cortet™
RADIO

Connect with Simplicity

cortet™
SOFTWARE

cortet™
APP

cortet™
CLOUD

cortet™
by CEL

The power of you + cortet™

- Capitalize on the connectivity potential of the IoT
- Revolutionize new and established markets
- Maximize your speed to profit

For over 55 years, Fortune 100s and small companies alike have looked to CEL for connectivity leadership.

During this tenure, we've witnessed multiple advancements in connectivity, but none have been as prolific and exciting as the IoT.

Our sales of 3M+ wireless modules to date are a testament to the potential of this market. To further accelerate our customer's expansion into the IoT, CEL is proud to offer the Cortet Connectivity Suite – a full turnkey solution which bridges the connectivity gap between 'things' and the cloud.

Qmotion® advanced shading systems

TRANE

JASCO

SmartThings

LEVITON

ASUS®

logitech

KEEN™ home

Contents

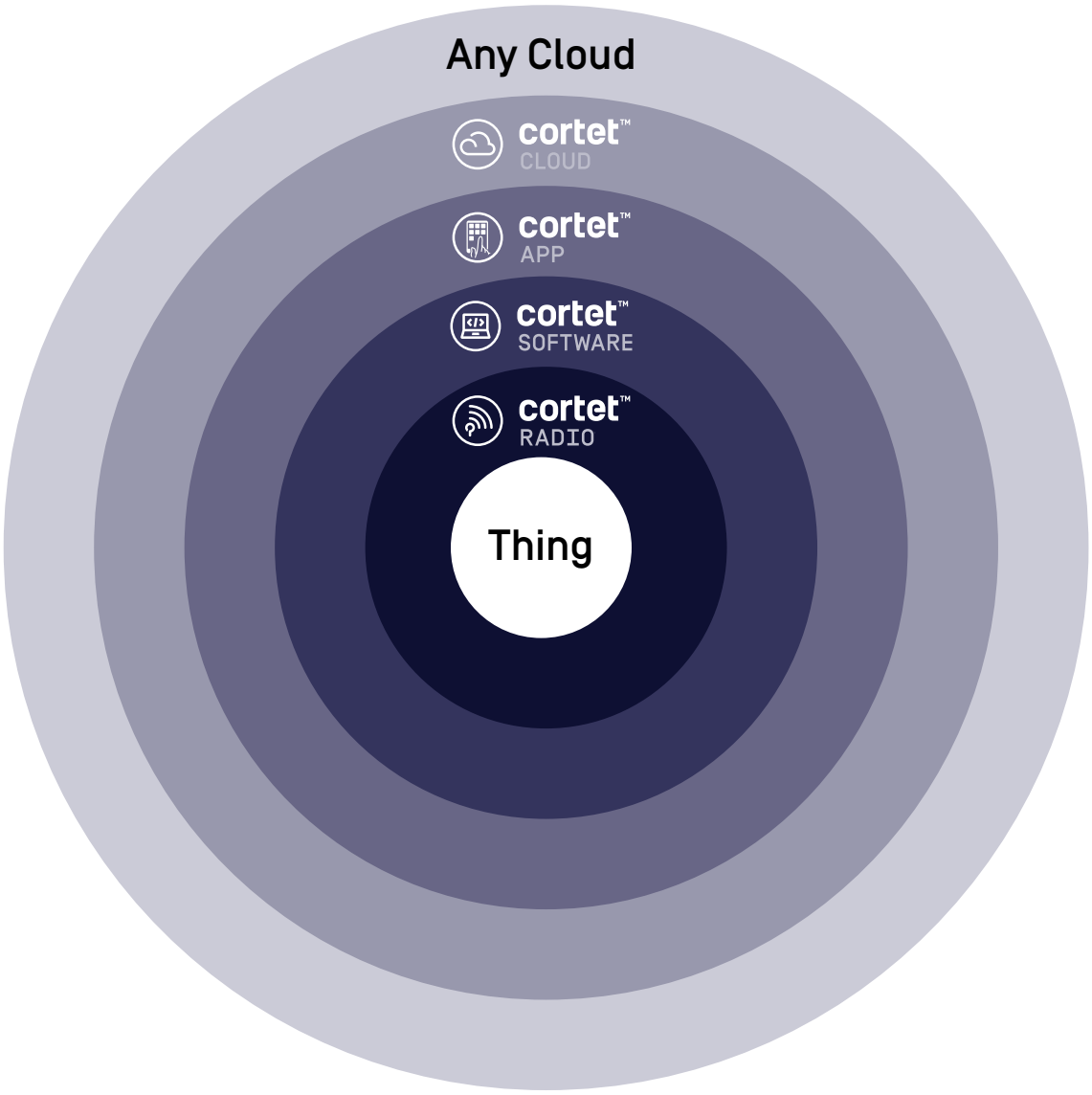
GET STARTED BY ▶ GETTING CONNECTED

you + cortet™

CONNECT ANY PRODUCT TO ANY CLOUD

Cortet is a complete, turnkey connectivity suite which links your 'thing' to any cloud. It's an ensemble of four well-orchestrated connectivity layers built around an incredibly strong embedded core.

The Cortet concept is vastly different from other connectivity offerings since the control and monitoring functions are locally centered around your 'thing'. Alternative cloud-based systems simply can't match Cortet's locally-focused, latency-free connectivity.



STEP 1 - Identify Your Profit Opportunities via Connectivity

It's not about getting on the IoT bandwagon, or succumbing to all of the hype. It's simply about capitalizing on new profit models. Let CEL help you identify ways to dramatically increase your product's revenue potential through cloud connectivity.

STEP 2 - Scope out Ecosystem Opportunities

Determine if your best option is to immediately seek membership within an existing ecosystem, or to pursue a more directed, autonomous 'point solution'. Leverage CEL's consultation services to get started on the optimal market path.

STEP 3 - Pick Your First Wireless Standard, & Build Hardware to Support It

Choose among ZigBee, Thread, Bluetooth or WiFi for your first connectivity product, knowing full well that you can easily migrate to the other standards as the need arises. Market demands are constantly shifting, and the smart move is to stay nimble with pin-compatible module hardware. Bypass the pitfalls of RF design, RF production test, and FCC/IC/CE certifications by employing CEL's extensive line of Cortet modules and SiPs.

STEP 4 - Create the Software to Support the Hardware

Either write your own firmware or employ Cortet's extensive embedded software libraries to accelerate your implementation time.

STEP 5 - Pick Connectivity & Control Options

CEL's Cortet platform was designed from the ground up to blend cloud access with extremely low latency local control. Leverage CEL's app framework or use CEL's turnkey app development services to create enterprise-class mobile access to your connected device.

STEP 6 - Multiply Market Reach with Connectivity Cloud APIs

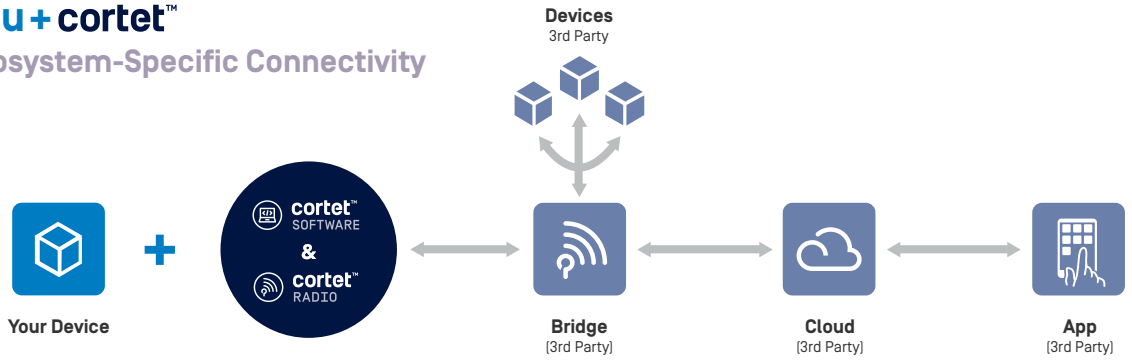
Expand your market reach by connecting to multiple ecosystems through Cortet's cloud APIs. Quickly migrate from a dedicated point solution to a participant in one of the more established ecosystems. Access SmartThings, Control4, Iris, Amazon and dozens of other systems via simple cloud-to-cloud APIs.

PICK FROM OUR SUITE OF WIRELESS STANDARDS

PICK ONE OF OUR CONNECTIVITY OPTIONS

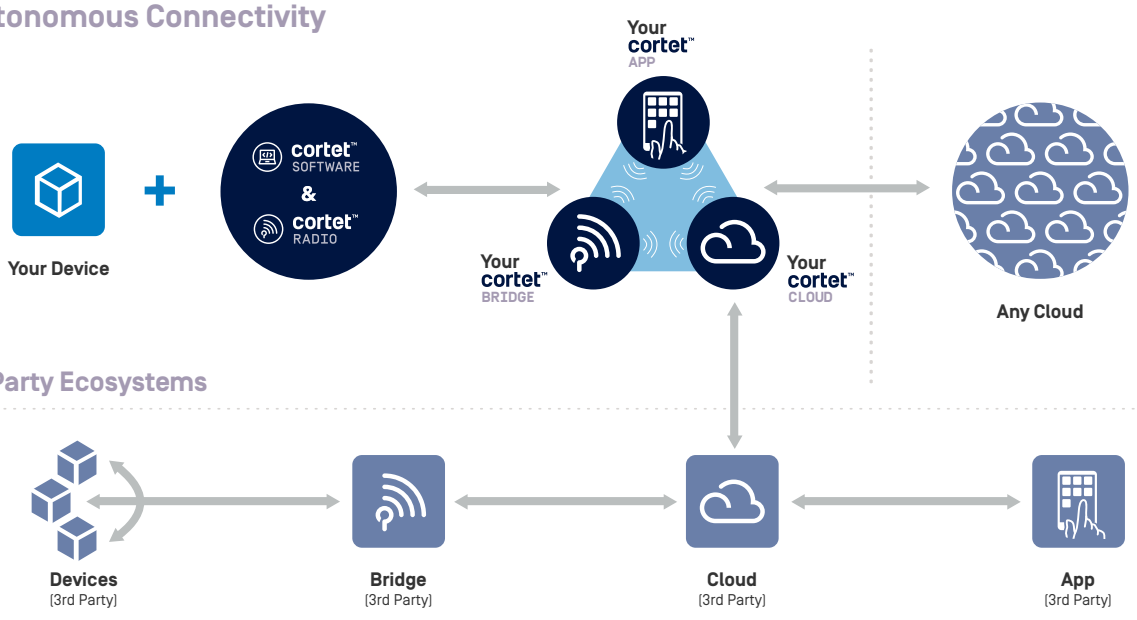
OPTION 1

you + cortex™
Ecosystem-Specific Connectivity



OPTION 2

you + cortex™
Autonomous Connectivity



RF MODULES, SIPS, IP BRIDGES, & WIRELESS PRODUCTS

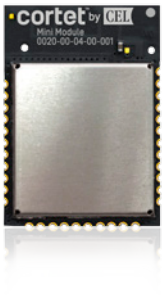
cortet™
RADIO

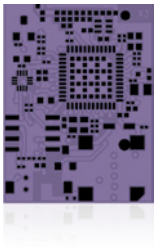
WHICH HARDWARE MODEL IS RIGHT FOR YOU?

CEL offers three different radio implementations which are tailored specifically for your application.

Seize the 'first mover' advantage and maintain standards agility with CEL's field-proven modules. As volumes increase and SKU variants become more refined, easily transition over to CEL's System-in-Package (SiPs) offerings.

Finally, utilize CEL's discrete licensing option when market success dictates that you move towards a chip-down design.





		Modules	SIPs	Discrete Licensing
CHARACTERISTICS OF TYPICAL APPLICATIONS	VOLUME PER SKU	< 250k	250k +	1M+
	SKU COUNT	MULTIPLE	FEW	SINGLE
	SIZE CONSTRAINTS	MINIMAL	SEVERE	MODEST
	NEED FOR STANDARDS AGILITY	YES	NO	NO
KEY FEATURES	FOOTPRINT	< 400 mm^2	63 to 100 mm^2 *	< 225 mm^2 *
	INTEGRATED ANTENNA	✔	-	-
	PIN-PIN COMPATIBLE ACROSS TECHNOLOGIES	✔	-	-
	FULLY RF TESTED	✔	✔	-
	FCC/IC/CE CERTIFICATION STATUS	FULLY CERTIFIED	PRE-CERTIFIED & FULLY CERTIFIED	-

* Antennas not included in SiP and Discrete footprint calculations

THE CORTET™ RADIO ADVANTAGE

ACCELERATED TIME-TO-PROFIT

INDUSTRY LEADING SILICON

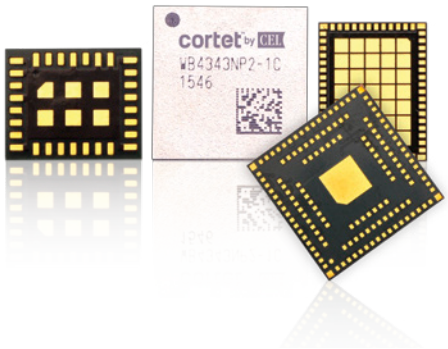
PROFESSIONAL GRADE QUALITY & RELIABILITY

TECHNICAL EXPERTISE & SUPPORT

MODULES

CEL offers a family of pin-compatible modules which utilize the 'best of breed' silicon from leading IC manufacturers.

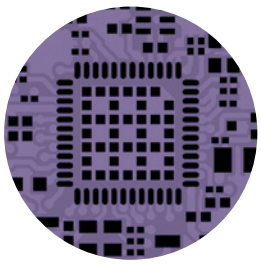
Modules allow you to bypass the headaches associated with RF design, RF test and FCC/IC/CE certifications. Simply drop in the fully integrated module for a complete turnkey hardware solution.



SiPs

CEL's SiP offerings utilize the same chipsets as used in the module portfolio. Migrating to a SiP-based design is quick and easy since you can simply port over your embedded code as used on the module.

SiPs come fully RF tested and pre-certified to work with common antenna elements.



DISCRETE LICENSING

When the need arises to move to a discrete chip-down solution, CEL can offer guidance and even design licensing opportunities. Proven layouts and antenna options are available via royalty or licensing arrangements.

WIRELESS PRODUCTS

CEL designs and manufactures a number of turnkey wireless products, including USB sticks, sensor nodes, fobs, and other ODM devices. We also have an extensive library of reference designs which support a variety of wireless sensors functions.

IP BRIDGES

CEL's IP Bridges serve as local network controllers as well as cloud access points. As the name suggests, these devices provide the 'connectivity bridging' function between the cloud and the wireless protocol used within the local network.

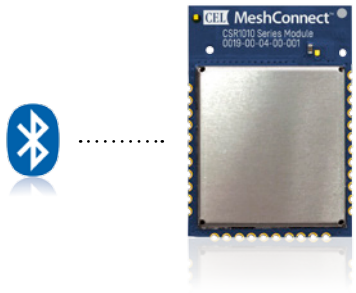
ONE COMMON FOOTPRINT WITH DROP-IN COMPATIBILITY

Never second guess your development project. Quickly adapt to the volatile market trends in technology and design with confidence knowing that you can easily transition between multiple wireless networking standards via CEL's drop-in compatible module hardware.

- Fully Certified
- Fully RF Tested
- Dual RF Connectivity Options (Integrated Antenna or Castellation Connection)
- Surface-Mountable Package
- CONNECT WITH SIMPLICITY
- Technology Swaps Facilitated by Common Footprint
- Based on Industry Leading Silicon

QUALCOMM CSR SILICON LABS

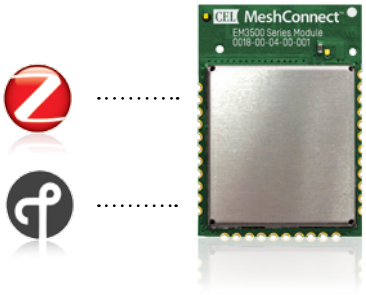
MODULE PRODUCTS



B1010 Mini Modules

Powered by QUALCOMM CSR

- Best-in-Class RF Range of 50 m to 100 m
- +8dBm Transmit Power
- Supports CSRMesh™
- 15 Analog / Digital I / O Pins
- Supports UART, I2C & SPI

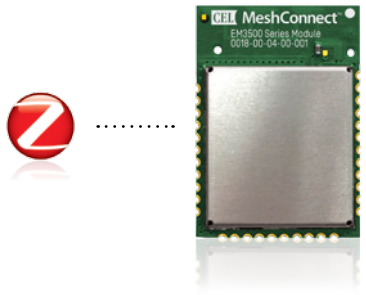


EM358x Mini Modules

Powered by SILICON LABS

Extended Range
- Transmit Power: +20 dBm
- Sensitivity: -103 dBm
- Best in Class Link Budget: +123 dB

Standard Range
- Transmit Power: +8 dBm
- Sensitivity: -100 dBm
- Link Budget: +108 dB



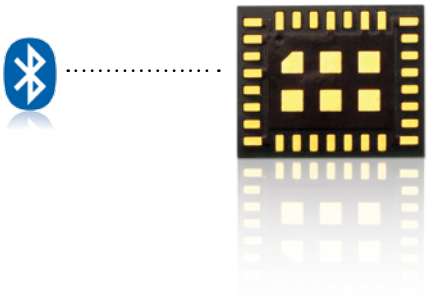
EM357 Mini Modules

Powered by SILICON LABS

Extended Range
- Transmit Power: +20 dBm
- Sensitivity: -103 dBm
- Best in Class Link Budget: +123 dB
- High Temp Variant Available

Standard Range
- Transmit Power: +8 dBm
- Sensitivity: -100 dBm
- Link Budget: +108 dB

SiPS



B1012 SiP

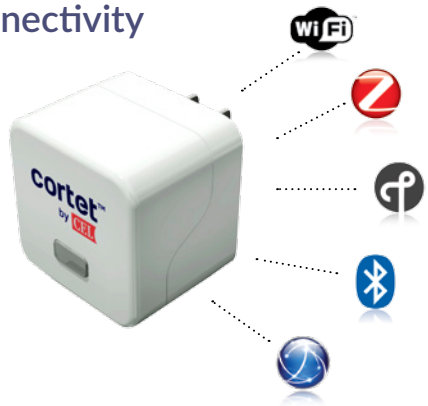
Powered by QUALCOMM CSR

- Based on the CSR1012
- Supports CSRmesh
- Transmit Power: +8 dBm
- Best in class RF range of 50 m to 100 m
- 7.2 mm x 8.8 mm, 36-pin surface mountable package

IP BRIDGES

Ethernet and Wi-Fi Connectivity

- Cost-effective cloud access
- White-label ready
- Small footprints



WIRELESS PRODUCTS

EM3588 USB Sticks

- Enable ZigBee® and Thread on any device with a USB serial port
- Powering the SiLabs – based Thread test harness
- Also powering the SiLabs Border Router reference design
- Based on Silicon Labs® EM3588: 32-bit ARM® Cortex™-M3 processor with 512 kB Flash

Extended Range
- Transmit Power: +20 dBm
- Sensitivity: -103 dBm
- RF Link Budget: +123 dB

Standard Range
- Transmit Power: +8 dBm
- Sensitivity: -100 dBm
- RF Link Budget: +108 dB

EM357 USB Sticks

- Enable ZigBee® on any device with a USB serial port
- Based on Ember EM357: 32-bit ARM® Cortex™-M3 processor with 192 kB Flash and 12 kB SRAM
- 1 MB Additional Flash Memory (off-chip) for Over-the-Air upgrades or additional program space

Extended Range
- Transmit Power: +20 dBm
- Sensitivity: -103 dBm
- RF Link Budget: +123 dB

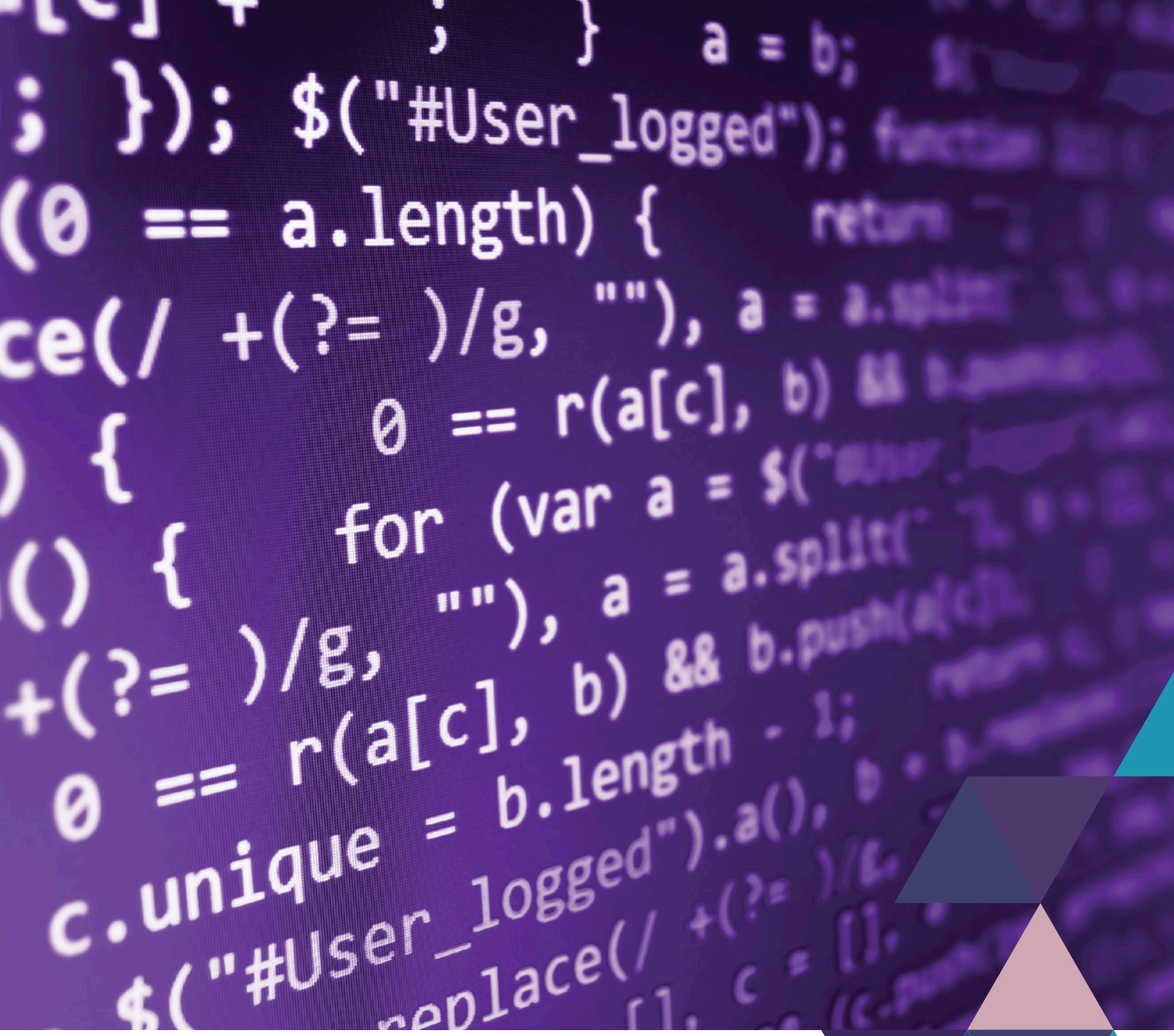
Standard Range
- Transmit Power: +8 dBm
- Sensitivity: -100 dBm
- RF Link Budget: +108 dB

OpenTether Sensor Node

- Ideal for rapid prototyping
- Includes 10 popular sensor functions
- Utilize the node's I/O expansion port to connect to any external sensor or control node using I2C, analog, or digital I/O

Turnkey ODM Products

- White-label ready
- Complete turnkey designs, including industrial design, custom plastics, pcb layouts, and antenna designs
- Fully certified for FCC/IC/CE compliance



SOFTWARE LIBRARIES READY-FOR-MARKET

cortet™
SOFTWARE

SOFTWARE LIBRARIES FOR MULTIPLE STANDARDS AND ECOSYSTEMS

From the developers of the award-winning MeshWorks™ platform comes a revolutionary and redesigned series of high-quality embedded software libraries.

Industry-Recognized Software

- R&D 100 – Software / Services Product of the Year (2015)
- ECN Impact Award Winner – Market Disrupter (2015)
- ECN Impact Award Winner – Rapid Prototyping (2015)
- Fierce Innovation – Product of the Year (2015)
- IoT Evolution – Product of the Year (2015)
- R&D 100 Product of the Year Finalist – Process/Prototyping (2015)
- ECN Impact Award Finalist – Software Design (2015)
- ECN Impact Award Finalist – Sensors (2015)
- Best of Sensors Expo Finalist (2015)

Libraries Ready For Market

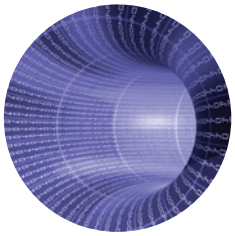
- Validated embedded libraries
- Ready for large-scale deployment
- Fully integrated with hardware
- Simple application development
- Available script libraries

Protocol Agility

- Libraries for different stacks

Ecosystem-Specific Software

- Libraries for multiple ecosystems
- iControl, DIY smart home & More



Designed for IoT

- Libraries for IP connectivity

Automated Testing

- Libraries for rapid validation

CORTET™ APP

MOBILE READY

cortet™
APP

AN INTELLIGENT IoT APP THAT BLENDS UBIQUITOUS CLOUD ACCESS WITH ZERO-LATENCY LOCAL CONTROL

The Cortet App is built on top of an app engine that allows for a mobile device to connect directly to a local network of devices (i.e., through an IP bridge). This results in extremely low latency and reliable two-way control. When you tell a device to do something, it does it immediately. When the Cortet App leaves the proximity of the network, it seamlessly switches to remote, cloud-based control.

WHITE-LABEL APP DEVELOPMENT

- Based on Cortet™ APP
- Ready for App Store
- Ready for Google Play

Download on the App Store | GET IT ON Google Play

CORTET™ MOBILE APP CONTROL

- Seamless blend of local and cloud control
- Low-latency
- Commercially available

APPLICATION SDK

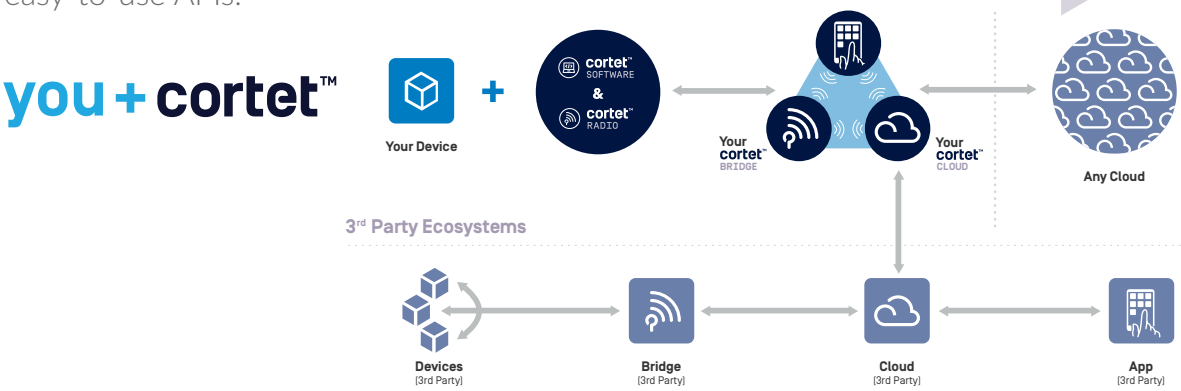
- Ideal for custom app development
- Utilizes Cortet's optimized blend of local & cloud control

CORTET CLOUD
CONNECTIVITY

cortet™
CLOUD

CONNECT TO ANY CLOUD AND ECOSYSTEM

The Cortet Cloud is an API-rich cloud built to be simple yet deeply robust. It is built on top of a proven and secure architecture which is intently designed to have simple pricing and easy-to-use APIs.



Your Cloud to Any Cloud

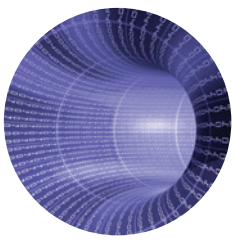
- Standard RESTful APIs
- Extensible API architecture
- Easily connect to ecosystems, applications, databases & more

Manage Devices & Connections

- OTA Device software upgrades
- Permission and groups
- Security management
- Partner cloud plug-ins

Control and Monitor

- Remote device control
- Rules engine
- Notifications & alerts
- Data batching



Simple and Robust

- Simple & easy-to-use APIs
- Robust & scalable infrastructure
- Simple pricing model
- Robust performance

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