

# Ember Smart Energy Suite

## Products

Simplifying Smart Energy Application Development

### 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**

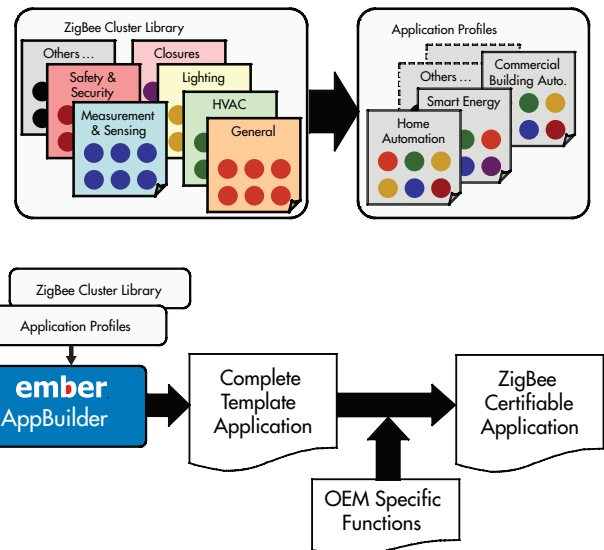
The increasing gap between the demand for energy, especially peak demand, and the available resources are forcing utilities to adopt new technologies to address the problem without having to build exorbitant new power plants, not to mention the associated environmental issues of doing so.

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).

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 EM300 Series, EM250 and EM260 chips



## Reliable, flexible, industry leading ZigBee platform

The EM300 Series - EM351 and EM357 - ZigBee chips from Ember are the industry's first ARM Cortex-M3 based family of SoCs delivering unmatched performance, power consumption and code density in a compact package. They can also be used as a network co-processor, using Ember's EZSP protocol, supported by the latest EmberZNet PRO software.

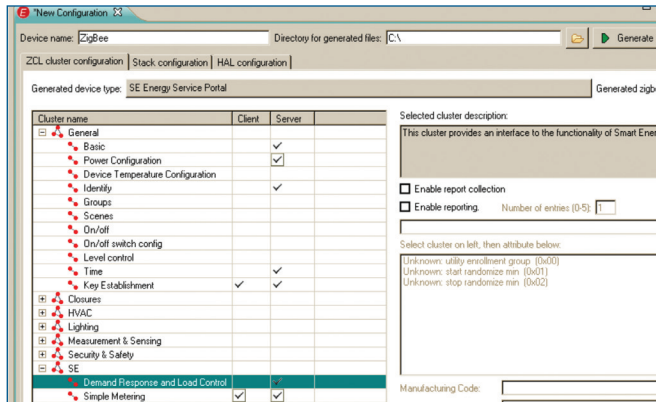
The EM250 ZigBee system-on-chip combines a 2.4GHz IEEE 802.15.4 compliant radio transceiver with a 16-bit microprocessor. The radio provides excellent performance, sensitivity and transmit power for long range.

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 PRO ZigBee stack. With a fast serial/UART 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 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 ZigBee Network Co-Processors or as a library running on Ember’s SoCs.

## About Ember

Ember Corporation ([www.ember.com](http://www.ember.com)) develops wireless mesh networking technology — chips, software and tools — for Smart Energy, connected homes, and many other monitoring and control applications enabling greener living and work environments. The Boston-based company is a promoter of the ZigBee Alliance with an IC design center in Cambridge, England, an office in Hong Kong and sales channels and distributors worldwide.

### US Headquarters:

25 Thomson Place  
Boston, MA 02210  
USA  
+1 617 951 0200  
[www.ember.com](http://www.ember.com)

### European office:

Cambridge Science Park  
Unit 300, Milton Rd.  
Cambridge, CB4 0XL, UK  
+44 (0) 1223 423322  
[www.ember.com](http://www.ember.com)

### Asian office:

Unit 13, 14th Floor  
Wellborne Commercial Centre  
8 Java Road, Hong Kong  
852 8199 0313  
[www.ember.com](http://www.ember.com)

**ember**  
[www.ember.com](http://www.ember.com)

SES-0212  
Information contained in this document is subject to change without notice and is presented without express or implied warranty. Ember, EmberZNet and InSight are trademarks of Ember Corporation. All other trademarks are the property of their respective owners. Copyright 2012, Ember Corporation. All rights reserved.