

Matter Introduction

Steven Feng @ 2022.5.13

Agenda

- What's the Matter?
 - Ecosystem
 - Network Topology
 - Connectivity Stack
 - Multi Dwelling & Admin
 - Member & Membership
- Matter 1.0 [TBD]

What's the Matter?



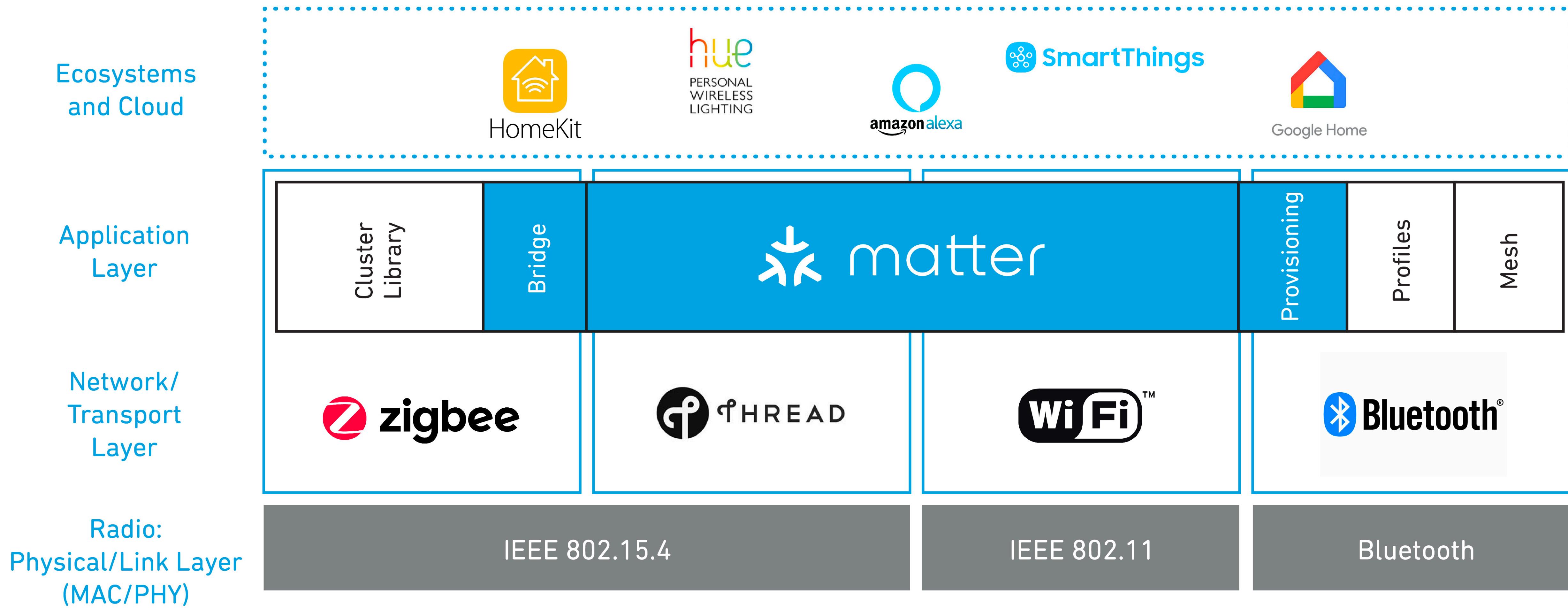
What's the Matter?

matter

- Formerly **Project CHIP** (Connected Home over IP), rebranded to Matter on 5/11, 2021.
- Supported by Amazon, Apple, Google, Samsung and Zigbee Alliance.
- Open source licensed by **CSA** (Connectivity Standards Alliance, formerly Zigbee Alliance).
- Matter 1.0 specification currently only available to members.

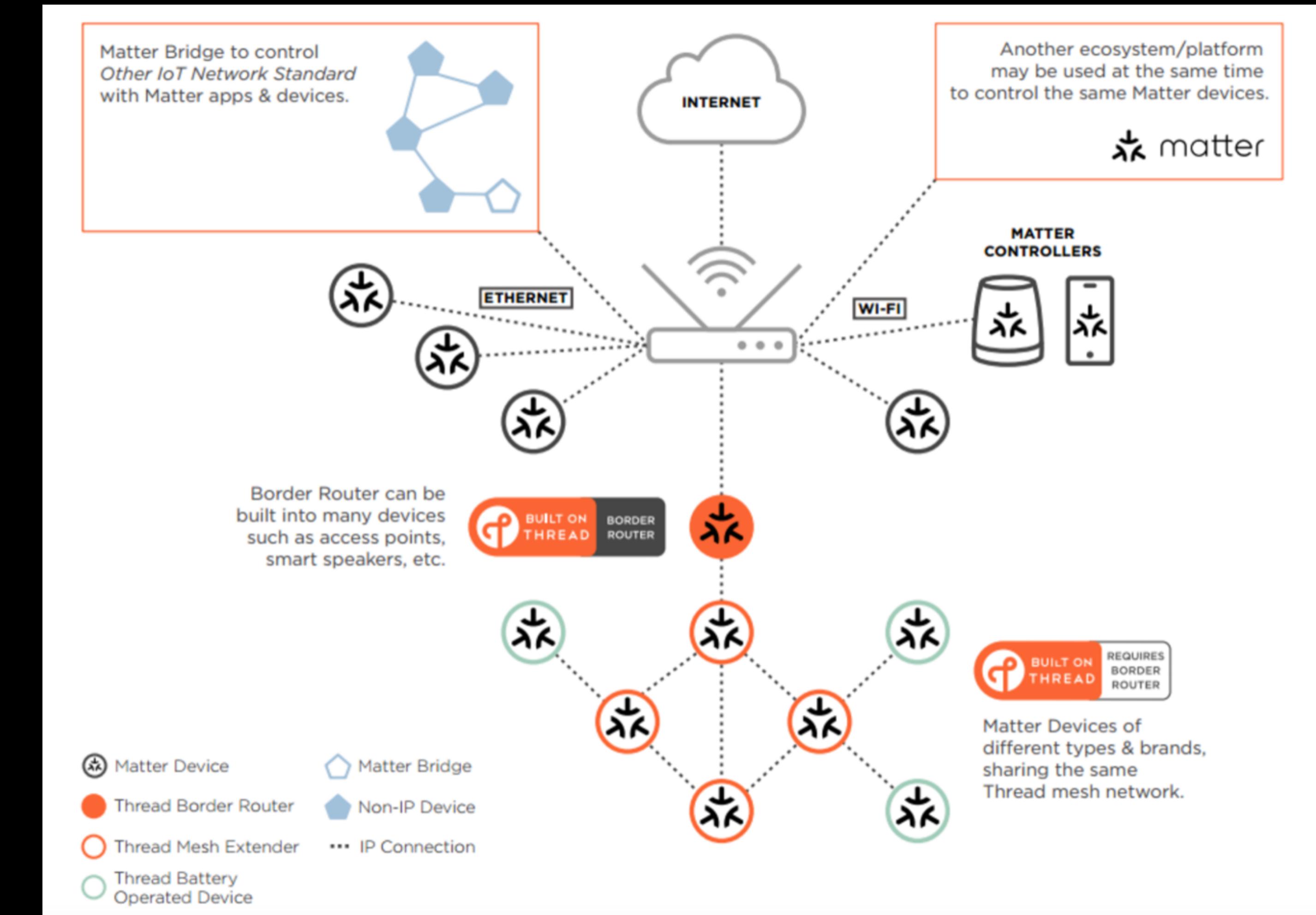


Ecosystem

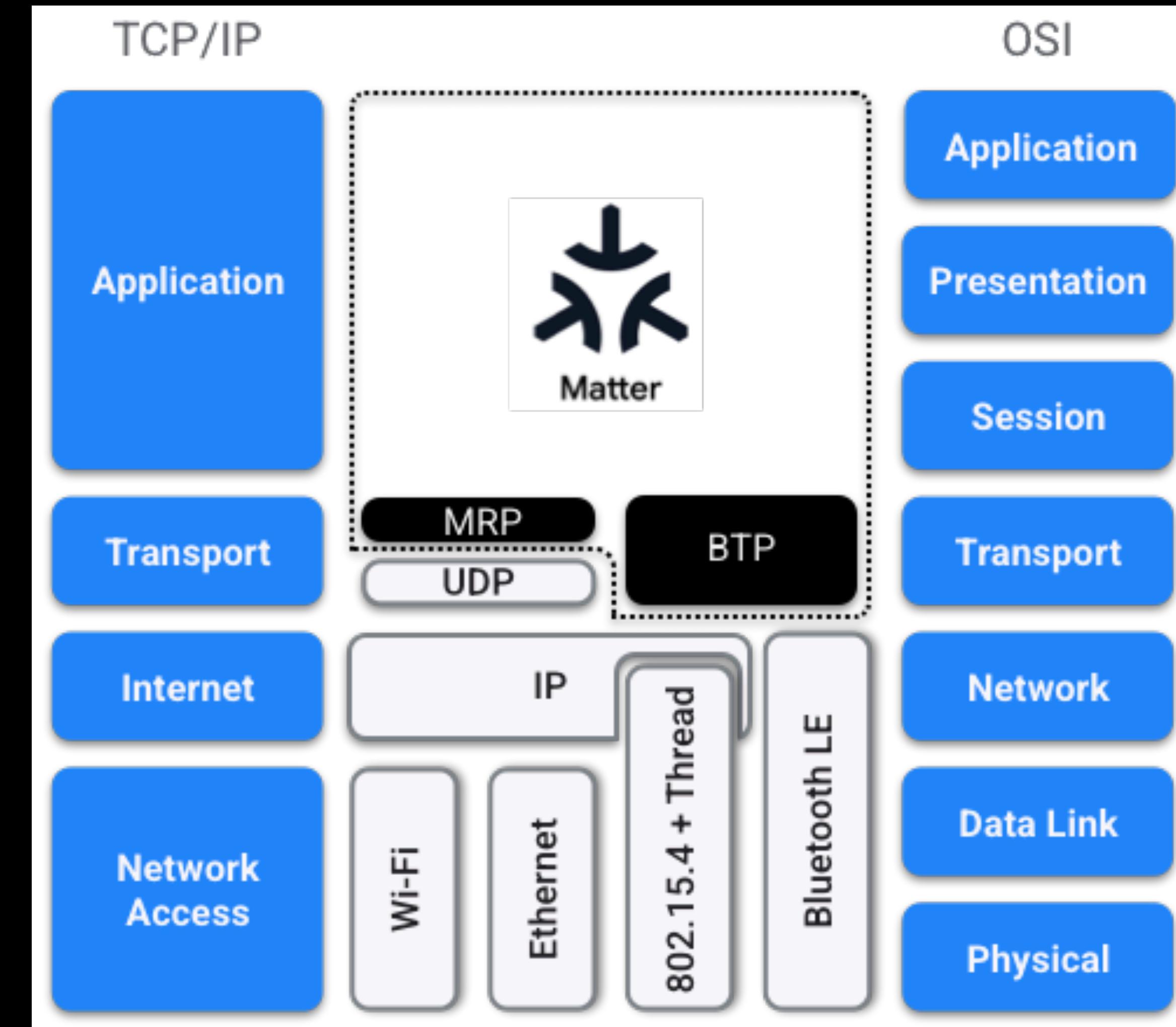


Network Topology

- Deploy on IPv6 network.
 - Wi-Fi (802.11)
 - Thread (802.15.4)
- **Boarder router**
 - Access to **Thread** network
- **Bridge**
 - Access to **other protocols** (Zigbee, Z-Wave, ... etc)



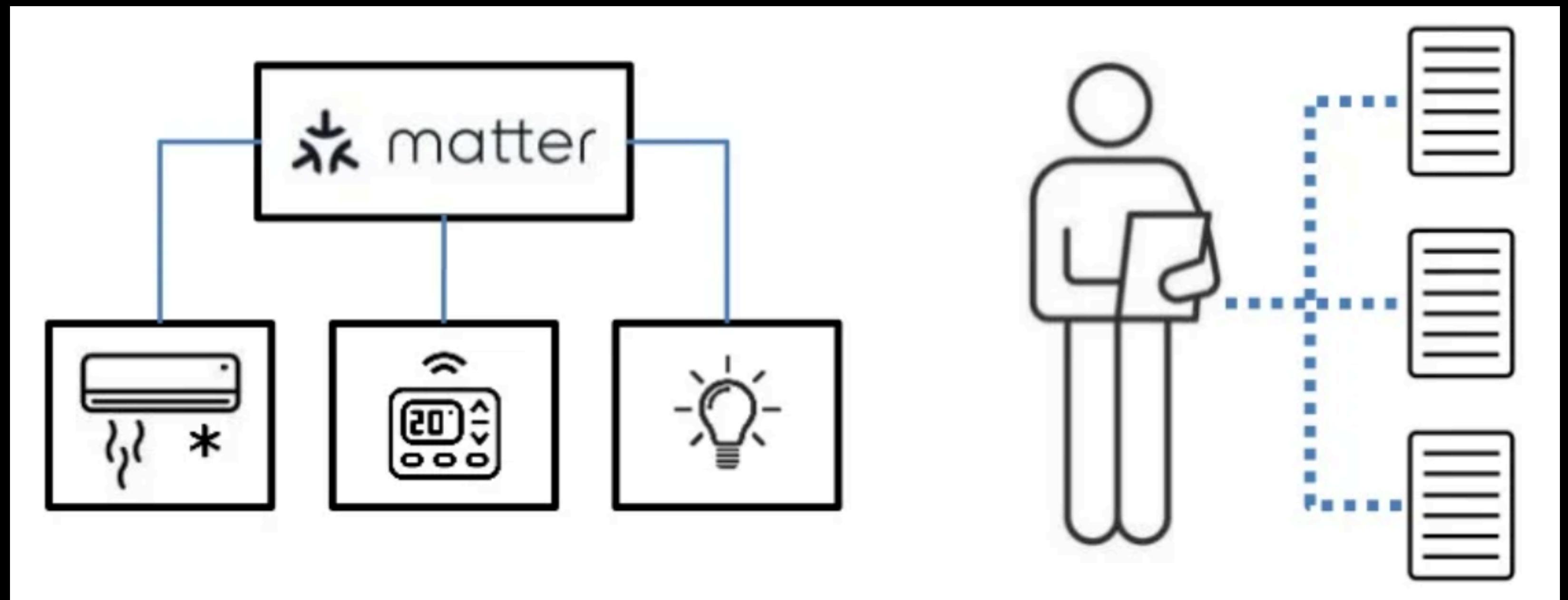
Connectivity Stack



Multi Dwelling

Enabling Solutions for Building Owners and Tenants

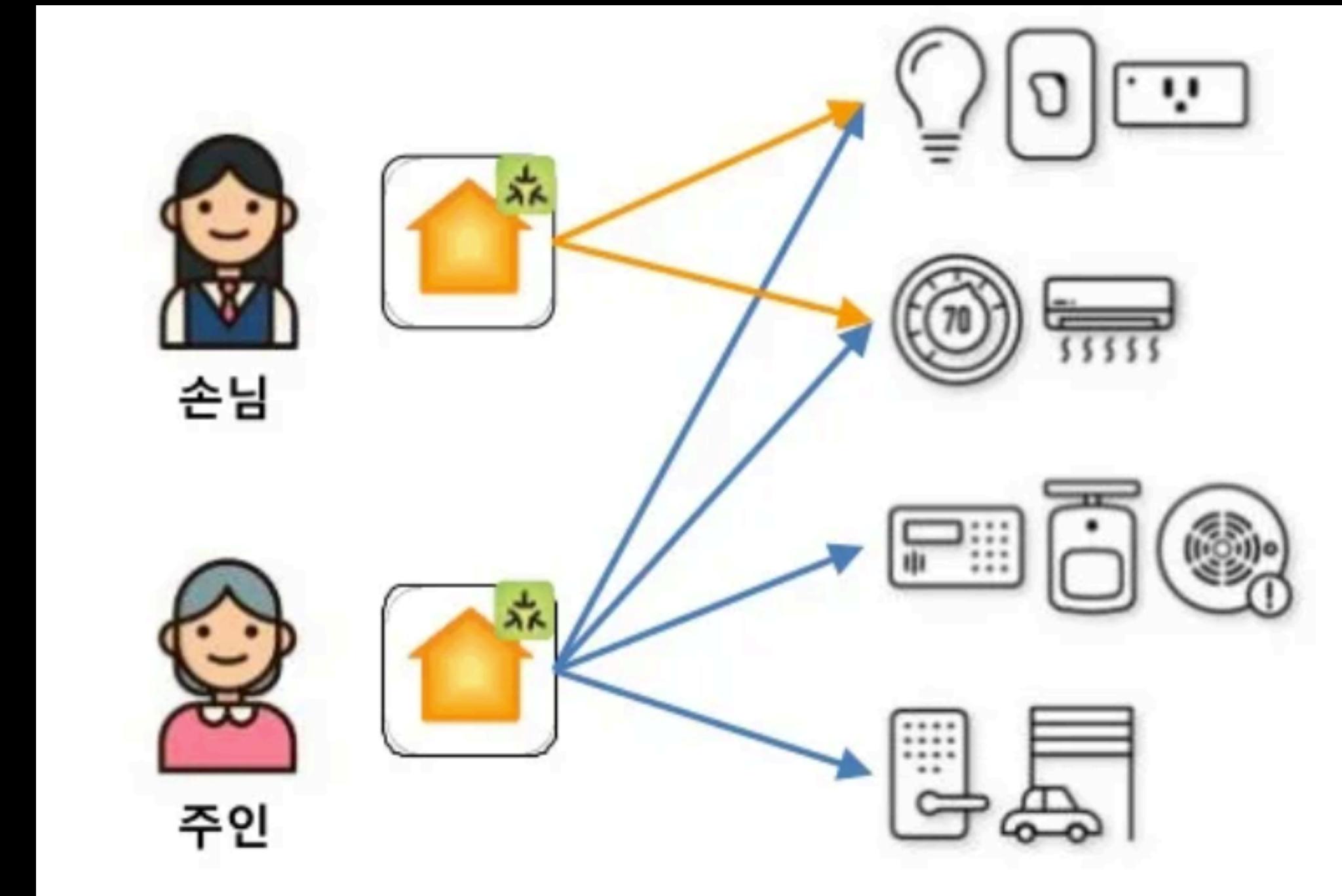
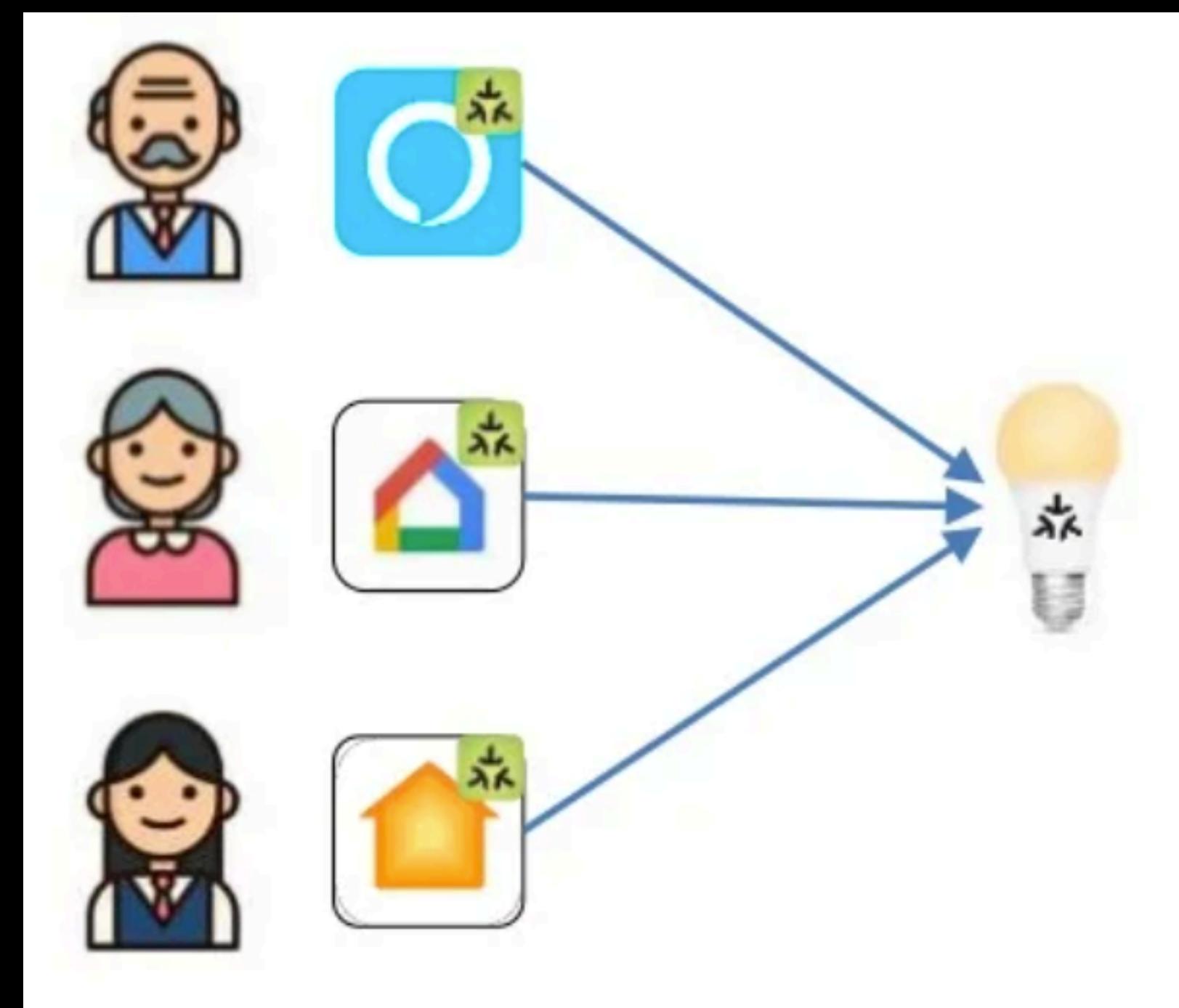
- Using Matter-Certified products makes it easier to maintain existing buildings.
- It is possible to solve the inconvenience caused by not interworking between the built-in system and the tenant-owned product.



Multi Admin

Meeting Individuals' Preferences

- Able to connect and use a specific device to multiple apps and ecosystems at the same time.
- Multiple family members individually connected to and used in their preferred ecosystem.
- You can set the control layer to differentiate device control rights for each user.



Member & Membership

Growing Rapidly

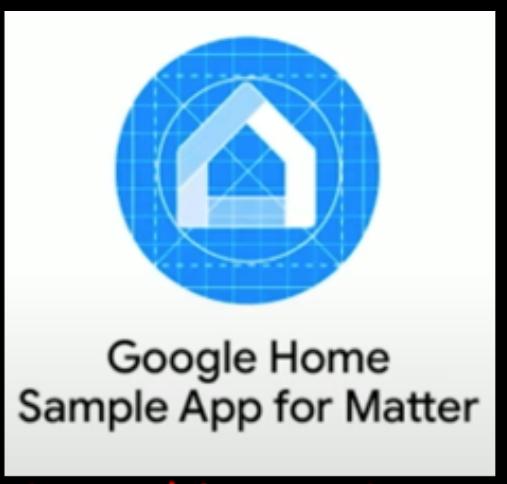
- **Associate**
 - White-label or re-labeled product.
- **Adopter (195)**
 - Access complete approved specification
 - Certify product through CSA program
- **Participants (248)**
 - Contribute and develop standards.
 - Access early specification.
- **Promoter (28)**
 - Adopt and approve standards.
 - All level benefits.



Google I/O 2022

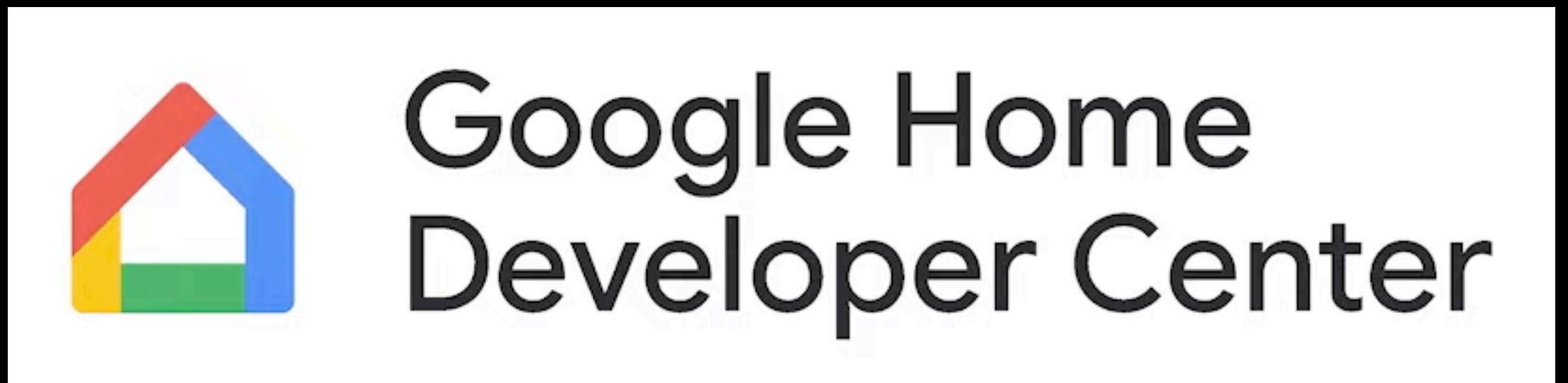
Matter Integrated Google Home

- Google Home Developer Center (developer preview in June)
 - Google Home Device SDK
 - Google Home Mobile SDK



Google Home
Sample App for Matter

Launching on June



Google Home
Developer Center

#GoogleIO

Native Matter Support for your apps

A smartphone displays the Matter logo, next to a smart lightbulb and a smart plug. To the right, a video frame shows a man speaking.

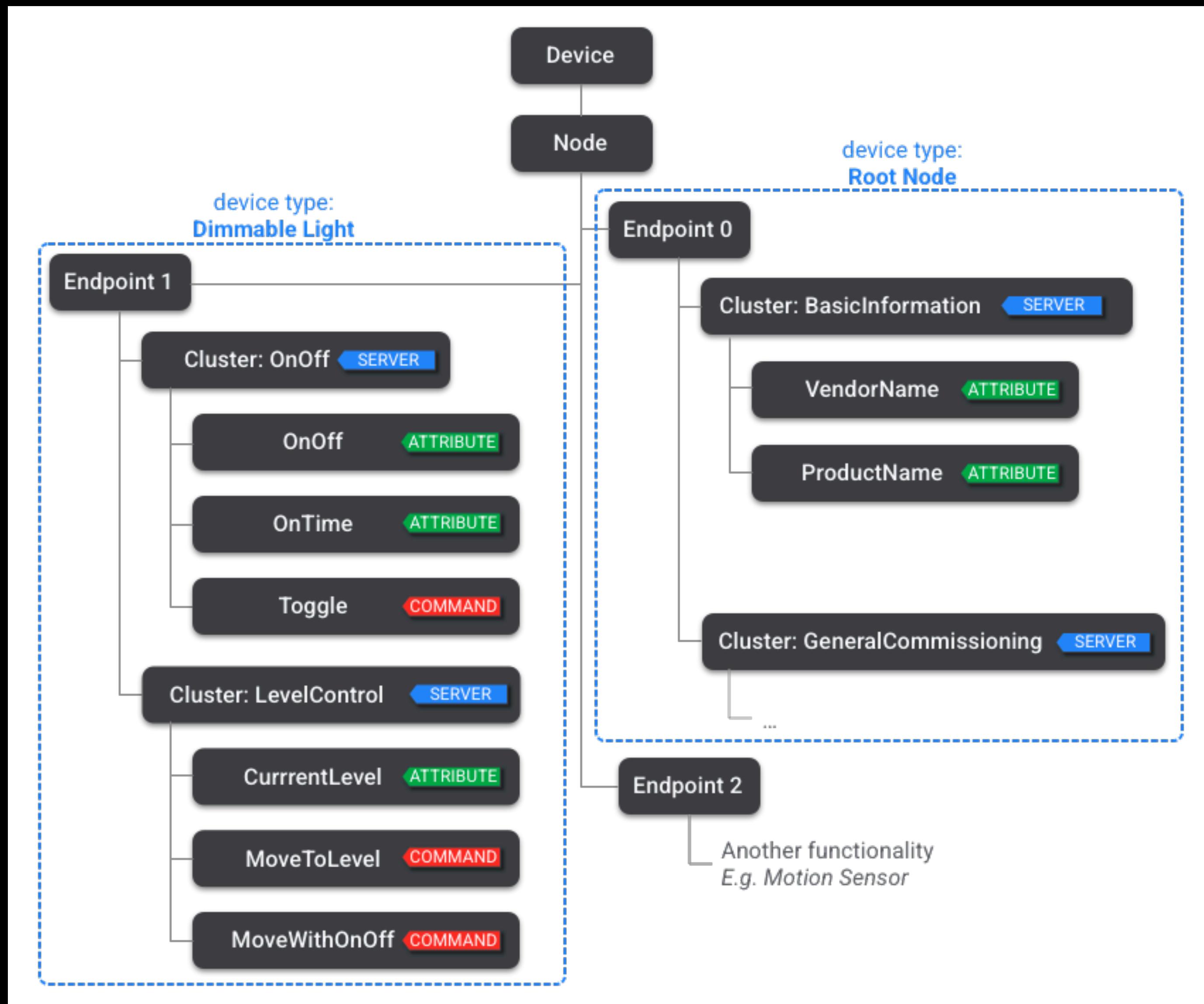
Matter 1.0 [TBD]

Currently only available to members.

Limited information from GitHub & forum discussion.

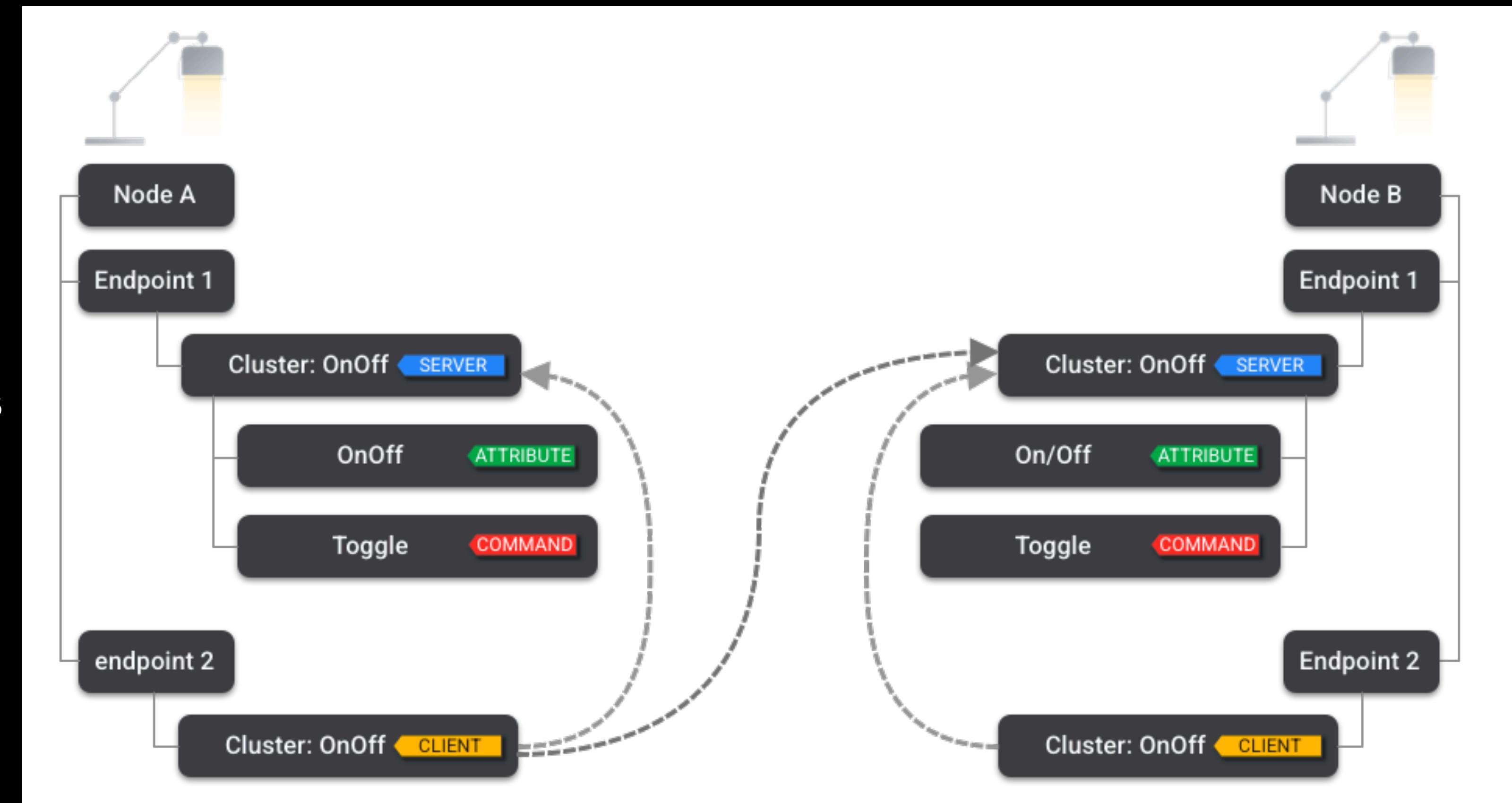
Data Model

- **Node**
 - A network-addressable entity with some functionality and uniqueness.
- **Endpoint (EP)**
 - A virtual device that provides some service(s).
 - Each node can have multiple endpoints.
 - EP 0 is reserved for the node configuration such as ACL & commissioning.
- **Cluster**
 - Multiple operations are combined into a reusable module.
- **Attribute**
 - What can be read or written.
- **Command**
 - The ability to trigger the Cluster to perform a certain behavior.

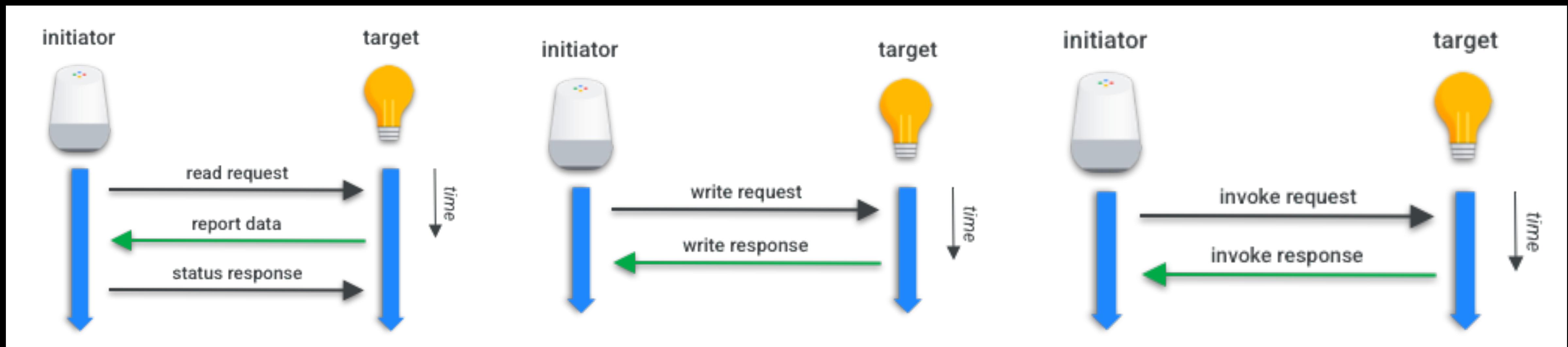
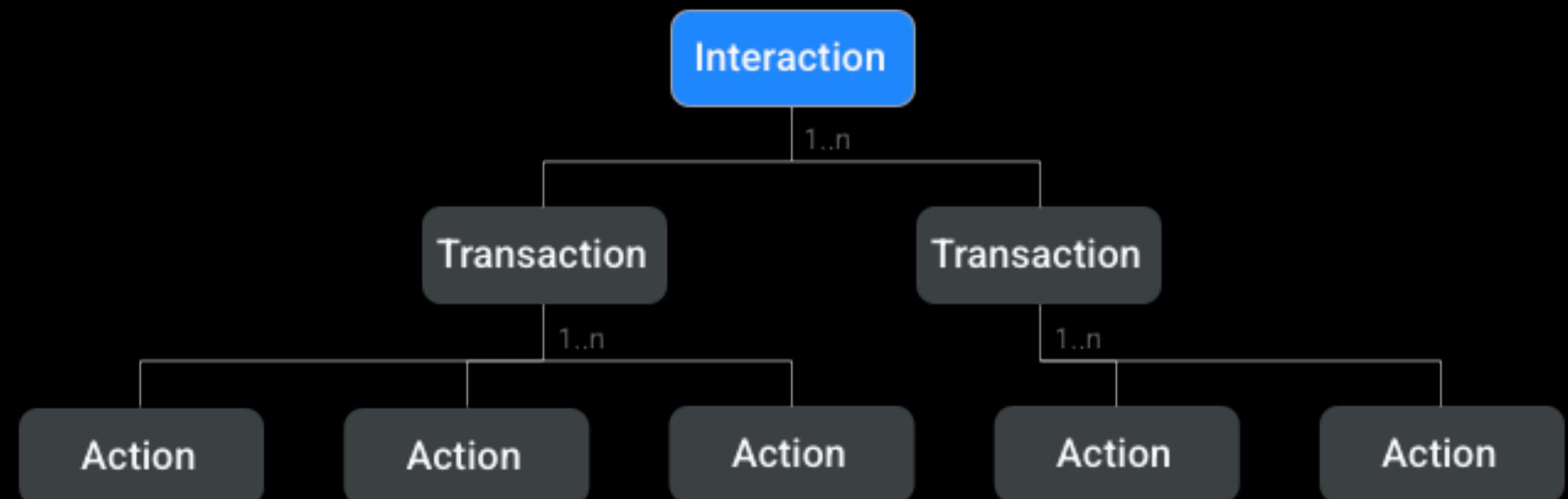


Data Model (cont'd)

- **Cluster Server**
 - Stateful. Holds attributes, events and commands.
- **Cluster Client**
 - Stateless. Initiate interactions with a server, performing
 - R/W attributes
 - Read events
 - Invocation of commands



Interaction Model



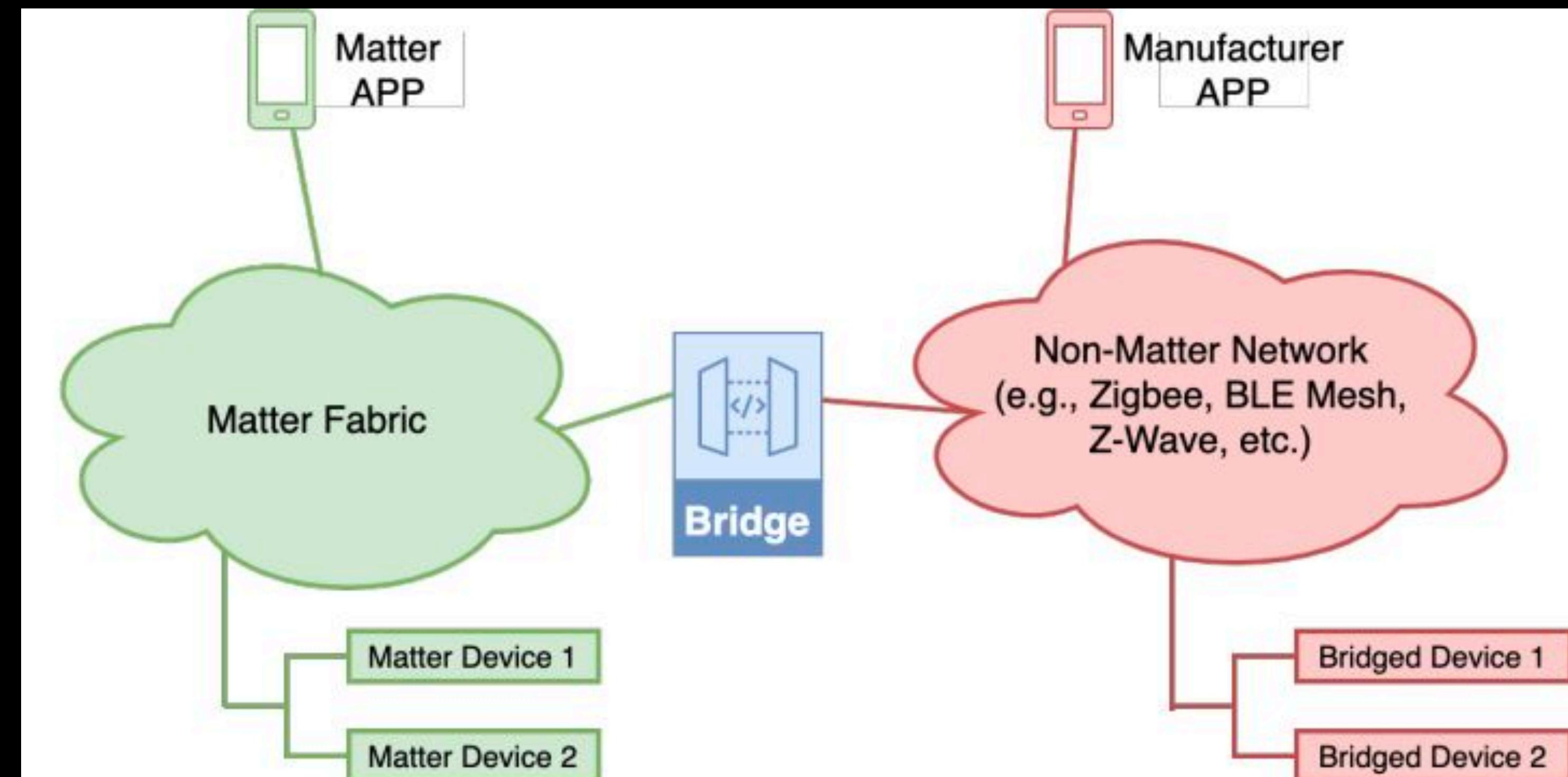
Read

Write

Invoke

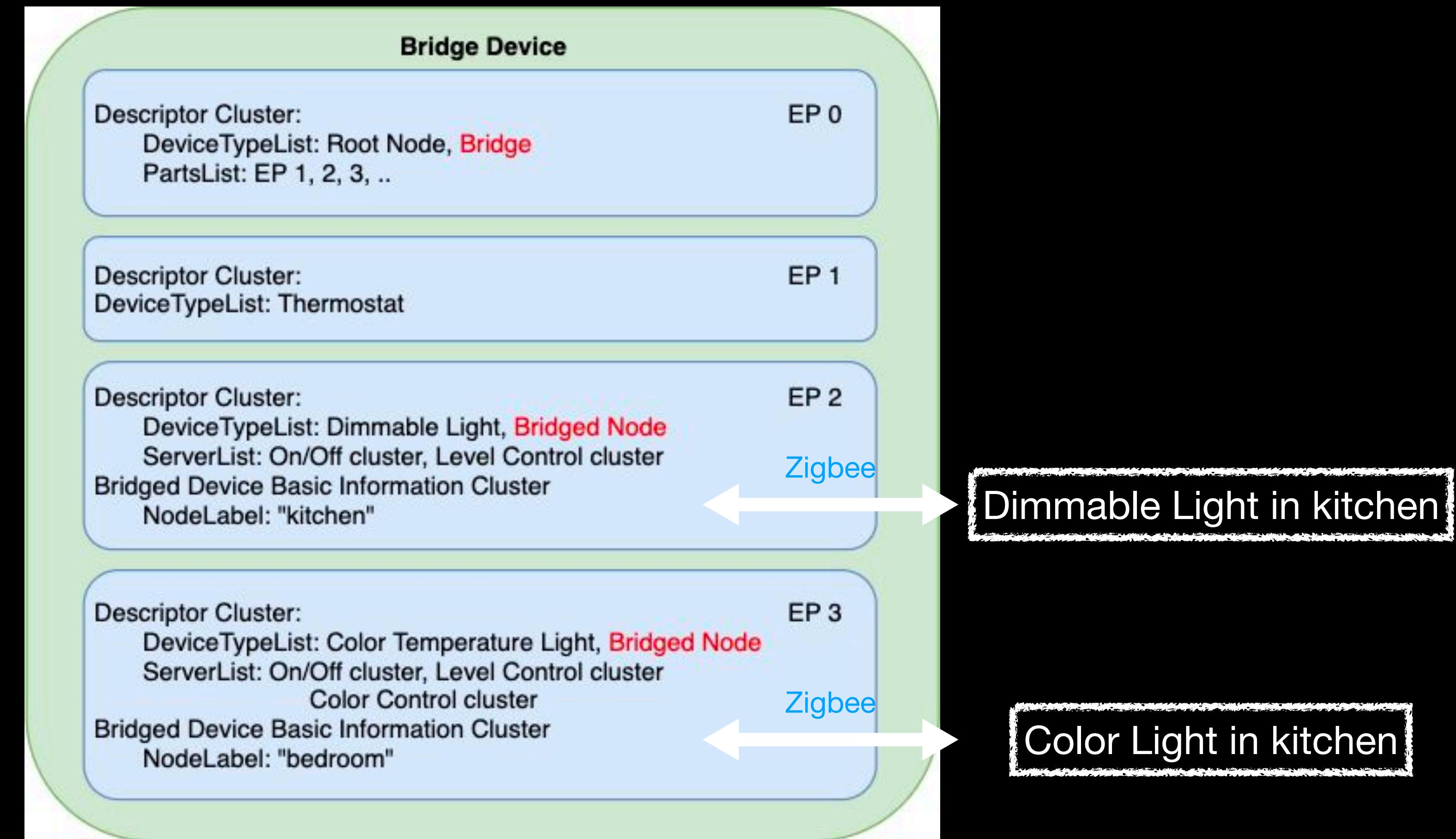
Bridge Device

- Bridge device allow non-Matter devices to join the Matter ecosystem (Fabric).
- Allowing users to control their Matter and non-Matter devices indiscriminately.



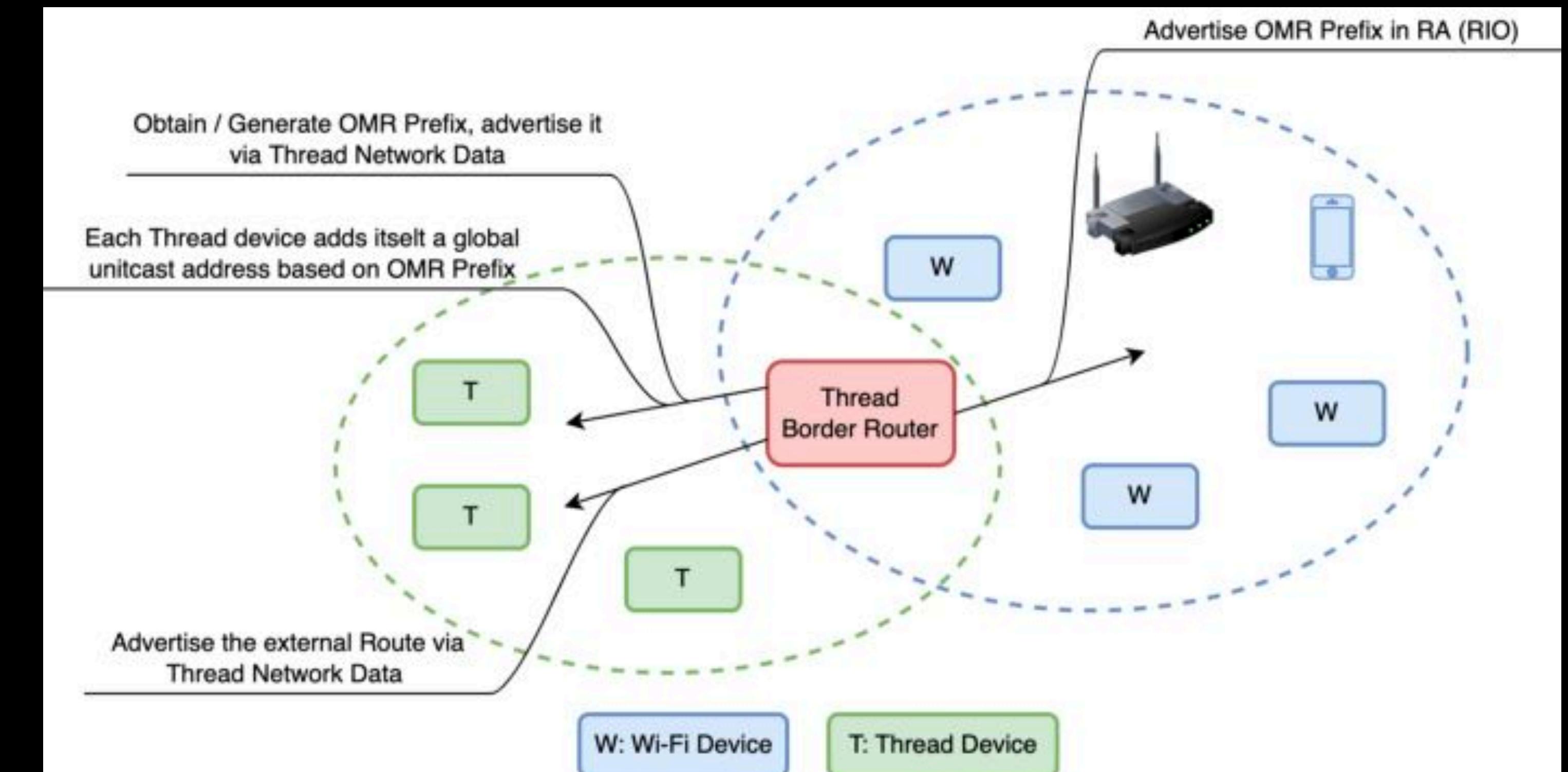
Bridge Device (cont'd)

- EndPoint 0
 - Device type “**Bridge**”
 - PartsList shows all bridged device.
- EndPoint 1
 - Bridge device own function
- EndPoint 2 & 3
 - Device type “**Bridged Node**”



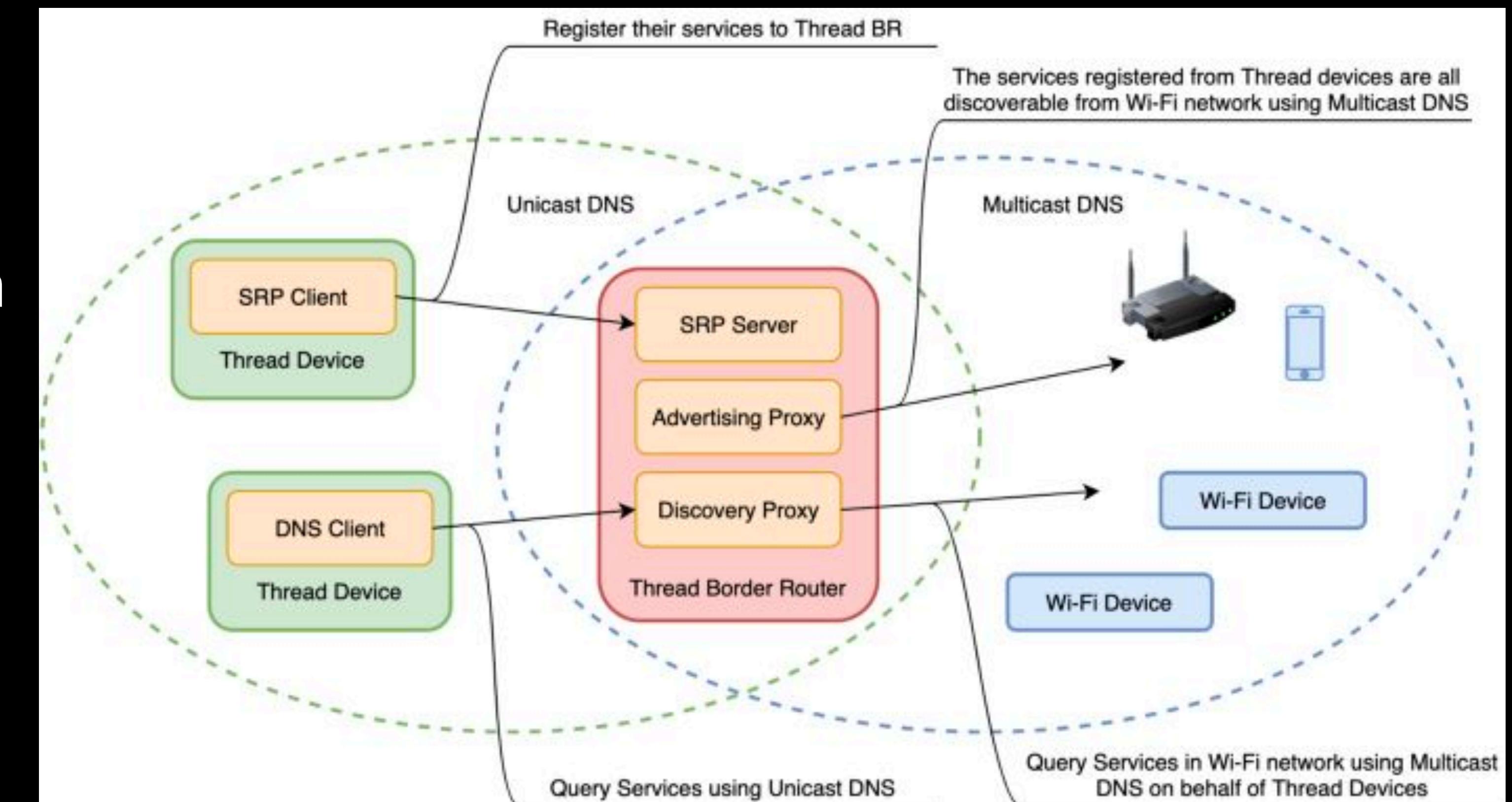
Thread Boarder Router

- Thread Boarder Router (BR) set OMR (Off-Mesh Routable) prefix for each Thread devices.
- BR forward IP frames w/ OMR between Thread and Wi-Fi network.



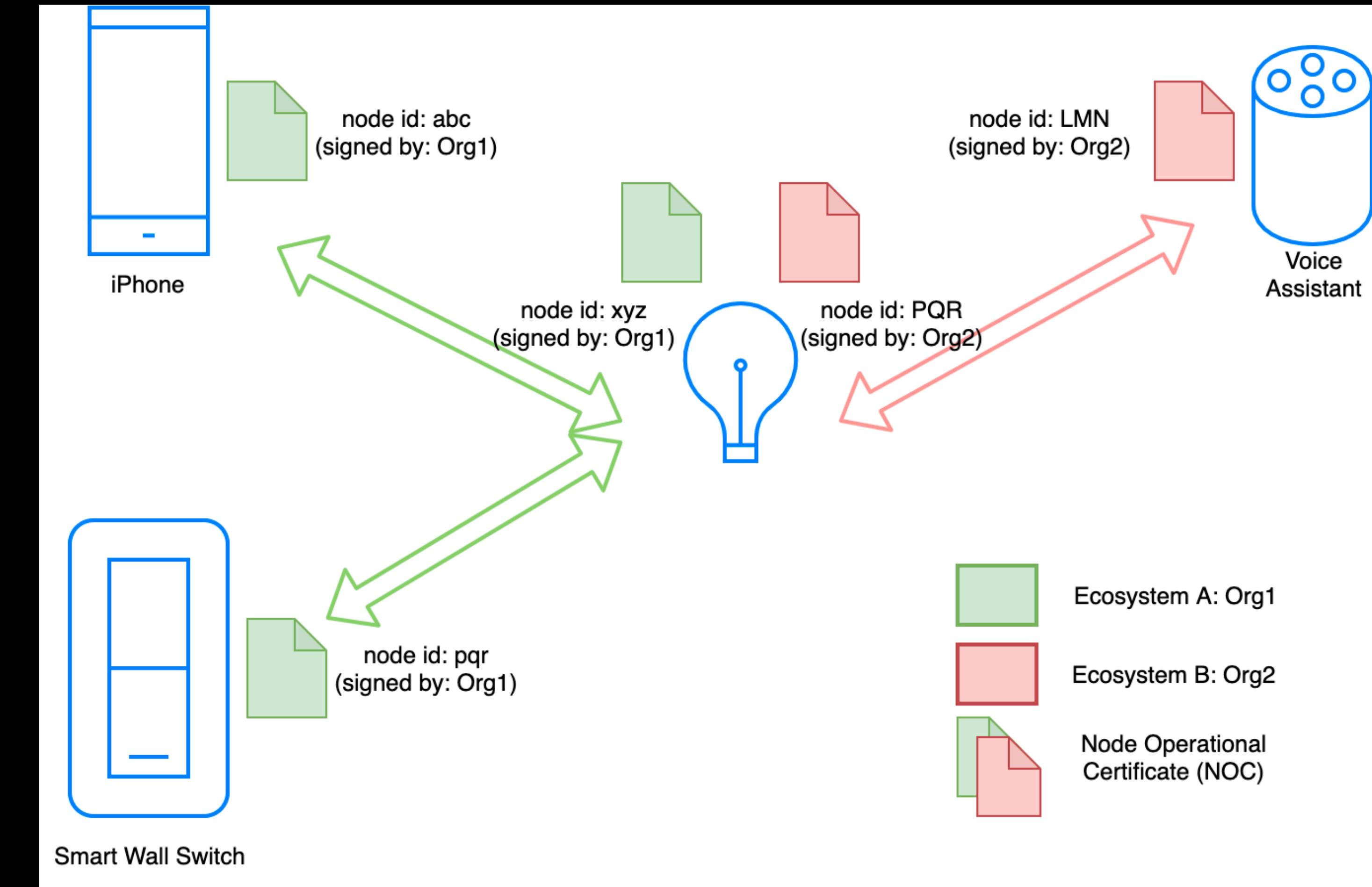
Thread Boarder Router (cont'd)

- Matter use DNS (Domain Name Service) as service discovery protocol.
 - mDNS (multicast DNS) in Wi-Fi network
 - SRP (Service Registry Protocol) unicast DNS in Thread network

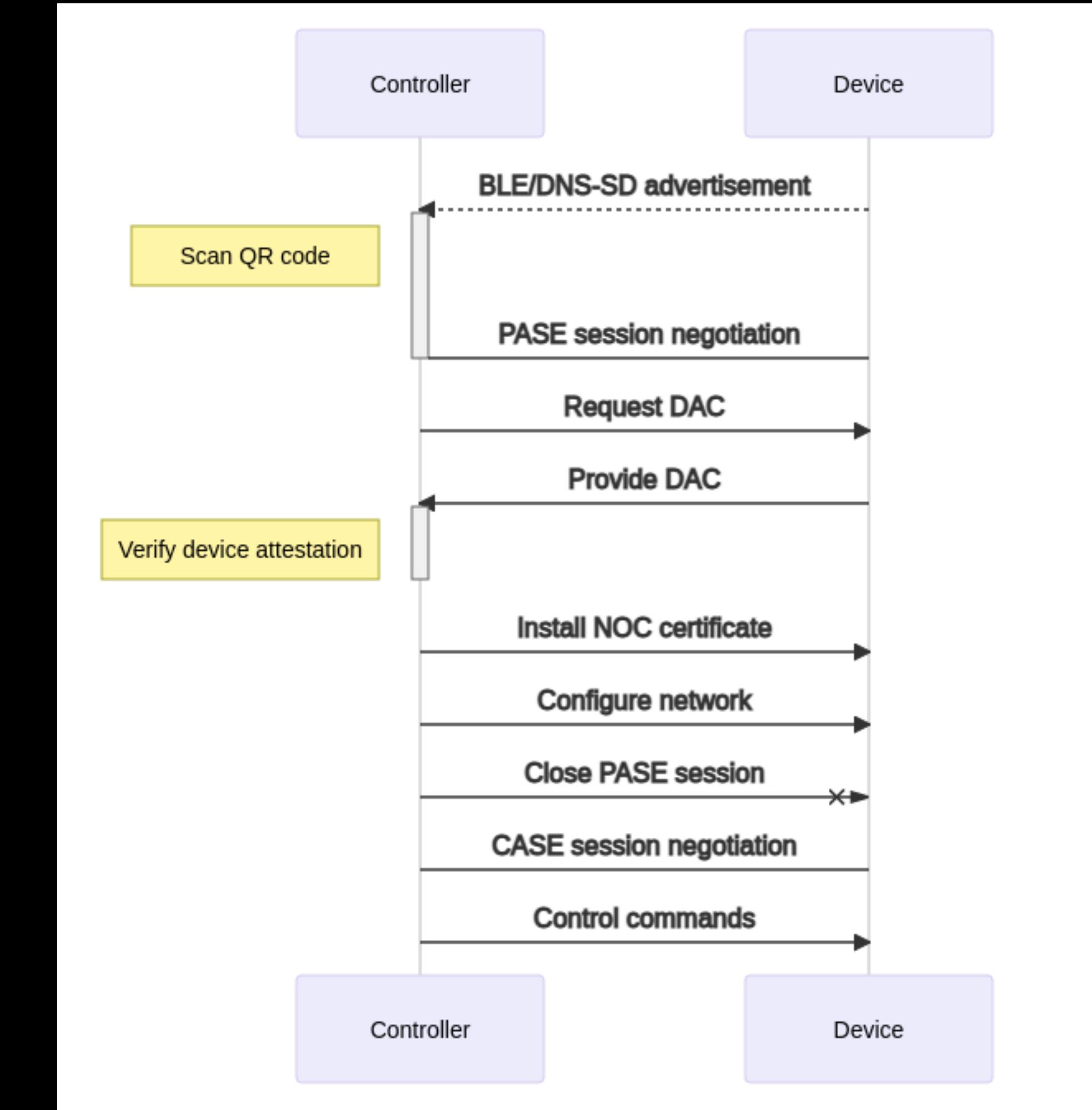
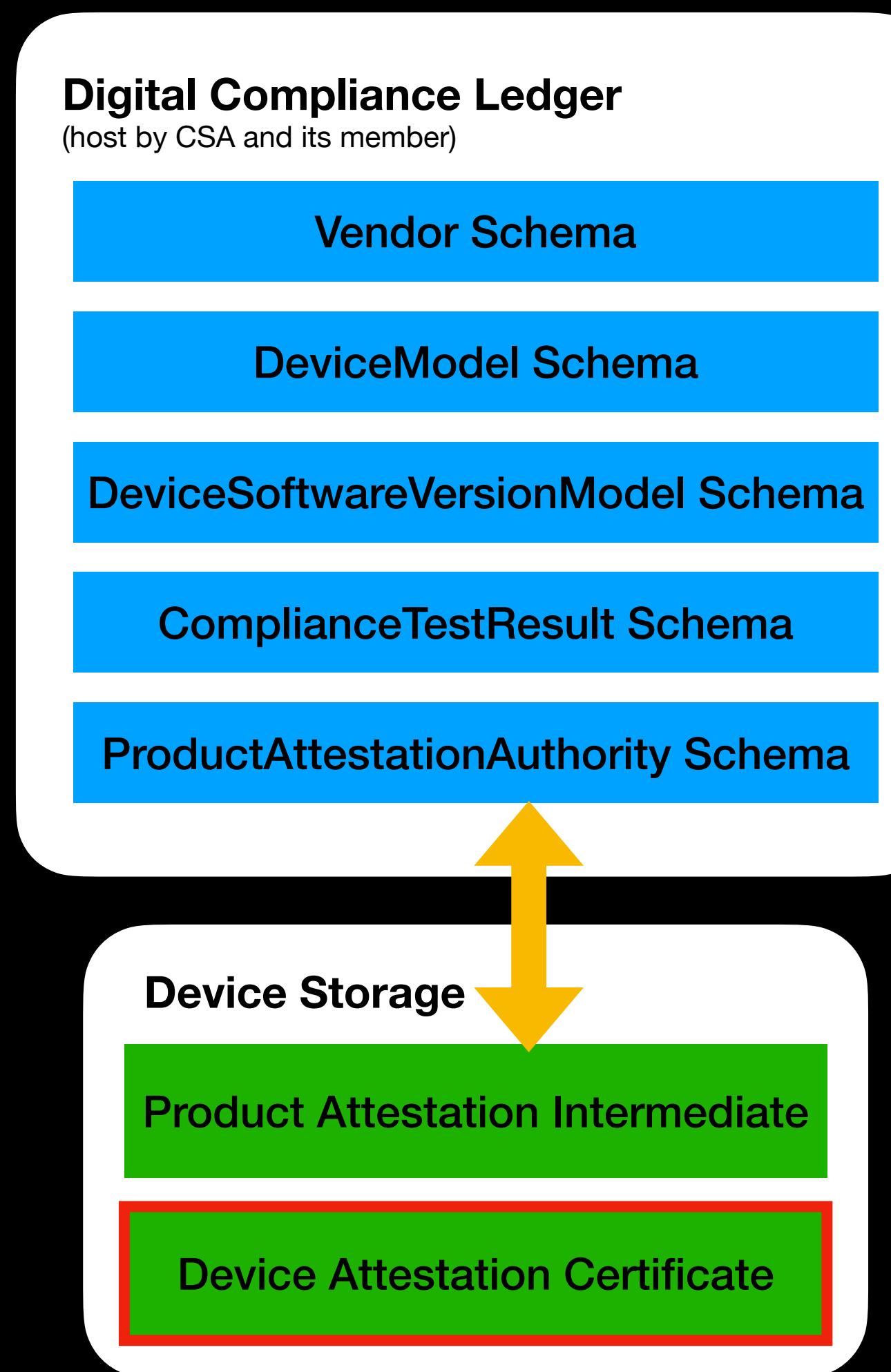


Certificate & Multi Ecosystem

- **Fabric**
 - An ecosystem for matter.
- **NOC (Node Operational Certificate)**
 - Used to verify node operation in Fabric.
 - Generated from commission process controller.



Commission



Thank You !

References

- CSA
 - <https://csa-iot.org/all-solutions/matter/>
- Google Developer Center
 - <https://developers.home.google.com/matter/>
- 乐鑫推出 Matter 系列博客
 - <https://blog.csdn.net/espressif/article/details/122451100>