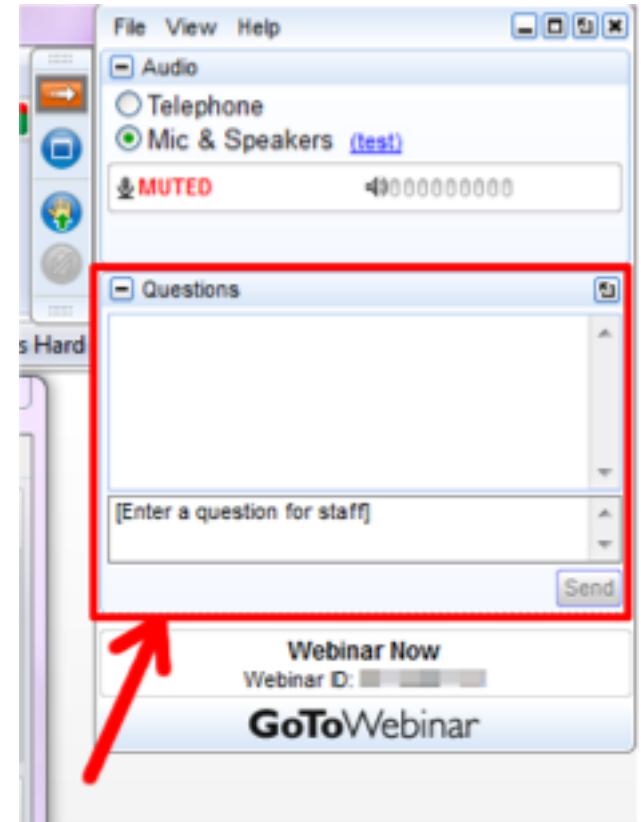# ꝑHREAD GROUP | **Go To Webinar Overview**

You will be defaulted to mute by organizer

Audio pane: Use the Audio pane to switch between Telephone and Mic & Speakers

Questions pane: Post your questions for panelists

Questions will be read and addressed after the presentation

Recording of this webinar will be made available on the Thread Group website

↑HREAD GROUP | **Today's Speakers**

Grant Erickson
President, Thread Group; Principal Software Engineer, Google / Nest

Grant Erickson is a principal engineer at Google / Nest, where he oversees the technical development of software designed to support Bluetooth Low Energy, Thread, Wi-Fi, and Nest Weave.

Sujata Neidig

Vice President of Marketing, Thread Group; Director of Marketing, NXP

Sujata Neidig has over 23 years of experience in the semiconductor industry and has served in a variety of roles ranging from product engineering to marketing and business development. She is currently the MCU & Connectivity Director of Marketing driving leadership and growth in multiple market segments.

Jonathan Hui

Vice President of Technology, Thread Group; Principal Software Engineer, Google / Nest

Jonathan Hui is a principal software engineer at Google / Nest, where he is responsible for Thread implementation in products and is maintainer of OpenThread released by Nest.

What is Thread?

What is Thread?

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

BUILT FOR IoT
Securely and reliably connect products in homes and buildings

BUILT-IN SECURITY
Provides security at the network layer

LOW ENERGY FOOTPRINT
Based on the power-efficient IEEE 802.15.4 MAC/PHY

OPEN IPv6 BASED PROTOCOL
Provides device-to-device and device-to-cloud connections

SEAMLESS INTEGRATION
Extends the internet into low power end devices

MARKET READY
Broad selection of silicon, stacks and components available globally

ꝰHREAD GROUP | **What is Thread?**

A low power, secure and Internet-based mesh networking technology for IoT products.

- Built on proven, widely available and supported technologies

  - Uses IPv6 (6LoWPAN)

  - Runs on existing 802.15.4 silicon from multiple providers

- Legacy-free design with updated architecture

  - Designed with a new security architecture to make it simple and secure to add and remove products

  - Supports 250+ products per network

  - Designed for very low power operation
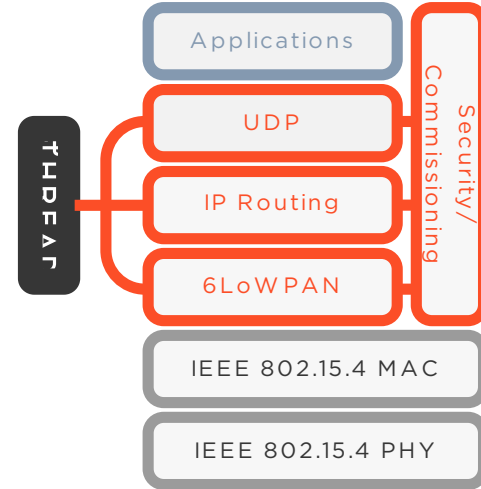
⟁ THREAD GROUP | **What is Thread?**

Thread Is

- Low power
- **Resilient (mesh)**
- IP-based
- Open protocol
- Secure and user friendly
- Fast time to market
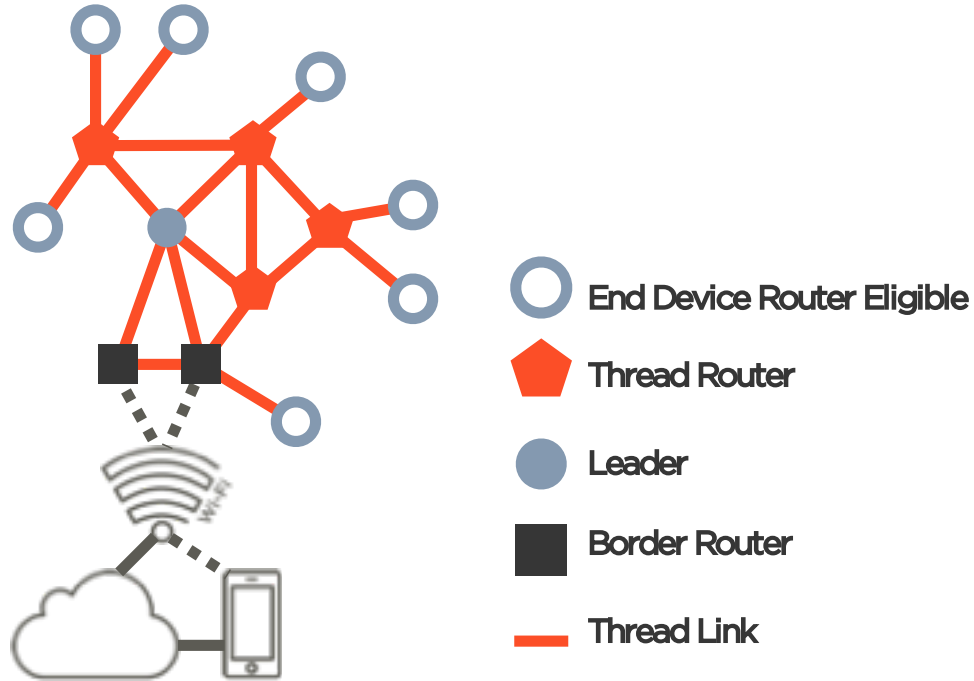- Existing radio silicon

→

- No single point of failure
- Self-healing
- Interference robustness
- Self-extending
- Reliable enough for critical infrastructure

THREAD GROUP | **Thread Network Topology**

End Device Router Eligible

Thread Router

Leader

Border Router

Thread Link

ᚦHREAD GROUP | **Network Topology Roles - Scalability**

Border Router

Forwards data to and from cloud/other networks

Provides optional Wi-Fi connectivity

Thread Leader

Manages network parameters

Coordinates commissioners

Makes network decisions

Thread Router

Routes traffic among devices

Form the mesh topology

Eligible to become the Leader

End Device

Designed for low power operation

May be powered or sleepy

May be router-eligible if powered

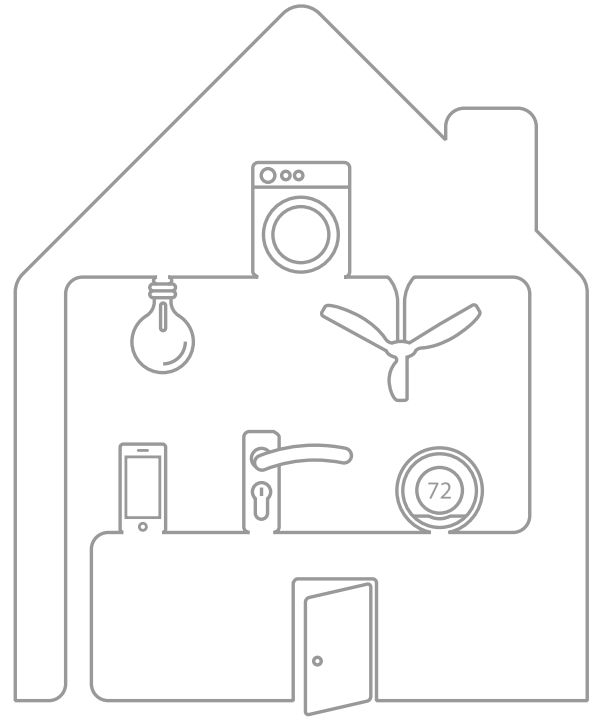Many   +   One   +   Up to 32   +   Up to 511 per Router

Hundreds of Devices per Network

↑HREAD GROUP | **Thread in Homes**

Securely and **scalably** connecting an ecosystem of **low power** products to each other, to cloud services, and to consumers via their mobile devices supporting applications

- Appliances
- Access control
- Climate control
- Energy management
- Lighting
- Safety
- Security

ᘖHREAD GROUP | Thread in Homes

Thread Technology is ideally suited for many different devices/applications

- **Line Powered Devices:** Each powered device can be a border router making a very reliable and robust home network

- **Access Control:** Thread use state of the art security making for a very secure access control network

- **Battery Powered Devices and Sensors:** Thread is designed to support low power devices ensuring battery powered devices operate efficiently and securely
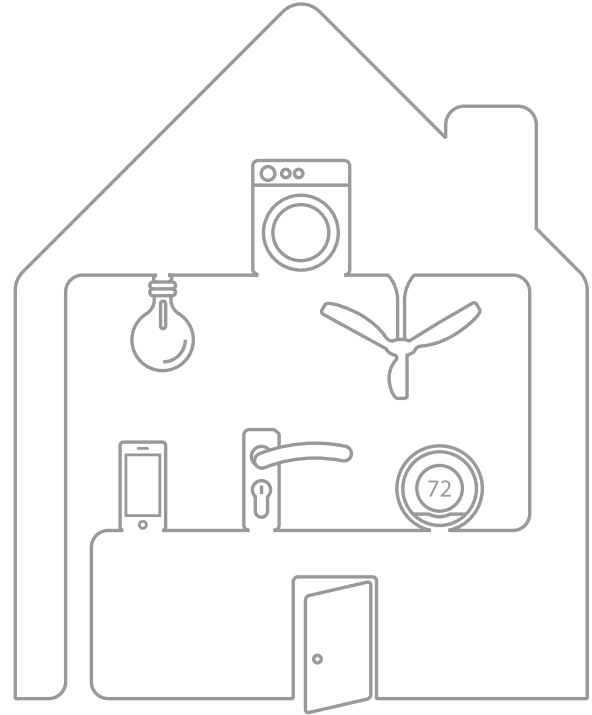
ℱHREAD GROUP | **Thread in Commercial**

Thread is being expanded with functionality specifically designed for integration opportunities in commercial applications like office buildings, hotels, factories, universities, outdoor applications and smart city areas.

SOHO   Building   Industrial   Outdoor

Thread addresses key requirements of Building Automation & Lighting Control (BALC) use cases.

- Thread is the only open-standard IPv6 mesh network that is available for BALC
- Cost-effective and low-power devices
- Future-proof security that supports any building automation and critical infrastructure

THREAD GROUP | Thread Commercial Network Topology

Thread can be integrated into an existing enterprise network.

A Thread network consists of:

- One or multiple *border routers* that connect the Thread network to the local IP network and the internet.
- Thread devices, all of which can act as *routers* to expand the mesh-network.
- Multiple *end devices* that can also be sleeping devices that are not required to check in and thus preserve power.

Who Is Thread?

ᎧHREAD GROUP | **Who Is Thread?**

The Thread Group is:

- Thread Group is a technology alliance focused
- Thread Group is focused on making Thread the foundation for the internet of things in homes and commercial buildings.

- The Thread Group provides a rigorous certification program to ensure device interoperability and a positive user experience.
- Thread is backed by industry-leading companies including Arm, Nest Labs, Nordic Semiconductors, NXP Semiconductors, OSRAM, Qualcomm, Schneider Electric, Siemens, Silicon Labs, Somfy and Yale Security.

Structured as a Delaware 501 (c) (6) Non-Profit Corporation for the mutual benefit of its members

- Independent, vendor-neutral and open to all — any entity can join
- Organizational membership only — one membership, one vote

⟨T H R E A D G R O U P | **Board of Directors**

President	**Grant Erickson** – Google / Nest	
VP of Marketing	**Sujata Neidig** - NXP	
VP of Technology	**Jonathan Hui** – Google / Nest	
Secretary	**Bill Curtis** - ARM	
Treasurer	**Kevin Kraus** - Yale	
Director	**Pär Håkansson** – Nordic Semiconductor	
Director	**Arnulf Rupp** - OSRAM	
Director	**Rolf De Vegt** - Qualcomm	
Director	**Cam Williams** - Schneider Electric	
Director	**Klaus Waechter** - Siemens	
Director	**Skip Ashton** – Silicon Labs	
Director	**Jean-Michel Orsat** – Somfy	

THREAD GROUP | **Structure**

Board of Directors

Management Organization
(Inventures)

Certification	Marketing	Use Case	Technical	Executive
Working Group	Working Group	Working Group	Working Group	Working Group

Available to Contributors

Available to Sponsors
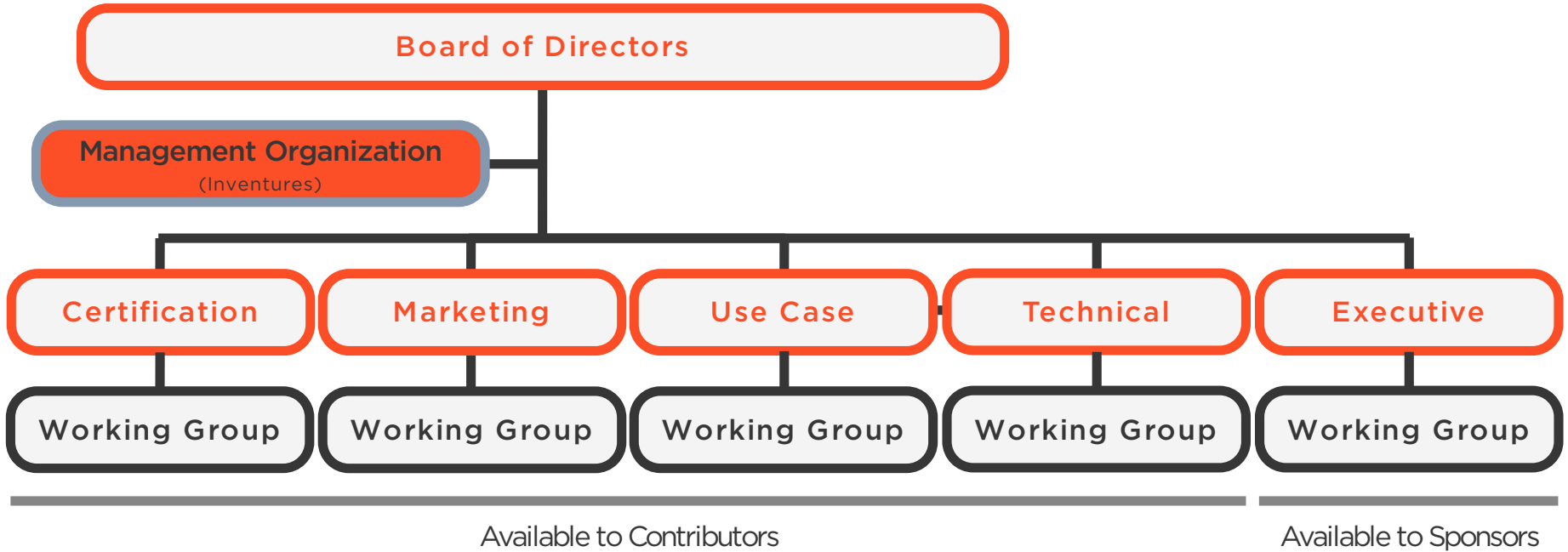
ᵠHREAD GROUP | **Intellectual Property**

Copyrights and Trademarks

Licensed to participants royalty free

Other Intellectual Property Policy

Policy is designed to maximize the adoption of the Thread technology and accelerate market acceptance

Policy for Thread Group membership balances interests of all stakeholders

Applies to all Thread members

Commitment to grant a RAND-RF (royalty free) license to members for patents essential to the Thread specification

ϕHREAD | **Membership Benefits**

Access to the technology and spec	Reduce time for development and implementation using a proven solution
Access to the IP	Gain IP rights for the Thread technology with no royalty payments
Access to Thread Certification Program	Guarantee network interoperability with other Thread devices and broaden your ecosystem
Use of the Thread Test Harness and Commissioning App	Save time and resource investment by completing in-house testing for spec conformance and network interoperability
Participation in Marketing and PR campaigns	Leverage Thread's marketing, social media and PR tools to extend marketing efforts
Participation in Committees	Provide a voice to help influence the direction of Thread
Networking with an ecosystem of companies	Collaborate with other members to optimize investment

↑HREAD GROUP | **Membership Tiers**

Membership Benefits	Academic	Affiliate	Contributor	Sponsor
Receive member communications				
Participation in general or annual meetings				
Access to members only website				
Use of Alliance Member Logo				
Participation in press articles & interviews				
Access Final Deliverables				
Access Draft Deliverables				
Chair Committees and/or Work Groups				
Certify Compliant Products and Utilize Certification Logo				
Participate and Vote in Work Groups				
Participation and Vote in Committees				
Approve Operating Budget				
Approve Final Deliverables				
Initiate Work Groups or Committees				
Automatic Seat on Board of Directors				
Annual Renewal Fee	**$0K**	**$2.5K**	**$15K**	**$65K**
One-Time Initiation Fee		**-**	**-**	**$35K**

THREAD GROUP | Liaisons and Partnerships

	Organization	Liaison Type
	CABA	Marketing
	EEBus	App Layer
	Fairhair Alliance	Standards
	KNX	App Layer
	Linaro	Marketing
	OCF	App Layer
	Zigbee Alliance	App Layer

"By 2023, 4.5 billion cumulative 802.15.4 mesh devices will be sold worldwide. The majority of these will use smart home protocols such as Zigbee and Thread"
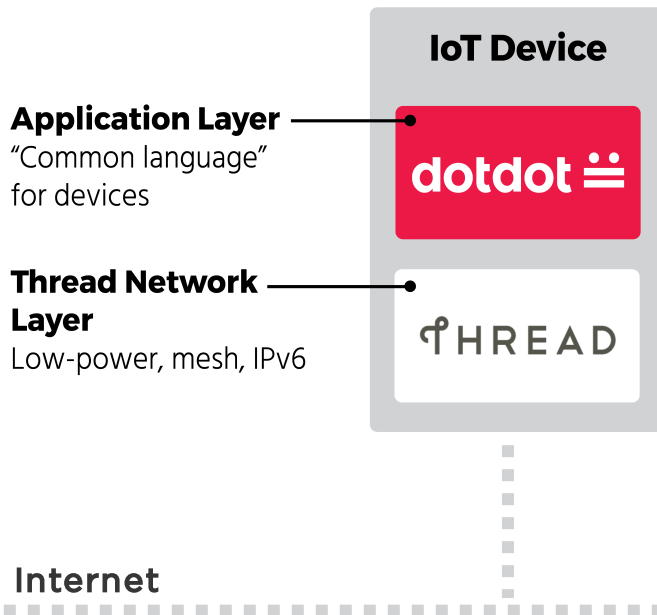
Source: ON World

ꭍHREAD GROUP | Dotdot + Thread

The first open, interoperable device language running over an Internet (IP) based network.

Open, universal protocols like HTTP over IP unlocked and accelerated innovation on the Internet.

Dotdot's common device language over Thread's IP network brings this foundation for innovation to the Internet of Things.

IoT Device

Application Layer
"Common language" for devices

dotdot

Thread Network Layer
Low-power, mesh, IPv6

ꭍHREAD

Internet

Benefits of Thread

ꝊHREAD | The Value of Thread

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

BUILT FOR IoT

Low energy footprint

Secure and reliable connectivity

No single point of failure

Interoperability

Scalability

Based on proven standards

IP-BASED

Convergence layer across all networks

Ease of Development

Application layer choices

Multiple Ecosystems

Flexibility to add or change app layers, ecosystems

Device-to-device and device-to-cloud communication

SEAMLESSLY INTEGRATED

Seamlessly and securely works with users' existing networks

Extends the internet into low power end devices without translators

Easily extends to personal devices

MARKET READY

Broad selection of silicon

Four certified stacks

Publicly available specification

Active certification program

Fast-ramp tools accelerating time to market

Global Solution

ᚦHREAD | **The Value of Thread**

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

BUILT FOR IoT

Low energy footprint

Secure and reliable connectivity

No single point of failure

Interoperability

Scalable

Based on proven standards

IP-BASED

Convergence layer across all networks

Ease of Development

Application layer choices

Multiple Ecosystems

Flexibility to add or change app layers, ecosystems

Device to device and device to Cloud

SEAMLESSLY INTEGRATED

Seamlessly and securely works with users' existing networks

Extends the internet into low power end devices without translators

Easily extends to personal devices

MARKET READY

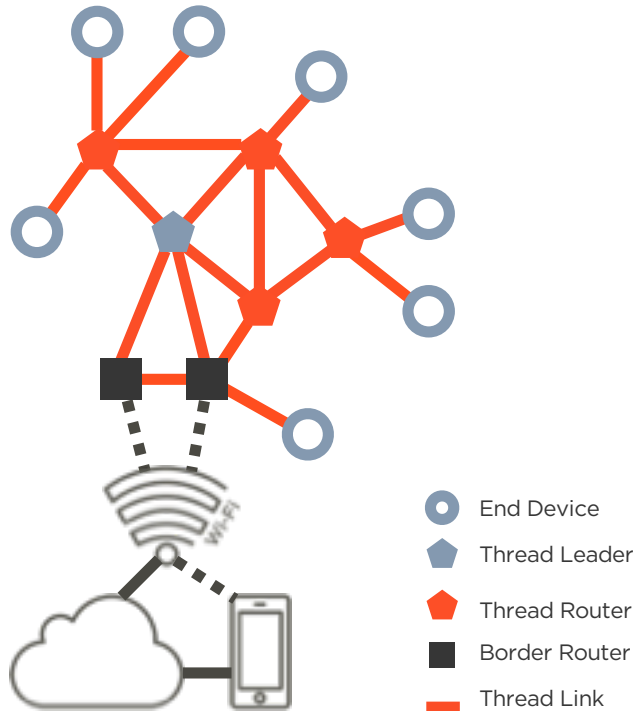Broad selection of silicon

Four certified stacks

Publicly available specification

Active certification program

Fast-ramp tools accelerating time to market

Global Solution

⟁ THREAD | **Low Power Operation: Sleepy Devices**

Legend:
- End Device
- Thread Leader
- Thread Router
- Border Router
- Thread Link

- Sleeping devices poll parents for messages (or remote device if application configured)

- Sleeping devices not required to check which allows lower power operation

- Parents hold messages for sleeping devices

- Sleeping device automatically switches parent connection is lost

ᏘHREAD | **Security and Commissioning**

End Device
Thread Leader
Thread Router
Border Router
Thread Link
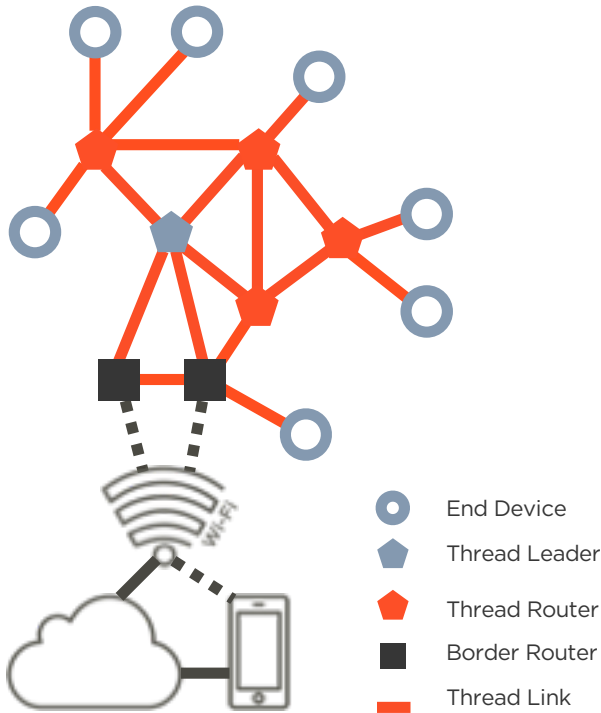
- Simple Commissioning

  - User authorizes devices onto the network using smart phone or web

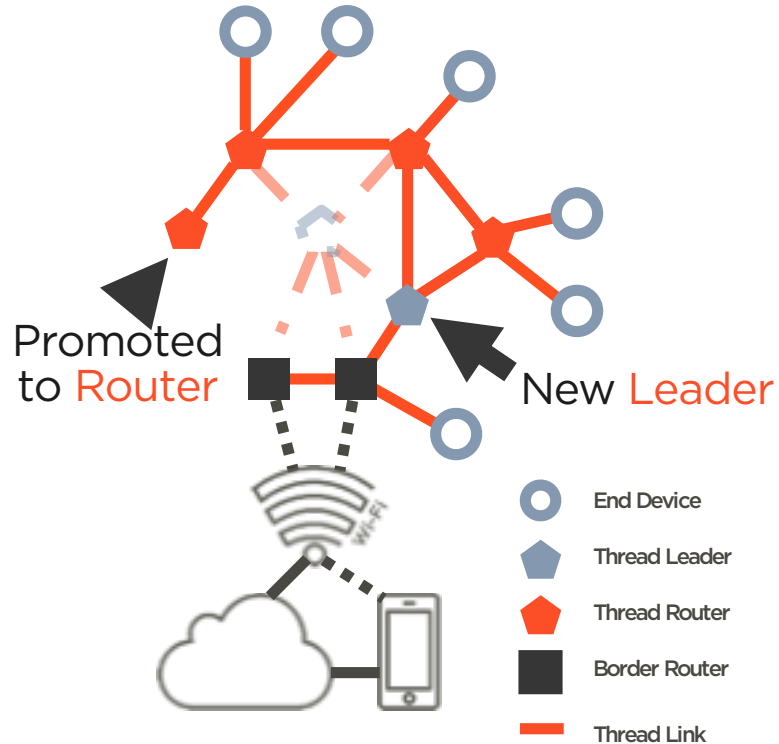 - Can be done on network if there is a device with a graphical interface

- DTLS Security session established between new device and commissioning device to authenticate and provide credentials

- Once commissioning session is done, device attaches to network

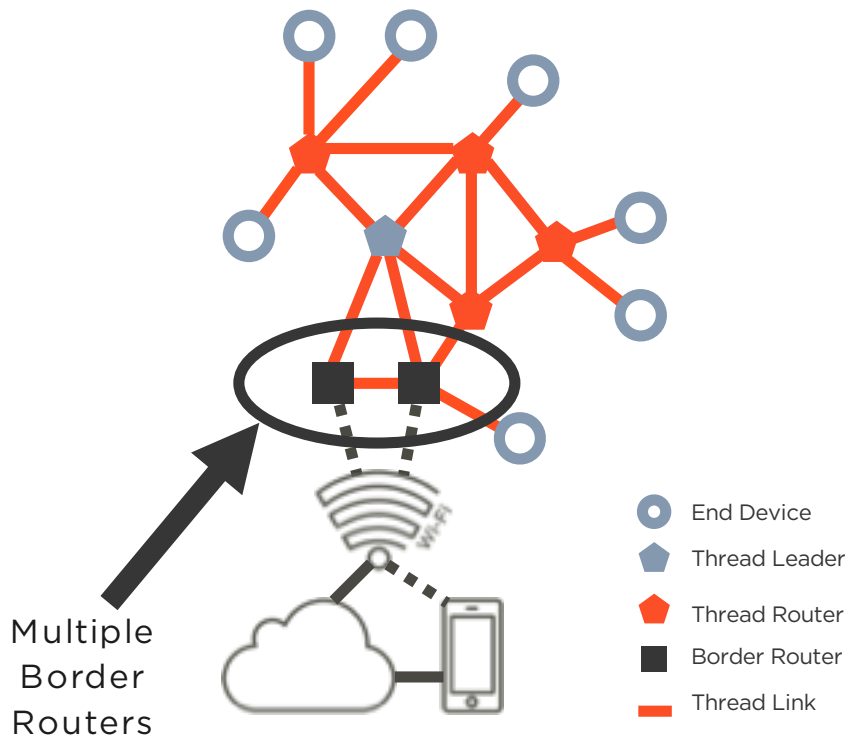- MAC security used for all messages

- Application level security is based on end-device requirements and application layer being used
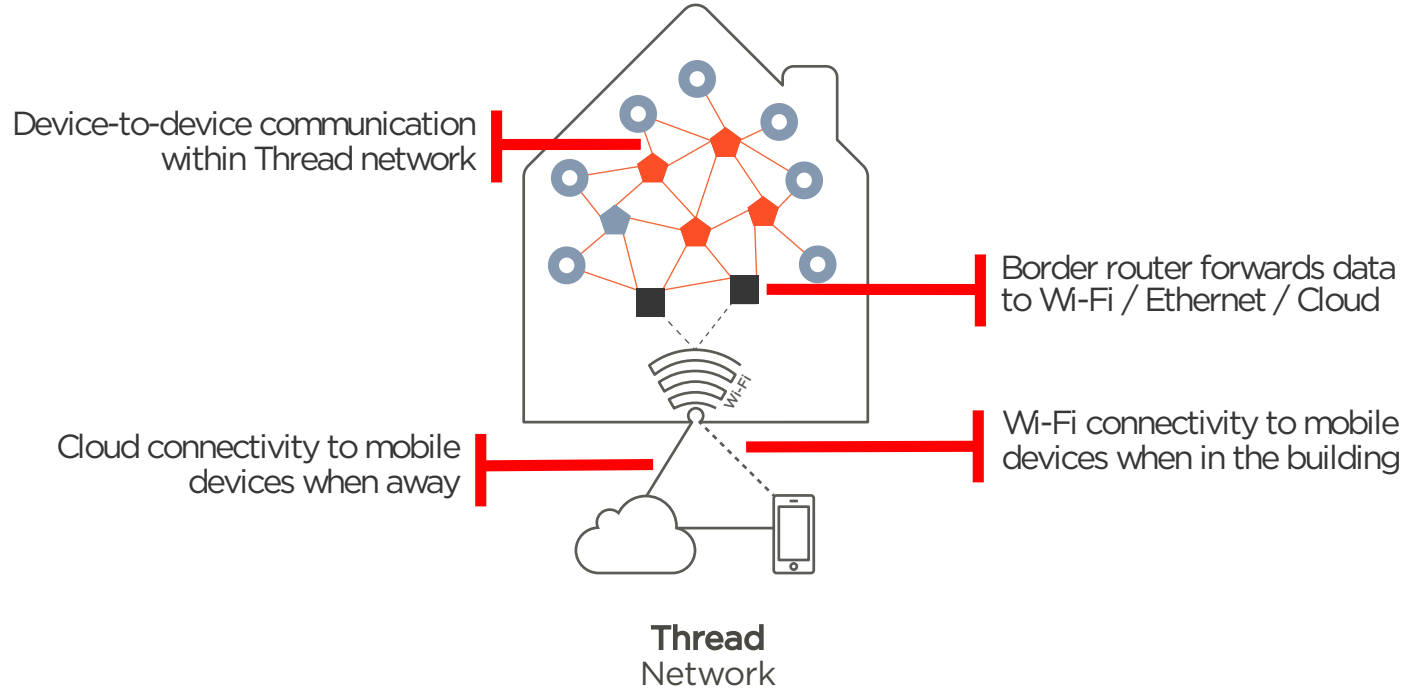
THREAD | Robust: No Single Point of Failure

Multiple Border Routers

Legend
- End Device
- Thread Leader
- Thread Router
- Border Router
- Thread Link

- Multiple Border Routers can be used for off network access

  - Devices operate without Border Router

- What can be a Border Router?

  - Anything with an 802.15.4 radio and another physical layer

    - Home Wi-Fi router

    - Set top box

    - Smart Thermostat (802.15.4 and Wi-Fi)

Thread Network

Device-to-device communication within Thread network

Border router forwards data to Wi-Fi / Ethernet / Cloud

Cloud connectivity to mobile devices when away

Wi-Fi connectivity to mobile devices when in the building

Thread
Network

ᚦHREAD | **The Value of Thread**

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

BUILT FOR IoT

Low energy footprint

Secure and reliable connectivity

No single point of failure

Interoperability

Scalable

Based on proven standards

IPv6
IP-BASED

Convergence layer across all networks

Ease of Development

Application layer choices

Multiple Ecosystems

Flexibility to add or change app layers, ecosystems

Device to device and device to Cloud communication

SEAMLESSLY INTEGRATED

Seamlessly and securely works with users' existing networks

Extends the internet into low power end devices without translators

Easily extends to personal devices

MARKET READY

Broad selection of silicon

Four certified stacks

Publicly available specification

Active certification program

Fast-ramp tools accelerating time to market

Global Solution

ꝮHREAD | **What Internet Protocols Does Thread Use?**
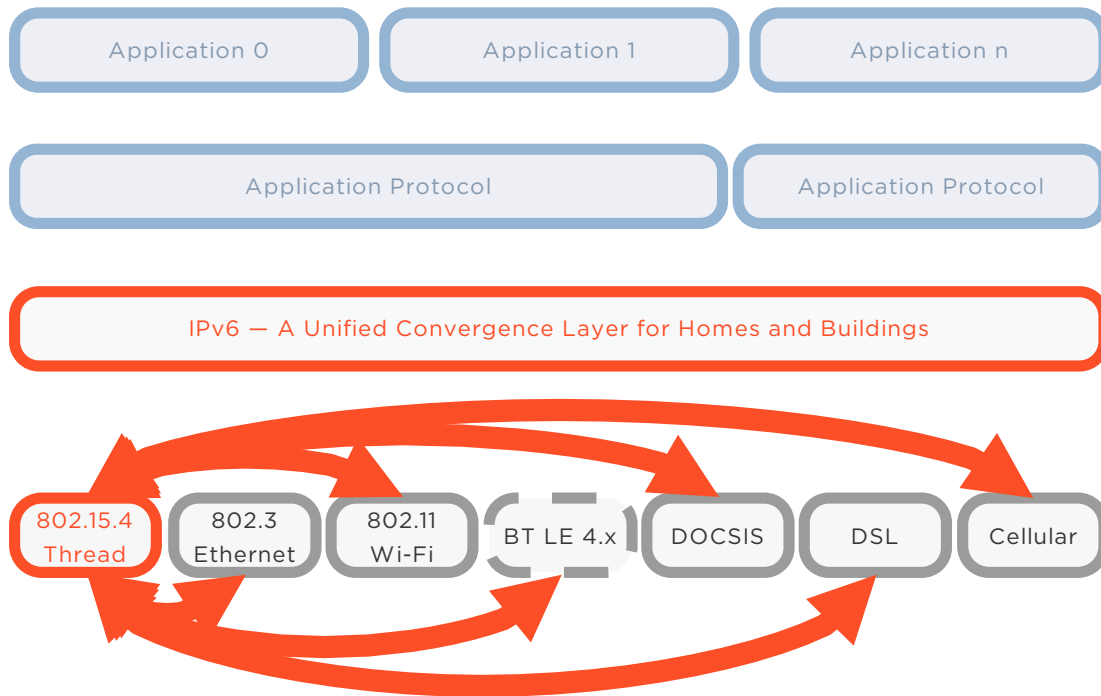
The Internet: Today, mostly "large" devices

	Large devices Mains powered Fast networks
Applications	Internet / Web applications
Web Transfer	HTTP
Transport	TCP
Security	TLS
Addressing	IPv6 / IPv4

↑HREAD | **What Internet Protocols Does Thread Use?**

The Internet: Now available in "small!"

	Large devices Mains powered Fast networks	Small devices Battery powered Constrained networks
Applications	Internet / Web applications can work with large or small devices	
Web Transfer	HTTP	CoAP
Transport	TCP	UDP
Security	TLS	DTLS
Addressing	IPv6 / IPv4	6LoWPAN

ΦHREAD | **Thread is IP**

| Application 0 | Application 1 | Application n |

| Application Protocol | Application Protocol |

IPv6 — A Unified Convergence Layer for Homes and Buildings

| 802.15.4 Thread | 802.3 Ethernet | 802.11 Wi-Fi | BT LE 4.x | DOCSIS | DSL | Cellular |

Unified convergence layer across all networks in the home and beyond

- Reuse software stacks

Enables direct device-to-device, device-to-mobile, and device-to-cloud, and one-to-many communication

- Nodes can communicate directly with each other and with multiple apps or backend services

Support for many application layers

- Any low bandwidth application layer that can run over IPv6 can run over Thread

⌖HREAD | **Many Wireless IoT Standards**

Category 1: Connectivity layer

- Provide wireless connectivity

- Examples: Thread, Wi-Fi/HaLow, Zigbee PRO

Category 2: Application layer

- Provides interoperability with other devices or the cloud. Some can be run over multiple connectivity methods, or at different layers.

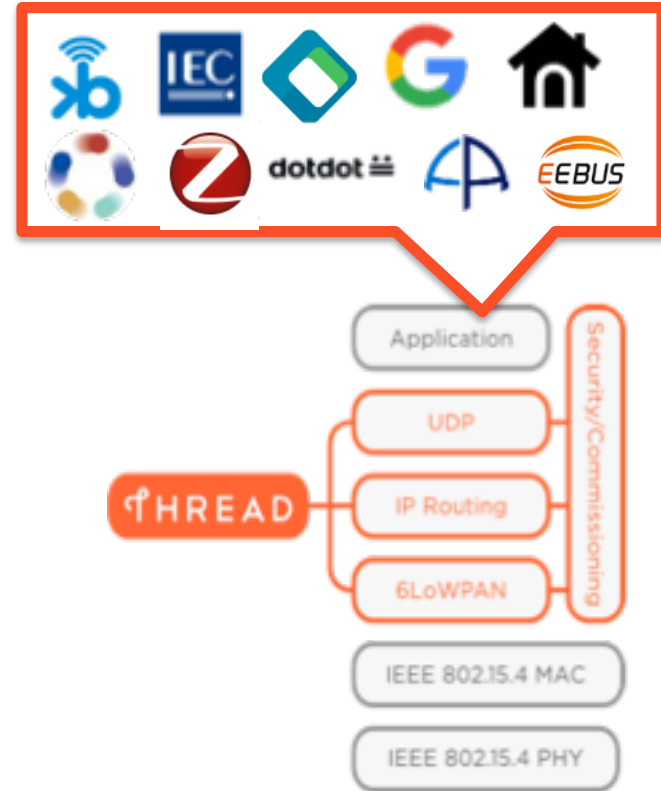- Examples: OCF (IoTivity), IIC, Zigbee Dotdot, many vertical-industry alliances

Category 3: Full-stack technologies – connectivity layer + application layer

- Examples: Bluetooth, Zigbee 3.0, Z-Wave, ULE

⫯HREAD | Application Layer Diversity

Thread is an IP **network** & **transport** layer specification

- Application Layer – A protocol running over an IP network layer

- Network layers – Ethernet, WiFi, cellular … and Thread

- Application layers can use multiple IP networks – i.e. Thread and Wi-Fi

- Thread can support multiple application layers

- Thread **does not** favor one application layer over another

- App layers typically interoperate via services through public interfaces

⟁ H R E A D | **The Value of Thread**

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

BUILT FOR IoT

Low energy footprint

Secure and reliable connectivity

No single point of failure

Interoperability

Scalable

Based on proven standards

IP-BASED

Convergence layer across all networks

Ease of Development

Application layer choices

Multiple Ecosystems

Flexibility to add or change app layers, ecosystems

Device to device and device to Cloud communication

SEAMLESSLY INTEGRATED

Seamlessly and securely works with users' existing networks

Extends the internet into low power end devices without translators

Easily extends to personal devices

MARKET READY

Broad selection of silicon

Four certified stacks

Publicly available specification

Active certification program

Fast-ramp tools accelerating time to market

Global Solution

ᵠHREAD | **Defining the IoT Product**

What is the environment?

- Home, Commercial, Professional, Personal?

- Number of devices to support?

Is it standalone or part of an ecosystem?

- A proprietary ecosystem?

- Established industry ecosystem or ecosystems?

- Is it a single product or a system?

What is this product connecting to?

With Thread and IP you are not forced to choose a single link technology to the exclusion of all others.

Network Links
Choose One

- ● Thread
- ○ WiFi
- ○ Ethernet
- ○ Bluetooth
- ○ Cellular
- ○ DOCSIS
- ○ DSL

↟THREAD | **Choosing Link Technologies**

Choose the right link technologies for your product and customer

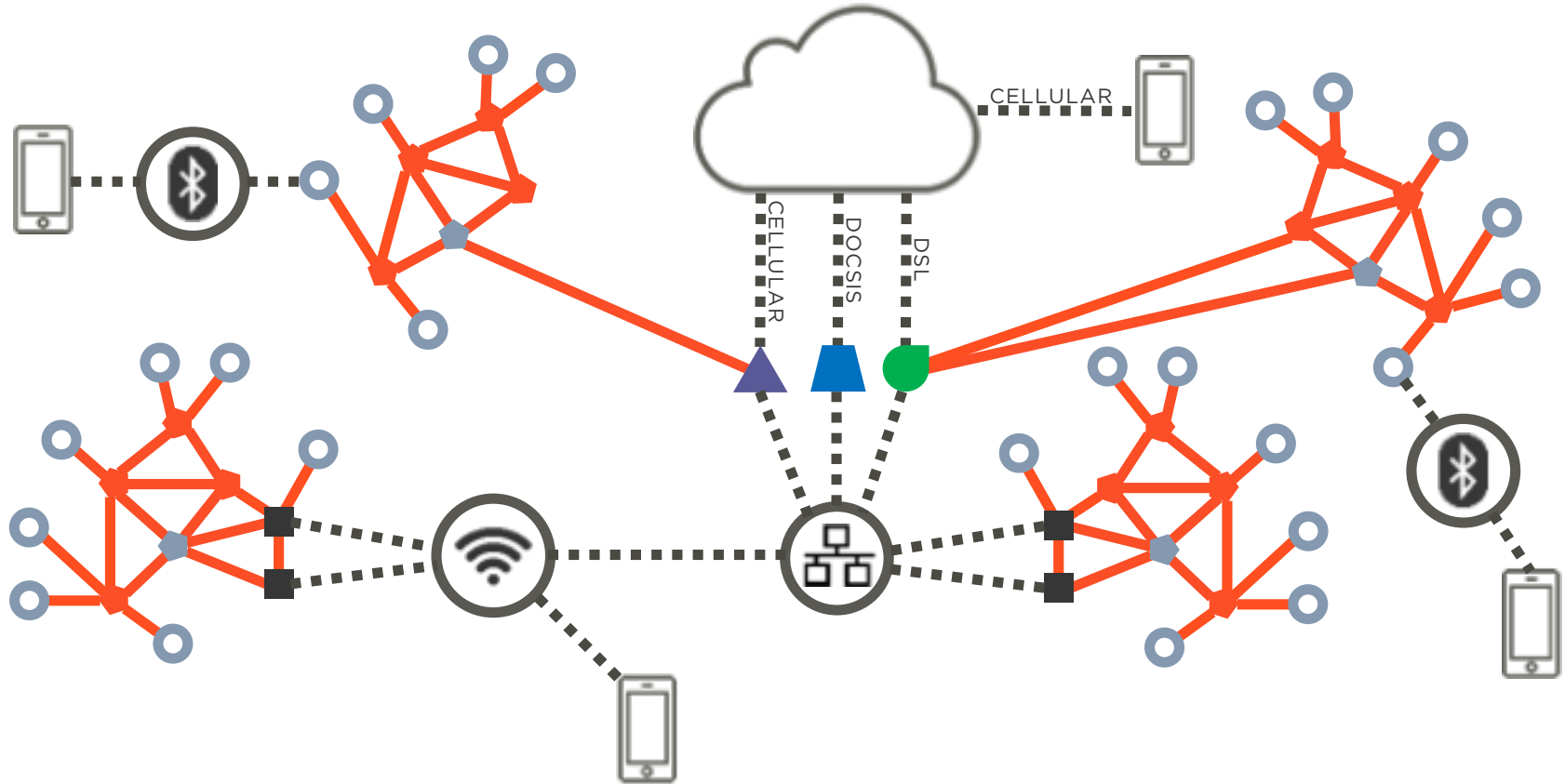Choose the right application layers appropriate for the:

Resources of your product

Ecosystems your customers want to access

Network Links
Choose Any

☑ Thread
☑ WiFi
☐ Ethernet
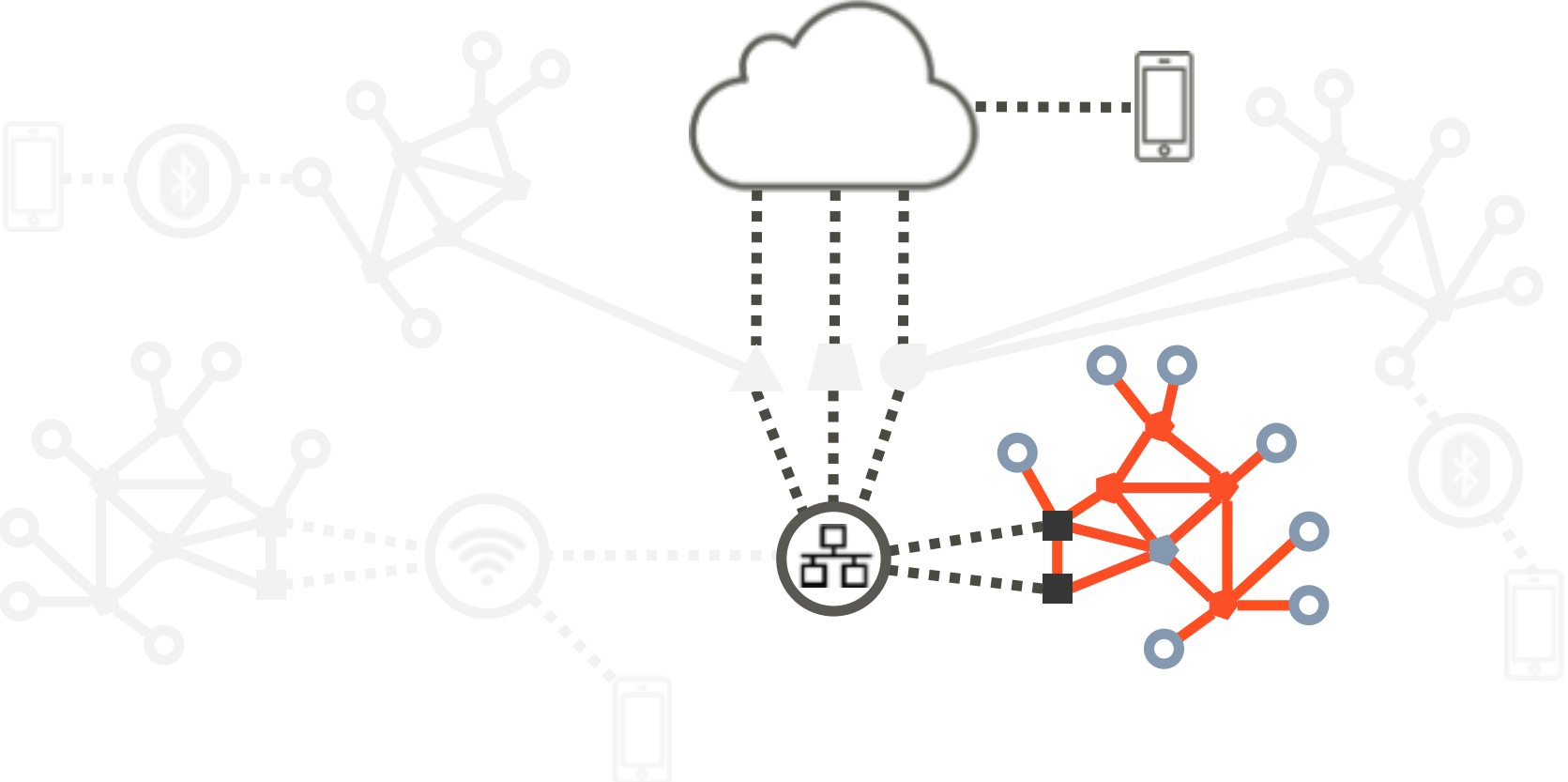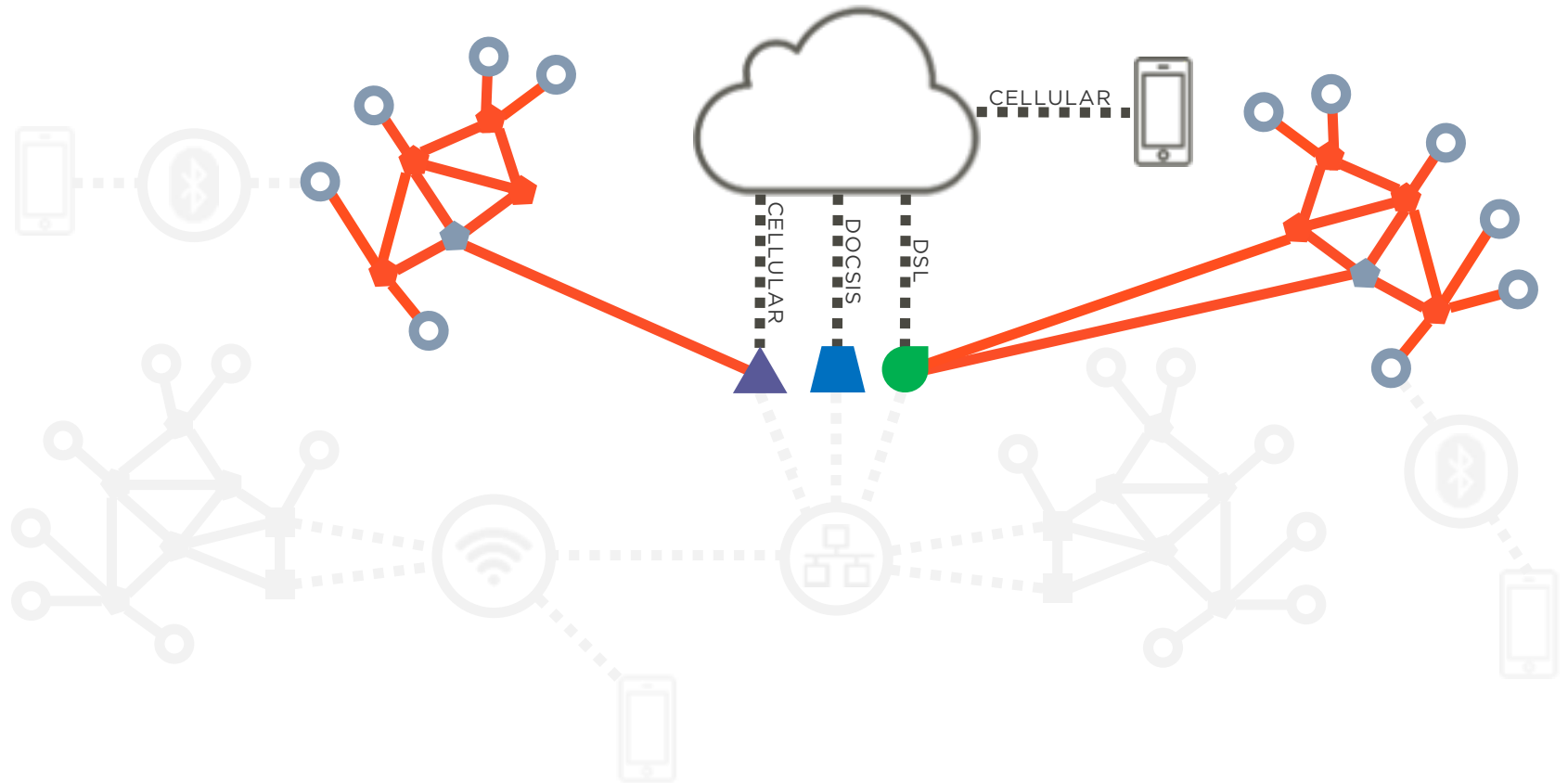☐ Bluetooth
☑ Cellular
☐ DOCSIS
☐ DSL

THREAD | Thread + Many

Thread + Internet & Telecommunications

THREAD | Thread + Bluetooth

☊ THREAD | The Value of Thread

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

BUILT FOR IoT

Low energy footprint

Secure and reliable connectivity

No single point of failure

Interoperability

Scalability

Based on proven standards

IP-BASED

Convergence layer across all networks

Ease of Development

Application layer choices

Multiple Ecosystems

Flexibility to add or change app layers, ecosystems

Device-to-device and device-to-cloud communication

SEAMLESSLY INTEGRATED

Seamlessly and securely works with users' existing networks

Extends the internet into low power end devices without translators

Easily extends to personal devices

MARKET READY

Broad selection of silicon

Many certified stacks

Publicly available specification

Active certification program

Fast-ramp tools accelerating time to market

Global Solution

⫿HREAD | **Certification**

We set the bar high

True **multi-vendor interoperability** between ≥ 3 stacks, not just a golden node

We held 13 discrete in-depth interop sessions to validate the spec

We have many certified stacks

We provide fast ramp tools

⌘ THREAD | **Available Now**

THREAD CERTIFIED COMPONENT

ARM mbed OS (NXP FRDM-K64F + Atmel ATZB-RF-233)

ARM mbed OS is an open source embedded operating system designed specifically to facilitate the creation and deployment of commercial, standards-based IoT solutions at scale. mbed OS features full support for Thread to simplify development of secure IoT applications in the home and to ease Thread product certification. Product Link

Express Logic X-WARE IoT PLATFORM

An Industrial Grade IoT platform for Thread devices that is based on the SIL 4 safety certified ThreadX RTOS and NetX Duo IPv4/IPv6 TCP/IP solutions. This platform contains no open source. X-WARE IoT PLATFORM for Thread is highly portable and currently available for most leading semiconductor solutions. Designed to be small, fast and easy to use, X-WARE IoT PLATFORM greatly eases Thread development and subsequent deployment. Product Link

Kirale Technologies – KiNOS Thread Stack

Kirale Real-Time Network Operating System is a high-performance, secure, robust and scalable Thread Certified Stack tailored for wireless low-power IP-enabled embedded devices and suitable for all Thread roles from ultra-low-power End Devices to powerful Border Routers. Fully-engineered by Kirale Technologies, KiNOS has been built from scratch to optimize footprint and performance. Designed to be small, simple and easy-to-use and with a very portable source code structure that facilitates its customization Product Link

Kirale Technologies – KTWM102 RF Module

Complete Thread Certified Solution with world's smallest PCB footprint. Surface-mount component, integrating a SoC which combines a powerful and ultra-efficient ARM® Cortex®-M0+ based 32-bit microcontroller and IEEE 802.15.4 compliant best-in-class 2.4 GHz RF transceiver. It can be easily handled by host processors through USB and UART interfaces and it is FCC/IC/CE certified allowing faster time to market and low development costs. Product Link

Nordic Semiconductor nRF52840 (OpenThread)

The nRF52840 is a multi-protocol SoC supporting Bluetooth 5 / ANT / 802.15.4 / 2.4 GHz proprietary, with a 32-bit ARM® Cortex™-M4F CPU with 1MB flash and 256kB RAM on chip. The nRF52840 and the "nRF5 SDK for Thread," which is based on the OpenThread stack makes a powerful solution for battery powered Thread devices. Product Link

NXP Kinetis Thread Stack (KW41Z/21Z)

NXP's Kinetis Thread Stack is a complete, robust and scalable certified stack, architected and tested to meet the most demanding product requirements including very low power end nodes, large Thread networks and gateway solutions. The stack is available across multiple NXP microcontrollers and easily connects to host processors to create Thread Border Router solutions. Product Link

OpenThread (TI CC2538)

OpenThread, released by Nest and supported by Google, is an open-source implementation of the Thread networking protocol. It is a highly portable library that is OS and platform agnostic with a radio abstraction layer that is supported on multiple platforms. Product link

Qorvo GP712 System-on-Chip

The Qorvo GP712 System-on-Chip is an IEEE 802.15.4 multi-stack multi-channel communications controller for integration into a Zigbee or Thread (OpenThread) node. It is compliant with the IEEE Standard 802.15.4, providing robust spread spectrum data communication with a secure encrypted data flow, and supports multiple ZigBee 3.0 and Thread protocol stacks in the host processor. Product Link

Qualcomm Atheros, Inc.(QCA 4020/4024/4025)

802.15.4 / Wi-Fi / BLE application processor with Thread stack/ Product Link

Silicon Labs Mighty Gecko Module MGM12P

Silicon Labs' Mighty Gecko MGM12P module integrates our EFR32MG12 SoC into a small form factor module supporting Thread, Zigbee and Bluetooth protocols. With 1024 kB of Flash and 256 kB of RAM, this module is ideal for applications requiring multi-protocol support. The MGM12P integrates all necessary system components including crystals, RF passives and antenna and also has worldwide regulatory compliance including FCC/IC/CE certifications. Product link

Silicon Labs Mighty Gecko SoC (EFR32MG1x)

The Mighty Gecko SoC is a highly integrated wireless SoC featuring an ARM® Cortex®-M4 core and multi-protocol, multiband radio supporting IEEE 802.15.4 (Thread/zigbee), Bluetooth low energy and proprietary RF protocols. This family supports up to 1 MB flash and 256 kB RAM. Additional features include a +20 dBm PA and Silicon Labs' unique Packet Trace Interface (PTI). Product link

TI OpenThread (CC2652)

TI OpenThread is the Thread implementation from TI using the open source OpenThread stack as networking core, and integrated in the TI SimpleLink ™ MCU environment, a SW framework including support for RTOS, drivers and tools common across all TI embedded devices. TI OpenThread runs on CC2652 silicon, a 2.4 GHz multi-protocol (BLE, Zigbee, Thread, Proprietary 2.4 GHz) low power wireless MCU which can be used to build all applications atop of any Thread device type. TI OpenThread is supported on the low-cost LaunchPad ™ development kit. Product link

⌘HREAD | **Certification Fast Ramp Tools**

Thread Commissioning App

- Speeds prototyping / implementation of the Thread device commissioning process for end users.

- First beta release of compiled app now available via the Google Play Store; iOS version to follow shortly.

Thread Test Harness

- Inexpensive test bed, plus software replicates the test environment used for certification.

- Provides debug & pre-validation of Thread implementations internally, vs. lab time at 3rd party test facility.

Thread Test Harness Extensions

- Automates Thread test execution for devices-under-test (DUTs) and integrates Thread testing into an existing automated regression environment.

- Functionality can be extended to control the testing of other technologies to create a comprehensive regression environment.

Getting Started Now

THREAD DEVELOPMENT ECOSYSTEM

Ready to get started? Many members offer a variety of products & services to help you built your Thread solutions.
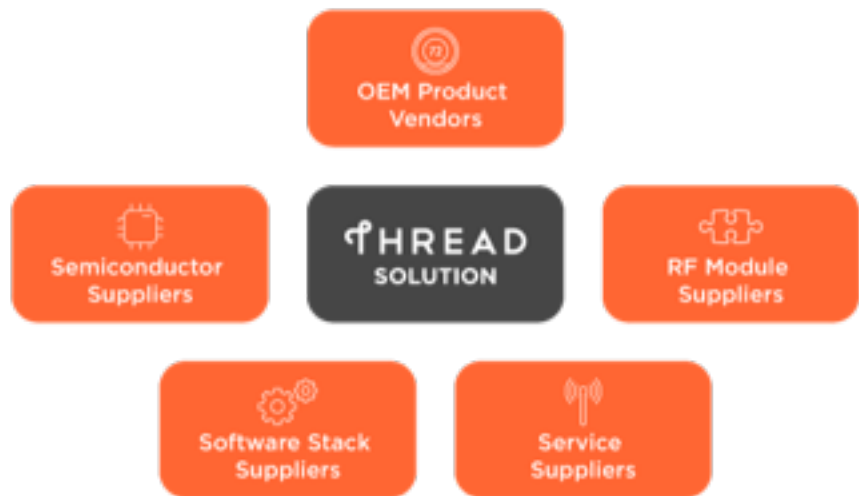
ᎢHREAD | Development Partners

RF Module Suppliers

- FCC and Thread Certified RF hardware modules to plug into your design

- A number of vendors also offer certified turnkey hardware solutions to complement your design (e.g., border routers)

- Some also offer software and/or design services

CEL

centero

DIGI

MMB Networks

kirale technologies

RIGADO

altiux

7 layers testing for a smarter world

ubilogix

Particle

runtime.io

TÜVRheinland® Precisely Right.

SGS

Service Suppliers

- Software stack providers or developers

- Software system integrators - integration of all networking and application layer technologies

- Manufacturing

- Hardware design

- Network testing

ꭨHREAD GROUP | Connect with Thread Members

Navigate the Thread Ecosystem through the Member page on threadgroup.org

OUR MEMBERS

Industry : [All]
Segment : [All]
Region : [All]
Membership Level : [All]

[Search] [Clear All]

THREAD IS BUILT FOR IoT

" Since Thread is an IP-based technology it's very flexible when it comes to application layers. This is a huge benefit for us & means that devices can interoperate across different networking standards.

MMB Networks

" We joined Thread because it addresses the need for a wireless, IP-based, low power protocol which allows many connected devices to co-exist on one network across multiple applications.

OSRAM

" Thread can support all sorts of devices simultaneously on the same network. And that means the customer has the opportunity for greater interoperability & less concern about devices not talking to each other.

eero

THREAD SOLVES PROBLEMS

" We joined Thread Group because we believe Thread is a viable solution not only for the connected home, but also for commercial & industrial applications such as commercial lighting & building automation.

CENTERO

" Thread is interesting to MMB as a low power, mesh & IP-based technology which opens up a lot of new markets and use cases for us & our customers.
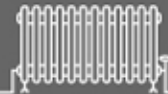
MMB Networks

" Siemens joined Thread because we are looking for a low-cost, wireless solution for constrained devices based on IP—& this is only available through Thread.

SIEMENS

DEVELOPERS
GETTING STARTED WITH THREAD

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

ꝉHREAD | **Thread Resources**

Thread White Papers

Thread Spec

Thread Videos

Thread FAQs

WHITE PAPERS

The Value of Low Power [pdf]   Battery Operated Devices [pdf]
Application Layer Interop [pdf]   6LoWPAN [pdf]
Thread Overview [pdf]   Border Routers [pdf]
Security & Commissioning [pdf]   All White Papers [zip]

SPECIFICATION

Download the Spec

FAQ

DEVELOPERS

▸ What Is Thread And What Does It Do?

▸ What Kind Of Devices Use Thread?

▸ Do Devices That Use Thread Work With Other Wireless Solutions Such As Bluetooth, Wi-Fi, Zigbee And Z-Wave?

▸ Is Thread Available Now?

▸ When Will Thread Certified Devices Be Available?

▸ What Aspects Of The Wireless Network Does Thread Address?

▸ How Does Thread Address Security And Commissioning?

How Will Thread Support

Why Mesh?

Why Mesh?

GRANT ERICKSON

Security in the Connected Home

Security in the Connected...

SUJATA NEDIG

ᚦHREAD | **Thank You!**

Sign up for our newsletter to get quarterly updates

SIGN UP FOR OUR NEWSLETTER

For more information, please connect with us:

- help@threadgroup.org

- www.threadgroup.org

- linkedin.com/company/thread-group

- @TheThreadGroup

- Be sure to check out Thread Group's Blog!

ᚦHREAD MEMBER

For more information about Thread Group,
please visit threadgroup.org or email help@threadgroup.org