

Communication Protocols

Having smart products that automatically communicate data means there is a need for communication protocol implementation. Many different types of communication technology are available, with their strengths and weaknesses. This paper offers a comparison between some of these technologies, to help to understand and select the most appropriate system for each use-case.

FEATURES



SECURE

Protocols use cryptographic secured algorithms and tamper-proof data with digital signatures attached



SCALABLE

Number of devices in the network easily scalable



OPEN SOURCE

Provide a neutral third-party solution which businesses can rely on and trust



END-TO-END INTEGRATION

Data transmission from sensor to server



EXTENSIBLE

Meshing technology allows to extent the network with the growing number of nodes/ devices



CONSUMPTION

Protocols are made to be used on low-power devices to save the maximum amount of energy



DESCRIPTION

BLUETOOTH LOW ENERGY

The Bluetooth low energy (or BLE) is a short-range protocol, very useful to transmit information quickly at a pretty good rate. The main strengths are the great popularity of the protocol (every smartphone is equipped with BLE, and a lot of devices are compatible with BLE), and the low energy consumption of this protocol by design.

LORAWAN

The LoraWan is a protocol based on LoRa modulation that allow transmitting small amounts of data on long distances. This protocol has a very low energy consumption and is made for IoT; more and more antenna installations offer LoraWan coverage. Furthermore, LoraWan is a free technology, so one can set up his own network.

LORA DTN

The Lora DTN is a mesh network that uses the LoRa modulation and the density of the nodes to exchange data. It is a very dynamic, highly scalable and extensible network.

TECHNICAL OVERVIEW

	BLE	LORA WAN	LORA DTN
RANGE	Up to 50m	Up to 1km	Up to 1km
DATA RATE	1 MB/s	10 kB/s	10 kB/s
ENERGY CONSUMPTION	Low energy	Low energy	Low energy
USAGE COST	Free	If using self gateway: free Else: license cost needed	Free
NUMBER OF MESSAGES ALLOWED PER DAYS	Unlimited	~1000	~1000
COVERAGE	No coverage required (short range protocol)	Depends on the installation	Depends on the network density
SECURITY	Secured	Secured	Secured
MESHING	No	No	Yes
POPULARITY	Usable with smartphone and many compatible devices	Needs special material	Needs special material

All specifications are subject to modification without notice
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