



# Introduction to Thread Group and Thread in Commercial

Jos Bruins and Jorg Kennis  
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# THREAD GROUP

The Thread Group consist of 150+ member companies worldwide, and includes:

- End-product manufacturers
- Silicon and RF module manufacturers
- Network software stack providers
- Consulting and service companies
- Certification testing labs

arm

Schneider  
Electric

nest

SIEMENS

NORDIC  
SEMICONDUCTOR

SILICON LABS

NXP

SOMFY

OSRAM

Qualcomm

Yale

# THREAD | The Need for a New Wireless Network Standard

IoT needs a low-cost, low-power, secure and scalable wireless network, that seamlessly works together with existing networking protocols and applications.

Thread is a wireless mesh networking protocol based on existing internet standards, that fulfills all these requirements:

- ✓ Low power
- ✓ Resilient / reliable
- ✓ Scalable
- ✓ Internet Protocol based
- ✓ Open / multi-vendor
- ✓ Secure
- ✓ Easy to set up and use
- ✓ Existing radio silicon

# THREAD | Multiple Application Layers

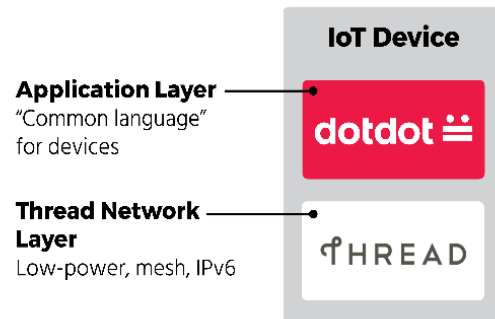
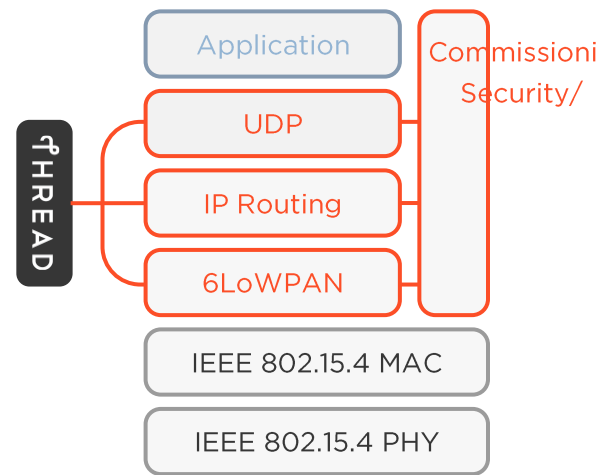
Thread is an IP network and transport layer specification that works on existing IEEE 802.15.4 wireless radios.

It is application layer agnostic and supports any IPv6 low-bandwidth application layer.

Similar to IT applications sharing Wi-Fi resources, many applications can share the same IP-based Thread network.

It can even run multiple application layers on the same Thread network, like Zigbee dotdot, BACnet, KNX and others.

Example - Zigbee dotdot over Thread:



# THREAD | Traditional BALC vs. Thread

In Building Automation and Lighting Control, only Thread offers true IP-to-IP connectivity from individual devices to the cloud.

This enables end-to-end encryption and one common interface to locally or remotely commission and control every device in the network.

Compare traditional BALC-installation versus Thread:

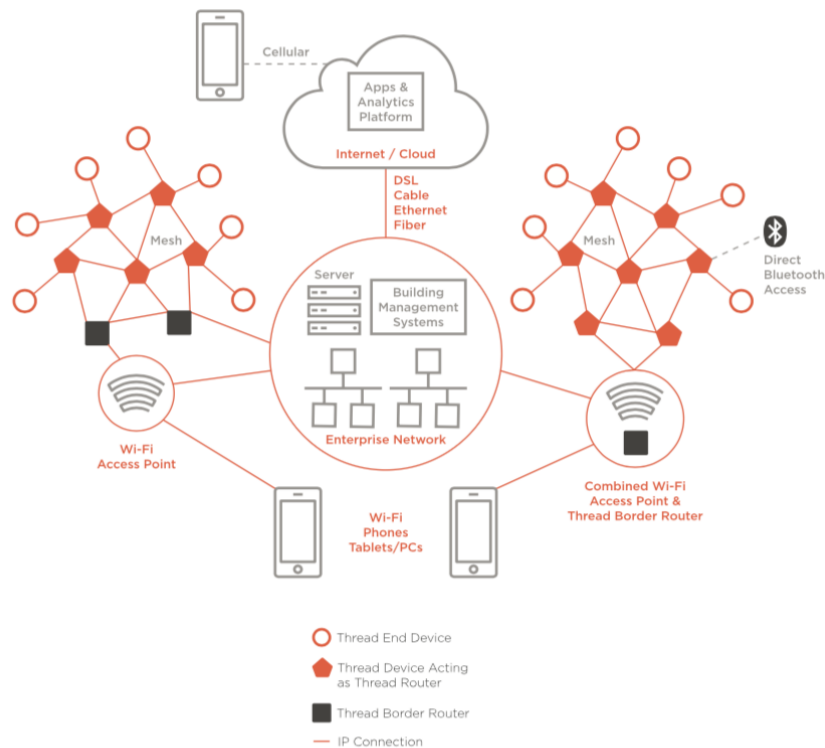


# THREAD | Thread Commercial Network Topology / 1

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 also serve as sleepy devices are not required to check in and thus preserve power.



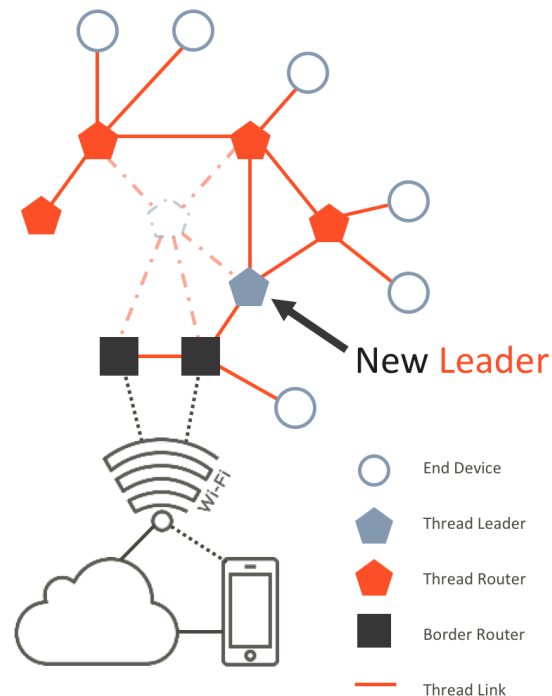
# THREAD | Thread Commercial Network Topology / 2

6LoWPAN uses IPv6 header compression to reduce data load, and link-layer packet forwarding to enable efficient forwarding of packets in a mesh-network. Thread is routed mesh, not flooding mesh.

One Thread device is dynamically assigned as a leader to determine traffic. In case of malfunction, another Thread device gains this functionality. Battery driven sleepy devices poll for messages that are held by parent devices.

Thread has security built-in. There is MAC security for all messages using 128-bit AES encryption and DTLS security sessions for new devices to be authenticated.

With Thread, there's no single point of failure so the network stays operational even without an internet connection.



# THREAD | Thread in Commercial

Thread is expanding its functionality for integration in commercial applications such as office buildings, hotels, factories, universities, and outdoor applications.



SOHO



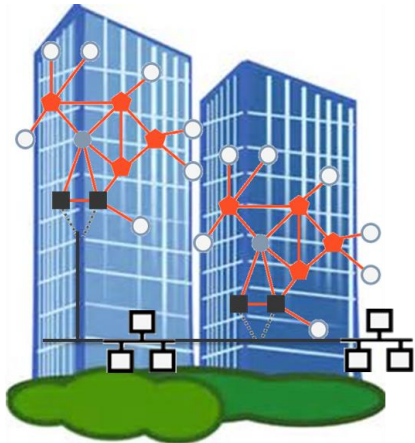
Building



Industrial



Outdoor



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

- 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



# 🌀 HREAD | Thread in Commercial Features

## **Migration towards true IP systems**

Integrates with existing Ethernet/Wi-Fi/LTE enterprise networks and offers easier maintenance, lower complexity and lower costs.

## **Enterprise-level security**

Remotely commission (multiple) devices.

## **Increased device capacity**

Associate devices with IT domains and scales up to thousands of devices. Run multiple application protocols on multiple subnets in parallel.

## **Automatic roaming**

Seamless switch to nearby network or prioritized network. Extensive scalability when nodes are added without the need to replace entire system.

## **Enterprise IT-requirements**

Assign secure, verifiable identity to each individual device.

## **User permissions**

Assign levels of network privileges to users or groups. Change user requirements without recommissioning applications.

## **Installation handover**

Essential installation handover functionality and verification capabilities.

## **Analytics**

One end-to-end network generates coherent data without conversion or multiple network-interfaces.

# THREAD | Getting Started with Thread

A number of leading companies now offer development boards, chipsets, and software solutions to help you get started on building your Thread product today.

Product certification testing is available from 3 test lab companies at 6 locations in US, EU, APAC.

## THREAD GROUP

The ARM logo consists of the word "arm" in a lowercase, blue, sans-serif font.The ExpressLogic logo features the word "expresslogic" in a blue, sans-serif font, with "express" in lowercase and "logic" in a slightly larger, bold lowercase.The KiraLe Technologies logo includes a blue icon of a stylized 'b' with a signal wave above it, followed by the word "kiralē" in a bold, black, sans-serif font, and "technologies" in a smaller, lowercase font below it.The Nordic Semiconductor logo features a blue, stylized 'N' icon followed by the word "NORDIC" in a bold, black, sans-serif font, and "SEMICONDUCTOR" in a smaller, lowercase font below it.The NXP logo consists of the letters "NXP" in a bold, sans-serif font, with each letter having a different color: 'N' is yellow, 'X' is grey, and 'P' is green.The Qorvo logo features the word "QORVO" in a bold, black, sans-serif font, with a trademark symbol (TM) to the right.The Qualcomm logo consists of the word "Qualcomm" in a bold, black, sans-serif font.The Silicon Labs logo features a red, stylized 'S' icon followed by the word "SILICON LABS" in a bold, black, sans-serif font.The Texas Instruments logo includes a red icon of the state of Texas with a stylized 'ti' inside, followed by the words "TEXAS INSTRUMENTS" in a bold, black, sans-serif font.

# THREAD | Resources

Visit our website for more information on Thread in Commercial.

<https://www.threadgroup.org/BUILT-FOR-IOT/Commercial>

- White Papers
- Summary Leaflets
- Explanatory Videos
- FAQs
- Developer tools
- Product and component overviews

Contact us with any questions via  
[help@threadgroup.org](mailto:help@threadgroup.org)

[www.threadgroup.org](https://www.threadgroup.org)

