Peraton | LABS

SEDIMENT

Remote Attestation

Environmental Sensor Use Case

To be Presented at: Linux Foundation ONE Summit 2024 Event

Presenter: Zahir Patni

This research was developed with funding from the Defense Advanced Research Projects Agency (DARPA). The views, opinions, and/or findings expressed are those of the author(s) and should not be interpreted as representing the official views or policies of the Department of Defense or the U.S. Government.

SEDIMENT – Overview

- SEDIMENT (SEcure DIstributed IoT ManagemENT) uses a combination of software root of trust, remote attestation, and resource-efficient cryptography, to build a system that scales across heterogeneous computing platforms. The aim is to provide secure remote attestation framework that can be leveraged for lightweight resource constrained devices.

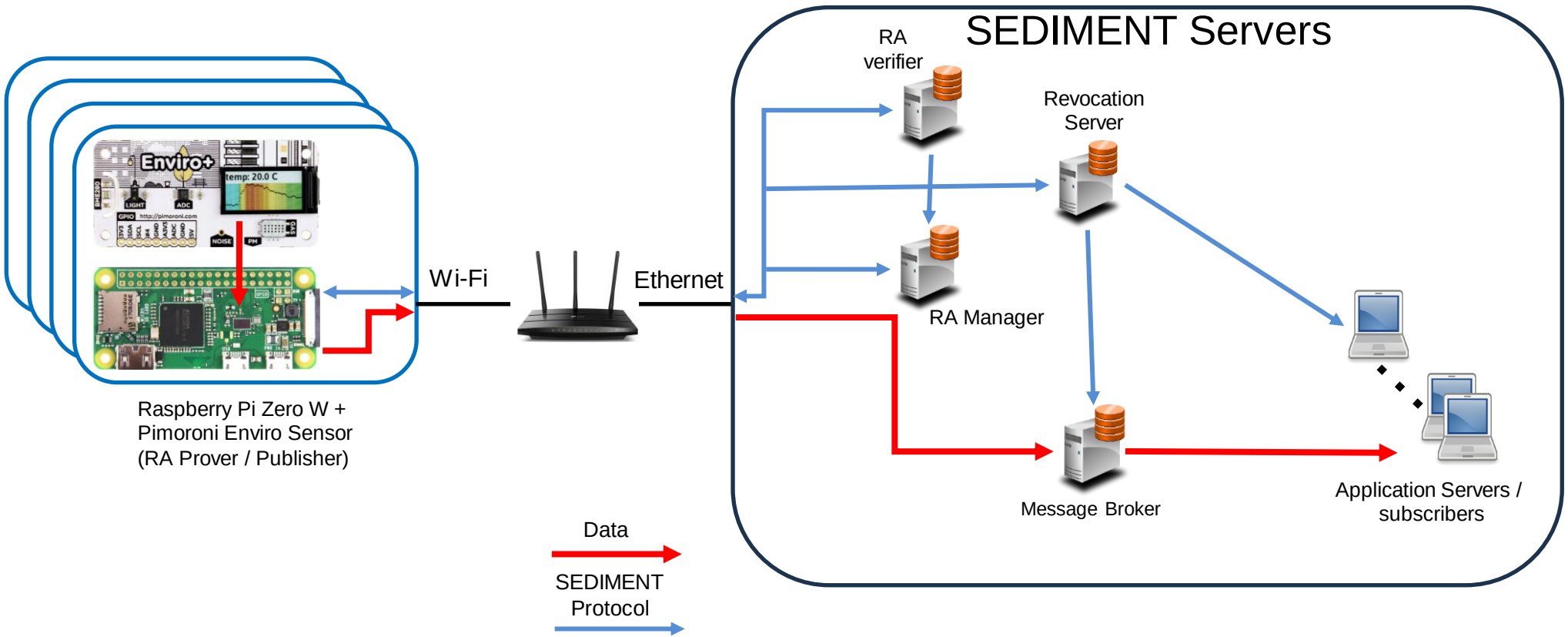
- Working with Linux Foundation 5G Super Blueprint (5G SBP), with one entry in 5G SBP Library and another entry in progress.
  - 5G SBP Whitepaper: https://lfnetworking.org/defining-the-5g-super-blueprint-integration-the-open-way/

SEDIMENT – Use Case

- This Use Case demonstrates how SEDIMENT can be used to authenticate lightweight resource constrained IoT devices, in this case environmental sensors.

- SEDIMENT, using the techniques and methods outlined above, is used to control network access of lightweight resource constrained environmental sensors.

Demo with Pimoroni Sensor + Raspberry Pi Zero W



SEDIMENT - Open-Source Components

Component	Description	Website
RA Verifier	Runs on a Remote Attestation Protocol (RAP) server to make an attestation decision about the wellbeing of a targeted IoT end device by evaluating supplied evidence against the Verifier's internal knowledge of the properties of the target.	https://github.com/sediment-lfproject/remote-attestation/tree/main/servers/verifier
RA Manager	Serves in its administrative capacity to pair up Prover and Verifier.	https://github.com/sediment-lfproject/remote-attestation/tree/main/servers/firewall
RA Prover	Runs on a targeted IoT End Device to supply evidence concerning properties of the target; evidence is gathered by means of a Network Endpoint Assessment, which could collect, safekeep, and produce evidence in response to attestation challenges.	https://github.com/sediment-lfproject/remote-attestation/tree/main/apps/common
Message Broker	The Message Broker utilized for SEDIMENT is Eclipse Mosquitto, which is an open-source message broker that implements the MQTT protocol.	https://mosquitto.org/

Four RPIs with Sensors Used In The Demo