GS-AN038

Firmware Update over Wi-Fi Interface using S2W

Introduction

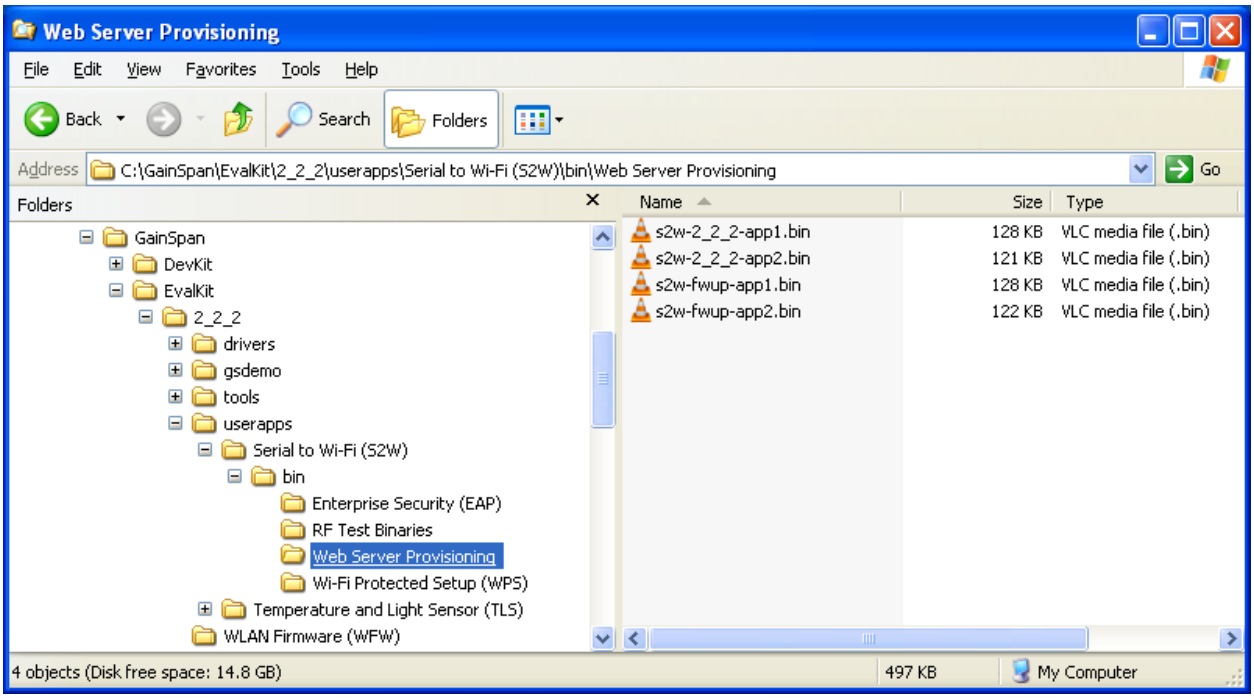
This document details the necessary steps and processes required for performing a firmware update over the Wi-Fi interface with the Serial2Wi-Fi Application.

Required Hardware and Software

1. Serial-to-Wi-Fi Evaluation Board with web server provisioning firmware
2. Power supply or battery
3. UART-USB cable or DB9 Null Modem Serial Cable
4. GSDemo version 3.3.6 (or later)

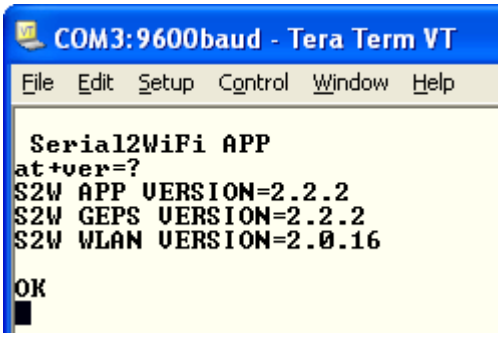
Binaries Required

1. Updated Serial2Wi-Fi App Binaries (s2w-fwup-app1.bin and s2w-fwup-app2.bin)



STEPS FOR UPDATING THE FIRMWARE

1. Connect the serial cable to the evaluation board and launch Tera Term. Setup the Tera Term to the correct COM port and baud rate that is communicating with the Evaluation Board. See Serial to Wi-Fi Evaluation Kit Startup Guide for steps if needed.



2. Turn ON the Evaluation Board (SW1=ON position).

3. After the Serial2WiFi APP prompt shows up, First check the version number (at+ver=?) of the binaries. Note the S2W APP VERSION=x.x.x. After firmware upgrade this version will be different.

4. Once you have verified with the version number of the binaries running on the board, you can associate the node with an access point using commands shown below. In this example we will use the one that is included in the Evaluation Kit (SSID=GainSpanDemo)

```
at+ndhcp=1
OK
at+wa=GainSpanDemo
    IP              SubNet          Gateway
 192.168.3.103: 255.255.255.0: 192.168.3.1
OK
```

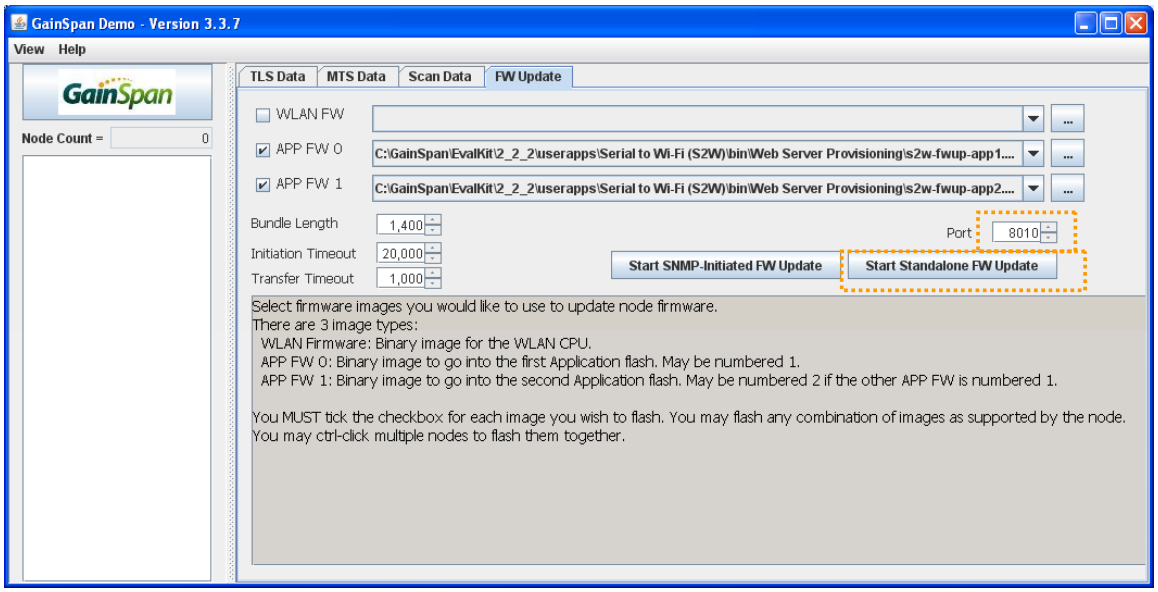
5. Connect the firmware update server (Host PC) to the GainSpanDemo AP. Once connected to the AP, PC will get its IP address from the AP. Note this IP address, as it will be needed when initiating FW update on the serial terminal. You can configure the IP in a DOS window and note the IP address for the NIC connected to the AP.

6. Run the GSDemo application on the PC that is also firmware update server. Go to the FW Update tab and select the updated binaries to upload.

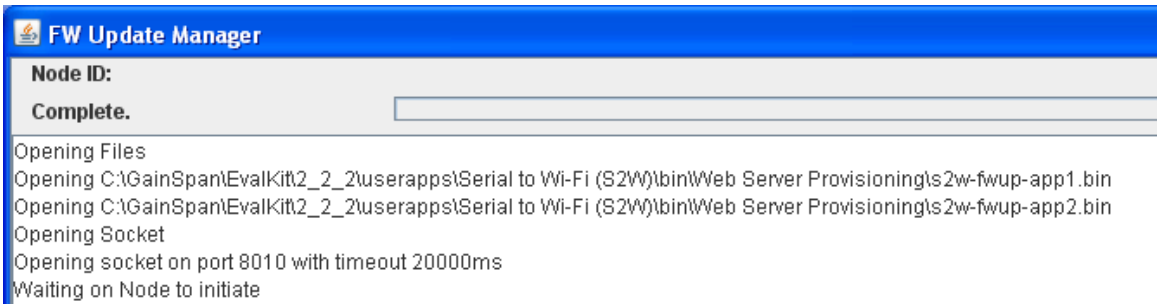
7. Select a port number you want to use for this FW Update procedure (ex: 8010)

8. Selecting the binaries can be done as below. In this example we will be doing APP1 and APP2 binary:
   a. Only WLAN bin.
   b. APP1 and APP2 Binary.
   c. All 3 binaries.

Select the APP1 and APP2 binary from userapps->Serial to Wi-Fi (S2W)->bin->Web Server Provisioning->xxx-FWUP-xxx.bin as shown below. Select a port number (ex:8010) you want to use for the FW update.



9. Click the "Start Standalone FW Update". This will open a new window (FW Update Manager) will and wait for the firmware from the node to initiate the update…



10. Now at this point, on the Tera Term window or from an external MCU send the command for the Firmware update request. At+fwup=<Serv IP Address>,<Server port Number>,<Src port number> ; Here you need to specify the Server IP address as the IP address of the Firmware update Server (Host PC), the Server port as the port number used in the GSDemo and the SrcPort as the port number that the node will use for communication (in this case we used 8010). Once the command is issued, the firmware update will start. Once the GSDemo receives the packet from the node, it will start sending the updated binary. Upon successful completion, the GSDemo will wait for any other firmware update requests, if any. If no request is received, the GSDemo will time out and close the session.

11. On completion of firmware update, you will receive a message "APP Reset-FW-UP-SUCCESS". Now verify the version number using AT+VER=? Command. Note the change in the version number for S2W APP VERSION

```
at+fwup=192.168.3.101,8010,8010
 Firmware upgrade is going on, Please wait....

OK

APP Reset-FW-UP-RECOVERY

APP Reset-FW-UP-SUCCESS
at+ver=?
S2W APP VERSION=2.2.3
S2W GEPS VERSION=2.2.2
S2W WLAN VERSION=2.0.16

OK
```

NOTES:

1. Firmware update can only be done within the same application type (i.e from WPS ver X to WPS ver Y), it cannot be done between different binaries options (Web ver X to WPS ver X) i.e. between web provisioning and WPS or Enterprise Security or RF test

ADDITIONAL REFERENCES

Serial to Wi-Fi Evaluation Kit Startup Guide.pdf

Serial to WiFi_Adapter_Guide.pdf

Detail description of the AT commands supported

Serial to WiFi_Command_Reference.pdf

List of the various AT commands supported

Serial to Provisioning Methods with S2W App Note AN039.pdf

Example of the provisioning methods supported and the steps necessary to connect to the infrastructure (i.e. Access Point) using either Web Based Provisioning or Wi-Fi Protected Setup (WPS).

Serial to WiFi Bridge App Note AN025.pdf

The GainSpan Ultra-Low-Power Wi-Fi System-On-Chip may be used as a transparent bridge to carry serial (UART) traffic over an 802.11 wireless link. Serial commands are used to manage the wireless network configuration. This application note will give the details necessary to setup this bridge.

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Version	Date	Remarks
1.0	9-Nov-10	GA

SP- 1.0