

Multi-protocol Wireless Mesh Network



STM32WB Bluetooth and 802.15.4
(Thread)

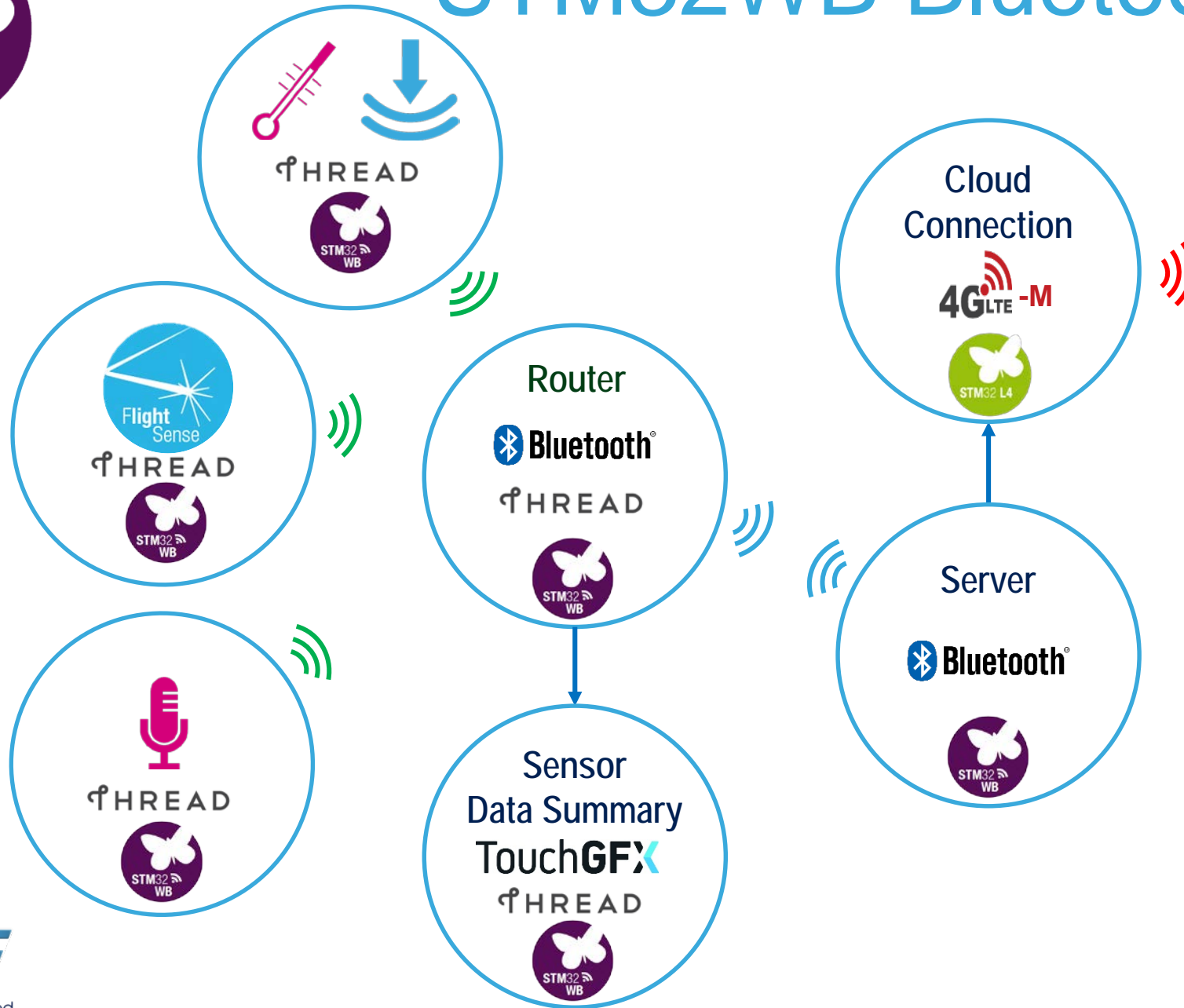
Thread Capabilities

STM32WB Wireless Microcontroller

STM32WB Full Flexibility Control



STM32WB Bluetooth 802.15.4 (Thread)



Sensor data uploaded to GroveStream cloud server

Sensor data is transferred to LTE connection Server

Sensor data is sent to display and Bluetooth Server

Thread router receives sensor data

Multiple sensor nodes in Thread network





Quick Look at Thread Capabilities

THREAD Direct Addressability of devices

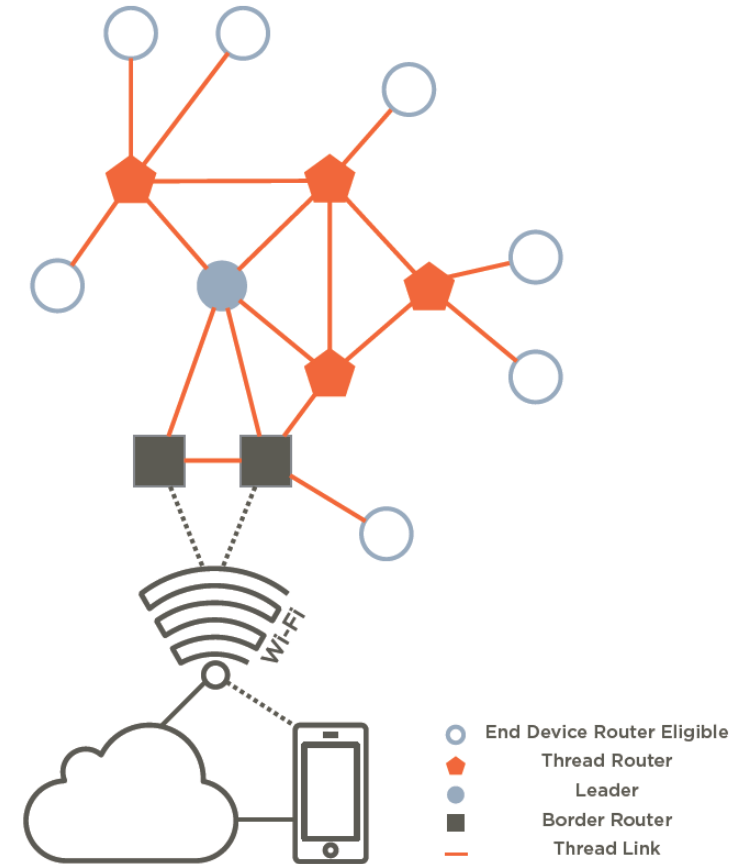
All devices have IPv6 addresses plus short address on HAN

DHCPv6 used for router address assignment

Home Network can directly address devices through Border Routers

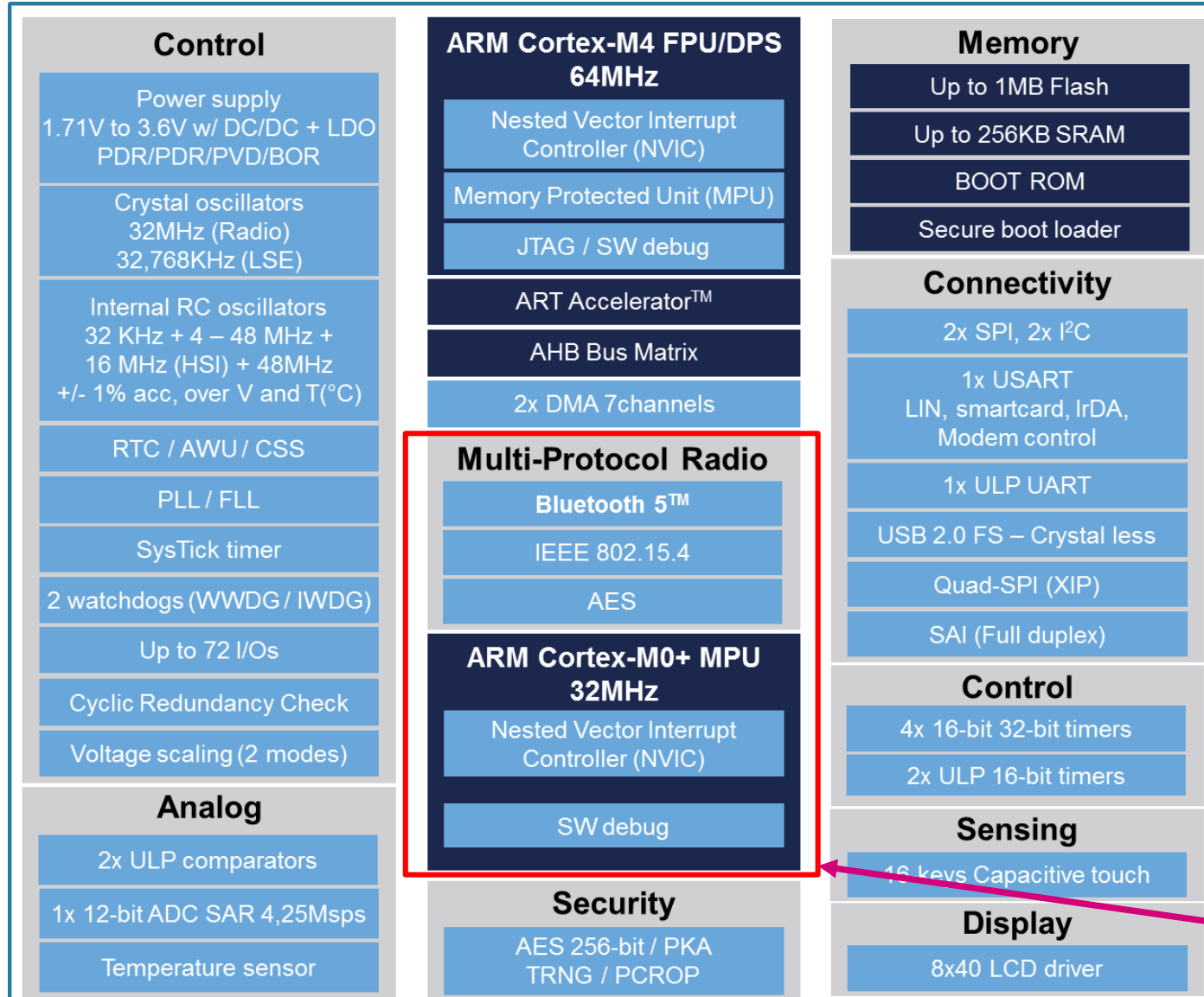
Cloud Services can address devices from the Internet

Devices can address local devices on HAN or off network devices using normal IP addressing





STM32WB Wireless Microcontroller



KEY FEATURES

- 2 independent cores for real time execution
- Ultra-low-power consumption
 - 50 µA/MHz Active mode (at 3.0V)
 - 2.1 µA Stop mode (Radio in standby + 256KB RAM)
 - < 50 nA Shutdown mode
- Peripherals
 - 2xI²C, 1xUSART, 1xLP-UART, 2xSPI, 1x USB 2.0 FS device supporting Battery Charging Detection, 1xSAI, Q-SPI (XIP), 6x 16-bit timer (including LPWM and low-power one)
- 1.71 to 3.6V voltage range (DC/DC, LDO)
- -40°C to +105°C temperature range

**Independent
Sub-system RF
2.4GHz**



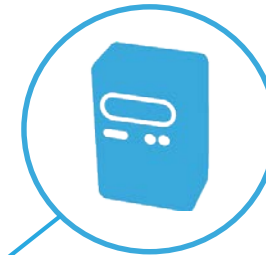


All-in-One MCU - Full Flexibility Control



Lighting

- Robust RF link **-100dBm Rx** IEEE 802.15.4 and **+6 dBm TX**
- **Update** securely Radio and stack firmware with build-in RSS
- BLE 5 and 802.15.4 protocols **Mesh capable** to extend network range



Fleet maintenance

- Retrofit legacy product to **BLE 5** and concurrency mode
- Remotely upgrade device with **OTA capability**
- **Brand protection** with Authenticated **FW upgrade** system



Industrial devices

- Up to **105°C** radio capable
- Down to **600 nA mode** with **RTC** and 32KB of RAM
- **PCROP, ECC, TRNG, PKA, Security**
- Reduce BOM cost with **built-in LCD booster**



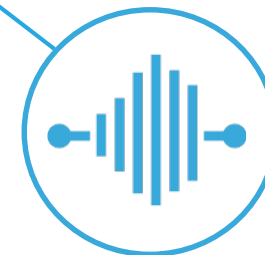
Fitness/Healthcare

- **Multipoint** BLE 5 connections
- Small form factor design with **CSP100 pins**
- Battery life time care with **< 50 nA** Shutdown mode
- Cost optimized product with USB 2.0 **crystal-less** device



Beaconing

- **Beacon** profile available among a huge list
- **Embedded balun** to minimize design cost
- Only **5.5mA Radio TX** current to extend beacon life time
- **Up to +6 dBm** output power to get best beacon range



Home security and Audio

- **-100 dBm** sensitivity to increase area coverage
- **Customer Key Storage (CKS)** for trustable Application update
- Manage full duplex **audio** with embedded SAI
- USB FS 2.0 with Battery **Charging Detection** for remote device

