Developers Guide

Ayla Embedded Agent for Marvell HAP SDK

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Ayla Networks

Referenced Documents

Ayla Networks does not supply all documents that are referenced in this document with the equipment. Ayla Networks reserves the right to decide which documents are supplied with products and services.

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Revision	Date	Change Description
1.0	05-2017	Initial version

1 Introduction

This document describes the installation and use of the Ayla Embedded Agent software on modules using Marvell's HAP SDK.

This is a companion document to *Ayla Embedded Agent Systems Developer's Guide,* which covers all the portable interfaces and details not specific to the WMSDK.

This version of the document is for use with Ayla Embedded Agent version 1.2 and with HAP SDK 1.0 Release 3.

1.1 Audience

This document is for developers who are familiar with the Marvell HAP SDK and are evaluating the Ayla Embedded Agent or integrating ADA functionality into a product.

1.2 Related Documentation

Refer to Marvell's documentation covering the WMSDK and associated hardware. Especially see these Marvell documents:

- Marvell Wireless Microcontroller Development Host Setup Guide
- Developing with WMSDK Using Eclipse and Command-Line
- HAP SDK Developer Guide

Ayla Embedded Agent Embedded Systems Developer's Guide (AY006DAR0), for the portable aspects of the Ayla Embedded Agent. In that document, see the Related Documentation section for other useful documents.

1.3 Customer Support

Technical support is available through the Ayla Support website at: https://support.aylanetworks.com, or via email at support@aylanetworks.com.

2 HAP SDK Installation

Follow the instructions Marvell provides for installing the HAP SDK and the cross-compilation tools required. Also follow Marvell's instructions for installing drivers to access the serial port and JTAG devices for your evaluation board.

To be sure you can proceed, build and run one of the demos that Marvell supplies with the HAP SDK before installing ADA. You must be able to connect to the serial console and download programs using JTAG, and should refer to the Marvell documents for those steps.

3 Ayla Embedded Agent Installation

Extract the Ayla Embedded Agent package into the directory created when you extracted `hap_sdk_bundle-1.0.r3.18`.

```
cd hap_sdk_bundle-1.0.r3.18
tar xfz ada-hap_sdk-src-1.2.tgz
```

NOTE: If you cut-and-paste commands from this document, you may get UTF-8 characters that look the same as the simple ASCII ones. Be sure you're getting a minus-sign (dash), and not something else (i.e., em-dash).

Copy the files into the WMSDK tree.

```
cp -R ada-hap_sdk-src-1.2/* .
```

The first time you build the application, Makefile.ayla applies patches to HAP SDK for the Ayla Embedded Agent. These modifications are minor but required.

If re-installing the Ayla Embedded Agent after using an earlier version, make sure that only any new or changed patches not in the earlier version are applied. The easiest way to do this may be to revert the earlier patches before applying the new ones.

Build the demo application. The following examples assume your evaluation board is `mw300_rd` and your chip is `wmcore`. Otherwise, make the appropriate substitutions in Makefile.ayla.

```
make -f Makefile.ayla
```

This build shows three files that are built: `ayla_demo.axf`, `ayla_demo.bin`, and `ayla_demo.ftfs`. The following steps use a script `flashprog.sh` to download these and other files to the flash on the module.

To allow `flashprog.sh` to run without being `root` (under sudo), you may optionally configure your FTDI-based USB devices to be writable by you.

```
sudo usermod -a -G dialout $USER
newgrp dialout
newgrp
```

The two `newgrp` commands run subshells to make the group change effective.

Next, format the flash storage using:

```
make -f Makefile.ayla flash_layout
```

If the hardware device module being used has not run a HAP SDK app before, its flash layout must be initialized by downloading `boot2` and `wififw`. If you have already done this, you can skip this. Follow any Marvell instructions in preference to these.

```
make -f Makefile.ayla download_boot2
make -f Makefile.ayla download_wifi
```

Download `ftfs` and `mcufw` to the evaluation board as shown below:

```
make -f Makefile.ayla download_ftfs
make -f Makefile.ayla download
```

At this point, push the reset button and the device should boot into the demo.

4 Run the Demo for the First Time

Refer to *Ayla Embedded Agent for Marvell WMSDK* for detailed information on this section. It explains the steps necessary to configure the device to communicate with the Ayla cloud.

These steps include:

- Obtaining the Device Serial Number and Key XML Files
- Setting Device Serial Number and Key
- Setting the OEM Key
- Sending the Log Entries
- Wi-Fi Setup

5 Run the Demo

5.1 Register the Device

Please refer to the corresponding section in *Ayla Embedded Agent for Marvell WMSDK.*

5.2 Set Device Properties

The `ledevb` demo in `accessories/feature_examples/cloud_demo/ayla_demo` implements a subset of the Ayla development kit demo properties.

The sample application source is in `accessories/feature_examples/cloud_demo/ayla_demo/src` and composed of the following C files: `demo_common.c`, `demo_ledevb.c`, `conf.c`, `ota.c`, and `sched_conf.c`, along with the `board.c` file copied there by the `HAP SDK` build.

Refer to the corresponding section in *Ayla Embedded Agent for Marvell WMSDK* for detailed information about the properties and their purpose in the demo.

Another demo is present as `demo_outlet1.c`, which is an alternative to `demo_ledevb.c`.

6 Sample Application Code

The sample applications are provided as working examples of the usage of the Ayla Embedded Agent APIs. They should be evaluated as examples only and not considered necessarily the only way or even the best way to do things.

Refer to *Ayla Embedded Agent for Marvell WMSDK* for detailed information on this section.

7 Source Code Organization

The library source code for ADA, not including the sample_app, is delivered in the subdirectory `sdk/external/ayla`. This directory contains a Makefile and the libraries `libada`, `libadw`, `libayla`, and `libnet`. These libraries are described in detail in the *ADA Developer's Guide*. Refer to *Ayla Embedded Agent for Marvell WMSDK* for Marvell-specific information on the source code.

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