**LoRaWAN**

**LoRaWAN (Long Range Wide Area Network)** is a low-power, wide-area networking protocol designed specifically for the Internet of Things (IoT). It enables long-range communication between devices (like sensors and actuators) and centralized servers with minimal power consumption. Here’s a detailed overview of LoRaWAN, including its architecture, features, benefits, and use cases.

**Key Features of LoRaWAN:**

1. **Long Range Communication**:
   * LoRaWAN can communicate over distances of **up to 15–30 kilometers** in rural areas and **2–5 kilometers** in urban environments, depending on the terrain and other conditions. This long-range capability is one of its primary advantages.
2. **Low Power Consumption**:
   * Designed for battery-operated devices, LoRaWAN allows sensors and devices to operate for **several years** on a single battery charge. This is crucial for applications that require long-term deployment without frequent maintenance.
3. **Scalability**:
   * LoRaWAN networks can support a **large number of devices** (potentially millions) over wide areas, making it suitable for large-scale IoT deployments in smart cities, agriculture, and industry.