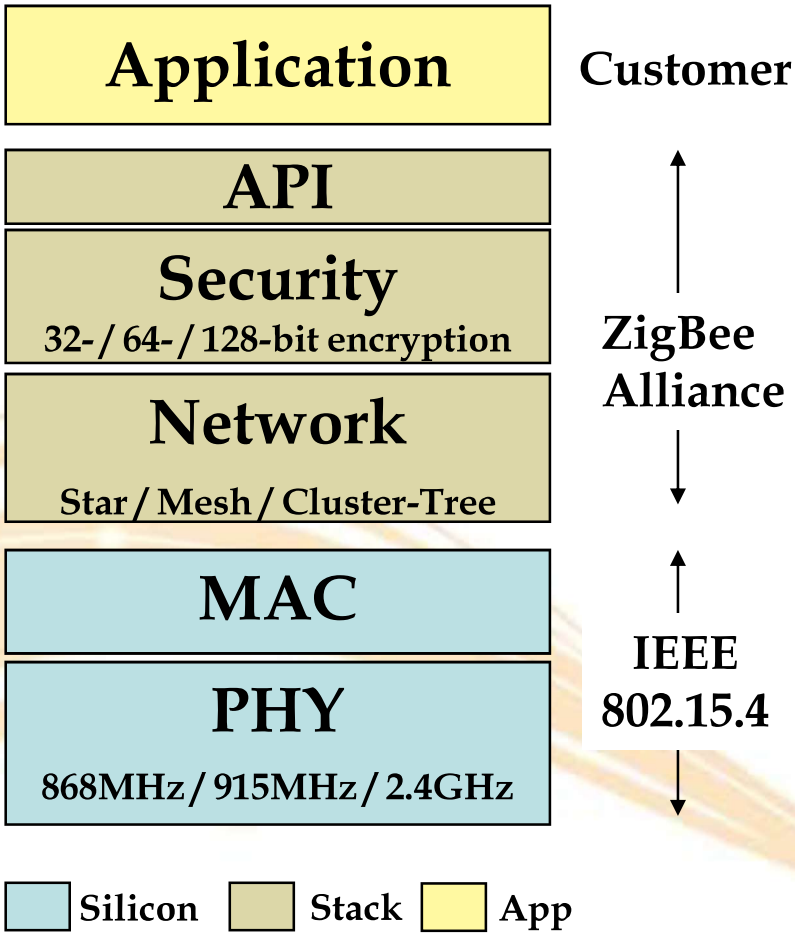
What is Zigbee?

- ZigBee is a new wireless technology
- Technological Standard Created for Control and Sensor Networks
- Based on the IEEE 802.15.4 Standard
- Created by the ZigBee Alliance
- Philips,Motorola,Intel,HP are all members of the allience.

Zigbee

- Designed for low power consumption allowing batteries to essentially last for ever
- ZigBee makes possible completely networked homes where all devices are able to communicate and be controlled by a single unit
- It provides network,security and application support services operating on the top of IEEE

IEEE 802.15.4 & ZigBee



ZigBee Alliance

- "the software"
- Network, Security & Application layers
- Brand management

IEEE 802.15.4

- "the hardware"
- Physical & Media Access Control layers

Architecture

- Layered architecture
- These layers facilitate the features that make ZigBee very attractive:
  - ✓low cost
  - ✓ easy implementation
  - ✓ reliable data transfer
  - ✓ short-range operations
  - ✓ very low power consumption
  - ✓adequate security features

Architecture

Layers

1. Network and Application Support layer
2. Physical (PHY) layer
3. Media access control (MAC) layer

Zigbee Device Types

- There are three different ZigBee device types that operate on the layers in any self-organizing application network

1. Zigbee Coordinator node
2. Full Function Device (FFD)
3. Reduced Function Device(RFD)

1.Zigbee Coordinator Node

- It is the root of network tree and a bridge to other network
- Able to store information about the network
- Only one ZCN for a network
- It act as a repositary for other security keys

2.The full Function Device

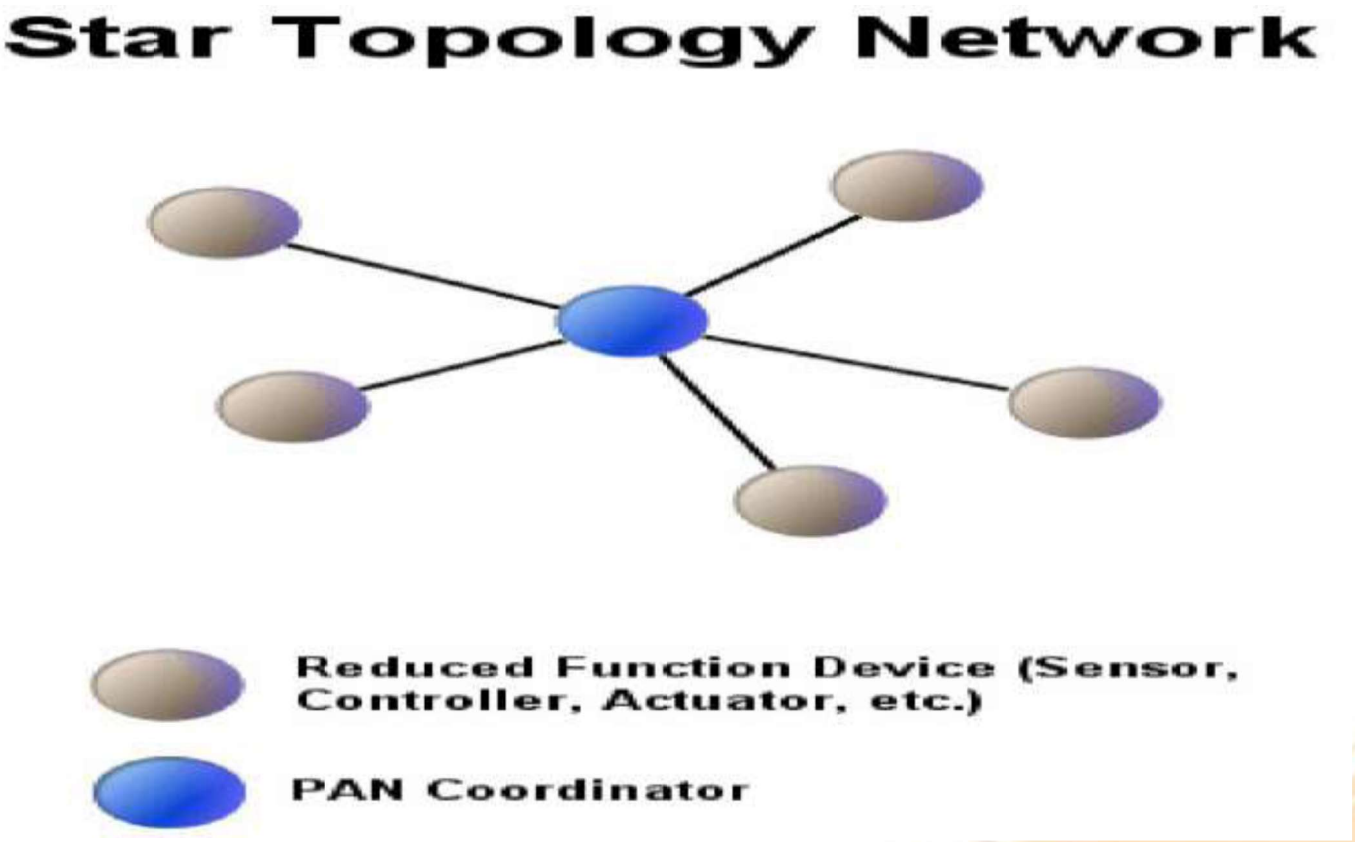
- An intermediatory router transmitting data from other devices
- Needs lesser memory than Zigbee coordinator node
- Lesser manufacturing cost
- Can operate on all topologies
- Also act as a coordinator

3.The Reduced Function Device

- Device capable of talking in the network
- It cannot relay data from other devices
- Less memory
- Cheaper than FFD
- It talks only to the n/w coordinator

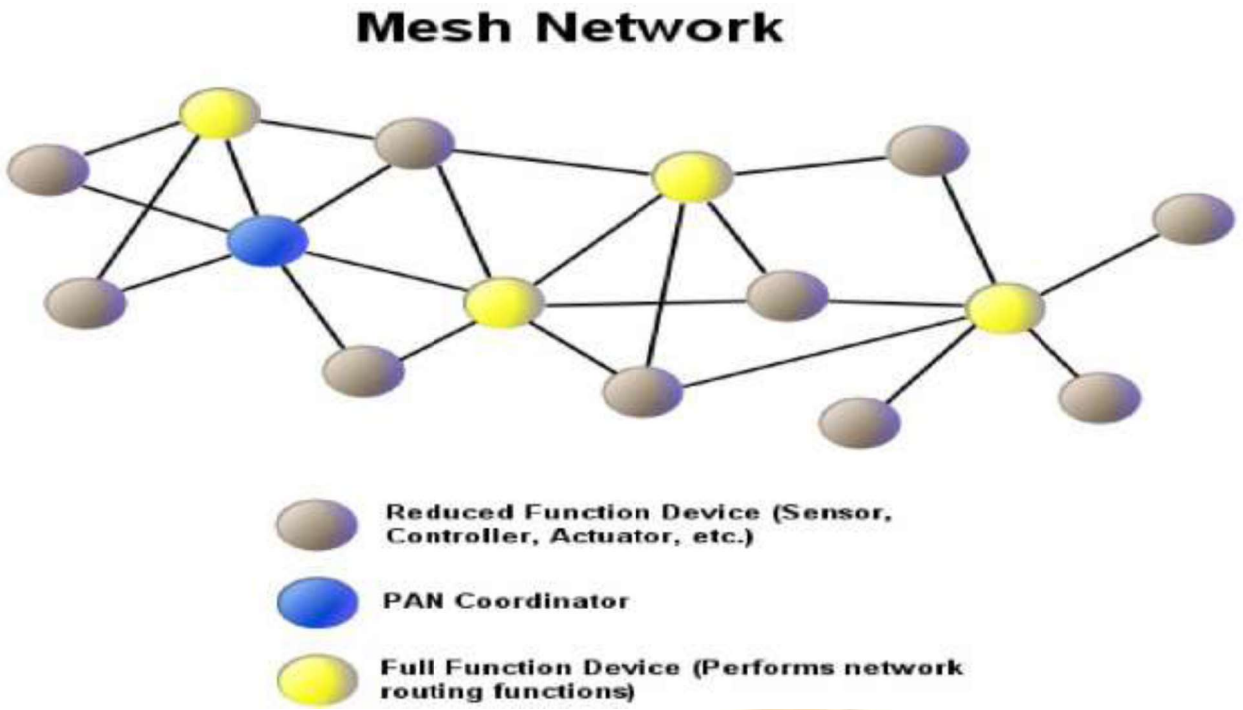
Network Topologies

1.Star Topology



Network Topologies(cont…)

2. Peer-to-Peer Topology



ZigBee Mesh Networking

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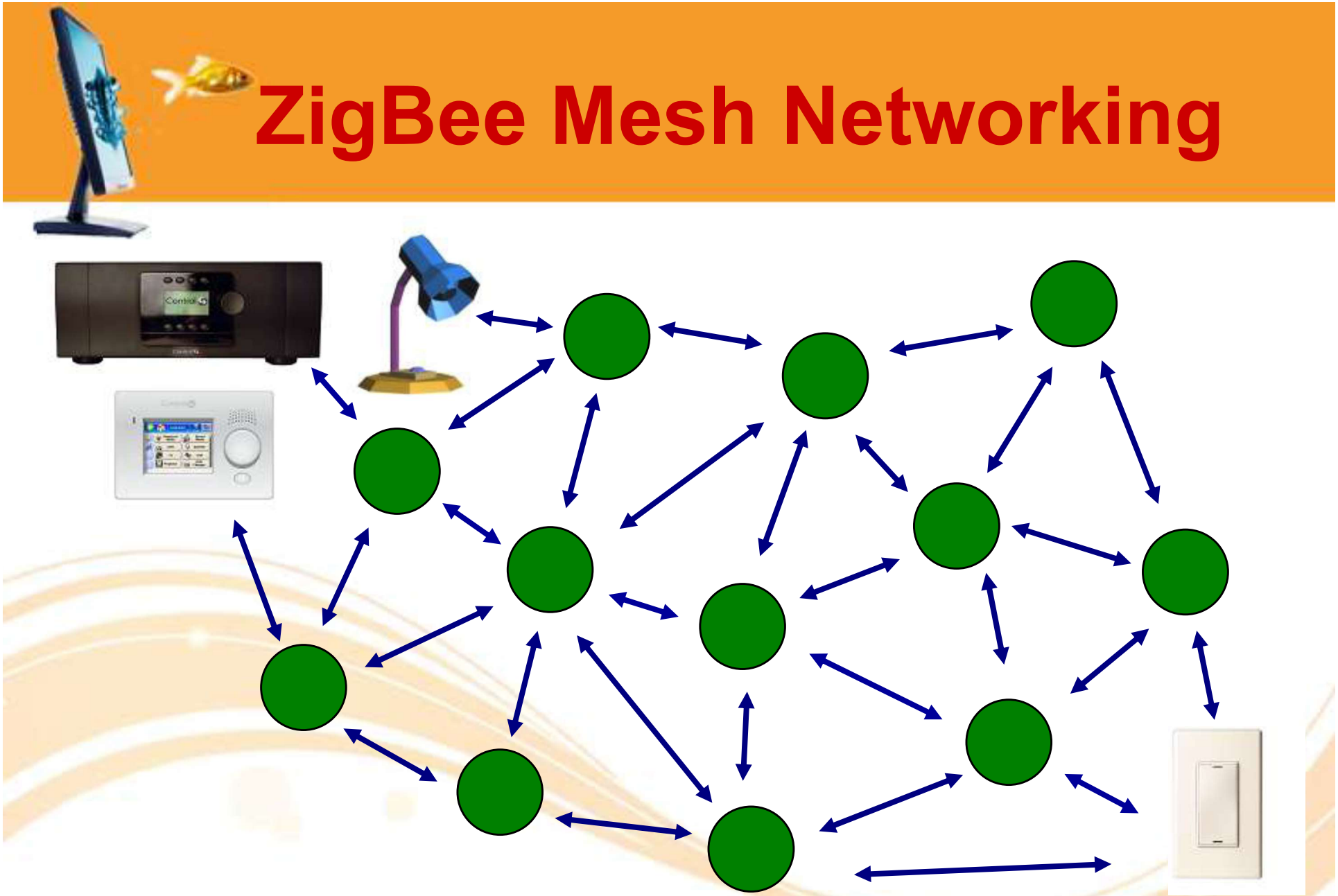
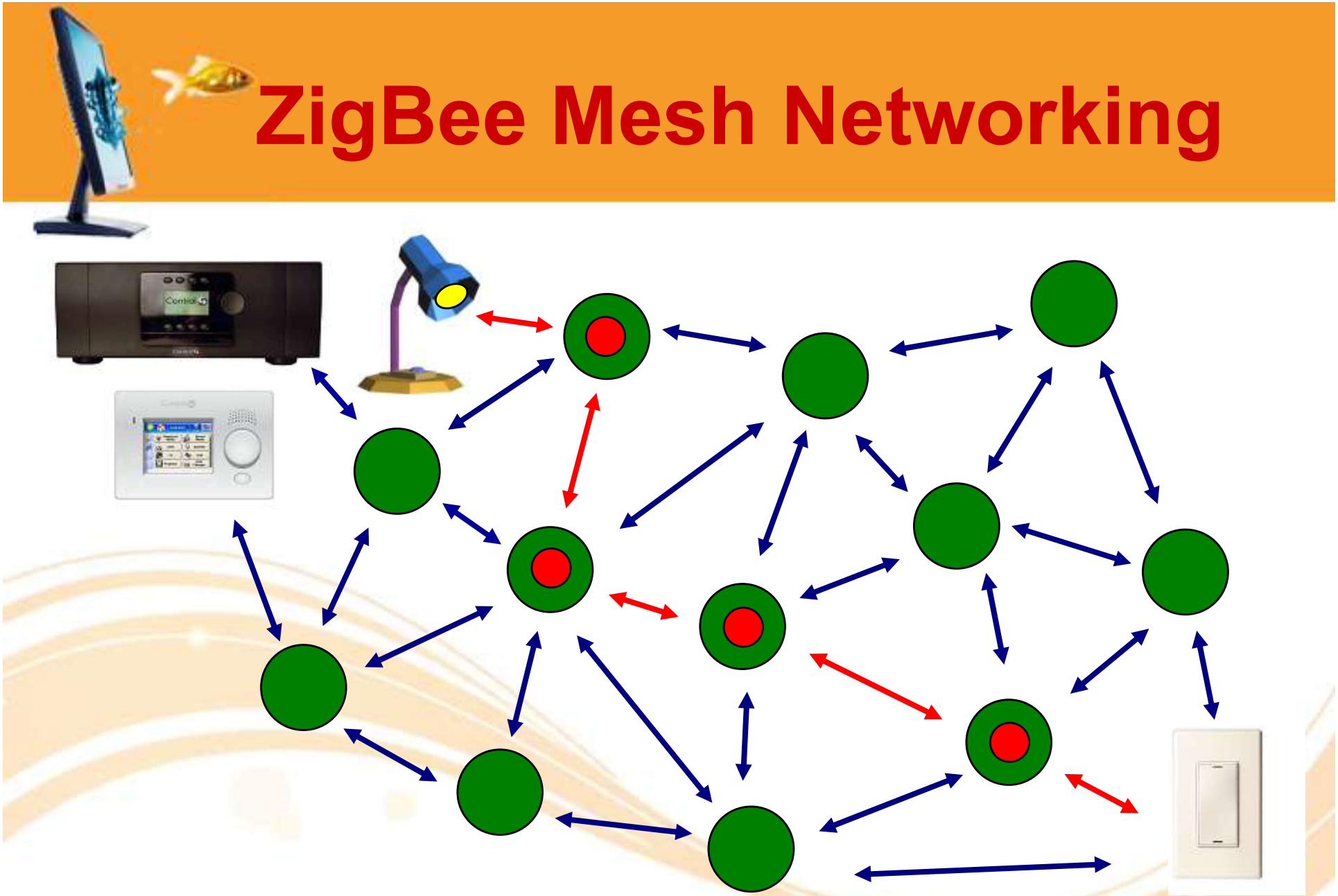
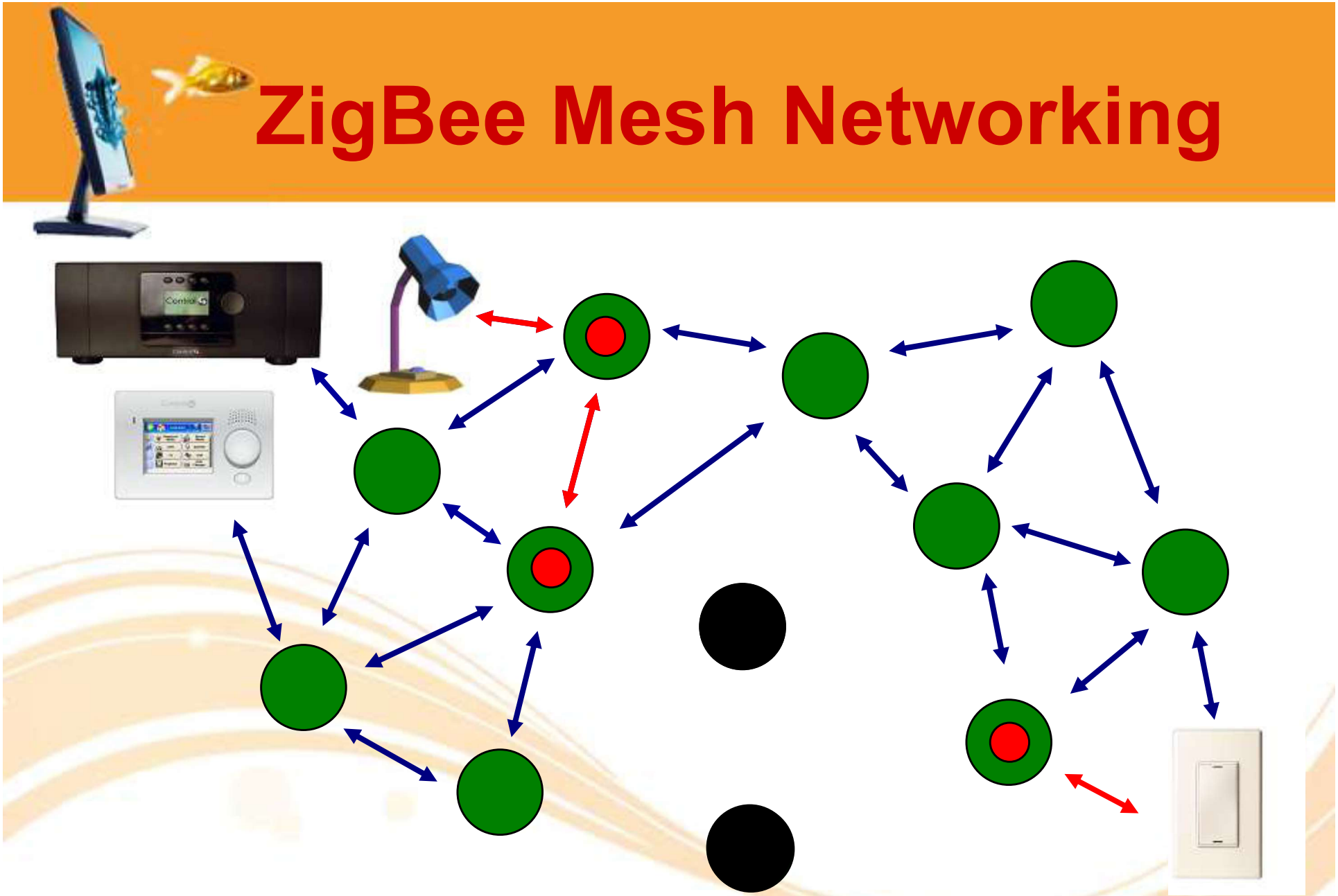


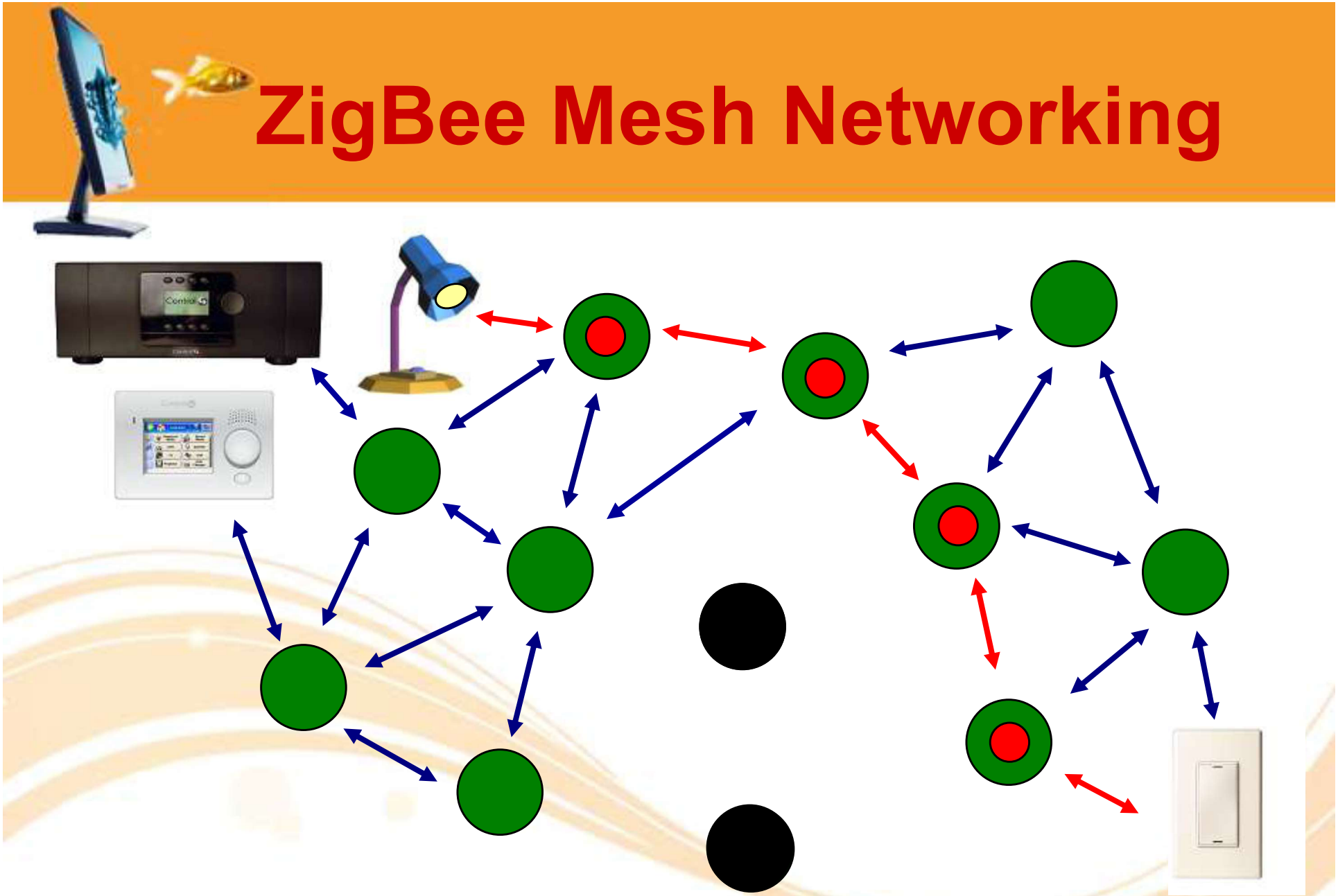
ZigBee Mesh Networking



ZigBee Mesh Networking

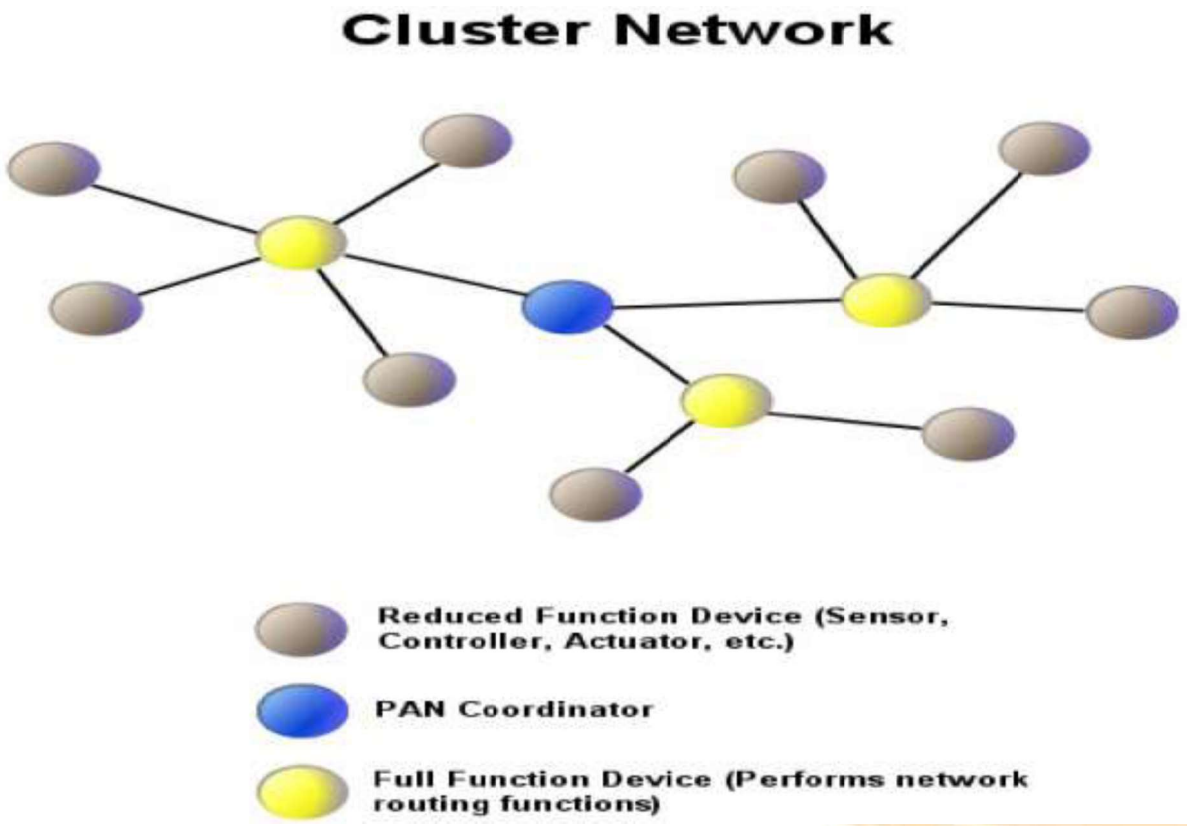


ZigBee Mesh Networking



Network Topologies(cont...)

3.Cluster Network



Characteristics

- Low power consumption with battery life ranging from months to years
- High density of nodes per network
- Low cost
- Simple implementation
- Low data rate
- Small packet devices

Applications

- The ZigBee Alliance targets applications Across consumer, commercial, industrial and government markets worldwide
- Home networking
- Industrial control and management

Conclusion

In future all devices and their controls will be based on this standard.
Since Wireless personal Area Networking applies not only to household devices, but also to individualised office automation applications, ZigBee is here to stay. It is more than likely the basis of future home-networking solutions……

QUESTIONS????

THANK YOU…….