

# **Secure Connection Capability for WiLink™ Bluetooth® 4.2**

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## **ABSTRACT**

The WiLink™ 8, Wi-Fi™ and *Bluetooth®*/Bluetooth low energy combination solution adds new significant Bluetooth 4.2 low energy secure connection capability to existing devices. These capabilities are compatible with the current hardware by downloading the new [TI-BT-4-2-STACK-LINUX-ADDON](#).

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## 1 New Capabilities

Low energy (LE) secure connections – Bluetooth 4.2 security algorithm, elliptic curve Diffie-Hellman (ECDH) for key generation, and a new pairing procedure for key exchange (see Figure 1). The ECDH provides a higher security level for Bluetooth low energy authentication during the connection, to enable secure connections and protect the communication from passive eavesdropping and man-in-the-middle (MITM) attacks. Additional information can be retrieved from the Bluetooth specifications. This feature is required and requested by customers due to new regulatory requirements (for example, the new EuroPay™, MasterCard®, and Visa® EMV® standard, and the PCI DSS requirement).

### TI Bluetooth Stack Linux Architecture

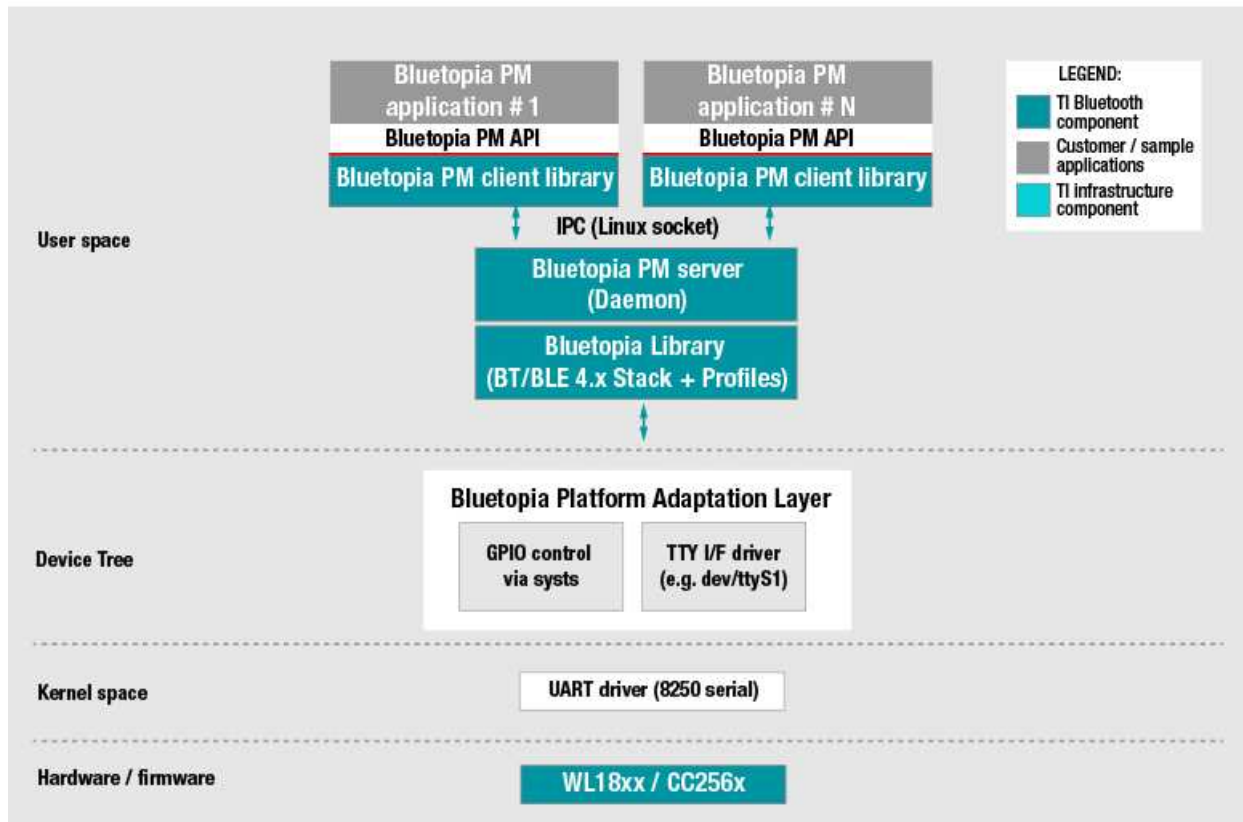


Figure 1. TI Bluetooth Stack Linux® Architecture

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The low energy, secure connections feature introduces a new security model. To ensure communication is secure, Bluetooth 4.2 includes major enhancements to the features involved in the communication process. These enhancements follow:

- Pairing Bluetooth 4.2 adds the numeric comparison method to the three methods already existing in Bluetooth 4.0 and Bluetooth 4.1 (Just Works, Passkey Entry, and OOB), and adds the use of an ECDH algorithm for the key exchange procedure.
- Key generation is performed by the host. In the past, key generation was performed on the controller side. This allows upgrading of the key generation algorithms without the need to change the controller. The public/private key is generated in the host and the secure connection key is generated by combining inputs from each device in the pairing process.
- The encryption algorithm uses an AES-CCM, 128-bit key and 128-bit, plain-text data, compliant with FIPS-1971. These feature enhancements set the standard and help solve MITM issues and other passive eavesdropping mechanisms. This feature was introduced to enhance the security level of Bluetooth low energy, and it is a mandatory feature for POS applications and applications that require a higher level of security.

To start evaluating WiLink 8, click [here](#).

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