Technical Article
An FAQ about the Matter Connectivity Standard

TEXAS INSTRUMENTS

Kevin Koestler

Matter, formerly known as Project Connected Home over IP (CHIP), is a royalty-free connectivity standard developed within the Connectivity Standards Alliance, formerly the Zigbee Alliance. Matter runs on Thread and Wi-Fi® network layers and uses *Bluetooth*® Low Energy for commissioning. By providing a unified application layer based on proven technologies, manufacturers can leverage this open-source protocol to accelerate their development. Matter also improves compatibility for consumers and enables interoperability across the quickly expanding Internet of Things ecosystem so smart switches, smart hubs and smart thermostats from different manufactures can all work together in a home.

TI has been a promoter member of the Connectivity Standards Alliance for more than 10 years, a Thread Group contributor member, Wi-Fi Alliance contributor member and an early adopter for Matter, where we are actively participating in development efforts.

Here are some questions that you may have about Matter, and how to get started with development early.

Q:

What are the benefits of Matter? What does Matter mean for end-equipment developers?

A:

Matter simplifies the developer experience by reducing functionality specific to an ecosystem like Amazon Alexa, Apple Siri or Google Assistant, which may limit interoperability so that an end equipment can communicate and be controlled within any ecosystem. Matter provides a common layer for device life-cycle events – such as commissioning and provisioning, and device and profile discovery – over an Internet Protocol (IP) link (Thread, Wi-Fi, Ethernet). Successful certification for Matter devices guarantees interoperability between various manufacturers.

Q:

What are the benefits for consumers?

A:

Matter is compatible with smart home services such as Amazon Alexa, Apple Siri and Google Assistant. Any Matter-certified end product will be plug and play, complementing any given smart home ecosystem that did not previously guarantee communication between different ecosystems.

Q:

How do Zigbee and Matter compare?

A:

Although Matter is led by the alliance, it is not a replacement for Zigbee. The alliance will continue developing the Zigbee protocol. Matter application objects and interactions are heavily inspired by the Zigbee Cluster Library. As far as the differences, Matter requires IP-bearing networking protocols, while Zigbee specifies its own networking protocol.

Additionally, Matter defines provisioning schemes, which best suits expected user setup scenarios, over *Bluetooth* Low Energy and Wi-Fi QR codes. Zigbee's standard commissioning process uses its native 802.15.4 radio.

Q:

What technologies does Matter run on top of?

A:

Matter provides an abstracted application layer that builds on top of IP protocols such as Wi-Fi, Ethernet and Thread, as shown in Figure 1. The unified application layer built on top of IP protocols improves interoperability for consumers and enables ease of development for solution providers across these connectivity protocols and technologies.
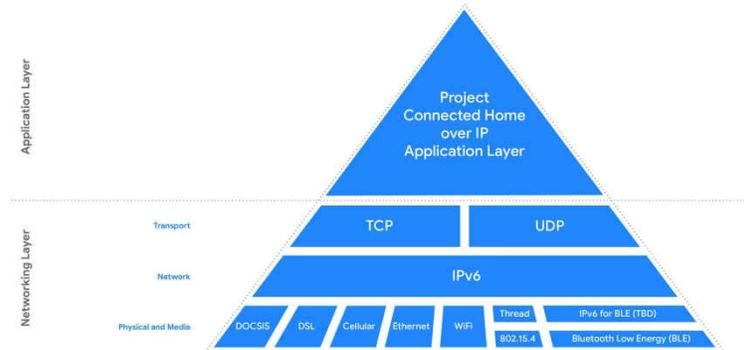
Figure 1. Matter's Abstracted Application Layer Builds on Top of IP Links (Source: Connectivity Standards Alliance)

Q:

Which devices will support Matter?

A:

Matter-enabled devices can operate in two different configurations, such as:

- **System on chip (SoC).** A Matter SoC runs all Matter layers on a single device. This configuration is a good fit for systems where the main system function is the Matter application. An SoC is common for higher-volume products such as lights, sensors or smart locks.
- **Co-processor.** A Matter co-processor runs a subset of Matter layers and pairs with another main processor to create a complete Matter solution. There are two possible types of co-processors: network co-processors (NCPs) and radio co-processors (RCPs).

TI's SimpleLink wireless connectivity portfolio will support all major Thread-based system topologies for Matter accessories. Table 1 lists the devices in the SimpleLink portfolio that support Matter over Thread and Wi-Fi. Matter defines Bluetooth Low Energy usage primarily for device discovery and provisioning.

Table 1. SimpleLink Portfolio Devices Supporting Matter

Device	Flash/secure random access memory	Matter device roles	Other capabilities	Production date
CC2652R CC2652P [1]	352 kB 80 kB	Thread NCP Thread RCP	Concurrent Bluetooth Low Energy	In production
CC3220SF	1024 kB 256 kB	SoC – Wi-Fi	Secure boot Secure key storage Wi-Fi Protected Access (WPA)3	In production

Table 1. SimpleLink Portfolio Devices Supporting Matter (continued)

Device	Flash/secure random access memory	Matter device roles	Other capabilities	Production date
CC3230SF	1024 kB 256 kB	SoC – Wi-Fi	2.4 GHz Secure boot Secure key storage Bluetooth Low Energy coexistence WPA3	In production
CC3235SF	1024 kB 256 kB	SoC – Wi-Fi	Secure boot Secure key storage Bluetooth Low Energy coexistence Dual band (2.4 GHz and 5 GHz) WPA3 Federal Information Processing Standards 140-2 level 1	In production

(1)   The P in the device number indicates an integrated +20-dBm power amplifier

Matter provides a unified application layer that simplifies development for manufacturers and improves interoperability between smart devices. Visit TI.com/Matter to get started with development resources like our updated software development kits for Matter-enabled MCUs. Also, check out our Matter technology demo: Unified standard for connected objects.

IMPORTANT NOTICE AND DISCLAIMER