# uran

Ukrainian Research and Academic Network

# Deployment of WiFi/Cable Connectivity to University Dormitories (Hostels)

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# Overal goal: Provision of Internet services to University hostels

- Complete WiFi coverage of all leaving areas

- WiFi coverage of public areas in the building

- At least one cable outlet (RJ45) in every living room

- Speeds for clients up to 100 Mbps

- Access to University LAN, GEANT, Internet, URAN services

# Organizational
# and Financial Targets

- University does not invest: network infrastructure construction costs covered by URAN
- Contract duration between University and URAN – at least 5 years
- Exclusive rights for URAN to provide services for the duration of Contract
- Dwellers pay for services individually: tariffs agreed to by University
- Income split between University and URAN on a monthly basis
- Payback of initial investment by the end of Contract. No profit.
- Infrastructure ownership transferred to University at the end of Contract

# Operation

- During the Contract period provided by URAN

- Billing system located at URAN

- Secure payments for services by credit cards

- Fiber connectivity to building at 1 Gbps

- Round o'clock help desk – by phone (during working hours) and e-mail

- Occasional troubleshooting visits to the site

- Self-registration of clients. Login-password credentials (Federation access in future)

- Training of University staff → knowledge transfer

# Implementations

- First hostel put into operation in 2008

- Since then connected more than 15 hostels in 5 Universities – 4 in Kiev, 1 in Poltava

- Last project "**PM**" (Panasa Myrnogo str.) launched in 2014 - at National University of Technology & Design

# The PM project:
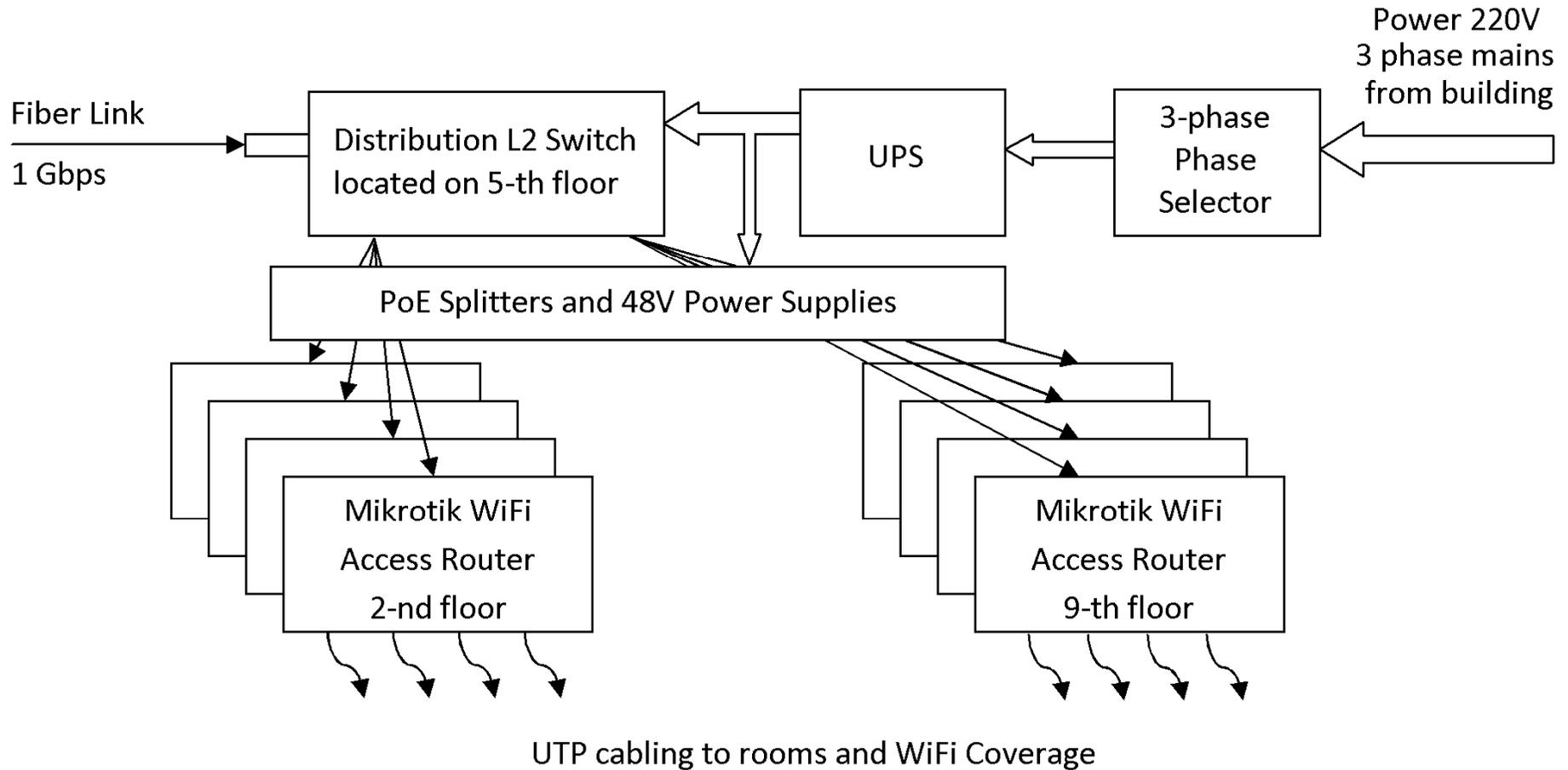# Implementation Steps and Timing

- Overall 6 weeks: 1 week for technical project with approval from University and 5 weeks for construction of network

- Started operation in October 2014

- Total duration of Contract with University – 5 years.

# The PM project:
# Technical Data

- Hostel building parameters: 9 floors,
  16 rooms per floors 2nd through 9th,
  4 inhabitants per room average; about 500 dwellers;
  administrative offices on 1st floor

- 4 Mikrotik RB951Ui-2HnD access servers
  per floors 2 through 9 with PoE

- Total 32 Mikrotik RB951Ui-2HnD access servers
  cover all leaving areas with WiFi and provide UTP
  (cable) access in each room

# The PM project: Logical Diagram of LAN infrastructure



Power 220V
3 phase mains
from building

Fiber Link
1 Gbps

Distribution L2 Switch located on 5-th floor

UPS

3-phase Phase Selector

PoE Splitters and 48V Power Supplies

Mikrotik WiFi Access Router 2-nd floor

Mikrotik WiFi Access Router 9-th floor

UTP cabling to rooms and WiFi Coverage

# The PM project:
# Software and billing

- **Access method:** Mikrotik Hotspot with customer self-registration and WEB-based "Personal Cabinet"

- **Billing:** Customized Oracle-based billing system

- **Network management and stats:** Mikrotik Dude and locally C-coded statistics gathering app

# The PM project:
# Billing statistics (example)

PM93   ← *Name of Mikrotik Access Router*

| Login | IP | MAC | Access media | Auth. method | Uptime |
|-------|-----|-----|--------------|--------------|--------|
| PM0028 | 192.168.43.194 | 34:23:87:AB:04:4B | WiFi | mac-cookie | 7h23m51s |
| PM0256 | 192.168.43.195 | 48:5A:B6:67:63:B3 | WiFi | mac-cookie | 43m3s |
| PM0224 | 192.168.43.196 | 6C:71:D9:61:ED:19 | WiFi | mac-cookie | 1h15m10s |
| PM0095 | 192.168.43.211 | 70:F1:A1:85:58:60 | Cable | http-pap | 7h27m14s |

PM94
| | | | | | |
|-------|-----|-----|--------------|--------------|--------|
| PM0222 | 192.168.43.229 | E0:B9:A5:F8:76:98 | WiFi | mac-cookie | 52m3s |
| PM0175 | 192.168.43.230 | 84:8E:0C:8A:3D:B7 | WiFi | http-pap | 3m55s |
| PM0060 | 192.168.43.233 | A8:06:00:CD:60:09 | WiFi | http-pap | 7h59m42s |

Stringlength of Table = 5031
#of connected users = 75
#of WiFi users = 51
Time is: 29-4-2015  19:14

# Pricing for clients

- up to 100 Mbps – about 4 Euro/month

# Thanks for the attention

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