



GainSpan SoC Software Development Kit 2.2



PRODUCT OVERVIEW

With the GainSpan SoC Software Development Kit (SDK), firmware engineers can develop embedded applications for the GS1011. Whether the design integrates the GS1011 with an MCU or uses the GS1011 as a solution on a chip, the SoC SDK increases control and flexibility in the software architecture.

The SoC SDK provides the best access to GainSpan software and the greatest flexibility in designing highly custom applications for the GS1011. Software engineers can use and modify sample applications as a baseline for new ones. With most of the GEPS software available in source, code size can be scaled down and performance optimized as necessary. Developers can create medical and smart energy applications that run on a customizable SW/HW platform.

The SDK includes the development board, open embedded software (most in source code), configuration management system, firmware update system, RTOS and development environment. Two SDK options are available: SDK basic and professional.

DEVELOPMENT BOARD

The GainSpan Development Board (DB) includes the GS1011, discrete components and connectors to integrate design-specific components. It allows engineering teams to start software development against functional HW prior to the availability of custom boards.

Connection:

- Serial (2) for terminal program, microcontroller connection with AT command set and debug output
- 20-pin JTAG connector for debugging of embedded software and custom device drivers
- 10-pin Aardvark connect for SPI and I2C interface with host microcontrollers and discrete components
- 60-pin header for access to GS1011 I/O pins
- Current monitor pins enable easy connection of ammeter or other lab equipment to precisely monitor current consumption. The connector is ideal for low-power consumption designs.

Sensors:

- Development board contains temperature, humidity, light, pressure sensors & two-axis accelerometer for rapid development of sensor applications.

Buttons:

- External reset button to simulate external reset signal
- Alarm 1 & Alarm2 buttons to simulate external wake-up signals

LEDs:

- 4 dedicated; 4 user-defined

BENEFITS:

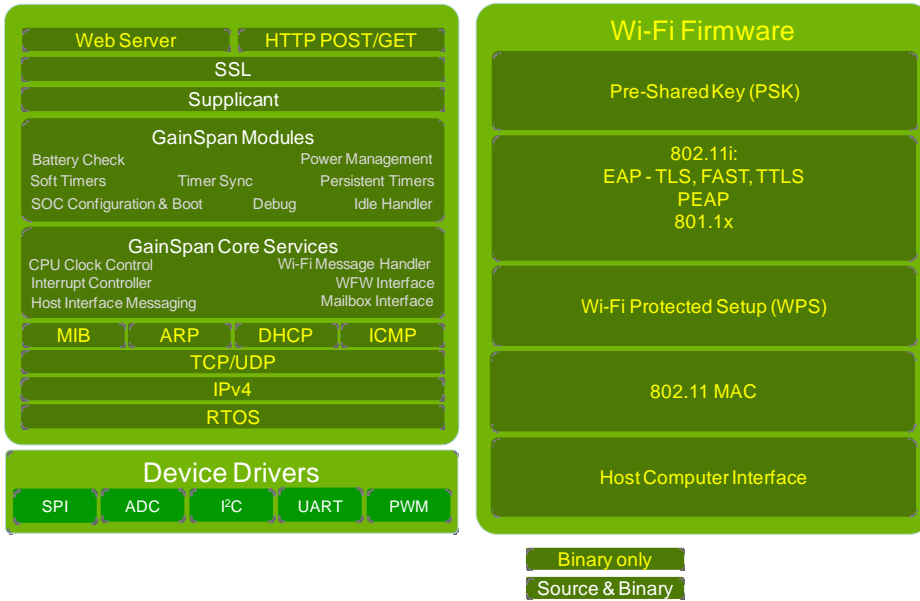
- **Reduced development time and testing and certification burden, accelerating time to market for embedded application for the GS1011**
- **Customizable solution on a chip**
- **Design choices:**
 - Two-chip or single-chip
- **Board options:**
 - Custom board or GS1011 Modules
- **Scalable code-size of GainSpan Embedded Platform Software (GEPS)**
- **Provisioning options for rapid field deployment of Wi-Fi devices**
- **Firmware update mechanism to ease support burden**
- **Ultra low power consumption through dynamic power management**

FEATURES:

- **Source code and binary to sample embedded applications**
- **Source and binary to GEPS**
- **Complete networking and Wi-Fi services software**
- **802.11i Security**
 - WPA-Enterprise
 - WPA2-PSK, WPA, WEP
- **Compile firmware for custom boards or GainSpan GS1011 Modules**



GAINSPAN EMBEDDED SOFTWARE 2.2



GainSpan Embedded Platform Software (GEPS) 2.2 is middleware software that abstracts the HW from and provides network services for customer’s embedded application. With GEPS, manufacturers can focus development on their value-add application by using comprehensive APIs provided by GEPS. GEPS runs on the RTOS on ARM7 networking services core on the GS1011.

Wi-Fi Firmware executes on the ARM7 Wi-Fi core as a Wi-Fi off-load engine that includes Wi-Fi security protocols, Wi-Fi Protected Setup and the 802.11 MAC.

SAMPLE EMBEDDED APPLICATIONS

The SDK includes source code and binaries of sample embedded applications.

- Serial-to-Wi-Fi interface software
- IP-to-Wi-Fi interface software
- Temperature-Light Sensor (TLS) application for the evaluation TLS board
- MTS application for the development board and sensors
- Wi-Fi scan application

CONFIGURATION MANAGEMENT

The SDK contains a reference PC application and embedded software that provides OEMs with a baseline configuration management system. The system is based on SNMP which allows end-users to view and configure:

- IP and Mac addresses
- Wi-Fi device client configuration: Security (WEP, WPA, WPA2); Scan list of access points
- Power management
 - Mode selection
 - Battery warning level
 - Battery standby
 - Battery checkpoint
- SNMP IP address of management application
- Error logging (read only)



FIRMWARE PROVISIONING

The SDK contains a reference PC application and embedded software that provides OEMs with a baseline firmware provisioning system. End-users can update (wirelessly or wired) the following:

- Custom software, networking services firmware, GEPS, device drivers and RTOS
- Wi-Fi Firmware

GREEN HILLS IDE AND RTOS



Green Hills Software's MULTI Integrated Development Environment (IDE) includes the industry's most powerful and proven tools for developing embedded software with maximum reliability, maximum performance, and minimum code size. With the MULTI's sophisticated capabilities, you can develop, debug, and optimize code more quickly, significantly reducing both development cost and time.

The μ -velocity real-time microkernel is the smallest of Green Hills Software's family of royalty-free operating systems. It is implemented as a C library so it can be easily ported to a number of target architectures. Its simple design as well as integration with the best-in-class MULTI tools make μ -velocity both easy to learn and simple to use. Both MULTI and μ -velocity are tightly integrated with GainSpan products.

SDK OPTIONS

SDK Components	Basic	Professional
Green Hills Multi IDE	-	✓
Green Hills JTAG Probe	-	✓
Green Hills Compiler	✓	✓
WireShark Protocol Analyzer	✓	✓
WiLD Configurator	✓	✓
GSDemo	✓	✓
Sample embedded applications	Source & Binary	Source & Binary
GEPS 2.2	Source & Binary	Source & Binary
Wireless Firmware	Binary	Binary
Green Hills uVelocity RTOS	Binary	Binary
Green Hills Networking Stack	Binary	Binary
Development board	✓	✓
Wi-Fi Access Point	✓	✓