

How to support WPA3 Personal in LWB/LWB+/LWB5+

Sterling™ LWB, Sterling™ LWB+, Sterling™ LWB5+

Application Note

v2.0

1 Introduction

When we refer to WPA3 Personal, we also refer to support for SAE (Simultaneous Authentication of Equals) to replace Pre-Shared Key (PSK) authentication, as well as the protection of management frames specified in the 802.11w amendment

OWE (Opportunistic Wireless Encryption) serves to enhance the security and privacy of users connecting to open (public) Wi-Fi networks, and it's also supported by WPA3. However, by default there is no support in the LWB, LWB+, or LWB5+ for OWE.

This guide establishes how to build and setup a WPA3-Personal SAE with the Sterling™ LWB, LWB+, and LWB5+ in Linux platform. While the LWB5+ is used as an example, the same procedures apply to the LWB and LWB+. For a reference setup in these steps, we're using the iMX8MP with Linux version 5.4.

2 Requirements

To set up the build environment for WPA3 Personal Wi-Fi connection, you'll need the following:

- iMX8MP Development Kit
- Sterling LWB5+ Development Kit
- Development PC with Yocto build environment
- Terminal software for console message dump
- An access point which supports WPA3 SAE mode (Cisco Aironet 2800 is used in this example for reference)
- Sterling LWB/LWB5 release packages: <https://github.com/LairdCP/Sterling-LWB-and-LWB5-Release-Packages>

3 Build Environment Setup

To support SAE in Sterling-LWB5+, it's mandatory to integrate the **sterling-supPLICant-lwb** release package from Ezurio, which includes the extra patches from Infineon to support WPA3 SAE. It's not possible to use the standard release from wpa-supPLICant.

The sterling-supPLICant-lwb is available as part of our Sterling LWB/LWB5 release packages on GitHub:

<https://github.com/LairdCP/Sterling-LWB-and-LWB5-Release-Packages>

You'll also need to enable the CONFIG_SAE and CONFIG_IEEE80211W options in the sterling-supPLICant-lwb config file and rebuild the sterling-supPLICant-lwb package. The config file is located under the following path:

```
"~/imx-yocto-bsp/build/tmp/work/aarch-poky-linux/sterling-supPLICant-lwb/10.4.0.10-r0/sterling_supPLICant-lwb-10.4.0.10/laIRD"
```

After modified the config file, you may need to use the following two commands to configure and compile sterling-supPLICant-lwb package:

```
bitbake -f -c do_configure sterling-supPLICant-lwb
bitbake -f -c compile sterling-supPLICant-lwb
```

Then you can build your own image which will include the new sterling-supPLICant-lwb build base on the new config setting.

For details on the Ezurio laIRD-cp Yocto layer integration, see the README at the following address:

<https://github.com/LairdCP/meta-laIRD-cp/tree/lrd-10.0.0.x/meta-laIRD-cp>

4 AP Setup

The AP used for this setup here is Cisco Aironet 2800 series Access Point. Configuring the AP in SAE mode is as follows:

1. Choose WLANs to open the WLANs page.
2. Click the ID number of the corresponding WLAN to open the **WLANs > Edit** page.
3. Choose the **Security > Layer 2** tabs.
4. From the Layer 2 Security drop-down list, choose **WPA2+WPA3**.
5. From the Security Type drop-down list, choose **Personal** from the following options:
 - Personal
 - Enterprise
6. While you have chosen Personal, Encryption Cipher is limited to CCMP128 (AES) and Authentication Key Management is in the PSK format. Also, if only WPA3 is selected as the security policy, Fast Transition is set to Disabled state and Protected Management Frame is set to Required state.
7. While you have chosen security type as Personal and the security policy as WPA3, configure the PSK in the Authentication Key Management section by specifying the PSK format and the key.
8. Save the configuration.

5 IMX8MP Setup

After loading the new image with new sterling-suplicant-lwb, you'll still need to properly configure wpa_supplicant.conf to connect with SAE network.

The following is a working example of wpa_supplicant.conf.

```
ctrl_interface=/var/run/wpa_supplicant
network={
ssid="WPA3_SAE"
key_mgmt=SAE
sae_password="wpa3saenetwork"
ieee80211w=2
}
```

6 Revision History

Version	Date	Notes	Contributor(s)	Approver
1.0	14 Nov 2022	Initial Release	Miles Chung	Dave Drogowski
2.0	11 Mar 2025	Ezurio rebranding	Sue White	Dave Drogowski