EmSPARK Suite

Getting Started Guide

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1. Introduction

The **EmSPARK Suite - Evaluation Kit**, **Getting Started** guide provides an overview of the prerequisites to use the Evaluation Kit and the Kit package contents. After completing this guide, see the `USER_GUIDE.pdf` tutorial for a description of the Evaluation Kit and the `CORELOCKR_LIBRARIES_GUIDE.pdf` for instructions to build and run the provided example applications.

1.1. Prerequisites

The following hardware and software are required to use the EmSPARK Suite:

- Shield96 Trusted Platform: Jumper for J3 must be in place.
- SD Card to install the filesystem (U1 and U3 cards should NOT be used due to HW Limitations)
- Network connection on the board
- Host computer connected to the board

The Shield96 SKU#2 board from Arrow comes with the QSPI loaded with the Sequitur Labs build of EmSPARK and Linux Kernel.

2. Installation Procedure

The process consists of these steps detailed in the following sections:

- Insert a blank SD Card on the board
- Connect the board to the host computer and start a serial console
- Power up the board
- Ensure the board has connectivity to a network

The board will register itself to the Sequitur Labs AWS when network connection is available and an SD Card is present.

2.1. Insert SD Card on the Board

The SD Card must be 4GB or larger. Insert a blank SD Card on the board. The installation process will partition, format and install the root filesystem on the card.

Notes:

- Inserting an SD Card that has a filesystem able boot the board will prevent the installation process.
- U1 and U3 cards should NOT be used due to HW Limitations.

2.2. Connect the Board and Start the Console

To start the serial console which is the TEE console where occasionally the Secure World prints output messages:

- Connect a micro USB cable to J10 (debug) micro USB port on the board
- Connect the host machine to the serial port
  - 115200 bps
  - No parity

  - 8 bits
  - 1 stop bit
  - No flow control
- Connect a micro USB cable to the PC/power micro USB port on the board, if you would like to power the board separate from the console connection.

2.3. Power up the Board

When the board boots for the first time will do the following:

- Boot to the Linux RAM FS
- Check for network connection
- Check for SD Card

The initial setup checks for network connection and SD Card. If the checks succeed, then the board will register itself to AWS and retrieve the Root filesystem.

This process is automated but can be observed from the console connection

The device is now able to run the example applications and modify the root filesystem.

The serial terminal will print output such as the following:

```
Checking: mmcblk1
Getparts:  /dev/mmcblk1 status:  2
Create partitions
...
eth0 at:  192.168.x.xxx
...
Enroll device at AWS ...
...
Enroll customer/device at AWS IoT ...
...
Retrieve device rootfs information from AWS ...
...
Payload server:  screechowl.seqlabs.com
Service port:    2270
Root filesystem: Shield96RootFS.tar.gz
...
Extract rootfs ...
```

Finally:

```
Welcome to Sequitur Labs CoreTEE
root@seqlabs_coretee:~#
```

2.4. Secure Boot Mode - Starting and Using the System

To start using the system on the board, start the console. After the board starts up:

- Access `username:password = root:root`.
- The board is configured to acquire an IP address using DHCP

The board is ready for your configuration:

- Required configuration:
  - The date on the board must be current for certificate management. When the board is used offline, the date must be configured. When the board is configured for remote access, verify that the date is current.
- Optional configuration:
  - Configure user(s). Only users in the `coretee` group have access to the TEE clients, therefore only users in the `coretee` group can execute applications using the CoreLockr APIs. If users are created to execute the example applications, they must be added to the `coretee` group.
  - Configure the board for remote access. The board is configured to acquire an IP address using DHCP. SSH is set up in the filesystem.

The board set up is complete. You can transfer to the board and execute example applications that use the EmSPARK Suite APIs.

See the User Guide for an overview of the example applications.

CHANGE HISTORY

DATE	VERSION	RESPONSIBLE	DESCRIPTION
January 27, 2020	1.0	Julia Narvaez	Produced document for release.