What is Sensor Network Architecture?

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Types of architecture in WSN

There are 2 types of architecture used in WSN: Layered Network Architecture and Clustered Architecture. They are explained as follows.

1. Layered network architecture

The layered network architecture uses several hundred sensor nodes and a powerful base station. Network nodes are organized into concentric layers.

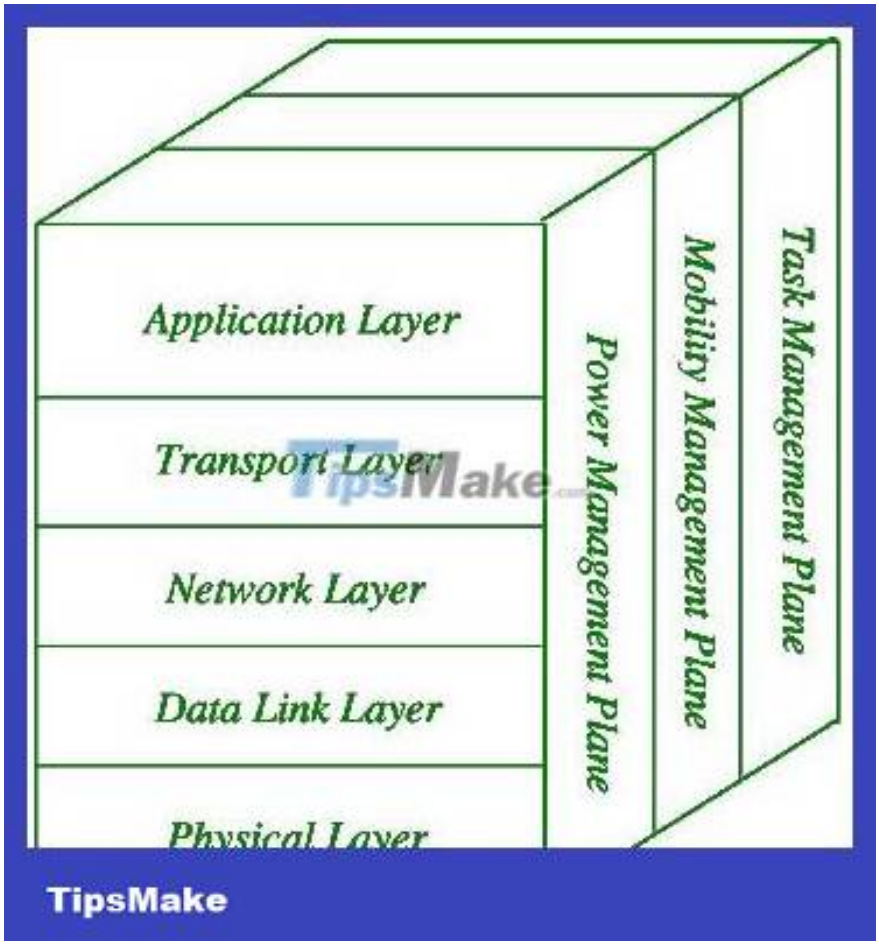
It consists of 5 layers and 3 cross layers.

The 5 layers are:

1. Application layer
2. Transport class
3. Network layer
4. Data link layer
5. Physics class

Cross layers include:

1. Power Management Plane
2. Mobility Management Plane (Mobility Management Plane)
3. Task Management Plane



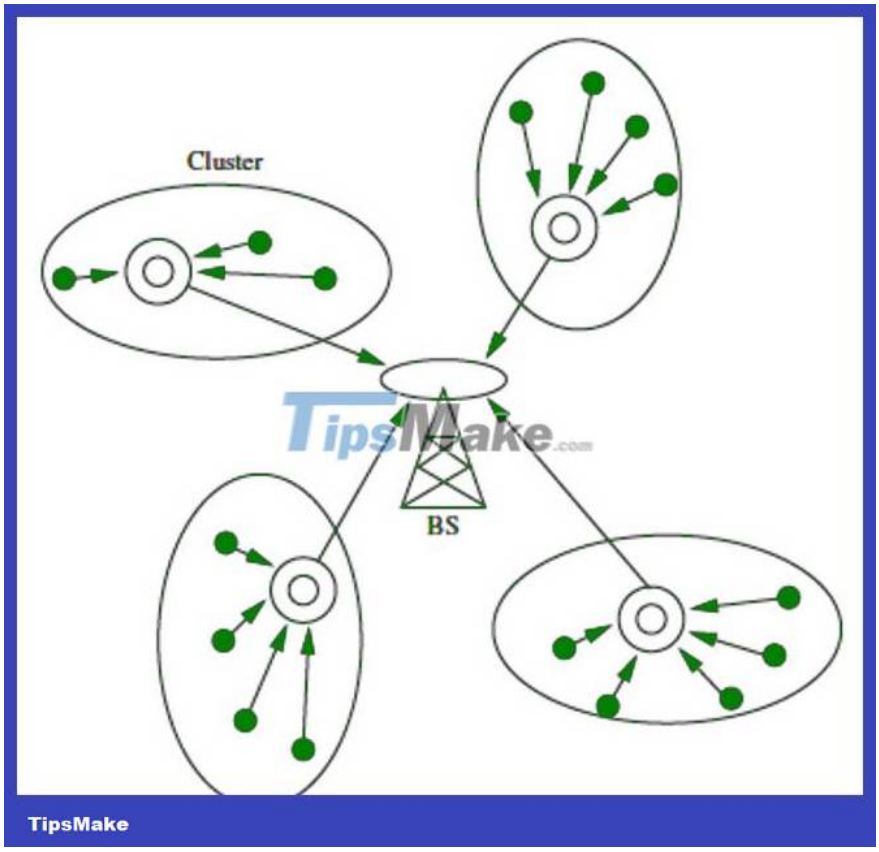
The advantage of using a layered network architecture is that each node is only involved in short-distance, low-power transmission to neighboring nodes, due to lower power consumption compared to other sensor network architectures. It is scalable and more fault tolerant.

2. Clustered network architecture

In clustered network architecture, sensor nodes automatically combine into groups called clusters. It is based on Leach Protocol using clusters. Leach Protocol stands for Low Energy Adaptive Clustering Hierarchy.

Leach Protocol Properties:

1. It is a 2-tier hierarchical cluster architecture.
2. It is a distributed algorithm that organizes sensor nodes into multiple groups called clusters.
3. The cluster head nodes in each cluster are formed automatically creating a time-division multiple access (TDMA) schedule.
4. It uses a concept called energy-efficient Data Fusion.



Clustered network architecture is a very useful sensor network because of the property of Data Fusion. Inside each cluster, each node communicates with the cluster head to collect information. All the clusters formed share the collected information with the base station. Cluster formation and cluster head selection within each cluster is an independent and autonomous distributed process.