

Out-of-box star-network solution: TI 15.4-Stack

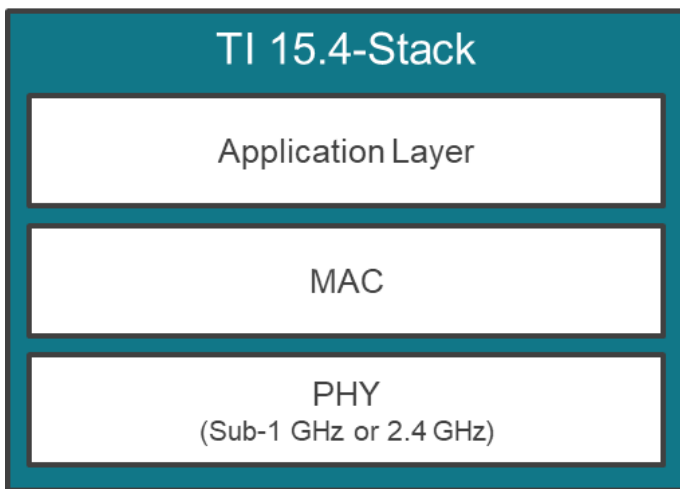
Save development time and resources with the SimpleLink™ star-network solution



SWAT015

What is the TI 15.4-Stack?

The TI 15.4-Stack is a complete network solution for developing low-power, long-range, robust and secure wireless star-network solutions for the Sub-1 GHz and 2.4 GHz frequency bands. Flexible and easily configurable, developers can quickly change the network parameters of the TI 15.4-Stack to suit their application requirements. The TI 15.4-Stack is included in the SimpleLink™ SDK and is based on the IEEE 802.15.4 MAC and PHY specification. For Sub-1 GHz frequencies, the TI 15.4-Stack also implements a frequency-hopping scheme for enhanced robustness.



What are the layers of the stack?

Application Layer:

- Contains highly configurable network formation controller and example applications that can be used as building blocks.
- Examples include sensor and collector, over the air download, and TI 15.4-Stack + Bluetooth® low energy concurrency.
- The developer can set the MAC and PHY modes of operation, security, and network parameters through simple function calls.

MAC:

- Three modes of operation: beacon, non-beacon, and frequency hopping (for robustness against channel disturbances).
- Built-in security: AES-128 encryption with key management.
- Robust two-way communication with acknowledgments, CSMA/CA, listen before talk, and retries.

PHY:

- Characterized for both Sub-1 GHz (433, 863, and 915 MHz) and 2.4 GHz applications.

How can the TI 15.4-Stack help developers?

- Reduce barrier to entry in developing low-power, long-range Sub-1 GHz applications
- Lower development costs and reduce time to market with a fully-tested, pre-built star-network solution
- Launch a security-enabled 250+ node network within minutes with a CC1312, CC1352R, or CC1352P collector
- Increase packet transmission success rates with frequency hopping, two-way communication, acknowledgments, CSMA/CA, listen before talk, and retries
- Enable engineers to focus on developing their application rather than building a network from the ground up

Key resources

Getting started	Development and training	Want to add BLE or a cloud connection?
Estimate battery life: TI 15.4-Stack Power Calculator	Get a network up and running within minutes: SimpleLink Academy TI 15.4-Stack examples	Add a concurrent BLE connection: Learn more about the Dynamic Multi-Protocol Manager
Finding the right TI 15.4-Stack mode: Choosing between synchronous and asynchronous mode	Explore the stack's configuration modes: TI 15.4-Stack User's Guide	Add a cloud connection: Learn more about the Sensor to Cloud solution
Download the stack from the SDK: CC13x0 SDK CC13x2 SDK CC26x2 SDK	Learn how to pass events and data from the MAC to the application: TI 15.4-Stack API Guide	

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