

Fakulta strojní VŠB – TUO

Department of Control Systems and Instrumentation



Automatic Control Devices

(Materials for write notes)

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Lecture No. 6

Wifi networks, configuration of access points and AD-HOC configuration, connection of control systems to the technological process (ILAN, LAN, WLAN). A sample of the laboratory set-up.

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What do you find out?

- Wifi networks
- Configuration of access points
- AD-HOC configuration
- Connection of control systems to the technological process (ILAN, LAN, WLAN)
- A sample of the laboratory set-up
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What is Wifi?

- WiFi (Wireless Fidelity) =

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What is Wifi?

- In order for devices from different manufacturers and different platforms to communicate with each other, there are international standards.

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What is Wifi?

- A wireless computer network can be implemented in two ways, according to the number and location of computers.

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What is it?

- Access Point, AP
- Ad-Hoc Mode

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What is it?

- Afterburner
- Bridge

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What is it?

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PASMO 2,4 GHZ

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PASMO 5 GHZ

- Channel
- Client

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What is it?

- DHCP
- IP

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What is it?

- LAN
- NAT

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What is it?

- SSID
- VPN

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What is it?

- WDS
- WEP

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What is it?

- WiFi klient
- WiFi router
- Repeater

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What is it?

- IEEE 802.11.
- IEEE 802.11a.
- IEEE 802.11b.
- IEEE 802.11e.
- IEEE 802.11g.
- IEEE 802.11h.
- IEEE 802.11i.
- IEEE 802.11j

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Examples of web management

www.joyce.cz

www.joyce.cz/technicka_podpora/management/WELL_WRC5010NHome.htm

Download

Fullscreen

Print

WELL WRC5010N

Quick Setup

Operation Mode

Wireless

Basic Settings

Advanced Settings

Security

Access Control

Web-Settings

IP-Setting

WPS

Schedule

Network Settings

LAN Setting

WLAN Function

Tools

Port Forward

QoS Setting

MAC Filtering

Port Forwarding

SNMP Setting

SNMP Filtering

SNMP

Tools

Reset

Factory

Help

Log

Operation Mode

You can setup different modes to LAN and WLAN interface for NAT and bridging function.

Gateway

Bridge

Wireless ISP

In this mode, the device is configured to connect to internet via ADSL/Cable Modem. The NAT is enabled and PC in LAN ports share the same IP to ISP through WAN ports. The connection type can be setup in WAN page by using PPPoE, DHCP client, PPTP client, L2TP client or static IP.

In this mode, all ethernet ports and wireless interface are bridged together and NAT function is disabled. All the NAT related function and firewall are not supported.

In this mode, all ethernet ports are bridged together and the wireless client will connect to ISP access point. The NAT is enabled and PC in ethernet ports share the same IP to ISP through wireless LAN. You must set the wireless to client mode first and connect to the ISP AP in Site Setting page. The connection type can be setup in WAN page by using PPPoE, DHCP client, PPTP client, L2TP client or static IP.

Apply Change

Reset

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INSYS WLAN serial/bridge



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Application

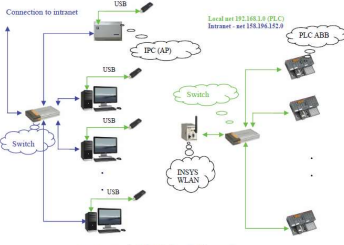


Fig. 2 Connection of particular network components

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The diagram illustrates a robotic system architecture and its control interface. On the left, a schematic shows a PC connected to a robot via a WiFi card and an access point. The PC runs a 'spuštěná aplikace v C# S' (executed application in C# S). The robot is connected to the PC via a WiFi card and an access point. The robot is also connected to a 'EZL 300W Lite' motor and an 'RS-232/RS-485' interface. The robot is shown with a camera and a gripper. On the right, a screenshot of the 'Polohování soustavy' (System Positioning) software interface is shown. The interface includes a 'Připojení' (Connection) tab, a '3D vizualizace' (3D visualization) window, and a 'Robotový systém' (Robot system) window. The '3D vizualizace' window shows a 3D model of the robot and its gripper. The 'Robotový systém' window shows a graph of the robot's position over time. The interface also includes a 'Nastavení' (Settings) window and a 'Monitorování' (Monitoring) window.

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ZigBee-Wireless communication standard



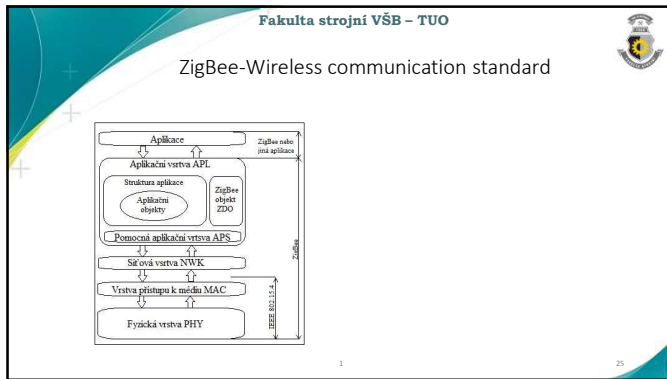
It is a wireless communication technology based on the

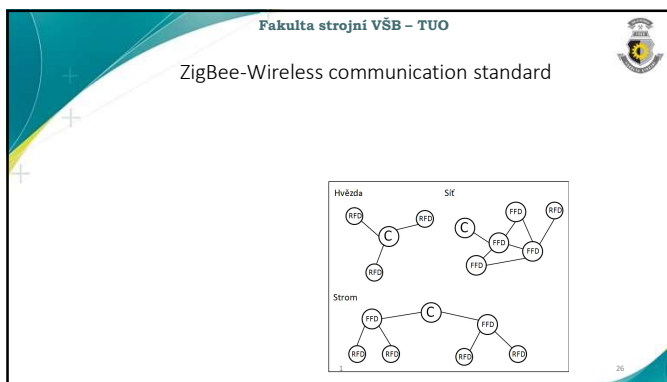
Examples of use:
Building management
...

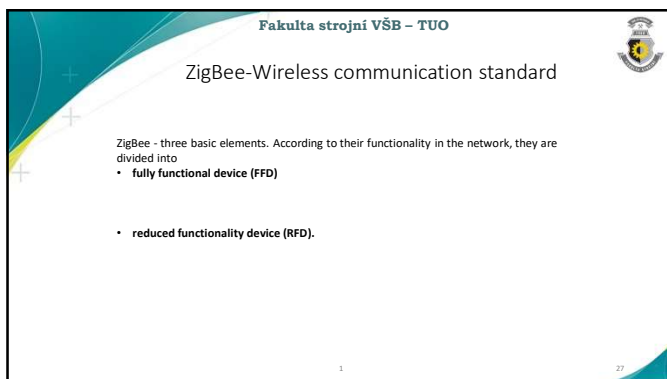


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ZigBee-Wireless communication standard				
Obchodný jmevo standardu	GPB5/GSM	Wi-fi 802.11b	Bluetooth 802.15.1	ZigBee 802.15.4
Applikáci zamenení	Široká oblasť (hlas, data)	Web, Email	Náhrada za kabel	Monitorování, řízení
Systémové zdroje (paměť)	16Mb a více	1Mb a více	250Kb a více	4Kb- 32Kb
Životnost baterií (dnů)	1-7	0.5-5	1-7	100 - 1000 (i více)
Max. velikost prvků (počet uzlů)	1	32	7	65 000
Přenosová rychlost (Kb/s)	64-128	11 000	720	20- 250
Komunikační dosah (m)	1 000 i více	1-100	1-10	1-100
Výhody	Dosažitelnost, kvalita	Rychlost, flexibilita	Cena, jednoduchost	Spolehlivost







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ZigBee-Wireless communication standard

ZIGBEE COORDINATOR API
ZIGBEE COORDINATOR AT
ZIGBEE END DEVICE ANALOG IO
ZIGBEE END DEVICE API
ZIGBEE END DEVICE AT
ZIGBEE END DEVICE DIGITAL IO
ZIGBEE END DEVICE PH
ZIGBEE ROUTER API
ZIGBEE ROUTER AT
ZIGBEE ROUTER SENSOR
ZIGBEE ROUTER/ END DEVICE ANALOG IO
ZIGBEE ROUTER/ END DEVICE DIGITAL IO
ZIGBEE ROUTER/ END DEVICE SENSOR

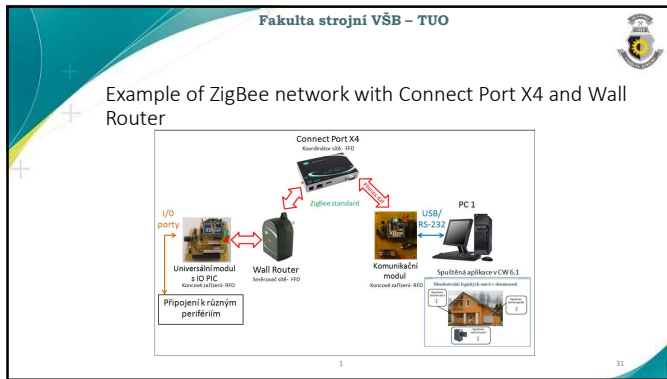
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Connect Port X4

ZIGBEE COORDINATOR API
ZIGBEE COORDINATOR AT
ZIGBEE END DEVICE ANALOG IO
ZIGBEE END DEVICE API
ZIGBEE END DEVICE AT
ZIGBEE END DEVICE DIGITAL IO
ZIGBEE END DEVICE PH
ZIGBEE ROUTER API
ZIGBEE ROUTER AT
ZIGBEE ROUTER SENSOR
ZIGBEE ROUTER/ END DEVICE ANALOG IO
ZIGBEE ROUTER/ END DEVICE DIGITAL IO
ZIGBEE ROUTER/ END DEVICE SENSOR

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Example of ZigBee network with Connect Port X4 and Wall Router



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What was the content of the lecture

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- ...

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Thank you for your attention ...

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