

Bahan Ajar

Chapter 14



Materi Pembelajaran

Matakuliah :

WIRELESS SENSOR NETWORKS

Kode Matakuliah : SKO 20428

Prodi : **SISTEM KOMPUTER**

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Tables of Content

Network Management for WSN

Traditional Network Management Model

- Simple network management protocol (SNMP)
- Telecom operation map (TOM),

Network Management Design Issue

Tugas Mandiri

Network Management for WSN

Network Management (NM) tools and techniques are also required to help provision network services and ensure cooperation of entities in the network.

The reasons for management functions are manifold and may be summarized as follows:

1. There are many heterogeneous devices and software entities that comprise the network, and some may fail. It is the NM responsibility to determine when, where, and why the fault had occurred and how to restore these entities.

Network Management for WSN

2. Optimization of system performance as a distributed system require NM to collaborate in the process.
3. For most networks, NM functions can be used to gather and analyze the behavior of user interaction during network interface, which is very important in planning the long-term evolution of network capacity and its performance.

Traditional Network Management Model

1. simple network management protocol (SNMP)
2. telecom operation map (TOM),

Neither SNMP nor TOM is designed particularly for wireless sensor networks.

However, one can utilize the simplicity of SNMP and the layered framework of TOM to design effective and efficient network management architecture for wireless sensor networks as well.

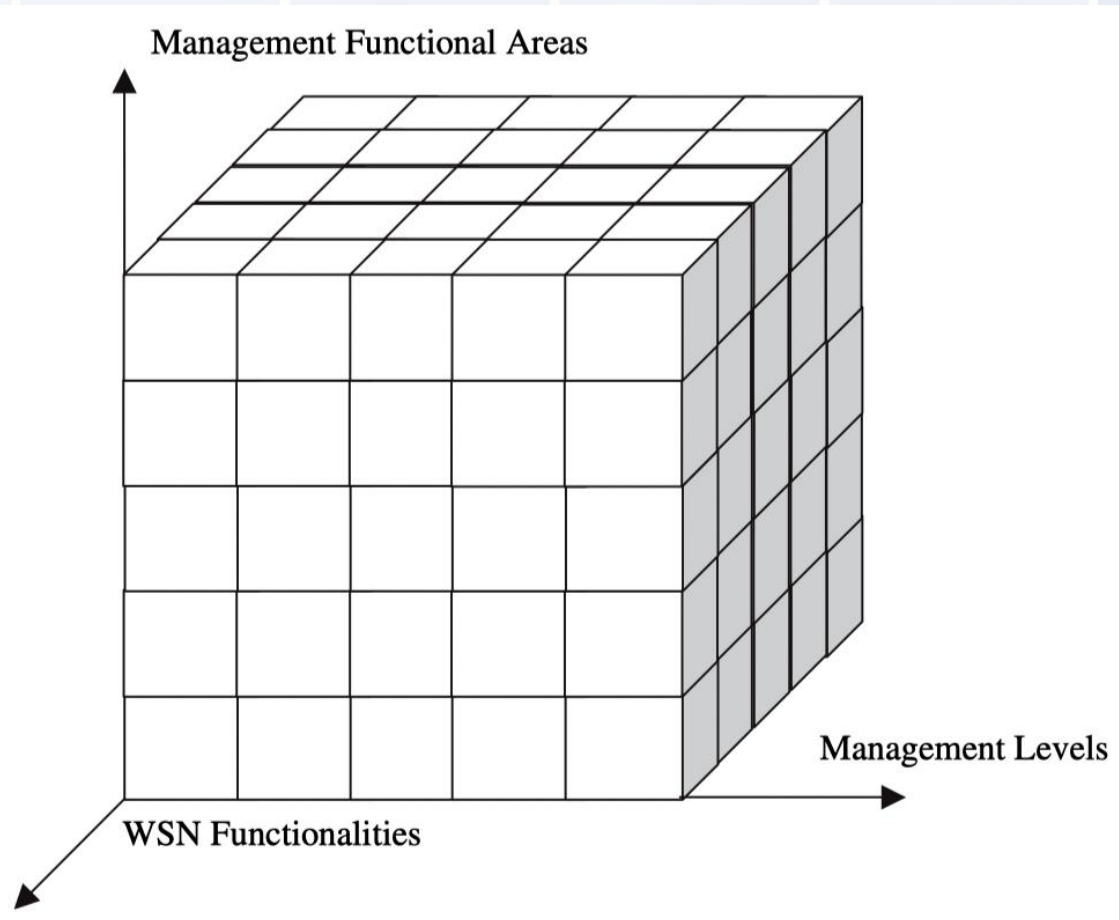
Network Management Design Issue

Network management is much more important for WSNs than for traditional networks for the following reasons:

- the current resource level needs to be gathered through network management.
- Topology management can be used in case an uncovered area is detected.
- Nodes in WSNs are usually arranged in an ad hoc manner.
- Collaboration and cooperation between sensor nodes are required to optimize system performance.

Network Management Design Issue

MANNA is a one of management architecture for WSNs.



Network Management Design Issue

MANNA defines the following managed object classes:

- (1) network (information on network behavior such as data delivery model, network structure, and mobility),
- (2) managed elements (such as sensor nodes),
- (3) equipment (the physical components of sensor nodes),
- (4) system (information on operating system),
- (5) environment (the environment the WSN),
- (6) phenomenon, and
- (7) connection.

Other Network Management Design Issue

There are several other issues related to sensor network management, the most important being naming, localization, maintenance, and fault tolerance.

A node in a networked system is identified through naming. This identifier is then used for communication between nodes. Generally, there are two traditional approaches to naming:

Other Network Management Design Issue

Generally, there are two traditional approaches to naming:

Low-level naming such as node addresses is typically application independent but topology and location dependent.

High-level naming is usually application dependent and location independent. High-level naming is built on the top of low-level naming.

Other Network Management Design Issue

Sensor nodes are distributed all over the place for sensing and data collection. It is usually helpful if the locations of sensor nodes are also known.

Localization algorithms can be classified into:

1. centralized schemes.
2. distributed schemes.

Tugas Mandiri (teori):

1. Apa fungsi network management pada WSN? Jelaskan.
2. Mengapa dibutuhkan network management pada WSN? Jelaskan.

Tugas Mandiri (praktikum):

Rancang komunikasi antar node menggunakan fungsi network management di Network Simulator.

end

