SILICON LABS

10 Considerations for Planning a Matter Product

A guide for product managers, decision makers, and business owners for a successful Matter launch

Purpose of this Guide

This document is a strategic guide for decision-makers, product managers, and business owners developing connected smart home devices.

Smart home ecosystems have been around for years, and the most popular brands such as Amazon, Apple, and Google are serving hundreds of millions of device users worldwide. But one challenge has been that these IoT ecosystems operate in isolated silos. With the release of the first Matter specification, the industry has entered a new, open era of smart home ecosystems.

Matter is an application layer protocol providing a common data model for the IoT ecosystems. Now smart home devices, gateways, smart speakers, and more, can talk to each other across the IoT ecosystem boundaries.

This document demystifies the Matter protocol and IoT ecosystems for product managers and decision-makers. It explains the ten most crucial points you must consider when planning a Matter product launch – these include: How Matter changes smart home product development and integration with IoT ecosystems, what are the standard Matter device types, which certifications are needed, and how to manage certificates during contract manufacturing among the many other topics. With this guide, you can navigate the yet-uncharted future of Matter and open IoT ecosystems as well as reducing risks and unplanned costs while accelerating product development and launch.
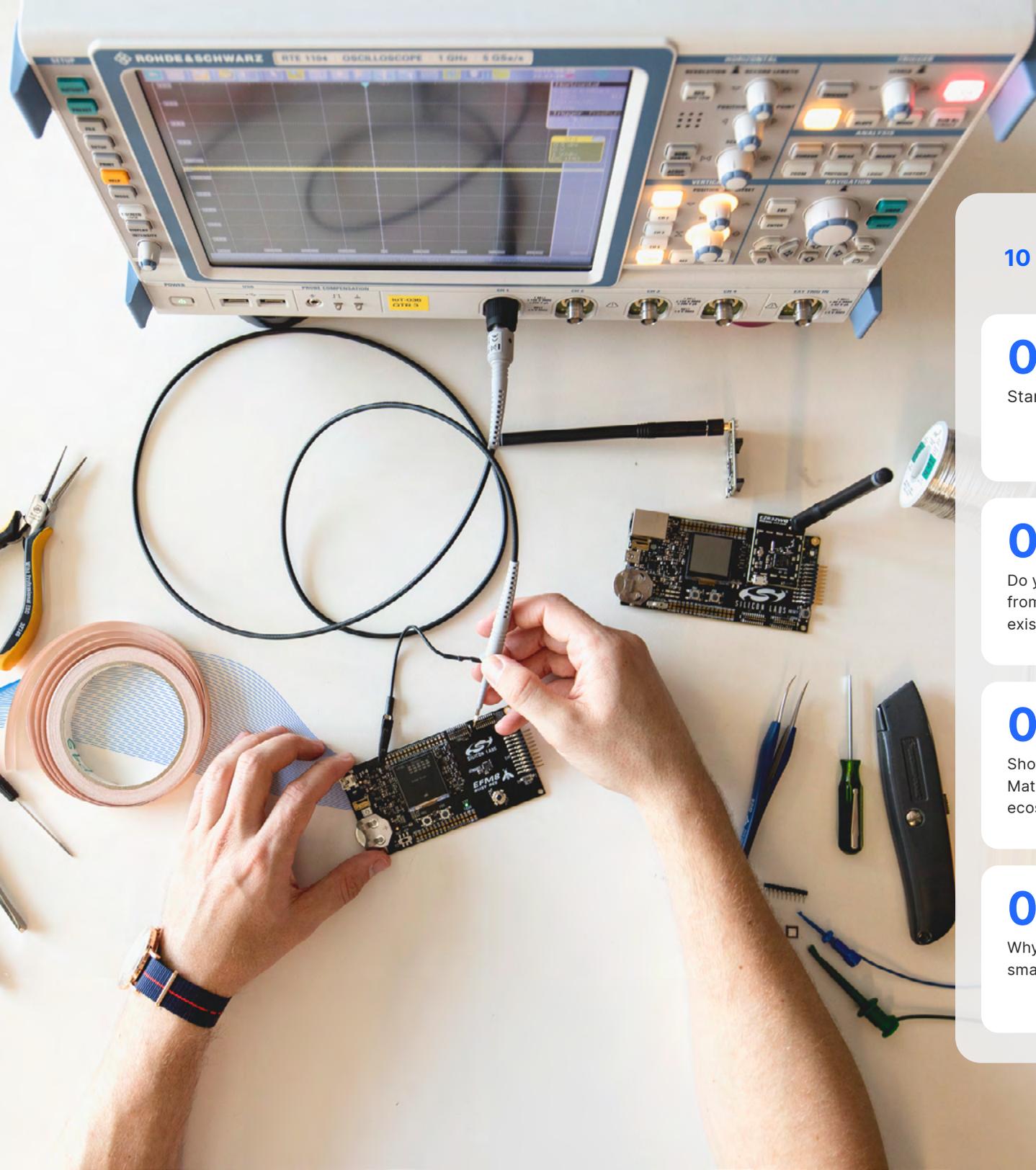
10 Considerations for Planning a Matter Product Launch

01 **Matter Device Type**

Standard or customized?

02 **Native Matter or Bridged Device**

Do you build a Matter device from scratch or bridge an existing device?

03 **Own Matter Fabric or Ecosystem**

Should you build your own Matter fabric or rely on ecosystems?

04 **Matter + Ecosystems**

Why integrate Matter with smart home ecosystems?

05 **Matter vs. Ecosystem Stacks**

What are the advantages of Matter stack vs. ecosystem-specific APIs?

06 **Wireless Design**

How do you optimize wireless design for Matter?

07 **Embedded Development**

Which of the three approaches is the best for your organization?

08 **Testing & Certifications**

What certification is required for your Matter product?

09 **Certificate Management**

How should you manage Matter certificates safely in manufacturing and beyond?

10 **Lifecycle Maintenance**

How do you keep the Matter product installed base up to date throughout its lifetime?

Are You a Member of CSA?

All device makers building a product for Matter must register with the Connectivity Standards Alliance (CSA). You can learn more about the four levels of CSA partnerships on the CSA website and register directly via the online form.

csa
connectivity
standards
alliance

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01 MATTER DEVICE TYPE

What Kind of Device are You Building?

Device type is the first and most critical consideration when designing a Matter device. The Matter protocol works based on device type. Only those device types included and identified in the latest specification can function on a Matter system. For example, Matter 1.1 contains device types such as LEDs, switches, electricity plugs, locks, blinds, shades, garage door openers, thermostats, HVAC, and gateways. Other types of devices do not yet function on a Matter 1.1-compliant system.

If you are planning to build a device that is not specified in the current Matter release, and it is part of the roadmap, you can request CSA for a new device type to be included on the specification.

How can Silicon Labs help?

As a central CSA contributor, Silicon Labs is actively listening to connected device manufacturers like you. We can help influence Matter-specification evolution based on the needs of device manufacturers and consumers alike. We can implement new device types in our Matter code to experiment with and validate.

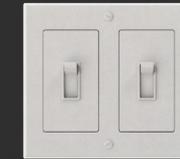## Device Types Currently Supported in Matter Specification 1.1

TVs
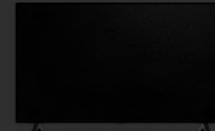
LEDs

Switches

Plugs

Locks

Blinds & Shades

Sensors

Thermostats

Gateways

Pumps & Controllers

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02 NATIVE MATTER OR BRIDGED DEVICE

Native or a Bridged Device?

From a device maker's perspective, you can consider Matter a protocol without a gateway. When Matter is used over Wi-Fi scenario, you don't have to build a gateway. Any Wi-Fi router can connect your devices to the Matter network. If Matter is transmitted via Thread, a border router is required. However, this standard function is typically included in the ecosystem provider's infrastructure.

Matter Bridge

The Matter Bridge is a standard function that enables devices using other protocols such as 802.15.4 protocol to connect to a Matter system. This allows you to expand the revenue and extend the life of existing Zigbee, Z-Wave, and other proprietary devices. However, developing a multiprotocol gateway that can bridge existing Zigbee and Z-Wave devices into the same Matter system is challenging.

Unify SDK: The Solution to Multiprotocol Gateways

Silicon Labs' Unify SDK can radically simplify multi-protocol software development for gateways such as Matter Bridge. It allows you to develop and maintain just one codebase while Unify SDK handles protocol-specific code translations.
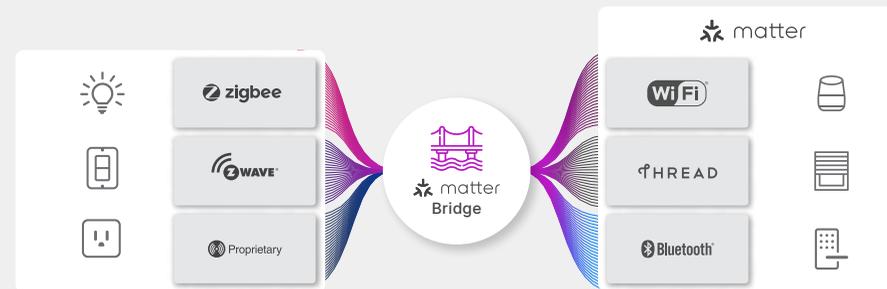
MATTER BRIDGE

The Matter standard combines Wi-Fi, Thread, and Bluetooth LE protocols. The Matter Bridge is a standard function that can connect devices using other wireless protocols into the system.
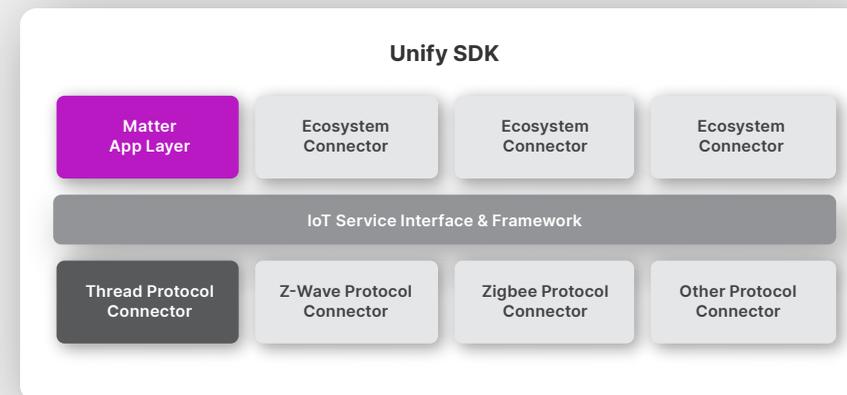
UNIFY SDK

Silicon Labs' Unify SDK is the only multi-protocol software development tool available that enables device makers to build a Matter Bridge faster, accelerating time-to-market.

Benefits of Unify SDK

- **Combine closed- and open-ecosystem strategies**
  Continue with your closed-ecosystem and launch an adjacent open-ecosystem play through Matter

- **Extend the life of existing Z-Wave & 802.15.4 devices**
  Keep your existing users happy and continue churning revenue in the Matter space

- **Reduce your R&D costs and Time-to-Market for Matter**
  Simplify multi-protocol software development on your gateway products with Unify SDK

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03 OWN MATTER FABRIC OR ECOSYSTEM

Own App or Ecosystem App?

As a device maker, you can choose between three approaches for the Matter fabric.

1

Build your own Matter device and use the fabric already provided by the smart home ecosystem providers. This is the easiest alternative, which however limits your possibilities for branding and tailoring the user experience. This option can also reduce sales because the buyers must own e.g. a Matter-enabled smart speaker to control the device.

2

Build a Matter device and your own proprietary App that works with the existing ecosystem fabric. This option saves you the effort and investment needed for the cloud infrastructure and gives more opportunities for a tailored user experience than option one.

3

Build a full Matter fabric including a Matter-certified device, mobile App, cloud infrastructure, and a local Matter controller device like a Border Router. Your own Matter fabric can be linked to work with the fabric of the ecosystem providers. The third option requires the highest investment of these three alternatives, yet it allows you to build the most tailored and branded smart home user experience.
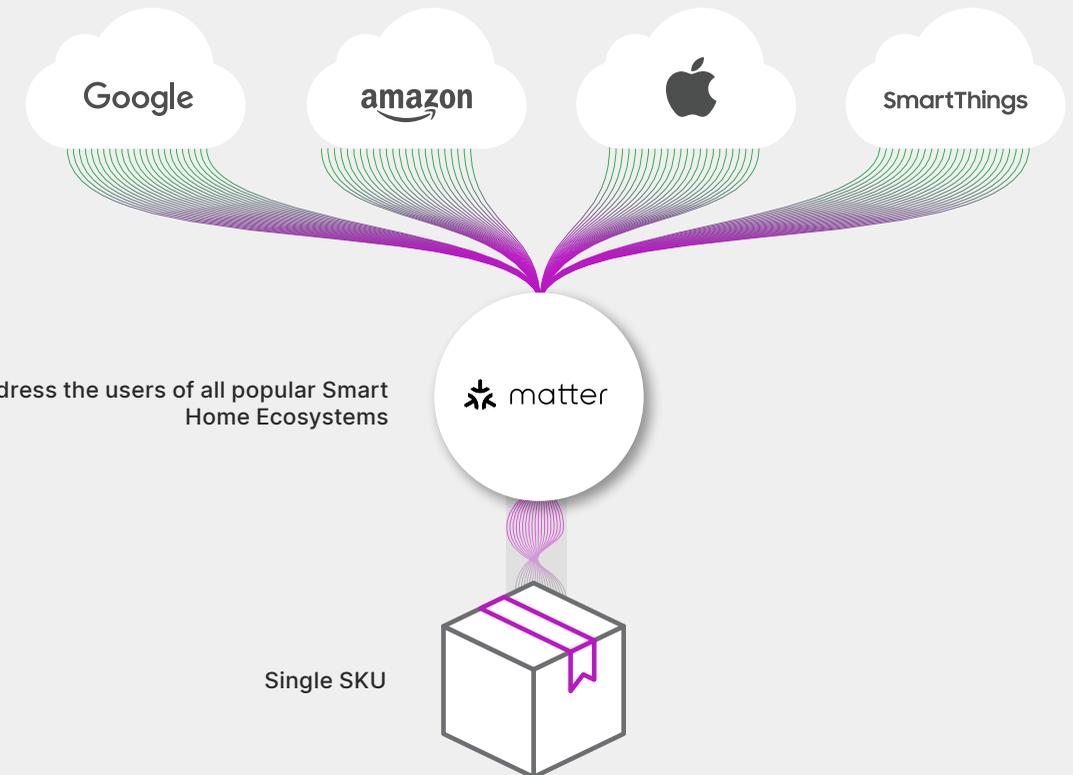
Build a Border Router

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04 MATTER + ECOSYSTEMS

Should You Connect Matter Products to Smart Home Ecosystems?

Matter enables smart home products to become compatible with any smart home ecosystem brand. Matter alone does not provide device makers its full potential. Certifying your Matter product with the smart home ecosystems and using the official Works With badges on marketing gives you several advantages.

Benefits of Matter + Smart Home Ecosystems

- Enter the world's largest smart home markets with a single SKU and increase sales and product margin

- Allow consumers to buy the devices confidently, knowing that they will work with the devices they already have at home

- Take advantage of trusted ecosystem user experience and interfaces (UX/UI) familiar to millions of users worldwide to accelerate the market adoption of your products.

- Differentiate by developing additional functionalities unique to specific ecosystems

- Reduce R&D costs and time to revenue through development platforms and tools

- No need to build your own fabric – gateway, border, cloud, and app – gateways of various ecosystem providers exist in 100s of millions of homes

- Bridge existing Z-Wave, Zigbee, and Proprietary devices into Matter to extend revenue generation

Address the users of all popular Smart Home Ecosystems

Single SKU

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05 MATTER + ECOSYSTEMS STACKS
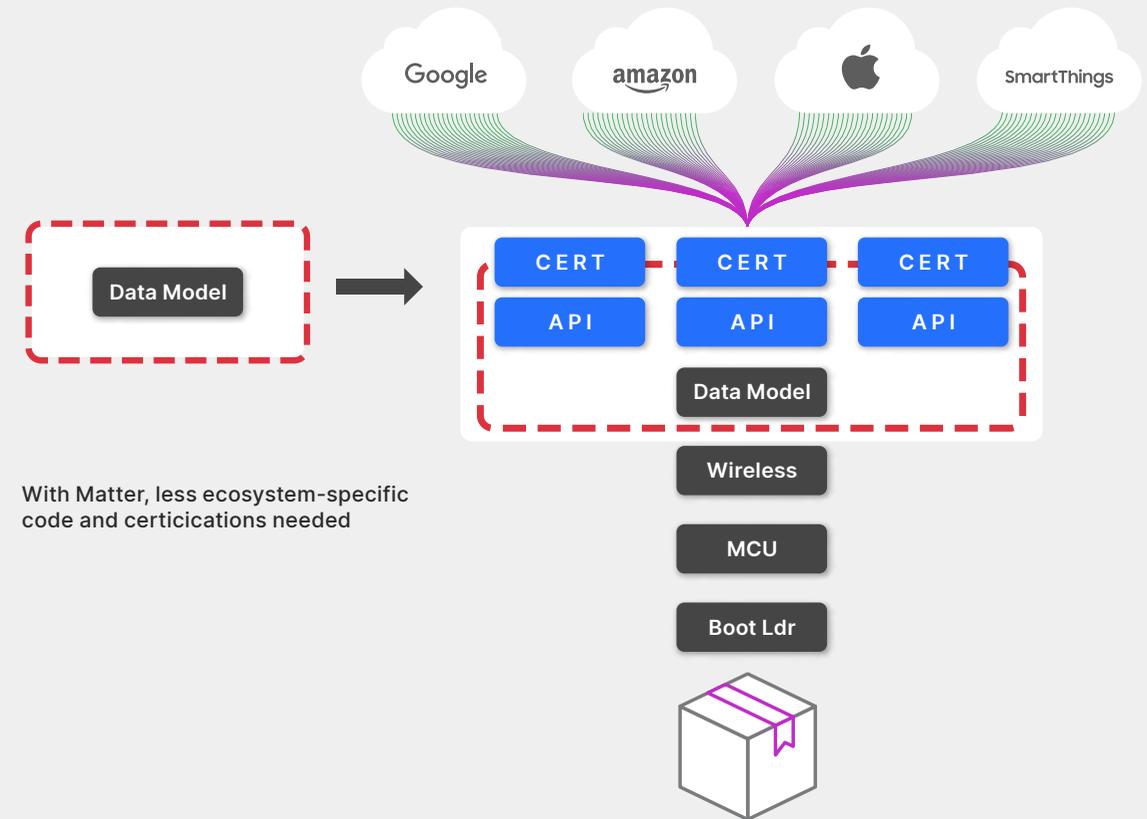
Matter vs. Ecosystem Stacks

The Matter standard introduces a unified Data Model (DM) compatible with all Matter-enabled IoT ecosystems, which eliminates significant ecosystem-specific development effort.

Instead of implementing several ecosystem-specific Application Programming Interfaces (API), device makers can simply implement a single, standard Matter Data Model for all ecosystems. With Matter, you need to perform only a light-effort interoperability testing and certification process with each ecosystem. The benefit for device makers is simplified software development and reduced interoperability testing and certification effort, saving costs and time-to-revenue.

IoT Ecosystem Certification

The process of design, development, testing, and certification varies with each IoT ecosystem. Learn more about how to get started with different IoT ecosystems.
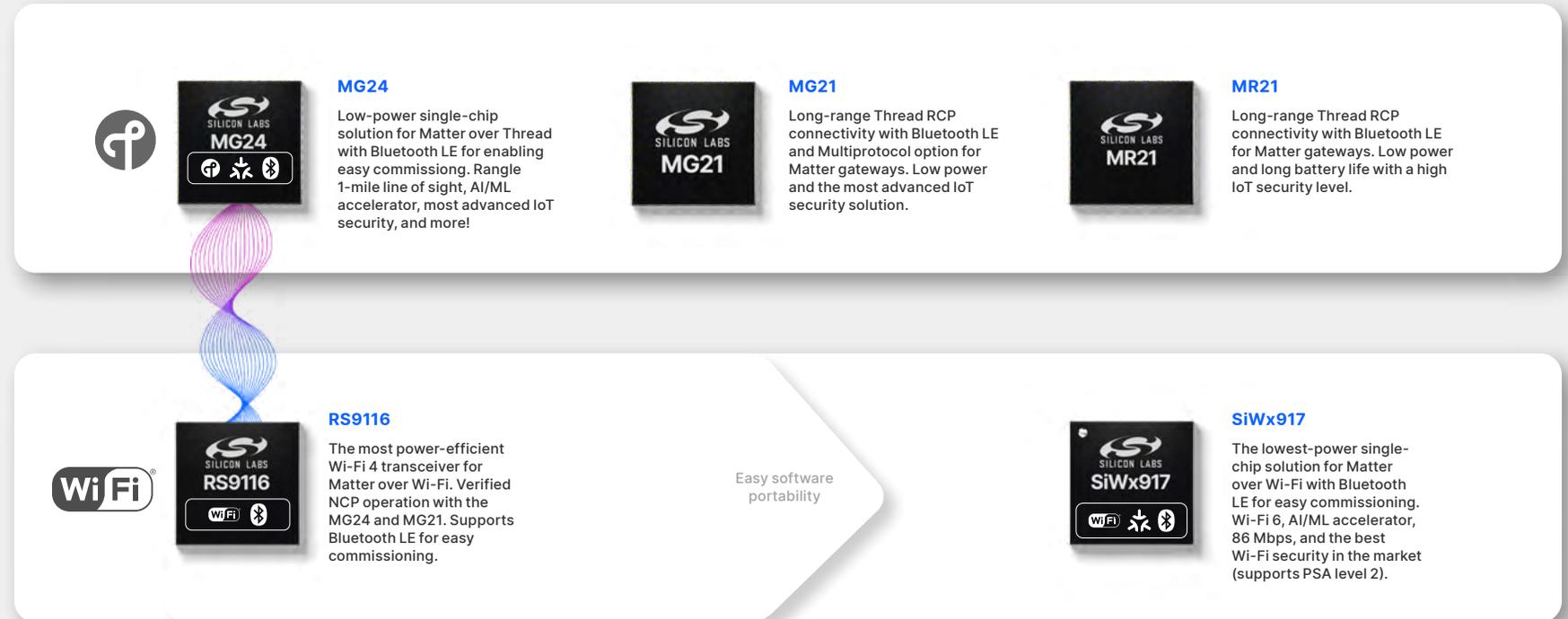
Learn More

With Matter, less ecosystem-specific code and certications needed

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06 WIRELESS DESIGN

Choosing the Optimal Wireless Protocol for Matter

Every home is a unique wireless challenge. Walls, reflections, and interference can deteriorate user experience. Your connected device is only as good as the quality of your connectivity. So, how do you give users the best possible first impression? With Matter, there are three wireless protocols to consider: Wi-Fi and Thread for data communication, and Bluetooth Low Energy for easy device commissioning. Silicon Labs offers you the best wireless performance on the most power-efficient single-chip solutions for all Matter protocols. This reduces design complexity, footprint, and BoM while enabling your devices with reliable wireless connectivity in every room of the house and beyond.

MG24
Low-power single-chip solution for Matter over Thread with Bluetooth LE for enabling easy commissiong. Rangle 1-mile line of sight, AI/ML accelerator, most advanced IoT security, and more!

MG21
Long-range Thread RCP connectivity with Bluetooth LE and Multiprotocol option for Matter gateways. Low power and the most advanced IoT security solution.

MR21
Long-range Thread RCP connectivity with Bluetooth LE for Matter gateways. Low power and long battery life with a high IoT security level.

RS9116
The most power-efficient Wi-Fi 4 transceiver for Matter over Wi-Fi. Verified NCP operation with the MG24 and MG21. Supports Bluetooth LE for easy commissioning.

Easy software portability

SiWx917
The lowest-power single-chip solution for Matter over Wi-Fi with Bluetooth LE for easy commissioning. Wi-Fi 6, AI/ML accelerator, 86 Mbps, and the best Wi-Fi security in the market (supports PSA level 2).

SoC or Module?

Silicon Labs' wireless hardware are available as ultra-compact SoCs and RF-certified modules with built-in antenna.

SoCs
Choose SoC to gain ultimate design flexibility

Modules
Choose Module to reduce testing, and certification costs while accelerating time to revenue

What is the Right Development Approach for Your Team?

In Matter embedded software development, you can choose between three approaches, each with their pros and cons, depending on your development organization.

Silicon Labs GSDK

The Silicon Labs Simplicity Studio with Gecko Software Development Kit (GSDK) provides your development team the easiest, smoothest, and most integrated development experience for Matter. It includes all the protocol SDKs and Matter SDK with a seamless transition to smart home ecosystem certifications. The most advanced wireless specialist toolkit includes an energy profiler, network analyzer, pin tool, and more at no cost. Example applications save time in getting the development work off the starting blocks. Test harnesses and certification capabilities included in Simplicity Studio accelerate time to revenue.

Silicon Labs Matter GitHub

Through Silicon Labs Matter GitHub, you can access tested and verified Matter software, which is optimized to give the best performance on Silicon Labs hardware and to reduce the time needed for debugging and troubleshooting. This improves your overall product quality and accelerates development. The Silicon Labs Matter GitHub is perfect for those developers and teams that have their own tools and processes.

Unify SDK

Unify SDK provides simplified multiprotocol (Zigbee, Z-Wave) software development for Matter Bridge and gateways. It reduces your development costs and Time-to-Market. You can simply develop and maintain a single codebase — Unify SDK handles protocol-specific code translations.

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08 | TESTING & CERTIFICATION

How Do You Manage all Three Levels of Certification?

Matter Certification

Silicon Labs' Matter solutions are already CSA-certified, simplifying your product development and certification effort. However, your end product will not inherit this certification, and it must be tested per CSA instructions by a qualified test house with documentation including the Bluetooth and Wi-Fi certification IDs submitted to CSA. You can use Silicon Labs' Wi-Fi certification ID if the Wi-Fi Certified logo will not be used with the end product.

Network Stack Certification

Silicon Labs' wireless network stacks are certified by the respective standardization bodies to save your development time and cost. Simplicity Studio also streamlines testing and certification for your team.

- Silicon Labs Bluetooth Low Energy stack is qualified with the Bluetooth SIG. This certification is passed on to the end product. No need for additional testing. However, the certification documents must be submitted to the Bluetooth SIG.

- Silicon Labs Thread stack is also certified and passed on to your end product. No need for additional testing. However, the certification documents must be submitted to the Thread Group.

- Wi-Fi Alliance certification is mandatory if the Wi-Fi Certified logo will be used with the end product. Silicon Labs Wi-Fi solutions are tested and certified by the Wi-Fi Alliance, making the certification process easier for you. In the case the Wi-Fi Certified logo is not accompanied by the product, certification is not mandatory.

Ecosystem Certification

Interoperability testing and certifications are required with smart home ecosystems for manufacturers to claim the right to use the official Works With badges. Silicon Labs' implementations have been tested with popular IoT ecosystems, and our documentation, guides, and tools will guide you through the certification processes, saving you time and cost when certifying your devices, and making it easy for you to build a Matter product that works everywhere.

09 | CERTIFICATE MANAGEMENT

How Will You Manage Your Matter Certificates?

One of the most critical challenges for device makers is how to manage Matter certificates safely during the outsourced manufacturing process, prevent IP theft and counterfeiting threats while streamlining a cost-efficient process, and maintaining independence from the contract manufacturer.

Silicon Labs provides device makers custom certificate injection of Matter certificates. This means that Matter certificates can be safely injected into the Silicon Labs' wireless SoCs during the manufacturing process. This reduces your manufacturing complexity while delivering a more secure way for managing Matter certificates from the very beginning of the product lifecycle. It also increases your independence, enabling you to relocate production anytime while safely managing certificates.

Learn more about Silicon Labs Custom Part Manufacturing Service (CPMS).

How Will You Maintain Your Installed Base?

The lifetime of a smart home device can extend several years, depending on your application. Nevertheless, you must keep the promise of delivering the user a great experience every day while maintaining your installed base efficiently throughout the lifetime of your device. This includes maintaining software versions and updating security frequently to ensure your installed base withstands rapidly evolving cyber-threats and that users' private data is protected.

Long-Term SDK Support

Silicon Labs offers device makers the best product longevity with up to 10 years of software and security updates with Long-Term SDK Support.

Learn More