



M2M: Industrial Sensor Mesh Networks

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agenda]

Introduction

Sensor networks

Requirements

Applications

Technology/Standards

Solutions

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Portus enables the Connected Home (Office, Factory,...)!

Portus provides an end to end solution for delivering services to the premises

Success:

- Winner of the Singapore iDA Connected Homes Programme
- Singapore pilot completed '04
- Portus a HP preferred partner: Portus solution the digital home showcase at HP Cooltown Singapore, Shanghai, VIP exhibit at ITU Telecom Asia

Patented technology – Portus holds patent for internet connected security, surveillance, automation & control.



sensor networks]

What are sensor networks?:

- Networks of sensors that are linked back to controllers for monitoring and control

Wired sensor networks:

- Status quo
- Bulky cables, cabling nightmare
- Wear problems associated with monitoring actuators in motion
- Expensive!
- All factors limit use

Wireless sensor networks:

- Get rid of cabling
- Enable monitoring in areas where not previously viable
- Reduce cost
- Increase connectivity and proliferation

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requirements]

Wireless sensor network technology must provide:

- Reliability, Integrity: technology must provide reliable secure self healing network with redundancy
- Sufficient range, Scalability: node to node, and extensible via mesh topology
- Responsiveness: low latency, adequate data rates
- Low power: battery operation or draw power from immediate environment
- Low cost: standards based, cost driven via mass adoption



applications]

Industrial monitoring and control:

- Air compressors: used in 97% industrial manufacturing plants. Gardner Denver retrofitting sensor networks to inform customers:
 - when consumables need replacing
 - when maintenance required

Commercial:

- Swimming pools/spas – nPhase monitoring chemical levels in hotel pools and spas, school and public pools

Supply Chain:

- Cold goods supply chain – Ceebron wireless mesh sensor network to monitor condition of refrigerated goods during transit

Intelligent buildings:

- Security & surveillance
- Environment control
- Utility metering
- Energy management



technology]

Technology:

- Silicon, stacks:
 - Millennial Net, Dust Networks, Chipcon, Ember, Freescale – chips, stacks for RF communications
- Sensors:
 - Honeywell, Opto22
- Gateways/Platforms:
 - Portus

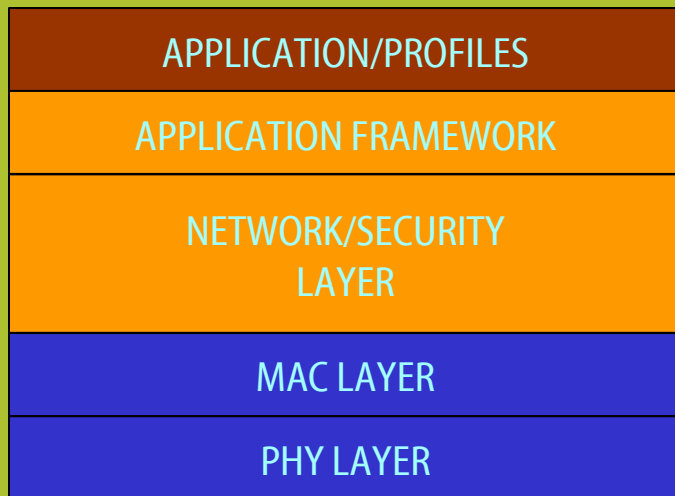
To support large range of applications, interoperability & low cost, a common standard required.

Zigbee – license free spectrum, data rates to 250 kbps, low power, interoperability, standard profiles, implementation cost under US\$3, wireless communication protocol based on 802.15.4



zigbee]

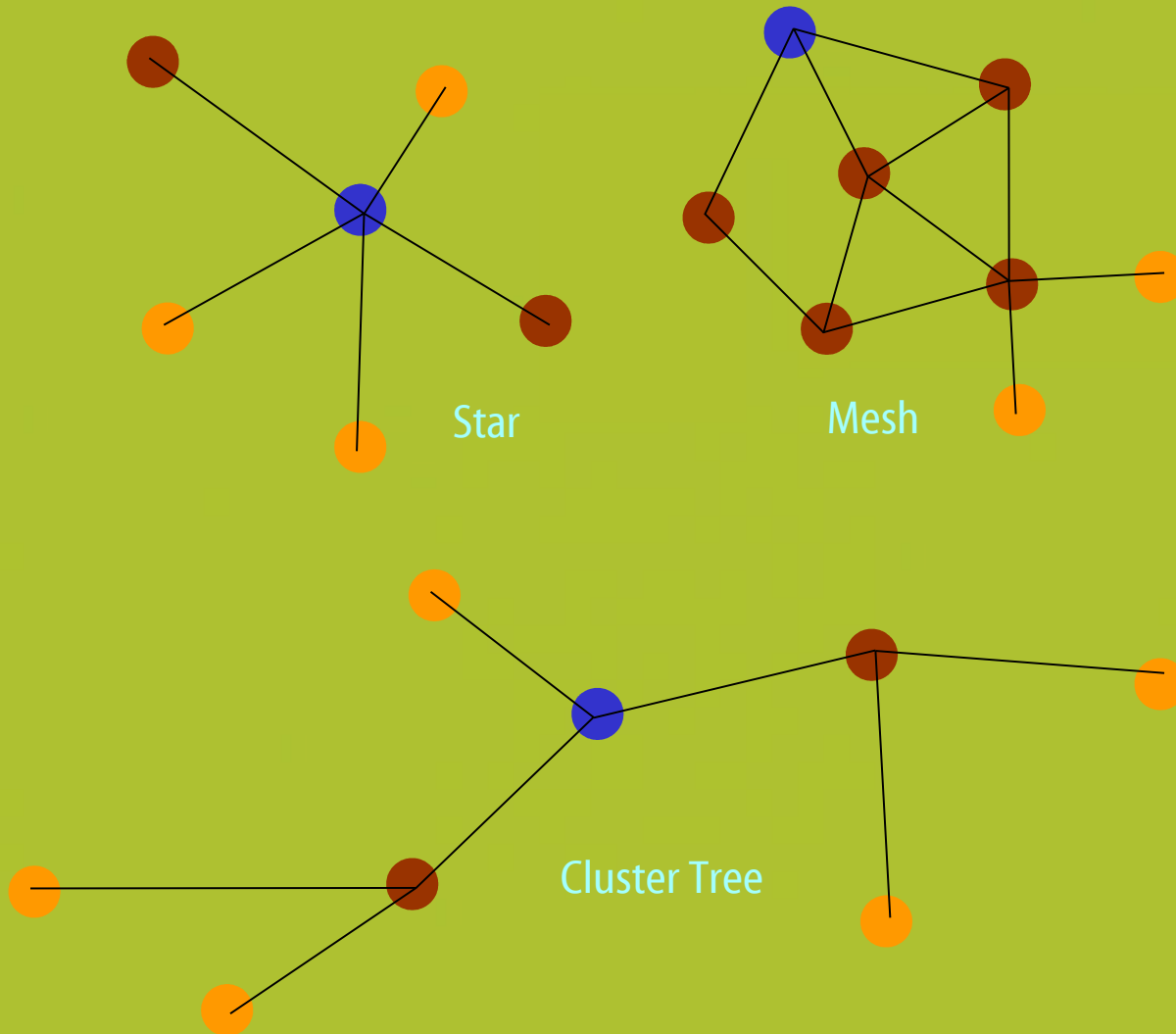
- Application
- Zigbee Stack
- Silicon






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zigbee]



-  PAN coordinator
-  Full function device
-  Reduced function device

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solution]

Portus provides the critical components in the service delivery chain:

DIAS connected services platform

DIAS series gateways

service provisioning/management

key service applications

Core product replaces separate dedicated solutions with a single next generation system

Built from the ground up to satisfy the requirements of mission critical services

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DIAS Connected Services Platform:

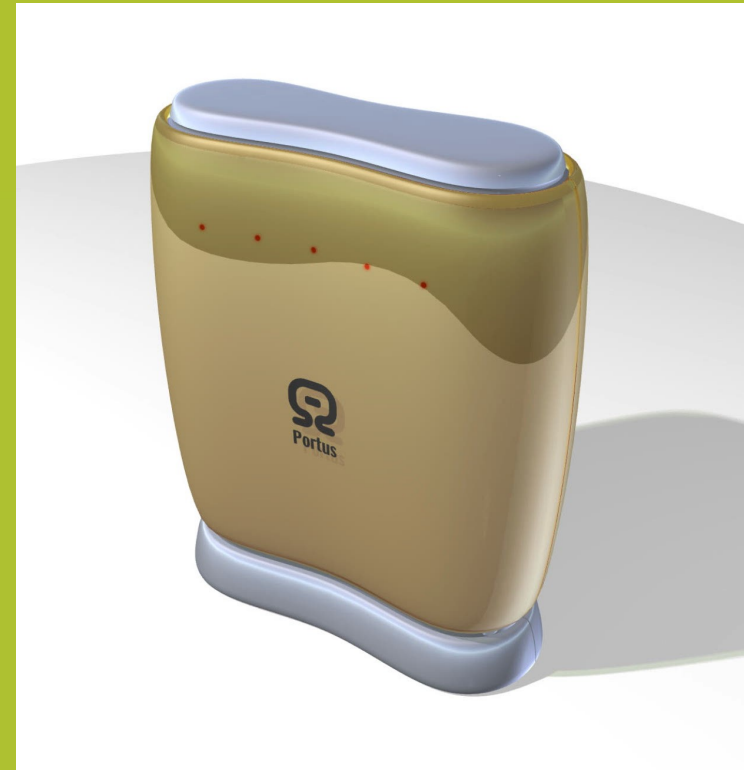
- Secure, remotely managed platform for dynamic deployment of mission critical services
- Standards-based OSGI open services framework
- Sophisticated provisioning & management system
- All user operation via advanced web-based interface
- Supports a wide range of services from security, surveillance, access control to utility metering, energy management, and environment control



DIAS 3000 Series Gateways:

- DIAS Connected Services Platform
- Requires no new wires
- Integrated ADSL modem
- Provides the 3 essential networks for the modern building:
 - WiFi (802.11b/g)
 - Bluetooth (Class 1)
 - PLC (LON)
- Secure – acts as firewall
- ~100% uptime, can be battery backed for power interruption
- Intelligence can offload requirement from other devices eg meters, medical monitoring

DIAS 3000-Z: Zigbee



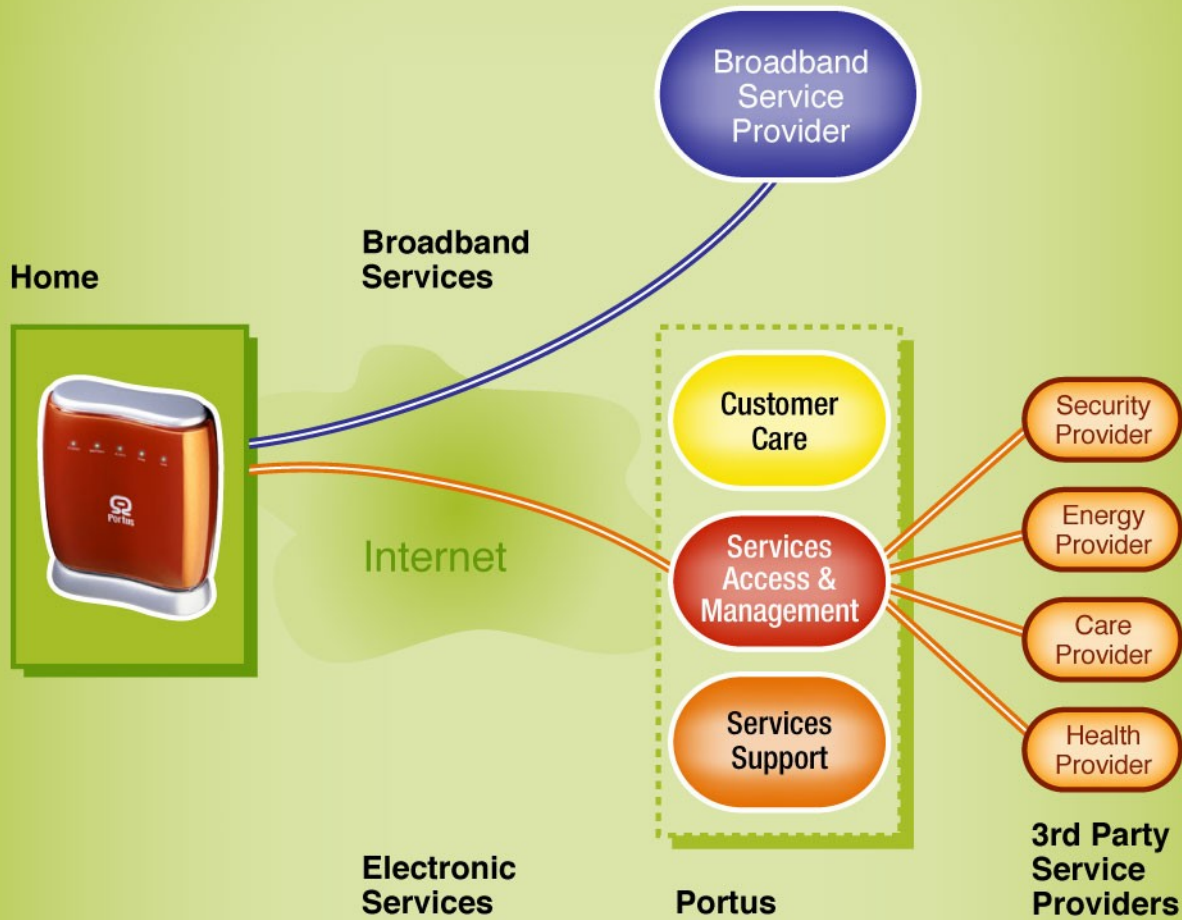
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