# **Provisioning Methods with S2W**

**Gain**Span<sub>®</sub>

## INTRODUCTION

**GS-AN039** 

The Serial to Wi-Fi application supports multiple methods of provisioning the device to connect to the infrastructure (i.e. Access Point)

- a) Web Provisioning using Limited AP Provisioning Mode
- **b**) Wi-Fi Protected Setup (WPS)
- c) Web Provisioning over Ad-hoc

Web Server based provisioning allows users to scan and choose a Wi-Fi Access point to connect to using a web browser either on their PC or handheld. The GainSpan (GS) Module based device may either generate an Ad Hoc Network or an Infrastructure Network for the PC or Handheld to join and launch the embedded web browser. The user may then select an access point and input the security pass code to connect to the AP.

Wi-Fi Protected Setup (WPS) enables users to connect their GS Module based device to their WPS enabled access point without having to input any pass codes. This method requires the AP to support WPS and have enabled either push-button method or pin method for association and authentication.

## SETTING UP WEB PROVISIONING USING LIMITED AP PROVISIONING MODE

In the S2W application, user may also access the embedded web pages by putting the device into the Limited AP Provisioning Mode. In this mode, the device acts as an access point for other devices, such as smart phones, etc., to connect as a client and provision the device. In the tera-term window, where AT commands are being entered, execute the following. (*Please note that parameters, such as IP addresses, etc. are for example purposes only.*)

۵ 🔍	:OM1	9:9600	)baud -	Tera Te	rm VT	
Eile	<u>E</u> dit	<u>S</u> etup	C <u>o</u> ntrol	<u>W</u> indow	<u>H</u> elp	
Ser at+ OK at+ OK at+ OK at+ OK at+ OK	ial2 nset wm=2 wa=G IP 2.16 dhcp webp	WiFi =192. S_Lim 8.1.1 srvr= rov=,	APP 168.1. itedAP :255.2 1 ,,1,,1	1,255. 9,,11 Sub <b>N</b> 55.255	255.255.0, et .0:192.168	.192.168.1.1 Gateway 3.1.1



1. Set the Static IP address on the Evaluation Board:

AT+NSET=192.168.1.1,255.255.255.0,192.168.1.1

- Set the wireless mode to limited AP so that the adapter can act as a limited wireless AP: AT+WM=2
- **3.** Set the AP network (*example creating using SSID GS\_Limited\_AP on channel 11*)

AT+WA=GS\_Limited\_AP,,11

IP SubNet Gateway

192.168.1.1: 255.255.255.0: 192.168.1.1

4. Start the DHCP server.

AT+DHCPSRVR=1

**5.** Enable provisioning through web pages. Enable saving profile and starting new NCM(network connection manager).

AT+WEBPROV=,,,1,,1

- 6. Associate the PC acting as the configuring device to provision the Evaluation Board.
- On the PC, go to Start -> Connect To -> Wireless Network Connection. Select the Wireless Network created in Step 3, in this example it is GS\_Limited\_AP, and click Connect.

(1) Wireless Network Connec	tion 🔀	19 Wireless Network Connection		
Network Tasks  Refresh network list  Set up a wireless network for a home or small office	Choose a wireless network Click an item in the lat below to connect to a wireless network in range or to get more information. ((g)) Intacct - Guest	Network Tasks	Choose a wireless network Cick an tem in the list below to connect to a greless network in range or to get more reformator:  ((g)) G5_Limited_AP Connected \$?	
Related Tasks	Southy enabled wheless network (WPA)     Southy enabled wheless network     Ithe context of the setwork     Ithe context of the setwork	Related Tasks	((q))     Virus_Installer     Automatic \$       ((q))     Virus_Installer     Automatic \$       ((q))     GainSpanDermo     Automatic \$       ((q))     GainSpanDermo     Automatic \$       ((q))     GS-Guest     Automatic \$       ((q))     GS-Guest     Automatic \$       ((q))     SS-Guest     Automatic \$	
	(P) And CC - Engineering Security-enabled wireless network (WPA) all SP_IDSS Unsecured computer-to-computer network. Connect		((Q))     Infact - Guest     #UII       ((Q))     Infact - Guest     #UII       ((Q))     Infact - Guest     #UII       (C)     (C)     Correct	

 Once the connection is established, open the web browser and enter the URL (<u>http://192.168.1.1/gsclient.html</u>). The IP address 192.168.1.1 was set in the previous steps.

9. This will launch the web provisioning page from the evaluation board.



C GSLink Client Provisioning - Windows Internet Explorer	
C	💌 🗲 🗙 Live Sea
File     Edit     View     Favorites     Tools     Help       (2)     ✓     Search web     (2)     ↓     (3)     ✓     (4)     ✓	
😭 🍄 🖉 GSLink Client Provisioning	0 · 0
<b>Gain</b> Span.	
Client Settings	
Wireless and Network Configuration	
Administrator Settings	

- **10.** From here, you may navigate to different pages
  - a. Wireless and Network Configuration (Proceed to Step 12)
  - b. Administrator setting (Skip to Step 14)
- **11.** Wireless and Network Configuration

You can connect to Wireless network by one of the following methods.

Client Settings
Please select one of the following methods to connect your device to the wireless network.
1. Select an Existing Network
2. Manual Configuration to Join a Network
Back

a. Select an Existing Network:

By selecting this option, the Node will start scanning and the displays the available APs. By clicking on Select button you can connect to the Selected AP by providing required credentials (Passphrase).

	Client Settings					
<u>Select</u>	from the following	existing networks				
Number	SSID	Signal Strength (dBm)	Security Mode	Channel		
1	spadoc	-16	No Security	1	Select	
2	LSCC-GUEST	-14	WPA/WPA2 Personal	1	Select	
3	wep	-34	WEP	1	Select	



After entering passphrase you can select the advanced options, which will displays the selection methods for obtaining IP address. You can get the IP address in two ways.

- 1. DHCP.
- 2. Static IP.

		Cli	ent Settings	
<u>Configure Wireless an</u>	nd Network Settings			
SSID:	LSCC-GUEST			
Channel:	1 💌			
Security:	WPA/WPA2 Personal 💌			
Passphrase:	•••••			
Confirm Passphrase:	•••••			
Advanced Options				
Select a method to obtain or	set the IP address.			
Acquire IP Address automatically (DHCP)				
Static IP Address Configuent Configuence Static IP Address Conf	uration			
Back Next				

b. Click Next to navigate to Wireless cofiguration summary page. This page displays the information about the SSID, Channel and Security type and provides an option to save and apply the settings.

	Client Settings				
<u>Wireless Configu</u>	Wireless Configuration Summary				
SSID:	LSCC-GUEST				
Channel:	<ul> <li>It is a second se</li></ul>				
Security:	WPA/WPA2 Personal				
Click on "Save and Apply" to confirm your settings, and then re-connect using the new wireless settings.					
Back	ave And Apply				



Click on "Save and Apply". Wireless settings will be applied to connect the Gainspan device to the LSCC-GUEST network.

$\frown$	A DESCRIPTION OF TAXABLE PARTY OF TAXABLE PARTY OF TAXABLE PARTY.	
(←)(	🔊 🍘 http://config.gainspan.local/gsclient.html 🖉 - 🖹 C 🗙 🍏 GSLink Client Provisioning 🛛	
File	Edit View Favorites Tools Help	
	x] GainSpan	
	Client Settings	
	<u>Wireless Settings</u>	
	Wireless settings have been applied to connect your device to the network: GSDemo021_KIRAN	

The Gainspan device will now reset and connect to the LSCC-GUEST network and start a network connection.

```
🖲 COM19:9600baud - Tera Term VT
 File Edit Setup Control Window Help
Serial2WiFi APP
at+nset=192.168.1.1,255.255.255.0,192.168.1.1
OK _
at+wm=2
OK
at+wa=GS_LimitedAP,,11
    ĪP
                       SubNet
                                        Gateway
 192.168.1.1:255.255.255.0:192.168.1.1
OK
at+dhcpsrvr=1
OK
at+webprov=,,,1,,1
OK
APP Reset-APP SW Reset
                       SubNet
                                        Gateway
     IP
 192.168.3.104:255.255.255.0:192.168.3.1
NWCONN-SUCCESS
```



#### **12.** Manual Configuration:

On this page you may configure the Wi-Fi related setting SSID, Channel, Security and Passphrase.

		Client Settings		
Configure Wireless and Network Settings				
SSID:	GSDem0			
Channel:	All			
Security:	WPA/WPA2 Personal			
Passphrase:	•••••			
Confirm Passphrase:	•••••			
Advanced Options				
Back Next				

And you also have Advanced Options, where you can obtain the IP address either by DHCP or by STATIC IP CONFIGURATION.

+ Attp://config.gainspan	local/gsclient.html	GSLink Client Provisioning ×	-
le Edit View Favorites Tool	s Help		
SSID:	GSDemo		
Channel:	All		
Security:	WPA/WPA2 Personal		
Passphrase <sup>-</sup>			
rasspirase.			
Confirm Passphrase	•••••		
Select a method to obtai • Acquire IP Address a • Static IP Address Co	n or set the IP address. automatically (DHCP) nfiguration		
IP Address:	192 .168 .21 .100		
Subnet Mask:	255 .255 .255 .0		
Gateway:	192 .168 .21 .1		
DNS Server:	0.0.0.0		
Back Next			



Click on Next navigate to Wireless configuration summary page			
	Client Settings		
Wireless Configurat	tion Summary		
SSID:	GSDem0		
Channel:	All		
Security:	WPA/WPA2 Personal		
IP Address:	192.168.21.100		
Subnet Mask:	255.255.255.0		
Gateway:	192.168.21.1		
DNS Server:	0.0.0.0		
Click on "Save and Apply" to confirm your settings, and then re-connect using the new wireless settings.			
Back Save A	And Apply		

Click on "Save and Apply", the selected wireless settings will be applied to connect the GainSpan device to the new network. The GainSpan device will now reset and connect to the new network and start a network connection.





#### 13. Administration Settings

Here you can change the Username and Password of the node.

			Client Settings
Administration Setti	ngs		
To disable web server securi	ty, please leave the followir	ıg fiel	ds empty.
Username:	GS_USER		
Password (at least 4 characters):	•••••		
Confirm Password:	•••••		
Back Save &	Apply		

Click on "Save and Apply", the selected information will be sent to Host processor and reset the Module. Now Host Processor has to send this information back to Module for Provisioning.

	Client Settings
Your administrator settings are saved.	

User can now continue using the various "AT" commands to step a serial to Wi-Fi Bridge and transfer data as showed in application Note AN025. Also, see the Serial to Wi-Fi Adapter Guide for details on the usage of the "AT" commands and the various features supported by the Serial to Wi-Fi Application



## SETTING UP WPS BASED PROVISIONING

## Wi-Fi Protected Setup (WPS)

In order to simplify the process of establishing a secure network, the Wi-Fi Alliance<sup>TM</sup> has defined a simplified Wi-Fi Protected Setup protocol allowing credentials to be exchanged between a client and AP without the need for manual creation, entry of the SSID or PSK. Two modes of operation are provided: *Personal Information Number* (PIN) and *Push Button Configuration* (PBC).

In PIN operation, a unique PIN number can be permanently associated with a client device or entered at the time of use. The PIN must be entered in the AP within a short time of device activation. In PBC mode, button on the Access Point must be pressed within a 2-minute period of providing the command to enable WPS on the client (either via button press or AT command). In both cases, an exchange then takes place between the client and AP providing the SSID and randomly-generated passphrase that can thereafter be used for secure communications. In both cases, security is, in part, dependent on the low likelihood of interception during the brief initial setup period.

To evaluate WPS, you have to load the serial to Wi-Fi application that supports WPS. Use the  $gs_flashprogram$  utility provided in the tools directory and the binaries from the  $\GainSpan\EvalKit->2_x_x->userapps->Serial to Wi-Fi (S2W) -> bin->Wi-Fi Protected Setup (WPS) directory that was installed with the evaluation kit software. Below are the steps to flash the module FLASH memory.$ 

- **1.** Power off the Evaluation Board using power switch (SW1=OFF).
- 2. Move the SW3 switch(s) to program position to put the module in program mode.



- 3. Power on the Evaluation Board using power switch (SW1 = ON)
- 4. Close the Tera Term Window.



5. Open a DOS window and go to the directory:

```
\GainSpan\EvalKit\2_x_x\tools\Flash_Program
```

6. Program the module flash using the gs\_flashprogram with the binaries in the Wi-Fi protected Setup directory as shown below. *Please note that illustrations and file names may differ. Illustrations are for example purposes only.* 

After launching the application, use the "Select Port" pull down menu to display all available Ports. Select the COM port from the list that is connected to the GainSpan Board. To program the flash, select the APP FW0 and APP FW1 banks and select the APP binaries are located in the GainSpan\EvalKit->2\_x\_x->userapps->Serial to Wi-Fi (S2W) -> bin->Wi-Fi Protected Setup (WPS) directory. Press the "Program Flash" button to transfer the binary files to the GainSpan node flash



memory. This procedure erases flash sector by sector prior to programming.

- **7.** Once the programming is done, power off the Evaluation Board moving switch SW1 to OFF position.
- 8. On the Evaluation Board move the SW3switch(s) to RUN mode
- 9. Launch the tera-term application and select the serial port that is being used
- 10. Turn on the evaluation board by moving switch SW1 to ON position
- **11.** After "Serial2Wi-Fi APP" shows on Tera Term, Evaluation Board is ready to be provisioned using WPS.

### For PBC Mode:

Issue the AT command for starting the WPS process.

AT+WWPS=1

"1" indicates the Push button mode.

Once the S2W receives the "at" command, it scans all the available radio channels looking for beacons whose Selected Registrar flag are set. The AP corresponding to each such beacon is stored. If the board finds a second Selected Registrar AP it stops scanning, having detected a session overlap. (This is a precaution to prevent connection to the wrong AP; it is presumed that the user has only pressed one button, so a second AP may belong to a different network or even be an attacker). If at the end of scanning all the channels, the S2W Evaluation Board has found a single Selected Registrar AP, it will connect to that AP to perform WPS registration.



Basic Wireless Settings	- Mozilla Firefox				
Eile Edit View History B	ookmarks <u>T</u> ools <u>H</u> elp				
<ul> <li></li></ul>					
🗋 Customize Links 🗋 Free Hol	tmail 📄 Windows Marketplace	🗋 Windows Media [	🗋 Windows 📄	http://192.168.0.30	l
LINKSY	∃ <sup>°</sup> by Cisco			Vireless-G Broa	Firmware \
Wireless	Setup Wireless Basic Wireless Settings	Security Wireless Security	Access Restrictions	Applications & Gaming MAC Filter   Adv	Administration ranced Wireless Settings
Wi-Fi Protected Setup	Wireless Configuration:	🔿 Manual 💿	Wi-Fi Protected	Setup	Wireless Networl you wish to exclude clients, choose B-0
	Wi-Fi Protected Setup <sup>TM</sup> Use one of the following for each Wi-Fi Protected Setup supported device: 1. If your client device has a Wi-Fi Protected Setup button, click or press that button, and then click the button on the right.				
<					
Done					

Figure 5: example of virtual button push (Linksys AP)

Once the connection is complete, this message is sent to the host processor:

SSID= <SSID of the associated AP>

CHANNEL= < Channel number of the associated AP>

PASSPHRASE= < Passphrase of the associated AP>

OK: the status

If the connection is not success, then an "ERROR" message is sent to host processor.

Once the board is associated with the AP, user can issue the AT (at+ndhcp=1) command to get the IP address from DHCP server running or set the IP address statically using at+nset command. At this point, it should be possible to communicate with the board from the AP's network. Use the AP's Active Client list (shown next page) to discover the IP address the new device has received and confirm the device is connected to the AP. You should be able to issue a PING command from node to AP and to node IP address from any host computer in the same subnet.

🕲 DHCP Active IP Table - Mozilla Fir	efox			
http://192.168.1.1/DHCPTable.htm				
DHCP Active IP Table				
DHCP Server IP Address: 192.168.1.1				Refresh
Client Host Name	IP Address	MAC Address	Expires	Delete
	192.168.1.101	00:1d:c9:00:0b:a4	23:59:52	
LPT-RAVI	192.168.1.100	00:1c:25:97:c9:c5	23:52:27	
				Close

Example of Active Client list (Linksys AP)

If the connection is subsequently lost, a "Disassociation Event" message is sent to the host processor. Now it is up to the host processor to decide if it wants to establish the connection using WPS or through normal association process as the host processor has already received the information from the AP while previous association through WPS.



#### For PIN Mode:

Set a valid PIN <12345670> to the AP which supports the WPS and you want the node to associate with.



Figure 7: Example of PIN entry (Linksys AP)

Issue the AT command for starting the WPS process.

AT+WWPS=2,12345670

Here: 2, indicates the PIN mode. And the second parameter is the WPS PIN.

Once the connection is complete, the below said message is sent to the host processor:

SSID= <SSID of the associated AP>

CHANNEL= < Channel number of the associated AP>

PASSPHRASE= < Passphrase of the associated AP>

OK: the status

If the connection is not success an "ERROR" message is sent to host processor.

The AP interface will generally inform the user when a client device has been successfully configured and connected. A specific example is depicted in figure below. Other APs may have differing GUI, messages, etc.

You can always check the DHCP client table of the AP to ensure that the device is properly connected. Once the board is associated with the AP, users may issue the AT (at+ndhcp=1) command to get the IP address from DHCP server running or set the IP address statically using at+nset command. At this point, it should be possible to communicate with the board from the AP's network. Use the AP's Active Client list to discover the IP address the new device has received. You should be able to issue a PING command directed to that IP address from any host computer in the same subnet.





## **SETTING UP WEB PROVISIONING OVER AD-HOC**

Serial to Wi-Fi firmware on the Evaluation Board includes a web-server and provisioning web-pages preloaded into the flash. Using AT commands, the Evaluation Board may be setup to be provisioned using the embedded web-server and web pages. This application note provides the steps to deploy the embedded web server and connect to the web pages via a browser.

Note: The steps below assume you have already followed the steps in the Serial to Wi-Fi Evaluation Kit Startup Guide and installed the necessary software and drivers.

The current method of accessing the embedded web pages is to use an Ad Hoc wireless network connection and a static IP on the Evaluation Board and PC. In the tera-term window, where AT commands are being input, execute the following. *Please note that parameters, such as IP addresses, etc. are for example purposes only.* 

<b>Q</b> (	:омз	:96001	baud - T	era Terr	n VT
<u>F</u> ile	<u>E</u> dit	<u>S</u> etup	Control	<u>W</u> indow	Help
Se at+ OK at+ OK at+ I9 OK at+ OK	rial ndhc nset wm=1 wa=G IP 2.16 webp	2WiFi p=0 =192. SWebp 8.65. rov=a	APP 168.65 rov,,6 200: 2 dmin,a	.200,2 Sub <b>N</b> 55.255 dmin	55.255.255.0,192.168.65.1 et Gateway .255.0: 192.168.65.1

**1.** Set the Static IP address on the Evaluation Board:

AT+NDHCP=0

```
AT+NSET=192.168.65.200,255.255.255.0,192.168.65.1
```

2. Set the Mode to adhoc mode:

AT+WM=1

- Create the Adhoc network (*example creating using SSID GSWebProv on channel 6*) AT+WA=GSWebProv,,6
  - IP SubNet Gateway
  - 192.168.65.200: 255.255.255.0: 192.168.65.1
- 4. Start the web provisioning mode.

AT+WEBPROV=admin,admin

- 5. Associate the PC acting as the configuring device to provision the Evaluation Board.
- 6. Setup the PC wireless network connection to a static IP in the same subnet as the Evaluation Board in Step 3.
- 7. On the PC go to Start->Connect to -> Show All Connections.



Setwork Connections	
<u>File E</u> dit <u>V</u> iew F <u>a</u> vorites <u>T</u> ools Adva <u>n</u> ced <u>H</u> elp	At
🕝 Back 👻 🌍 🖌 🏂 Search 🎼 Folders 🛄 -	
Address 🔕 Network Connections	💙 🔁 Go
Network Tasks	
Create a new connection Change Windows Change Windows	
(v) View available wireless networks	
Solution Disable this network device 1394 Connection Connected, Firewalled 2394 Connected, Firewalled	Local Area Connection 2 Connected, Firewalled Virtual Network Adapter
Rename this connection     Wireless Network Connection     Connection     View status of this     connection     (v) inte((R) WiFi Lin Disable	Local Area Connection Matwork_cable unplugged, Fire \$7LM Gigabit Net
Change settings of this connection Status Repair	Vetworks
Other Places   Bridge Connections	
Control Panel Create Shortcut	
My Documents     My Computer     My Computer	
Details	
🤡 View or change settings for this connection, such as adapter, protocol, or modem configuration se	sttings.

- 8. Select the wireless adapter and right click and select properties
- Select the TCP/IP and select properties. Choose use the following IP address and set the IP address to a static IP address that is in the same subnet as the IP was generated in Step 1. Click OK.

🗕 Wireless Network Connection Properties 🛛 🕐 🔀	Internet Protocol (TCP/IP) Properties
General Wireless Networks Advanced	General
Lonnect using: Intel(R) WiFi Link 5100 AGN	this capability. Otherwise, you need to ask your network administrator for the capability. Otherwise, you need to ask your network administrator for the appropriate IP settings.
This connection uses the following items:	Dtain an IP address automatically
🗹 🐨 Network Monitor Driver	● Use the following IP address:
WLAN Transport	IP address: 192 . 168 . 65 . 55
	Subnet mask: 255 . 255 . 0
Install.	Default gateway:
Description	Obtain DNS server address automatically
Transmission Control Protocol/Internet Protocol. The default	● Use the following DNS server addresses:
wide area network protocol that provides communication across diverse interconnected networks.	Preferred DNS server:
Show icon in notification area when connected	Alternate DNS server:
✓ Notify me when this connection has limited or no connectivity	Advanced
OK Cancel	OK Cancel

**10.** Go to Start -> Connect To -> Wireless Network Connection. Select the Wireless Network created in Step 3, in this example it is GSWebprov, and click Connect.



#### AN 039: Provisioning Methods With S2W

Network Tasks Ch S Holved network for S Set as a understandwerk for a former and office Related Tasks ()	hoose a wireless network d an iter in the lat below to connect to a gradean network in range of to get mare weature ((g)) Inform (measured retriese network ((g)) Breatwood ((g))	Activetik Taske Activetik Taske Active a strategis retwork for a hone or stall office Related Tasks	Choose a wireless network Od, in fair in the list below to connect to a ginless network in range or to get more references. Connected () Connected (
Tor a here or coal office Related Tanks	Unsecured intrinser notions. still ((Q1) breetwood	Tor a horse or shall office Related Tarks	Consequences computer network at 11
tetracking     Charge the order of     peterset networks     Charge obvioused     extings	((g))	Inern doot wretess satisfing     Charge the order of preferred retricels     Charge obviocel     Charge obviocel     Sectors	(Q)         Security-instand numbers network (NFA)         (1)           ((Q))         benetised         (1)           ((Q))         Security-instand numbers network         (1)           ((Q))         Matchewit         (1)
	Courts and of metors network (ATA2)     Sourts and of metors network (ATA2)     Sourts and of metors network     Sourts and of metors network     Concerned     Concerned     Concerned		1         Society enabled rendess network         K(III)           (10)         derrick         R. Society enabled rendess network (NTA)         K(III)           (10)         ZWIEZ-146         K(III)         K(III)           (10)         ZWIEZ-146         K(III)         K(III)           (10)         ZWIEZ-146         K(III)         K(III)

 Once connection is established, open your web browser and type URL (for example, http://192.168.65.200/gsclient.html ). This will prompt request for User Name and Password.

Authentication Required		
8	A username and password are being requested by http://192.168.1.99. The site says: "admin"	
User Name:	admin	
Password:		
	OK Cancel	

**12.** Type the username and password used in Step 4 and press enter. This will launch the web provisioning page from the evaluation board.

C C A http://192.168.65.200/gsclient.html	ク ~ 置 C ×  Ø GSLink Client Provisioning ×	
File Edit View Favorites Lools Help		
	X GainSpan	
	Client Settings	
Wireless and Network Configuration		
	Administrator Settings	

- **13.** From here, you may navigate to different pages
  - a. Wireless and Network Configuration
  - b. Administrator setting

NOTE: FOR EXPLORING DIFFERENT PAGES REFER TO "SETTING UP WEB PROVISIONING USING LIMITED AP PROVISIONING MODE" ON THE FIRST PAGE OF THIS DOCUMENT.



## **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 Wi-Fi Bridge App Note AN025.pdf

*Example of how to use the GS1011/GS1500M as a transparent bridge to carry serial (UART) traffic over an 802.11 wireless link* 

#### Firmware Update over Wi-Fi Interface using S2W App Note AN038.pdf

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

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Version	Date	Remarks
1.0	9-Nov-10	GA
1.1	16-Dec-10	Added MEE artwork
1.2	6-Jun-11	Added Setting up web provisioning using limited AP Provisioning Mode
1.3	9-Jun-11	Updated for GS1500
1.4	19-Oct-11	Updated artwork
1.5	6-Dec-11	Added navigation instructions for accessing different pages
		Added Wireless and Network Configuration instructions
		Added Administrator Settings instructions

Specifications, features, and availability are subject to change without notice.

SP-1.5