CC31xx Connection Policy

CC31xx Connection Policy

Overview

This sample application demonstrates how to use/enable the various connection policies of CC3100 device.

WLAN profiles are designed to allow connections to pre-defined stored access-points. A profile provides the information required to connect to a given AP. This information includes the SSID,



security-type and security-keys of an AP. Each profile refers to a certain AP. The profiles are stored on the non-volatile memory, and therefore are preserved during device reset.

The following APIs are available for handling profiles:

- "sl_WlanProfileAdd" Used for adding a new profile. SSID and security info shall be provided, where returned
 value refers to the stored index (out of the 7 available)
- "sl_WlanProfileDel" Used for deleting a certain stored profile, or for deleting all at once. Index shall be the input parameter
- "sl_WlanProfileGet" Used for retrieving information of certain stored profile. Index shall be the input parameter WLAN connection policy defines four options to connect the SimpleLink device to a given AP:
- **Auto**: The device attempts to connect to an AP from the stored profiles based on priority. Up-to 7 profiles are supported and upon a connection attempt, the device selects the highest priority profile. If several profiles are within the same priority, decision will be made based on the security type (WPA2 -> WPA -> OPEN). If the security-type is also the same, selection will be based on received signal's strength.
- **Fast**: The device attempts to connect to the last connected AP. In this mode "probe request" is not transmitted prior to "authentication request", as both the SSID and channel are known.
- **Auto SmartConfig**: If this policy is set, CC3100 will automatically start the SmartConfig process after booting-up, if no command is received by host within 2 seconds.
- Any P2P: This policy can be used to connect to any visible WiFi-Direct device in P2P mode When configured
 in this mode, CC3100 will perform discovery and connect to the first found device using security type
 'SL_SEC_TYPE_P2P_PBC'. Refer P2P sample application for more details

The default connection policy of CC3100 device is Auto.

The configuration is performed by using the following API: "sl_WlanPolicySet". For additional information about these APIs, please refer to the doxygen API manual in the latest SDK release.

```
/* Reset policy settings */
sl_WlanPolicySet(SL_POLICY_CONNECTION , SL_CONNECTION_POLICY(0,0,0,0,0), 0, 0);

/* Enable auto connect (connection to stored profiles according to priority) */
/* Connection should first be established to the higher (secured) profile */
sl_WlanPolicySet(SL_POLICY_CONNECTION , SL_CONNECTION_POLICY(1,0,0,0,0), 0, 0);

/* Enable fast connect (connection to last connected AP) */
sl_WlanPolicySet(SL_POLICY_CONNECTION , SL_CONNECTION_POLICY(1,1,0,0,0), 0, 0);

/* Enable Auto Smartconfig policy */
sl_WlanPolicySet(SL_POLICY_CONNECTION , SL_CONNECTION_POLICY(0,0,0,0,1), 0, 0);
```

CC31xx Connection Policy

Application details

This application initializes CC3100 device and adds two profiles, one, a unsecured AP profile with priority 6 and the other WPA-2 secured AP profile with priority 7. It then enables 'Auto' connect policy. The device shall connect to the available AP of highest priority (in this case, **Secured**) profile.

Application deletes all the profiles and sets the policy to 'Auto SmartConfig' and restarts the device. Upon reset, the device waits for 2 seconds for command(s) from Host-MCU, and if no commands are received, it enters **SmartConfig** mode.

Application deletes all the profiles, connects to the open AP, set the connection policy to 'Fast Connect' and restarts the device. Upon reset, the device will connected to the last connected AP.

Note: This wiki page is only applicable for CC3100-SDK v0.5.2 and upward releases. For documentation on older SDKs' examples, refer corresponding file in <cc3100-sdk-installation-location>\cc3100-sdk\docs\examples\

Source Files briefly explained

i. main - Initializes the device, adds profiles and sets connection policies

Usage

- Connect the board to a Windows-PC and configure the terminal-program for seeing the logs [I CC31xx_&_CC32xx_Terminal_Setting_Wiki ^[1]] has detailed instructions for configuring the terminal-program
- Open main.c and change UNSEC_SSID_NAME, SEC_SSID_NAME and SEC_SSID_KEY as per your access-points properties
- Build and run the application using IAR/CCS
- See the self explanatory logs on the terminal-program's console.

The application adds both secured (priority 7) and unsecured AP profiles sockets(priority 6) and sets the connection policy to **Auto**The device tries to connect to AP - Upon connection attempt, it selects the highest priority profile. If several profiles are within the same priority, decision will be made based on security type (WPA2 -> WPA -> OPEN)

The application then connects to the open AP, enables FAST policy and restarts the device

On reset, the device tries to establish connection w/ the last connected AP, which in our case is the open AP

The application sets the 'Auto SmartConfig' policy and resets the device

- Launch the SmartConfig application on a Smartphone and complete the provisioning process
- · On success, below message will be displayed on the terminal

CC31xx Connection Policy

```
Connection policies application — Version 1.0.0

*******************************

Device is configured in default state

Device started as STATION

Device connected to the AP using 'auto' connection policy

Device was connected to the AP using host-driver API

Device connected to the AP using 'fast' connection policy

Device waiting to be connected using SmartConfig technology

Device connected to the AP
```

Note: References to **restart** in above sections mean, putting & waking-up the device in & from hibernate respectively.

Limitations/Known Issues

• The profile has to be explicitly added when using 'Fast connection-policy

References

[1] http://processors.wiki.ti.com/index.php/CC31xx_&_CC32xx_Terminal_Setting

Article Sources and Contributors

CC31xx Connection Policy Source: http://processors.wiki.ti.com/index.php?oldid=179982 Contributors: A0131814, A0132173, A0221015, Codycooke, Malokyle

Image Sources, Licenses and Contributors

File:Cc31xx cc32xx return home.png Source: http://processors.wiki.ti.com/index.php?title=File:Cc31xx_cc32xx_return_home.png License: unknown Contributors: A0221015 File: Cc31xx return sample apps.png Source: http://processors.wiki.ti.com/index.php?title=File: Cc31xx_return_sample_apps.png License: unknown Contributors: A0221015 File:Light bulb icon.png Source: http://processors.wiki.ti.com/index.php?title=File:Light bulb icon.png License: unknown Contributors: DanRinkes, PagePusher Image:Connection_policy.png Source: http://processors.wiki.ti.com/index.php?title=File:Connection_policy.png License: unknown Contributors: A0131814

License

THE WORK (AS DEFINED BELOW) IS PROVIDED UNDER THE TERMS OF THIS CREATIVE COMMONS PUBLIC LICENSE ("CCPL" OR "LICENSE"). THE WORK IS PROTECTED BY COPYRIGHT AND/OR OTHER APPLICABLE LAW. ANY USE OF THE WORK OTHER THAN AS AUTHORIZED UNDER THIS LICENSE OR COPYRIGHT LAW IS PROHIBITED.

BY EXERCISING ANY RIGHTS TO THE WORK PROVIDED HERE, YOU ACCEPT AND AGREE DE BOUND BY THE TERMS OF THIS LICENSE. TO THE EXTENT THIS LICENSE MAY BE CONSIDERED TO BE A CONTRACT, THE LICENSOR GRANTS YOU THE RIGHTS CONTAINED HERE IN CONSIDERATION OF YOUR ACCEPTANCE OF SUCH TERMS AND CONDITIONS.

License

1. Definitions

- Adaptation means a work based upon the Work, or upon the Work and other pre-existing works, such as a translation, adaptation, derivative work, arrangement of music or other alterations of a literary or artistic work, or phonogram or performance and includes cinematographic adaptation for the purpose of this License. The constitution of the work in the work of the

2. Fair Dealing Rights

Nothing in this License is intended to reduce, limit, or restrict any uses free from copyright or rights arising from limitations or exceptions that are provided for in connection with the copyright protection under copyright law or other

3. License Grant
Subject to the terms and conditions of this License, Licensor hereby grants You a worldwide, royalty-free, non-exclusive, perpetual (for the duration of the applicable copyright) license to exercise the rights in the Work as stated

- to Reproduce the Work, to incorporate the Work into one or more Collections, and to Reproduce the Work as incorporated in the Collections; to create and Reproduce Adaptations provided that any such Adaptation, including any translation in any medium, takes reasonable steps to clearly label, demarcate or otherwise identify that changes were made to the original Work. For example, a translation could be marked "The original work was translated from English to Spanish," or a modification could indicate "The original work has been modified."; to Distribute and Publicly Perform the Work including as incorporated in Collections; and, to Distribute and Publicly Perform Adaptations.

 For the avoidance of doubt:

i. Non-waivable Compulsory License Schemes. In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme cannot be waived, the Licensor reserves the exclusive right to collect such royalties for any exercise by You of the rights granted under this License;
ii. Waivable Compulsory License Schemes. In those jurisdictions in which the right to collect royalties through any statutory or compulsory licensing scheme can be waived, the Licensor waives the exclusive right to collect such royalties for any exercise by You of the rights granted under this License; and,
iii. Voluntary License Schemes. The Licensor waives the right to collect royalties, whether individually or, in the event that the Licensor is a member of a collecting society that administers voluntary licensing schemes, via that society, from any exercise by You of the rights granted under this License.

The above rights may be exercised in all media and formats whether now known or hereafter devised. The above rights include the right to make such modifications as are technically necessary to exercise the rights in other media and formats. Subject to Section 8(f), all rights not expressly granted by Licensor are hereby reserved.

A Boothicities.

ed in Section 3 above is expressly made subject to and limited by the following restrictions:

- Restrictions
 license granted in Section 3 above is expressly made subject to and limited by the following restrictions:

 You may Distribute or Publicly Perform the Work only under the terms of this License. You must include a copy of, or the Uniform Resource Identifier (URI) for, this License with every copy of the Work You Distribute or Publicly Perform. You may not offer or impose any terms on the Work that refer to this License and to the disclaimer of warranties with every copy of the Work You Distribute or Publicly Perform. When You may not sublicense the Work. You may not sublicense the Work as incorporated in a Collection, but this does not require the Collection apart from the Work is under the terms of this License. This Section 4(a) applies to the Work as incorporated in a Collection, but this does not require the Collection apart from the Work is under the terms of this License. If You create a Adaptation on not more than a public perform the extent practicable, remove from the Adaptation any credit as required by Section 4(c), as requested. You may Istingto Perform and Adaptation on not under the terms of: (i) this License; (ii) a later version of this License with the same License Elements as this License; (iii) a Creative Commons jurisdiction license (either this or a later license version) that contains the same License Istems of: (ii) or iii) the "Applicable License." If you license the Adaptation under one of the Itenses may not offer or impose any terms on the Adaptation that recripies that the terms of any of the Repulse License generally and the following provisions: (i) You must include a copy of, or the URI for, the Applicable License with every copy of each Adaptation You Distribute or Publicly Perform; (II) You must include a copy of, or the URI for, the Applicable License with every copy of each Adaptation of the recripient of the Adaptation of the Applicable License. If you Distribute or Publicly Perform; (II) You must include a copy of, or the URI for, the Applicable License with ever

5. Representations, Warranties and Disclaimer

UNLESS OTHERWISE MUTUALLY AGREED TO BY THE PARTIES IN WRITING, LICENSOR OFFERS THE WORK AS-IS AND MAKES NO REPRESENTATIONS OR WARRANTIES OF ANY KIND CONCERNING
THE WORK, EXPRESS, IMPLIED, STATUTORY OR OTHERWISE, INCLUDING, WITHOUT LIMITATION, WARRANTIES OF TITLE, MERCHANTIBILITY, FITNESS FOR A PARTICULAR PURPOSE,
NONINFRINGEMENT, OR THE ABSENCE OF LATENT OR OTHER DEFECTS, ACCURACY, OR THE PRESENCE OF ABSENCE OF ERRORS, WHETHER OR NOT DISCOVERABLE. SOME JURISDICTIONS DO NOT
ALLOW THE EXCLUSION OF IMPLIED WARRANTIES, SO SUCH EXCLUSION MAY NOT APPLY TO YOU.

6. Limitation on Liability
EXCEPT TO THE EXTENT REQUIRED BY APPLICABLE LAW, IN NO EVENT WILL LICENSOR BE LIABLE TO YOU ON ANY LEGAL THEORY FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL, PUNITIVE OR EXEMPLARY DAMAGES ARISING OUT OF THIS LICENSE OR THE USE OF THE WORK, EVEN IF LICENSOR HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

7. Termination

License 5

This License and the rights granted hereunder will terminate automatically upon any breach by You of the terms of this License. Individuals or entities who have received Adaptations or Collections from You under this License, however, will not have their licenses terminated provided such individuals or entities remain in full compliance with those licenses. Sections 1, 2, 5, 6, 7, and 8 will survive any termination of this License. Subject to the above terms and conditions, the license granted here is perpetual (for the duration of the applicable copyright in the Work), Notwithstanding the above, Licensor reserves the right to release the Work under different license terms or to stop distributing the Work at any time; provided, however that any such election will not serve to withdraw this License (or any other license that has been, or is required to be, granted under the terms of this License), and little license that has been, or is required to be, granted under the terms of this License.

8. Miscellaneous

Each time You Distribute or Publicly Perform the Work or a Collection, the Licensor offers to the recipient a license to the Work on the same terms and conditions as the license granted to You under this License. Each time You Distribute or Publicly Perform an Adaptation, Licensor offers to the recipient a license to the original Work on the same terms and conditions as the license granted to You under this License. If any provision of this License is invalid or unenforceable law, it shall not affect the validity or enforceablity of the remainder of the terms of this License, and without further action by the parties to this agreement, such provision shall be reformed to the minimum extent necessary to make such provision valid and enforceable.

No term or provision of this License, shall be deemed waived and no breach consented to unless such waiver or consent shall be in writing and signed by the party to be charged with such waiver or consent. This License constitutes the entire agreement between the parties with respect to the Work licensed here. There are no understandings, agreements or representations with respect to the Work not specified here. Licensor shall not be bound by any additional provisions that may appear in any communication from You. This License ward to be modified without the mutual written agreement of the License and You.

The rights granted under, and the subject matter referenced, in this License were drafted utilizing the terminology of the Berne Convention of 10f, the WPIO Copyright Treaty of 1996, the WPIO Performances and Phonograms Treaty of 1996 and the Universal Copyright Convention of a revised on July 24, 1971). These rights and subject matter take effect in the relevant jurisdiction in which the License terms are sought to be enforced according to the corresponding provisions of the implementation of those treaty provisions in the applicable national law. If the standard suite of rights granted under applicable copyright law includes additional rights not granted under this