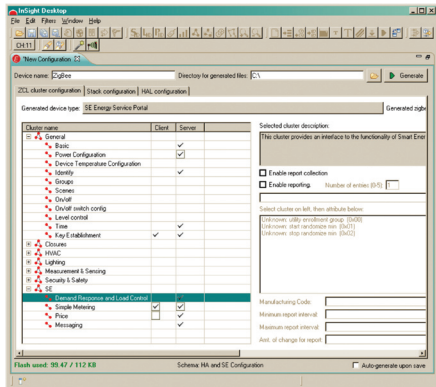
The EM250 ZigBee system-on-chip combines a 2.4GHz IEEE 802.15.4 compliant radio transceiver with a 16-bit microprocessor. The radio provides best-in-class performance with excellent sensitivity and transmit power for long range.

The EM260 ZigBee Network Co-Processor combines a 2.4 GHz IEEE 802.15.4 compliant radio transceiver with a flash based microprocessor running the EmberZNet ZigBee stack. With a fast serial interface to an application processor, the EM260 allows developers to easily add ZigBee networking to their favorite microcontroller.

EmberZNet PRO is a complete ZigBee software package containing all the elements required for robust and reliable mesh networking applications on Ember's silicon platforms. It includes the industry's first proven ZigBee stack based on the ZigBee PRO Feature Set enhanced with unique Ember innovations, providing "professional grade" networking for the most challenging smart energy applications.

## Easy application development

Ember's AppBuilder allows the developer to select from a the list of devices supported by the Smart Energy profile. The ZigBee Cluster Library clusters associated with the selected device are displayed as client or server-side commands. Selecting a specific cluster shows the attributes associated with that cluster. The developer can customize the clusters as desired, and add the hardware-specific code to the resulting template application.



The developer can configure the various options associated with the ZigBee PRO stack, as allowed by the Application Profile. Also allowed is the configuration of the Ember Hardware Abstraction Layer (HAL), which determines various hardware specific parameters, including silicon platform being used, selection of bootloader (local or over-the-air configurations), inclusion of InSight Port debug information, and various GPIO and serial communications configurations

When configuration is complete, AppBuilder generates a complete source code application with places for the developer to add their OEM-specific code. The resulting SE application can then be compiled and tested as usual using Ember's xIDE and InSight development tools.

AppBuilder allows selection of many different Smart Energy Profile devices including Energy Service Portals, Simple Meters, In-Premise Displays, Programmable Communicating Thermostats, Load Controls, Smart Appliances, and Pre-payment terminals. Devices from the Home Automation Profile may also be supported, including Dimmable Switch, Heating/Cooling Unit, Thermostat, Temperature Sensor, Pump Controller and a many others including Custom Devices.

The fully certified SE Profile reference application is yet another tool to help OEMs bring ZigBee SE certifiable products to market rapidly.

## Best in class security

To provide the strongest possible wireless network security, Ember has integrated Certicom's Security Builder MCE for ZigBee Smart Energy security into the Smart Energy Suite. Strong security is critical for utilities to ensure that only appropriate HAN devices are authenticated and connected to the utility network. Certicom's Security Builder MCE secures ZigBee networks using powerful elliptic-curve cryptography (ECC) to add a provable identity for HAN devices. The Certicom implementation is available directly integrated into Ember's EM260 ZigBee Network Co-Processor or as a library running on Ember's EM250 ZigBee system-on-chip.

## About Ember

Ember Corporation develops ZigBee wireless networking technology that enable companies involved in energy technologies—enertech—to help buildings and homes consume less energy, operate more efficiently, and keep people comfortable, safe and secure. Ember low-power wireless technology can be embedded in potentially any device to be part of a self-organizing mesh network. Ember is headquartered in Boston and has its radio development center in Cambridge, England, and distributors worldwide. The company is a promoter and Board member of the ZigBee Alliance and its platform is the "Golden Suite" for 802.15.4/ZigBee interoperability testing.

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