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WPS App note

Introduction:

Wi-Fi Protected Setup (WPS) is a standard for easy and secure establishment of a wireless home network, created by the Wi-Fi Alliance and officially launched on January 8, 2007.

The goal of the WPS protocol is to simplify the process of configuring security on wireless networks. The protocol is meant to allow home users who know little of wireless security and may be intimidated by the available security options to configure Wi-Fi Protected Access, which is supported by all newer Wi-Fi certified devices (but not older Wi-Fi devices).
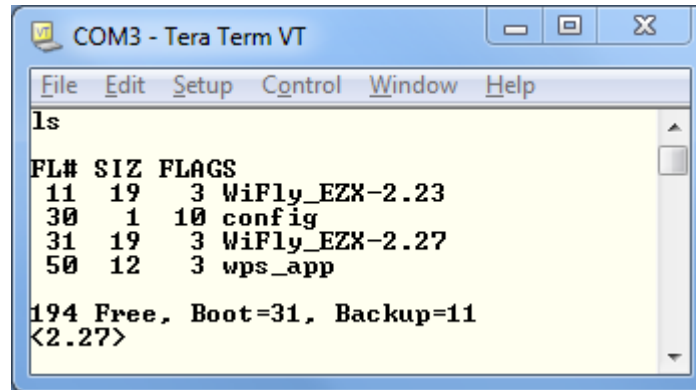
The most common mode of WPS is the Push Button Mode (PBC) in which the user simply pushes a button on both the AP and the wireless client (Roving Networks' WiFly module).

Version 2.28 and later of WiFly firmware brings the WPS feature to the WiFly family of products. As such, the RN-131, Rn-171 and products built upon these modules support WPS.

Firmware:

WiFly modules that ships with version 2.28 and later, will already have the WPS app. You can verify this by going into command mode and listing the files via the "ls" command.

As seen in the above diagram, file # 50 is the WPS app on the module.

Upgrading the module to version 2.28:

The following instructions detail the process of upgrading the module to version 2.28 and installing the WPS app.

For RN-131, RN-121, RN-123, RN-125 and RN-134 modules
1. Send the command "ftp u wifly-227.img"
2. Send the command "reboot"
3. Send the command "factory R" to reset to factory defaults
4. Associate the module to the network
5. Send the command "ftp r wps.img"

WPS in now installed and can be used on the RN-131 module.

For RN-171 and RN-174 modules
1. Send the command "ftp u wifly7-227.img"
2. Send the command "reboot"
3. Send the command "factory R" to reset to factory defaults
4. Associate the module to the network
5. Send the command "ftp r wps7.img"

WPS in now installed and can be used on the RN-131 module.

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Launching WPS App:
Once the module is updated to version 2.28 (or later) and the WPS App is installed, there are two modes of invoking the WPS function:

1. From the console, use the "wps" command

2. By using the ADHOC/factory reset GPIO 9:

In this mode, the WPS app is invoked when GPIO goes from LOW to HIGH. This can be achieved on the RN-134 and RN-174 boards by installing and removing the Adhoc/factory reset jumper.

Prior to using this mode, the WPS function on GPIO9 must be enabled. WPS on GPIO9 is disabled by default to avoid accidental invoking of the WPS function. To enable WPS on GPIO9, issue the "set system trigger 0x10" command.

NOTE #1: When the WPS app exists, it will reboot the module to associate with the WPS enabled AP. If at this time, GPIO9 is HIGH, the module will boot in adhoc mode. Care must be taken to drive GPIO9 LOW before the module reboots. A good indicator is the Red LED on the RN-134 and RN-174 boards. When it is flashing, the module is scanning for WPS enabled AP. This is good time to drive GPIO9 LOW.

NOTE #2: By default, the WPS code will print out messages on the UART as it scans channels, detect APs and tires to complete WPS. These messages can be disabled using the "set sys print 0" command.
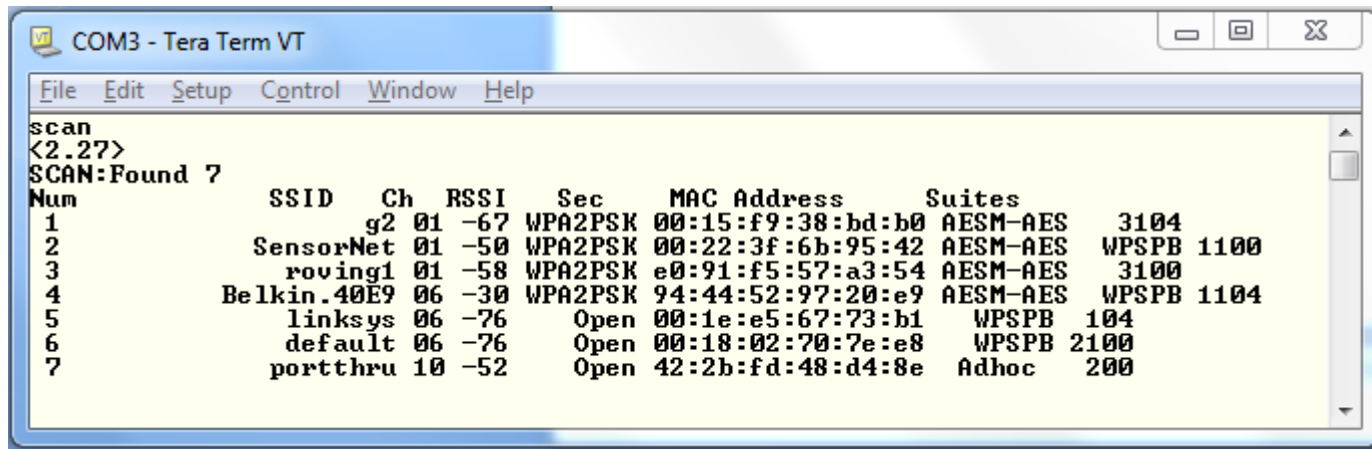
Status LEDs:
In WPS mode, the Red and Yellow LEDs blink as follows:

Red LED: Flashes while module is scanning for WPS enabled APs
Yellow LED: If a WPS enabled AP is found, the Yellow LED will turn SOLID while negotiation is in process. Once the process is successful, the WPS app will quit and the module will reboot. If the module is set to standard functions of GPIO (not alternate functions of GPIO4), the Green LED will start blinking at once per second. If alternate function of GPIO4 is enabled, the Green LED will be HIGH.

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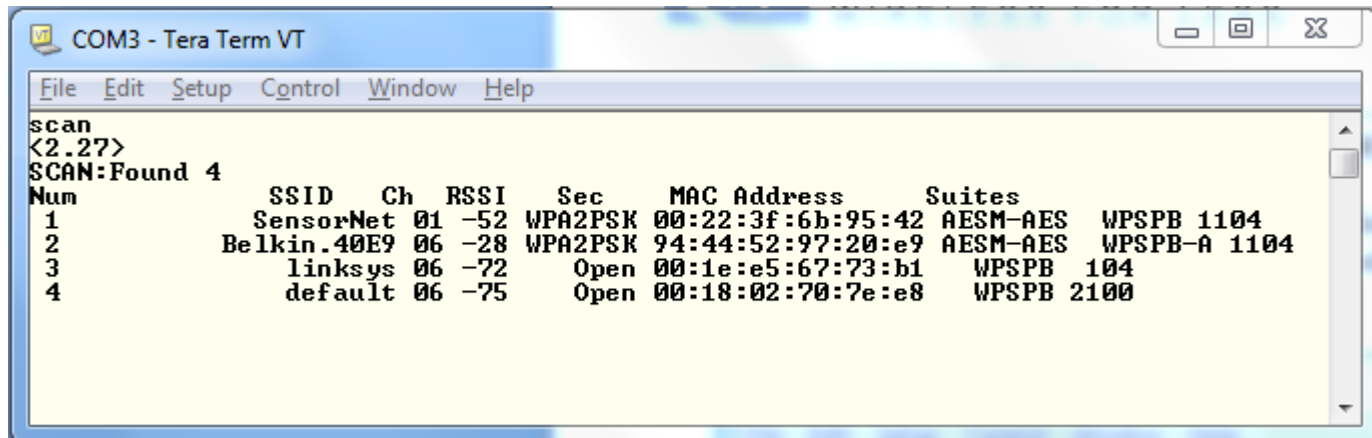**Scan format updated to show AP that support WPS:**

In version 2.28 and later, the scan output is modified to show AP that support WPS feature. Also, when a scan is performed after the WPS button is pushed on the AP, the scan returns a –A to indicate the AP is in WPS "active mode".

In the above diagram, the APs that support WPS are listed with WPSPB in the security suites. When the WPS button is pushed on an AP, it will show up as –A shown below.