

THREAD GROUP

Thread 1.3.0 Webinar

September 29, 2022



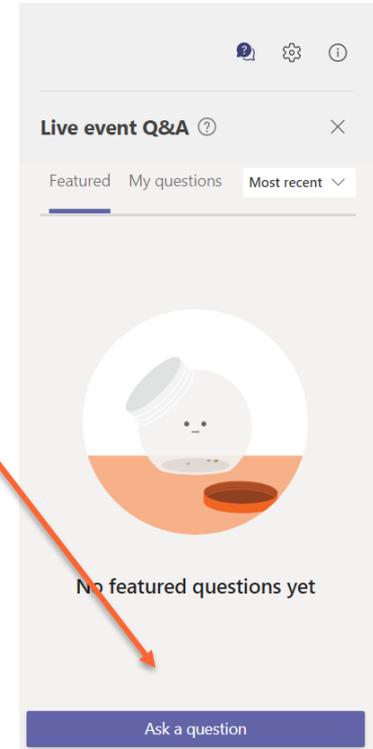
Webinar Overview

You will be placed on mute by organizer.

Post your questions at any time during the webinar for the speakers via the Q&A shown on the right of your screen.

Questions will be read and addressed at the end of the presentation.

A recording of this webinar will be made available on the Thread Group website.





Speakers



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Officer



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Agenda

- Introduction
- Thread Certification
- What is Thread 1.3.0?
- Thread 1.3.0 Examples
- Matter with Thread 1.3.0 Products
- What's Coming Next?
- Summary
- Q&A



Thread Overview



What is Thread?

Thread is a low power, secure and future-proof mesh networking technology for IoT products.



BUILT FOR IOT

Low power, secure and robust wireless mesh built on IP



CONVERGENCE & COEXISTANCE

IP as a point of convergence



GLOBAL SOLUTION

Open standard for smart homes and buildings



FLEXIBLE & FUTURE PROOF

Enabling interoperability

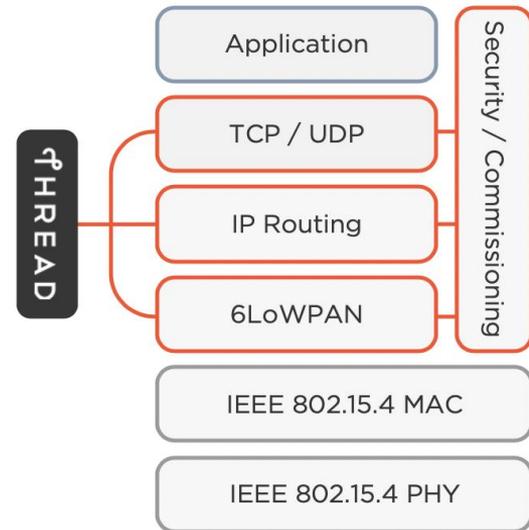


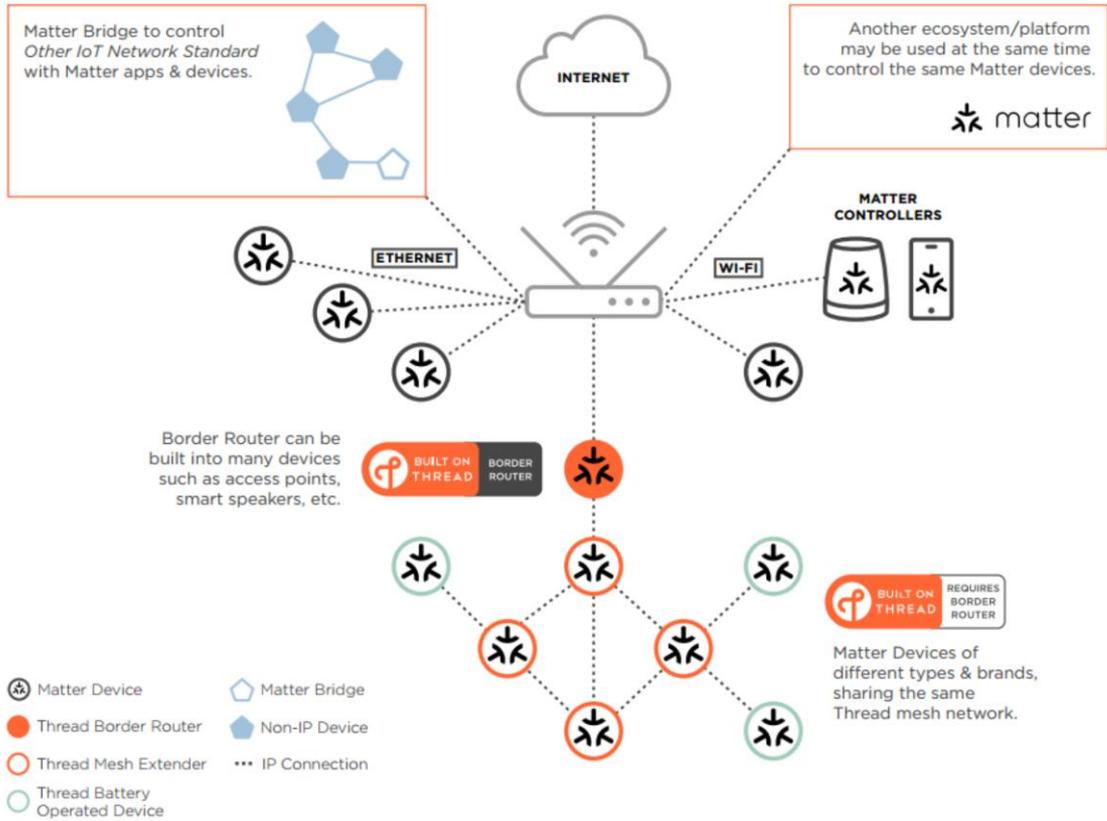
What Thread Delivers

A secure and reliable low power mesh network for connected products in homes and buildings.

- Build on proven, widely available and supported technologies
 - Uses IPv6
 - Runs on existing 802.15.4 silicon from multiple providers
- Architected to simply and securely add and remove products, keep communications secret and prove identify
- Tested and trusted to control devices in thousand-person office buildings, simple and affordable enough for a one-room apartment

Thread can support many application layer protocols







Thread Badging



Marks to help consumers know they'll need a Thread Border Router

How to identify a Thread Border Router, often built into many smart home hubs and devices





Thread Certification



Certification

- True **multi-vendor interoperability** with ≥ 3 stacks
- We have many certified stacks
- We provide fast ramp tools
- Why certify:
 - Intellectual Property Rights for using Thread technology and certification logo
 - Official Thread Group certificate for compliance and interoperability
 - Promotion by Thread Group
 - Certified Product listing on threadgroup.org
 - Prerequisite of many application layer certification programs
- www.threadgroup.org/certification

Authorized Test Labs



Asia – Nantou, Taiwan



Europe – Malaga, Spain



Europe – Lund, Sweden



Asia – Gyeonggi-Do, Korea
Asia – Taipei, Taiwan



Asia – Taipei, Taiwan
Asia – Dongguan, China
Asia – Gyeonggi-Do, Korea
Europe – Basingstoke, UK
N. America – Fremont, CA



Thread Certification

Thread Group Membership is required to obtain certification.

Thread Certification Options

Physical testing of a Thread system

- Covers Thread network protocol and interoperability with testing at an ATL

Inheritance (non-test) of a Thread system certification

- For products which reuse a certified Thread system – unchanged with self-testing

Application Layers

- App Layers are certified separately via the owning standards organization
- Thread certification required separately, i.e. A Matter with Thread device must have Matter certification per Connectivity Standards Alliance's program and Thread certification through Thread Group's program.
- Engage with Thread certification as early as possible



Thread Group Membership Enables Certification

Option	Sponsor	Contributor	Implementer
Certification Testing / Pretesting Services (ATL)	Yes	Yes	No
Certification Inheritance	Yes	Yes	Yes
Internal Member Pretesting	Yes	Yes	Yes
Test Harness Software	Free	Free	\$(Annual)
Test Bed Hardware	\$	\$	\$



What is Thread 1.3.0?



Seamless Response Across Matter Devices



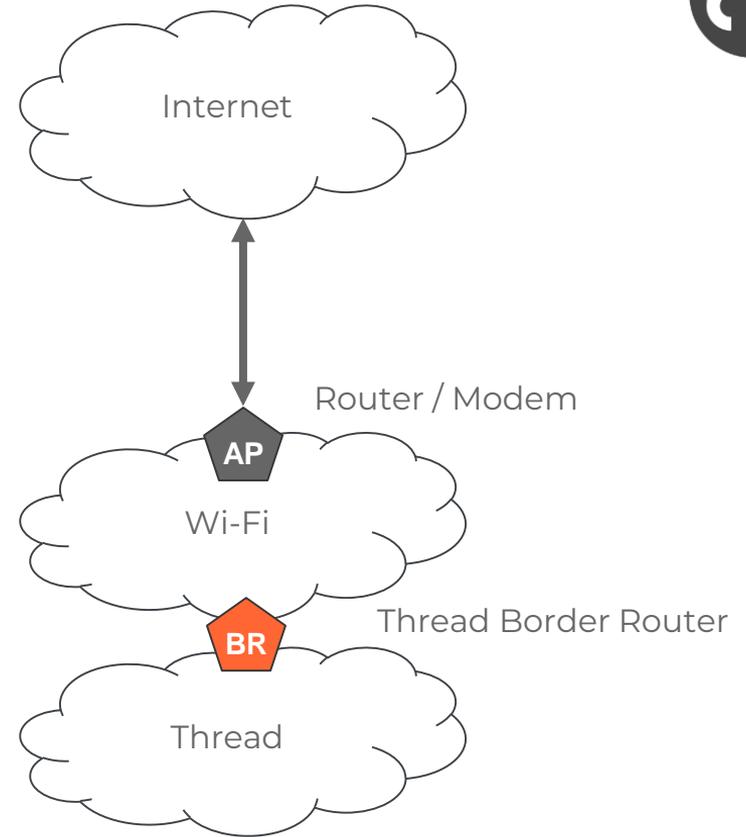


Seamless Integration into Existing Networks

Separate IP subnets

Separate broadcast domains

Multiple IP hops between Thread and Wi-Fi





IPv6 Reachability



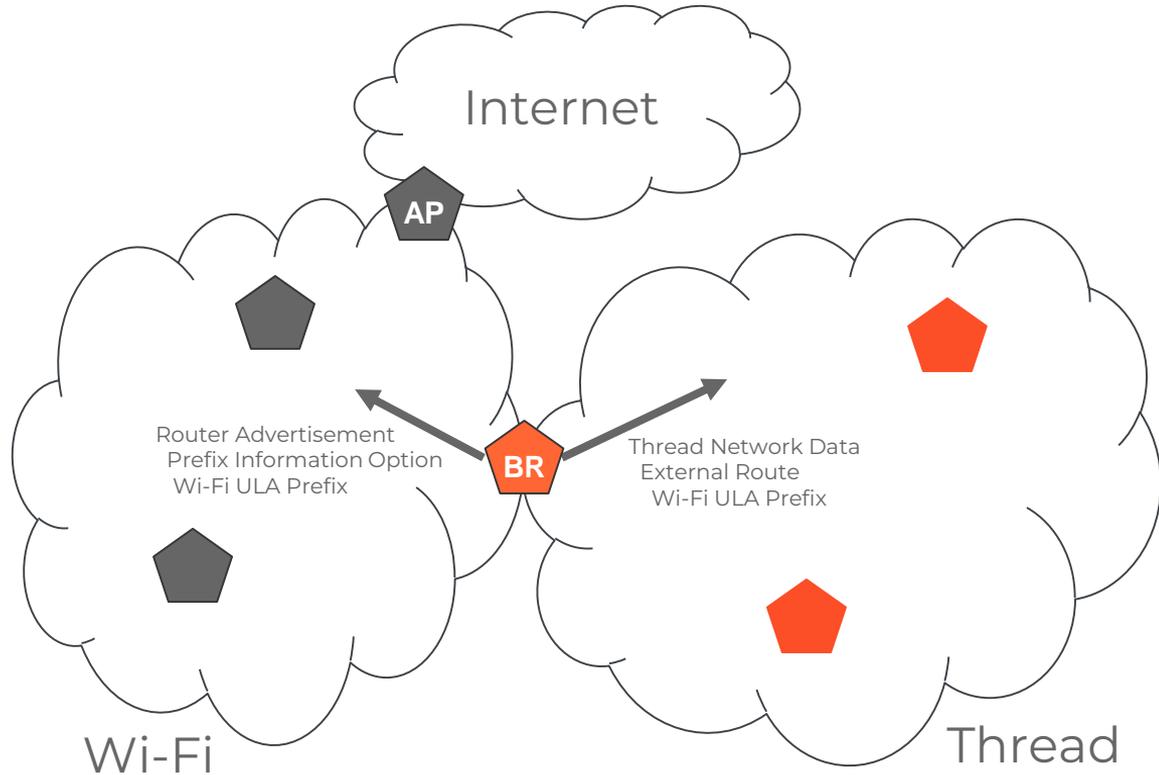
IPv6 Reachability

Config Wi-Fi devices with ULAs

Send Router Advertisements on Wi-Fi
Prefix Information Option (PIO) with
Wi-Fi ULA Prefix (based on Ext PANID)

Config Thread devices with route to Wi-Fi

Publish Thread Network Data on Thread
External Route with
Wi-Fi ULA Prefix (based on Ext PANID)





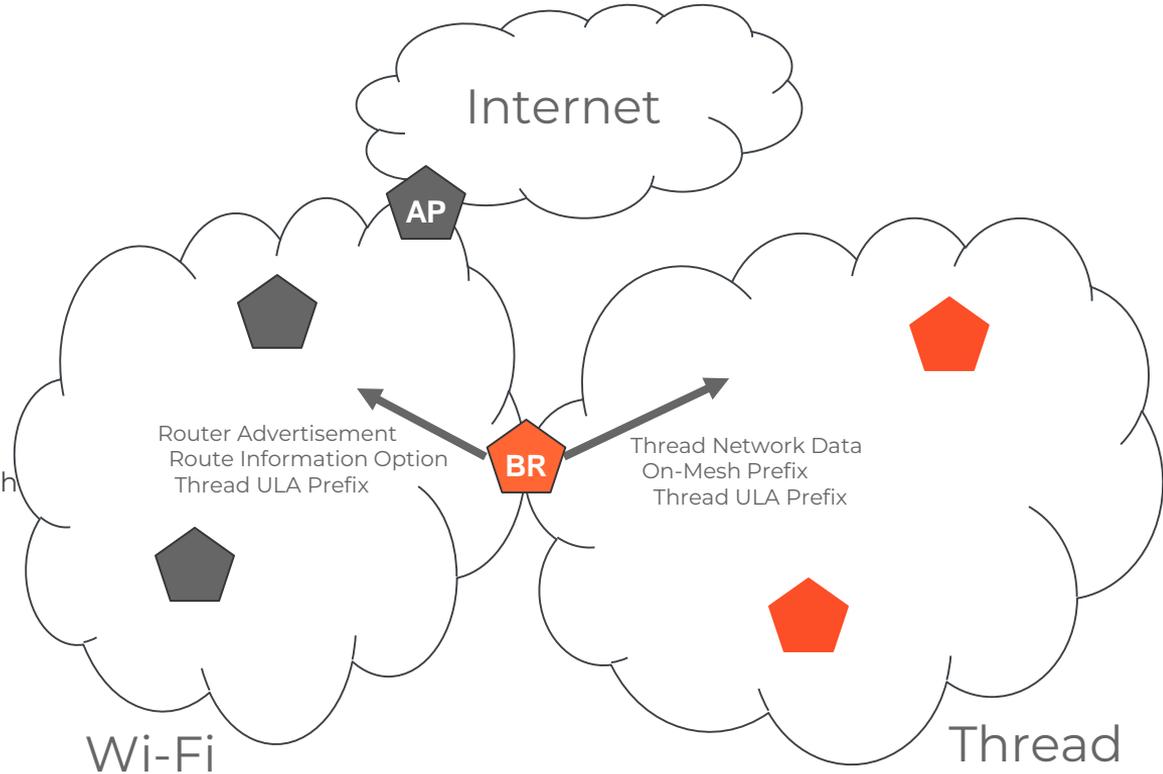
IPv6 Reachability

Config Thread devices with ULAs

Publish Thread Network Data
On-Mesh Prefix with
Thread Network ULA Prefix

Config Wi-Fi devices with route to Thread

Send Router Advertisements on Wi-Fi
Route Information Option (RIO) with
Thread Network ULA Prefix





DNS-Based Service Discovery



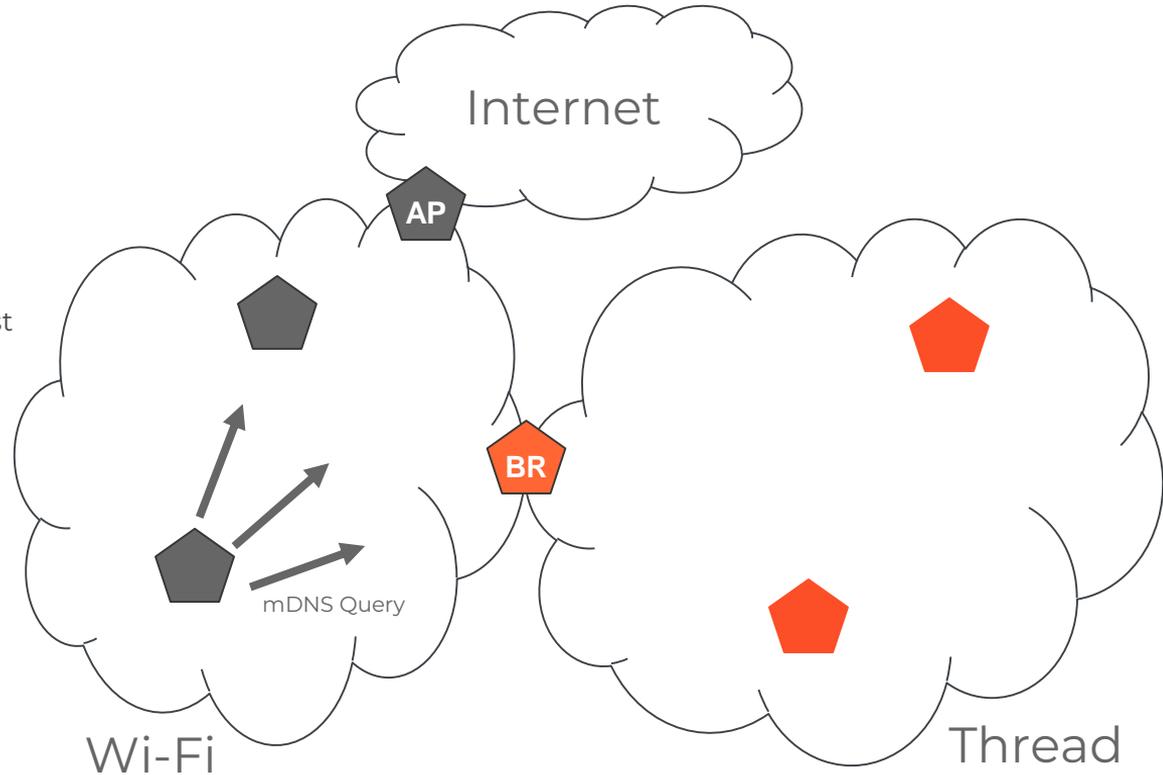
Multicast DNS (mDNS)

mDNS widely used for discovering services

Multicast DNS Query sent to link-local multicast
Does not extend into Thread network

Increasing performance gap between
unicast and **multicast**

Multicast in mesh networks very expensive





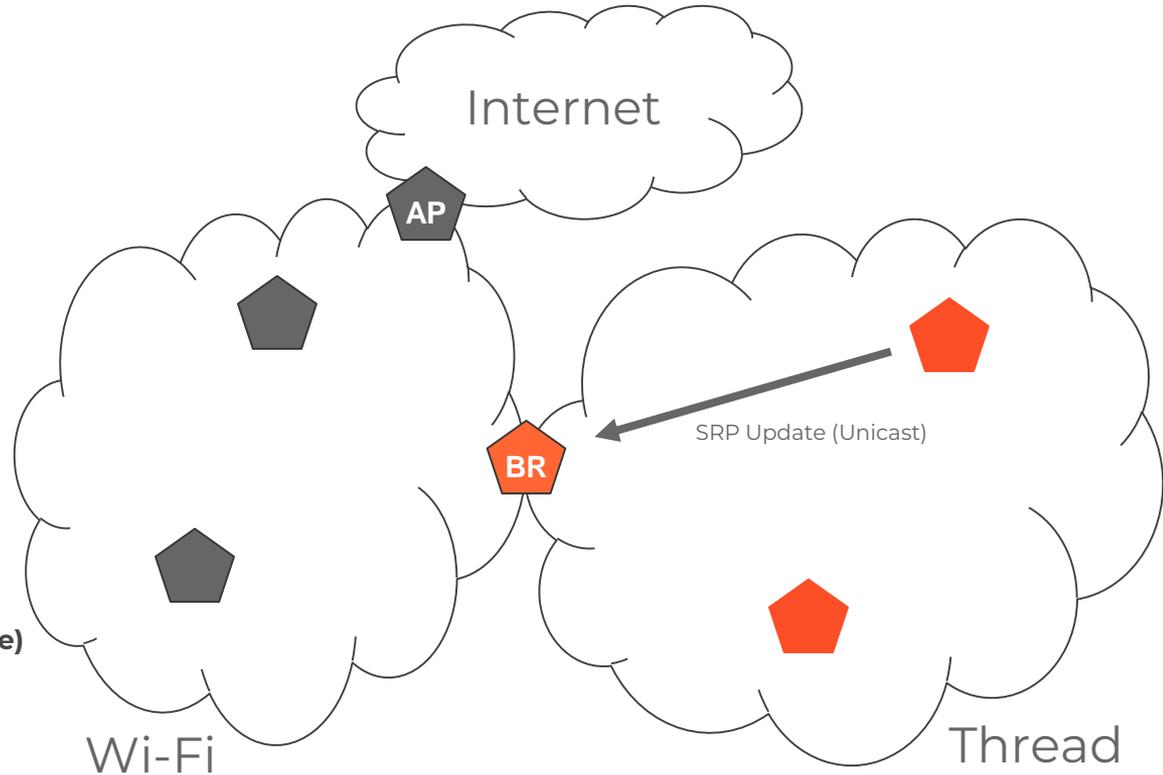
Service Registration Protocol (SRP)

SRP Update (DNS Update)

- Zone
default.service.arpa
- Updates
 - Service Discovery Instruction (PTR)
 - Service Description Instruction (SRV, TXT)
 - Host Description Instruction (AAAA, KEY)
- Additional Records
 - Update Lease
 - Lease
 - Key Lease
 - SIG(0)

SRP Update Response (DNS Update Response)

- Error Code

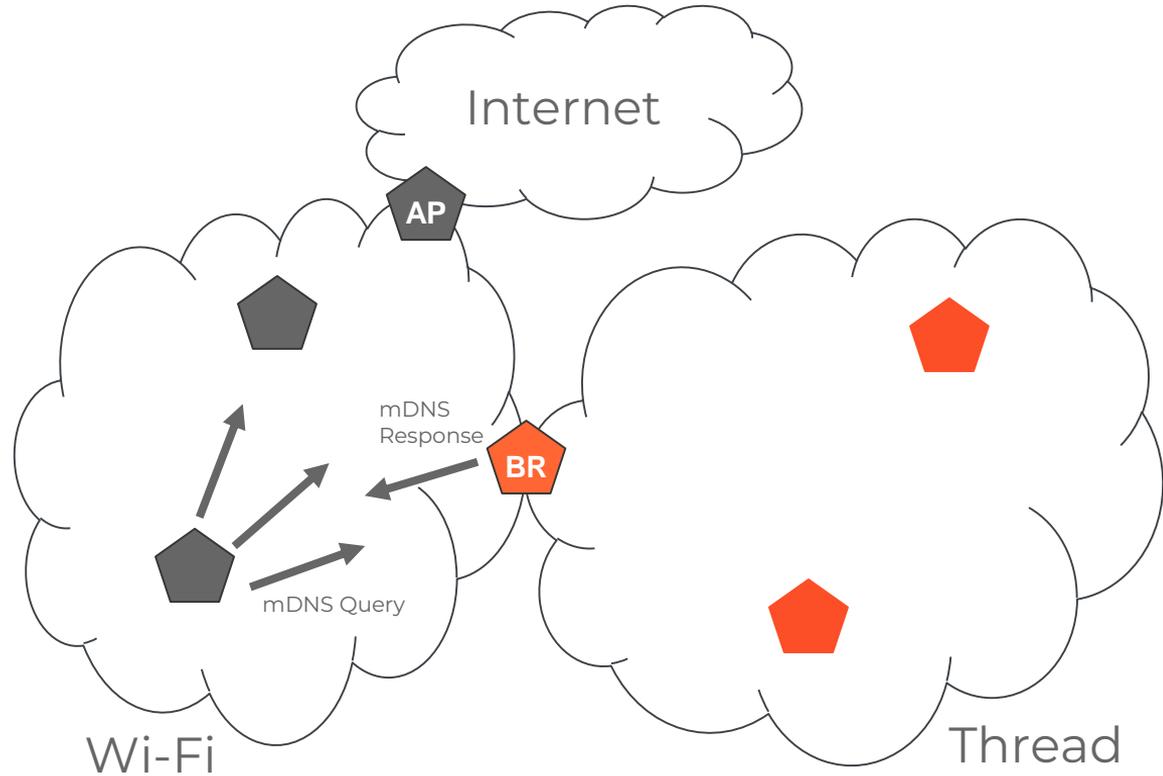




Advertising Proxy

Border Router implements Advertising Proxy to make services discoverable on Wi-Fi

Publish DNS-SD records from SRP on Wi-Fi using mDNS



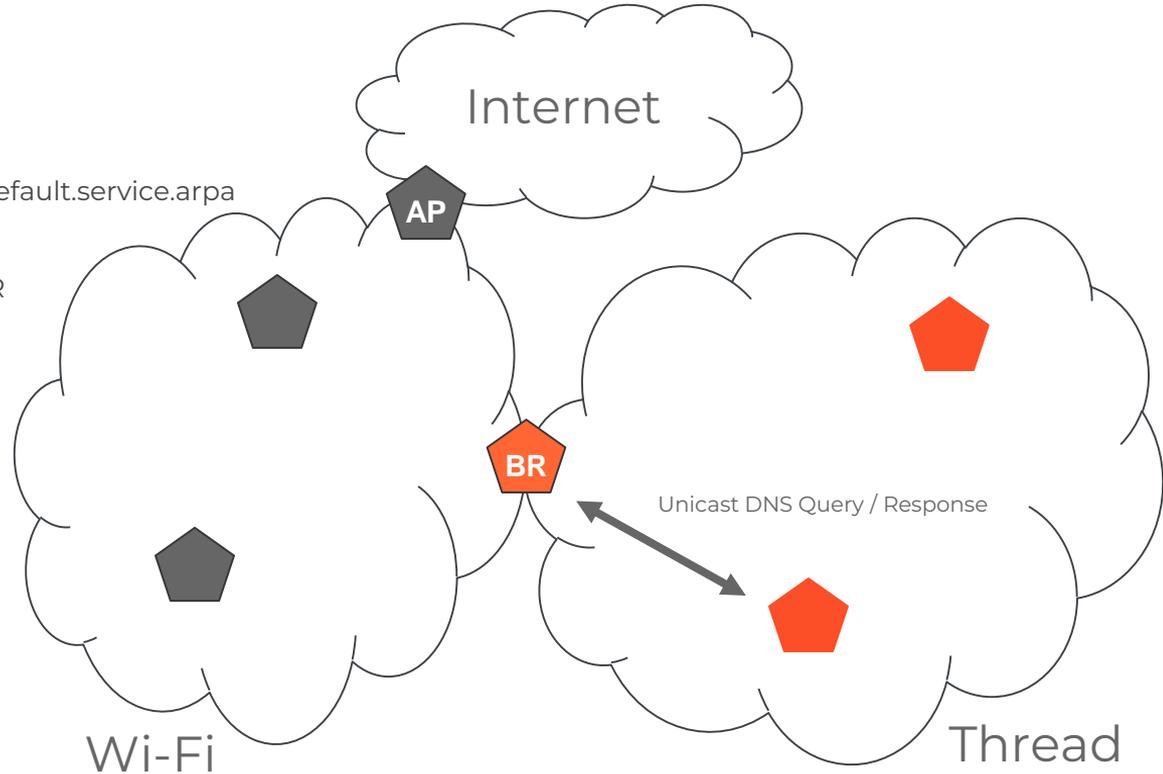


Discovering Services

Border Router is DNS authoritative server for default.service.arpa

Thread device sends unicast DNS queries to BR

Border Router sends unicast DNS response





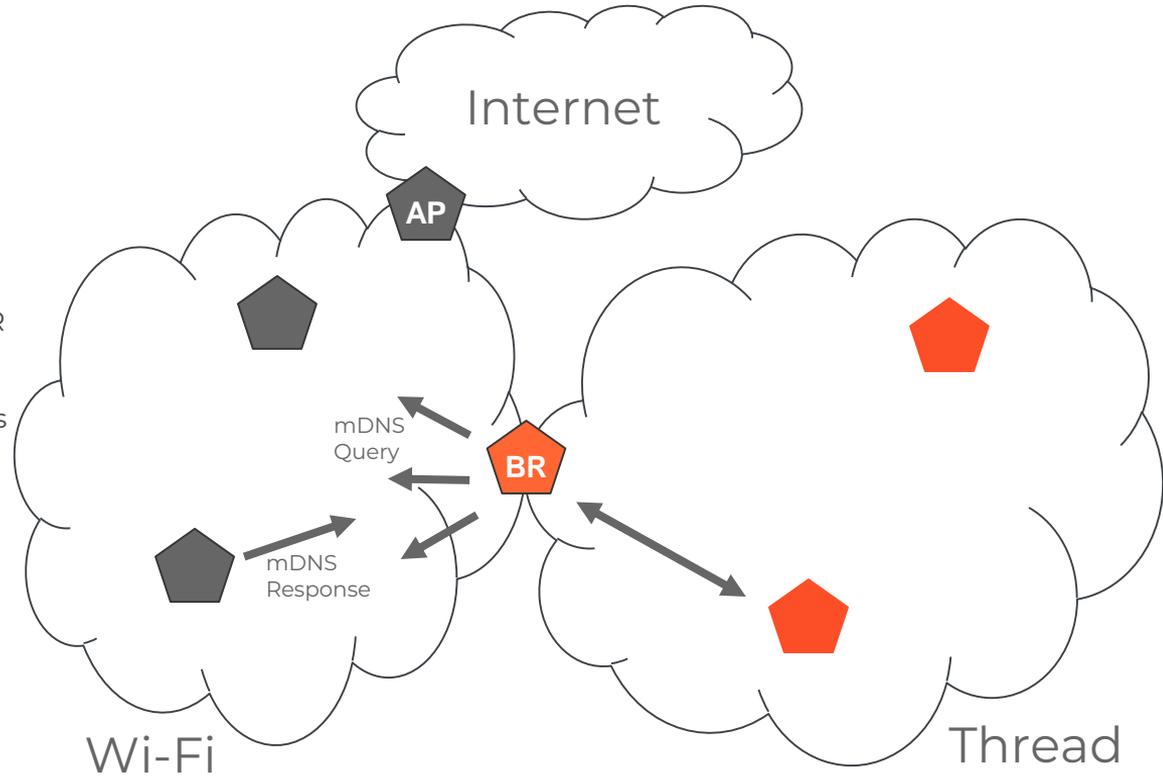
Discovering Proxy

Border Router implements Discovery Proxy

Thread device sends unicast DNS queries to BR

BR sends mDNS Query and receives Responses

Border Router sends unicast DNS response



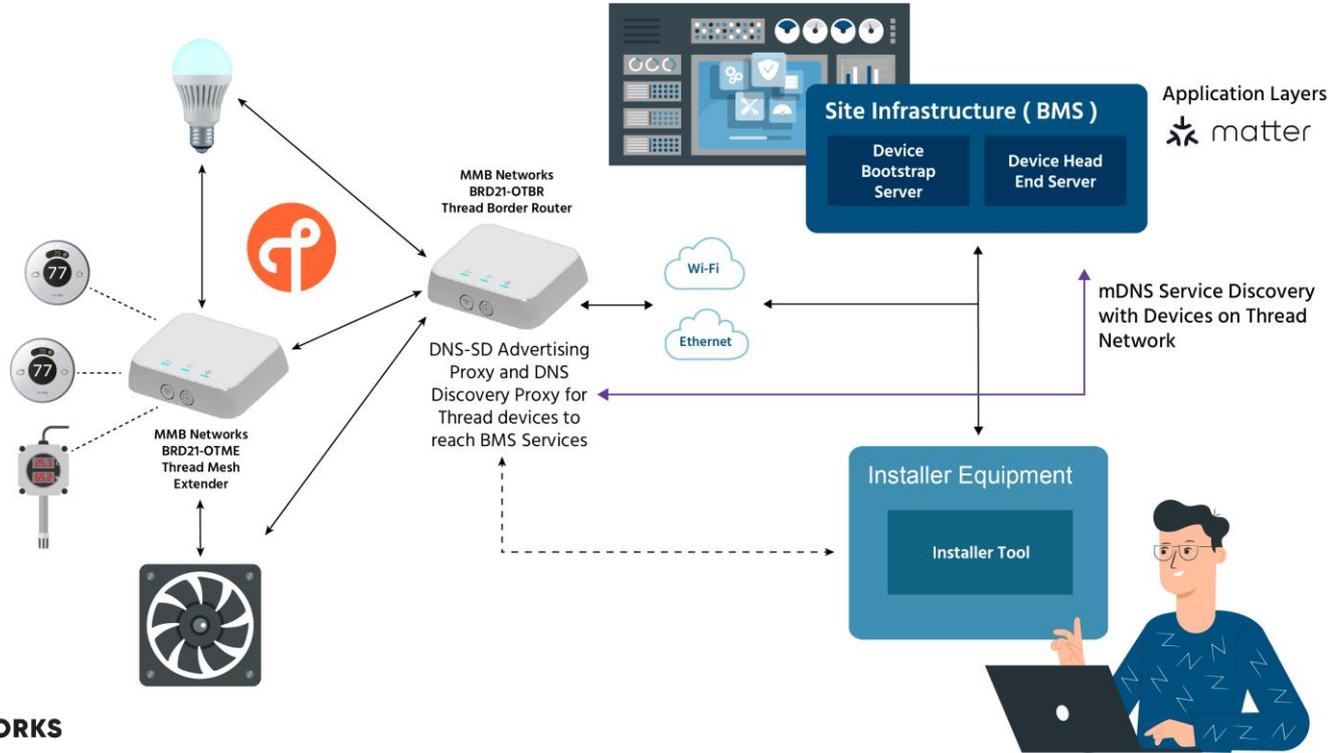


Thread 1.3.0 Examples



Demo of 1.3.0 Features

- Sleepy Child Link
- ==== Thread Neighbour Link
- ==== Building Infrastructure Link
- Border Router uAP Wi-Fi Link

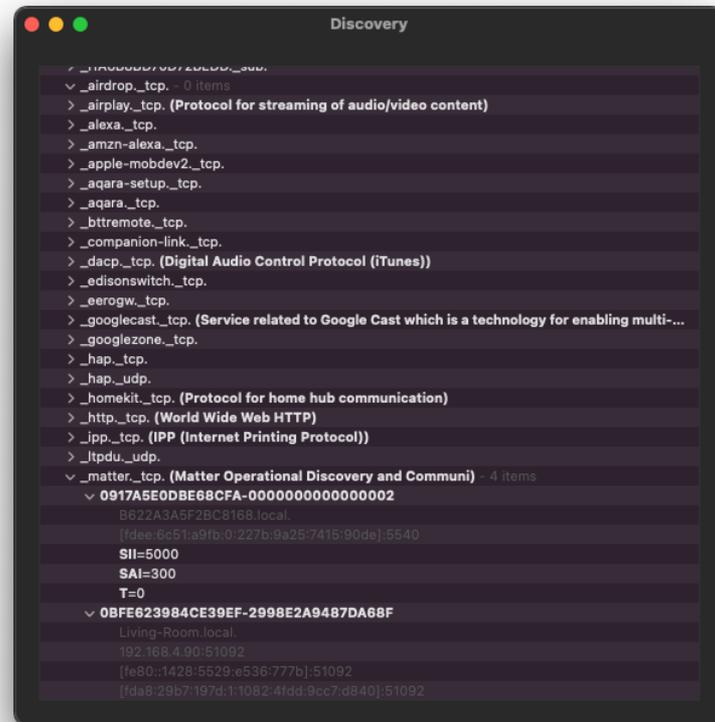




DNS-Based Service Discovery In Action

Nanoleaf Essentials registers a Matter service (`_matter._tcp.`) with the Nest Hub Border Router running Thread 1.3

Nest Hub makes that service available to anyone asking for it on the Wi-Fi network (e.g. smartphone, laptop)





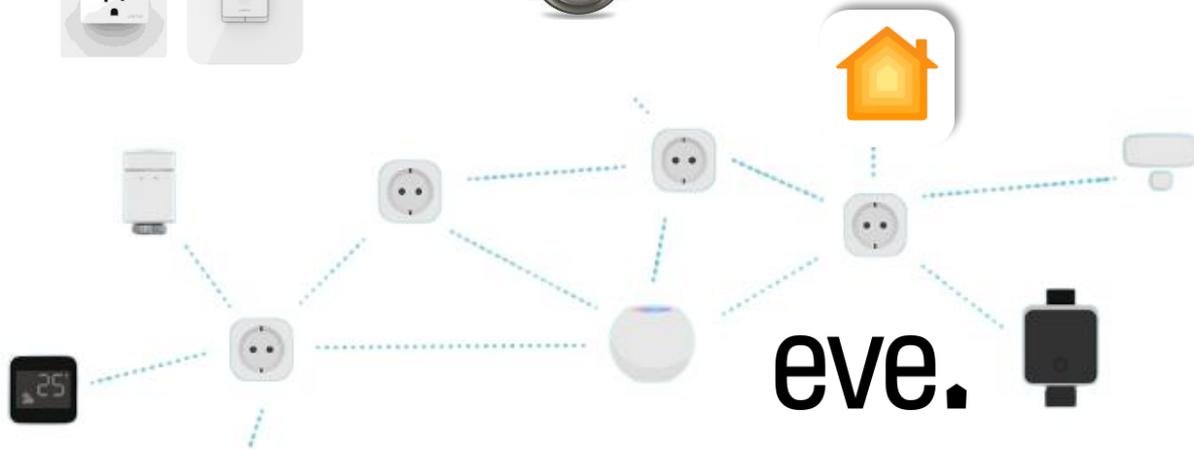
Matter with Thread 1.3.0



Apple HomeKit



Thread adoption has grown with Apple products supporting Thread.





What is Matter?

Matter is one protocol to connect compatible devices and systems with one another; with a new approach to create a **rapid, transformative impact** on the market.



Simple | Interoperable | Reliable | Secure

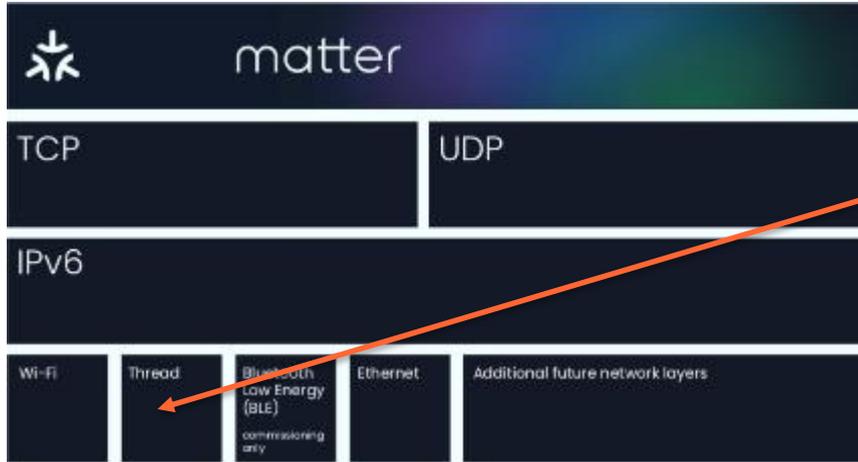
- Addressing issues of interop, choice & ease of use
- Enabling easier, faster, less costly IoT development and increased innovation investments
- Enabling accelerated adoption in smart home, building and commercial use



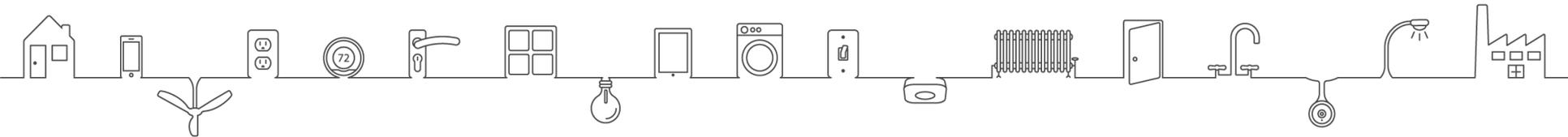
Thread Group and Connectivity Standards Alliance are separate standards bodies who partner to drive the IoT industry forward



Thread with Matter



Thread enables power-constrained Matter devices to easily join existing home networks.





Matter and Thread

Reliable: Thread is dependable.

- Thread devices connect to create a reliable, secure and self-forming mesh network with no dropped connections. In contrast to Wi-Fi and Bluetooth, Thread scales easily and strengthens with every new device

Instant Control: Thread is fast.

- Thread-enabled smart devices deliver fast responses regardless of network size.

Extended Range: Thread is well connected.

- A Thread mesh network extends with each additional Thread-enabled device, which means wider coverage in your home

Years of Battery Life: Thread is efficient.

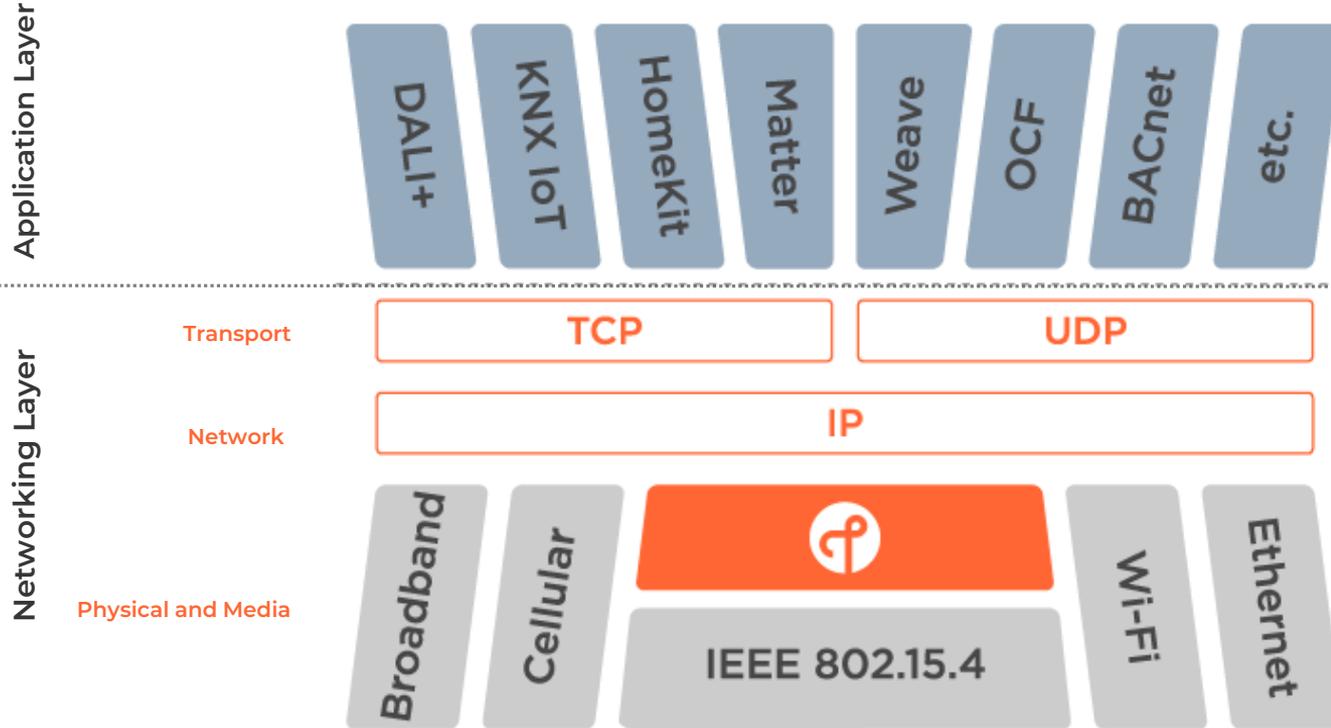
- With its low power consumption, Thread significantly extends the battery life of devices like door locks and sensors.



What's Coming Next?



Expanding Application Layers Support



Thread 1.3.0 Certification is released to members for Matter.

Certification to support app layers like KNX and DALI+ in progress.



Get Involved with Thread Group



Thread Roadmap is use case and market need driven:

- Contribute to and vote on use cases
- Create new partnerships to support additional application layers
- Expand to new markets



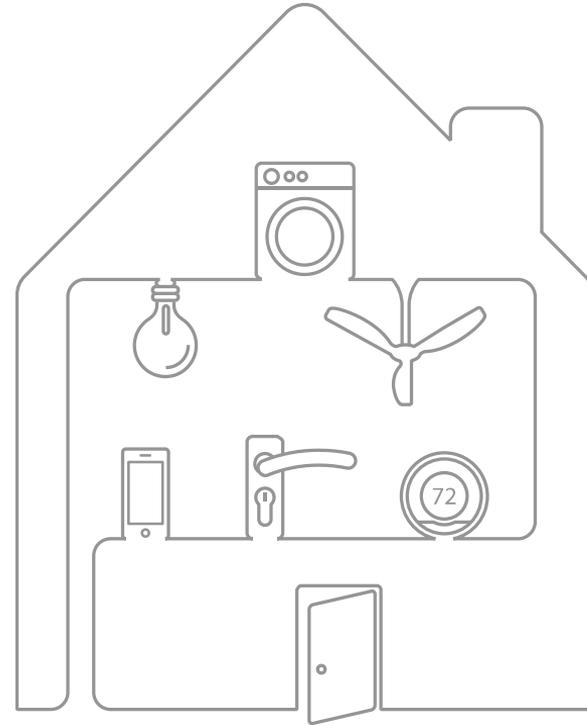
Summary



Summary

Thread is Built For IoT

- Thread 1.3.0 expands capabilities
 - Standardizes Border Routers
 - Reinforces Thread Networks
 - Simplifies Updates
 - Enables Matter





Thread Resources

The following resources are available on the Thread Group website:

Thread White Papers

Thread Spec

Thread Videos

Thread FAQs



Visit threadgroup.org/developers to see all the stacks and tools available to get started



Thank You for Watching!

For more information, please connect with us:

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www.threadgroup.org



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Audience Q&A



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Moderator



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