



BEZPRZEWODOWY POZNAŃ



PILOT WIRELESS NETWORK FOR ACCESS TO THE INTERNET IN POZNAN

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GENERAL INFORMATION

- **Investor – The City of Poznan**
- **Access to Network, hosting, NOC – PSNC**
- **Network Topology – Wi-Fi Mesh**
- **Technology – Nortel (chosen in a public tender –
The second offer of Cisco was 100% more expensive)**
- **Contractor– COMP S.A. Warszawa**
- **Cost of investment – 154 195pln (~50.000 €)**



INFRASTRUCTURE

- **Managing wireless network:**
 - wireless gateway 7240 – x 2 (the redundancy mode)
 - management system (Nortel Optivity NMS)
 - server (DHCP/RADIUS/Captive Portal)
- **Wireless Access Point (AP):**
 - outdoor (Nortel 7220) – x 7
 - indoor (Nortel 7215) – x 6
- **Access to network (routing)**
 - router (OSPF)
 - firewall (Linux/IPtables)
 - switch L2

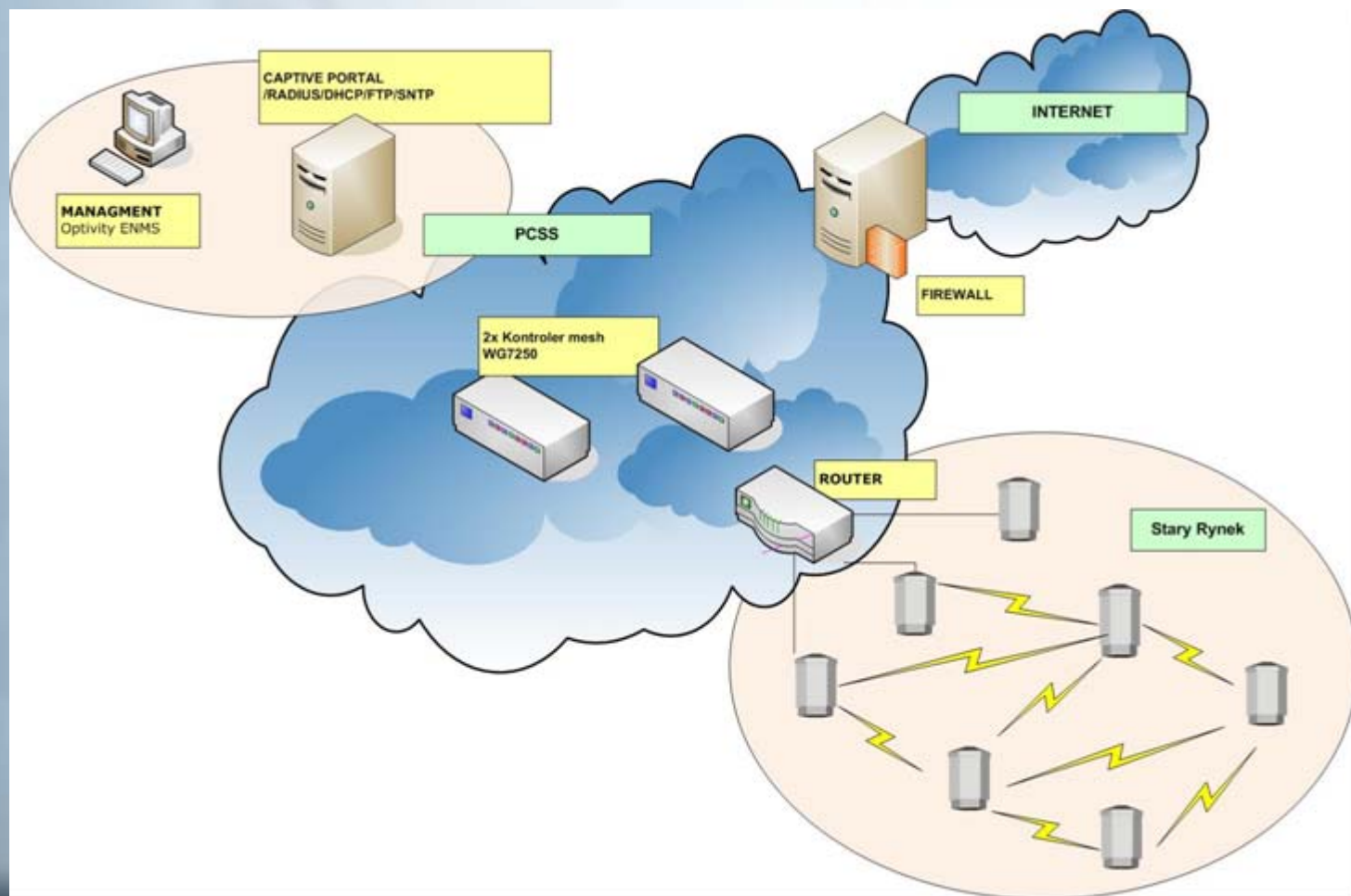


NETWORK TOPOLOGY

- **Core wireless network**
 - Mesh Nortel AP 7220, 5GHz
- **Security and management**
 - Mesh wireless gateway 7240
 - Firewall
- **Management users and monitoring AP**
 - Server FTP, DHCP, RADIUS – Linux on IBM x3550
 - Nortel Optivity NMS, Nagios



LOGICAL NETWORK TOPOLOGY





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AP 7215 (indoor)

installed in the Offices of the City of Poznań

The main role is to network access for employees of the City





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AP 7220 (outdoor)

The main role is to network access for tourists





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LOCATION AP (outdoor)

AP were installed on the tower of City Hall
and surrounding buildings



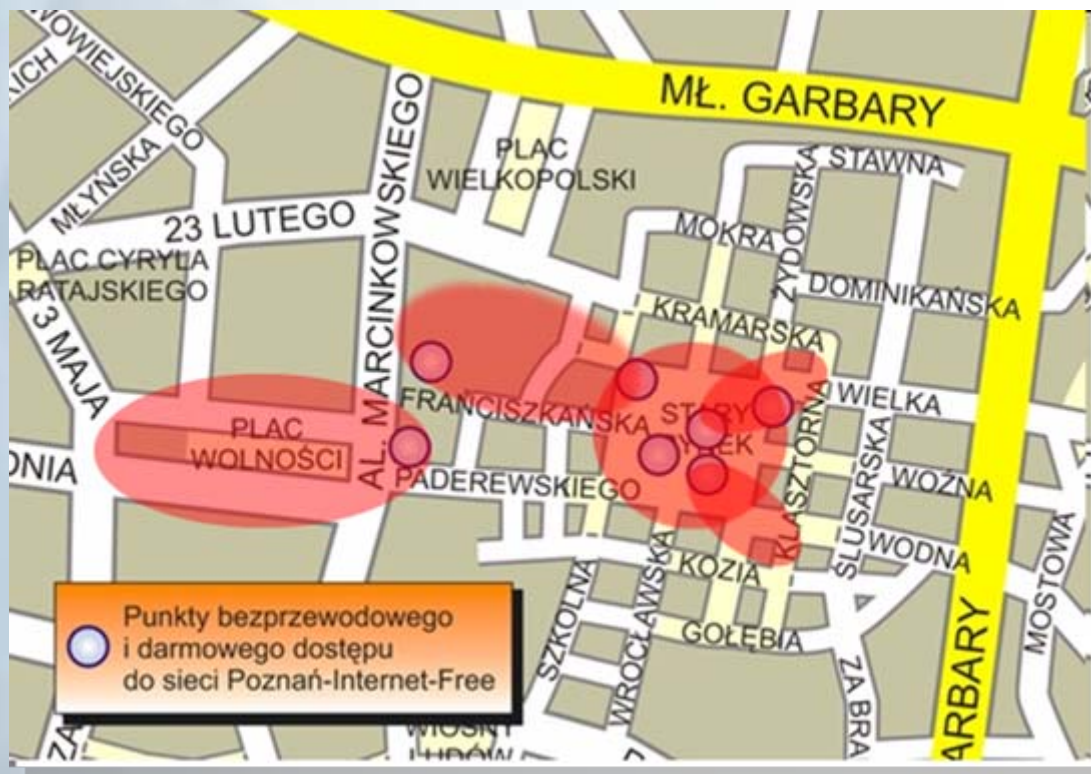


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MAP SIGNAL COVERINGS

the most attractive touristic places in the center of Poznań





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NETWORK SERVICES

- **SSID Poznan-Internet-Free**
 - Public, free access to Internet for tourists, residents and visitors.
 - Limited available network resource (www, e-mail)
 - Limited bandwidth 100 kbit / users
 - Limited single time session – 2h
 - Access requires the identification and acceptance of the Rules of Procedure
 - Open network, without encryption



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NETWORK SERVICES

- **SSID Poznan-UM**
 - Access for City Councilor and authorized employees of the City
 - Network without restrictions on bandwidth and time session of network
 - Network with encryption WPA2/WPA-TKIP
 - Triple authentication (id, password, certificate)
 - Access to urban applications (Internet. Asyst. Radnego, Internet. Asystent Prezydenta)



NETWORK SERVICES

- **SSID eduroam (<http://www.eduroam.pl>)**
 - Access to the network service for users science
 - Everywhere the same network configuration
 - Same username and password regardless of location
 - Access to a broad set of services such as www, VPN, email
 - Is available in:
 - Europe
 - Asia (Australia ,Japan, China)





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NETWORK SERVICES

- **Temporary SSID support and maintenance for significant events**
 - Theater Festival MALTA
 - Wielkopolskie Innovation Days
- **In total, it is possible to develop the 8 different subnets SSID, with different network parameters.**



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NETWORK SERVICES

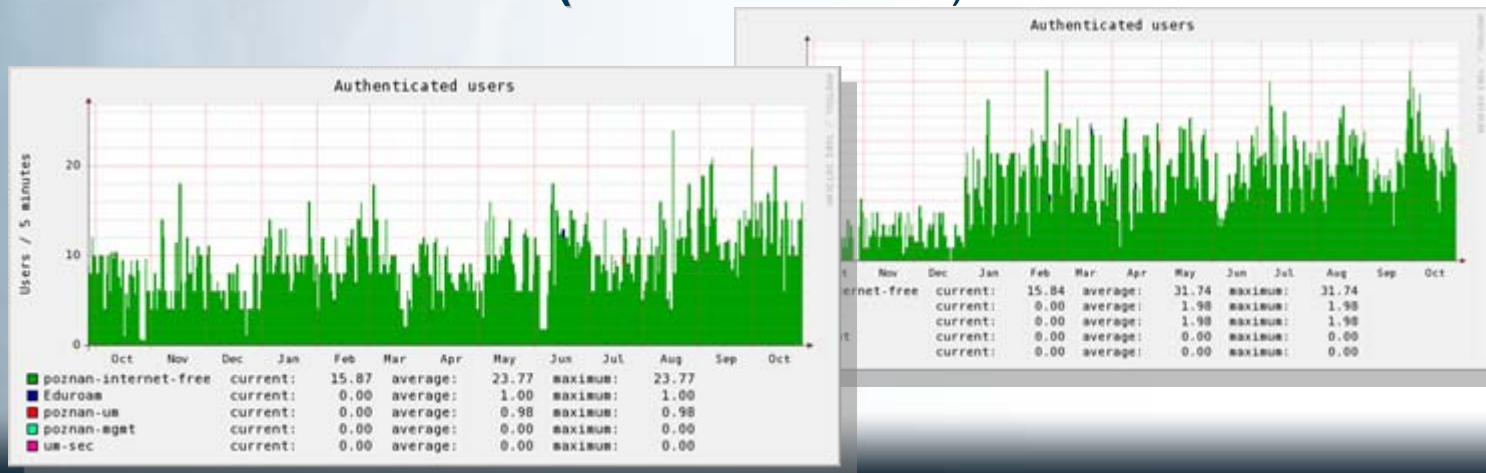
- THE OLD MARKET SQUARE GUIDE





NETWORK USE

- The number of people benefiting from the network (number of single log-ins):
 - since the beginning of the project: 289.800
 - from VI to VIII 2007 (Tourist season): 13.690
 - from VI to VIII 2008 (Tourist season): 67.206





PROBLEMS

- **Technical:**
 - Small range of mobile devices (palm, phone)
 - Signal interference – large number of private Wi-Fi
- **Procedural:**
 - Law – only limited free public access to Internet
 - Restorer of historic buildings – Installation AP only in designated areas



FUTURE

- **New locations:**
 - Places of tourist importance
 - Around school
- **New technology:**
 - We start testing Motorola
- **New services:**
 - City VoIP
 - New applications