



ПРОФЕСИОНАЛНА ГИМНАЗИЯ ПО
ЕЛЕКТРОТЕХНИКА И АВТОМАТИКА – гр. София

ПРОЕКТ

ТЕМА

**Разделяне на компютърна мрежа на 2/4 подмрежи
с Cisco Packet Tracer**

УЧЕНИК:

СПЕЦИАЛНОСТ: 5230502 Компютърни мрежи

ПРОФЕСИЯ: Техник на компютърни системи

ПРЕПОДАВАТЕЛ: инж. Георги Сачков

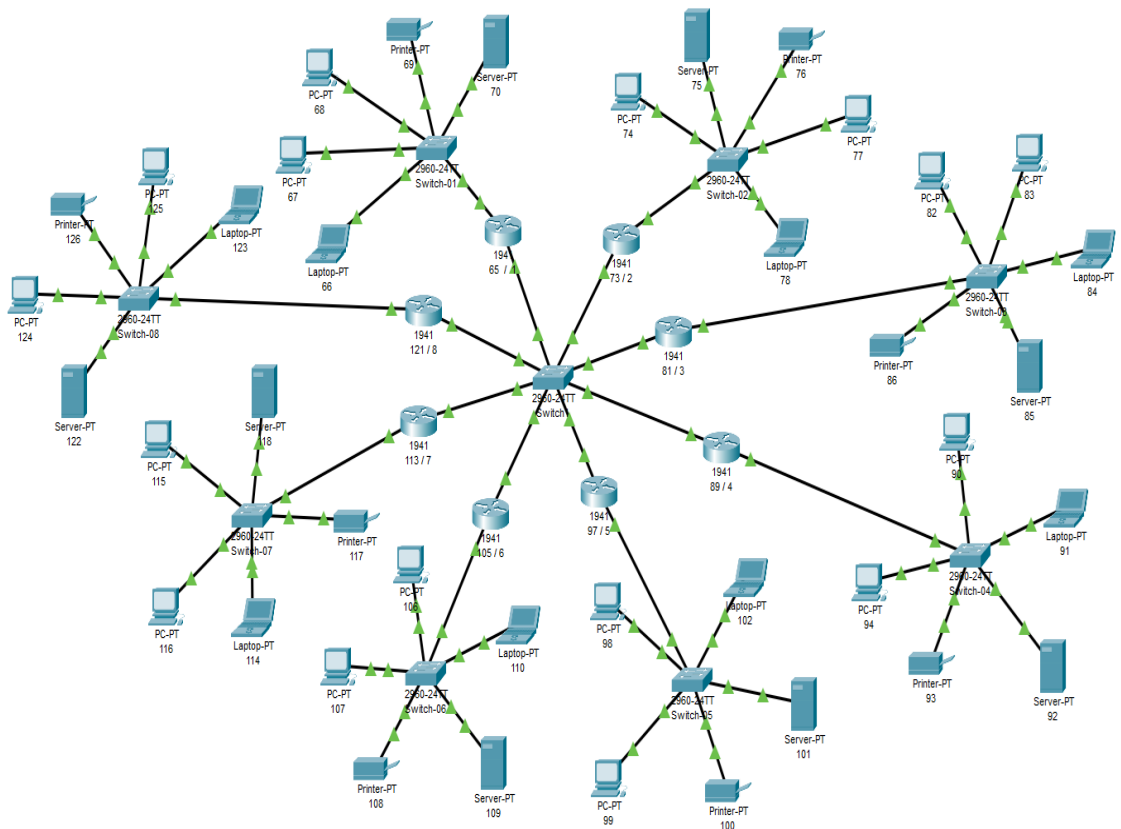
СОФИЯ

2024

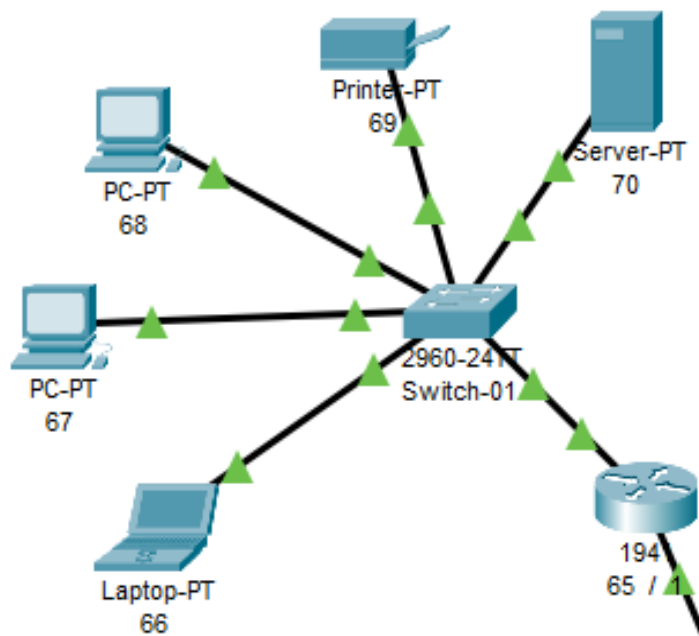
ПРАКТИЧЕСКА ЧАСТ

Таблица 1

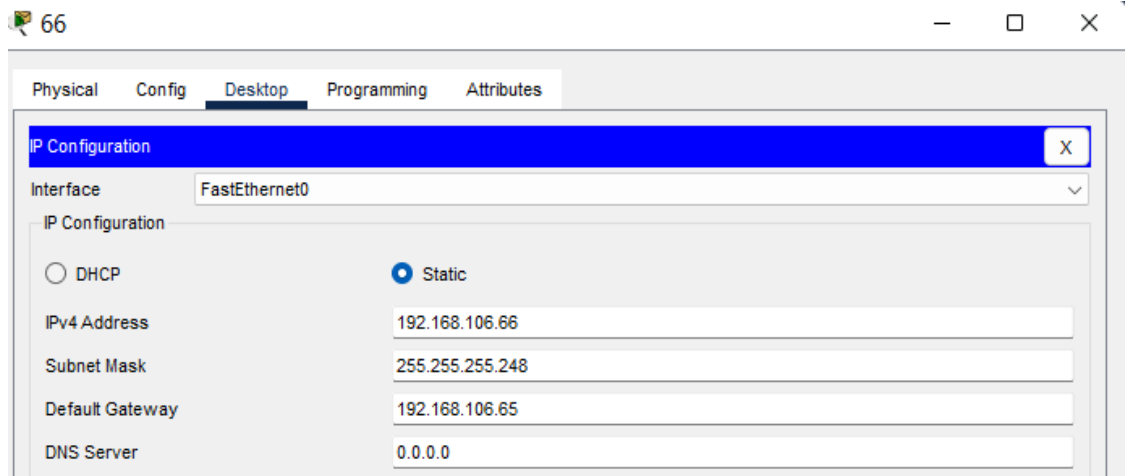
| parameter | IP address or value | № subnet |
|--|---------------------|----------|
| subnet ID ИМЕ на МРЕЖАТА | 192.168.xxx.xxx | 1 |
| first host address /gateway/ Рутер 1-ви хост | 192.168.xxx. xxx | |
| last host address последен хост | 192.168.xxx. xxx | |
| broadcast address бродкаст | 192.168.xxx. xxx | |
| CIDR notation битове на подмрежата | /xx | |
| subnet mask маска | 255.255.255. xxx | |
| number of hosts per subnet брой хостове | Xx | |
| subnet ID | 192.168.xxx. xxx | 2 |
| first host address /gateway/ | 192.168.xxx. xxx | |
| last host address | 192.168.xxx. xxx | |
| broadcast address | 192.168.xxx. xxx | |
| CIDR notation | / xxx | |
| subnet mask | 255.255.255.xxx | |
| number of hosts per subnet | Xx | |
| subnet ID | 192.168.xxx.xxx | 3 |
| first host IP address /gateway/ | 192.168.xxx.xxx | |
| last host IP address | 192.168.xxx.xxx | |
| broadcast address | 192.168.xxx.xxx | |
| CIDR notation | /xx | |
| subnet mask | 255.255.255.xxx | |
| number of hosts per subnet | Xx | |
| subnet ID | 192.168.xxx.xxx | 4 |
| first host address /gateway / | 192.168.xxx.xxx | |
| last host address | 192.168.xxx.xxx | |
| broadcast address | 192.168.xxx.xxx | |
| CIDR notation | /xx | |
| subnet mask | 255.255.255.xxx | |
| number of hosts per subnet | Xx | |



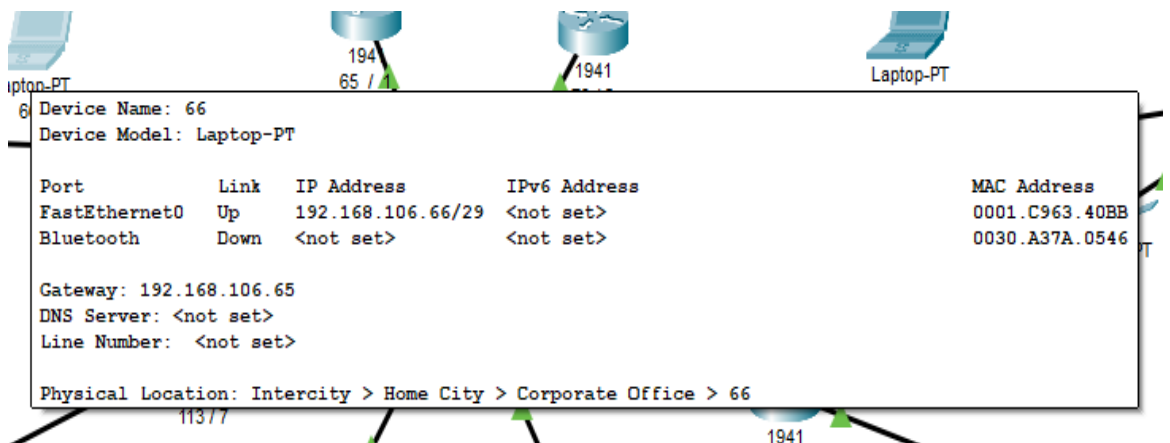
Фиг.1. Обща структурна схема на 2 или 4 броя подрежи.



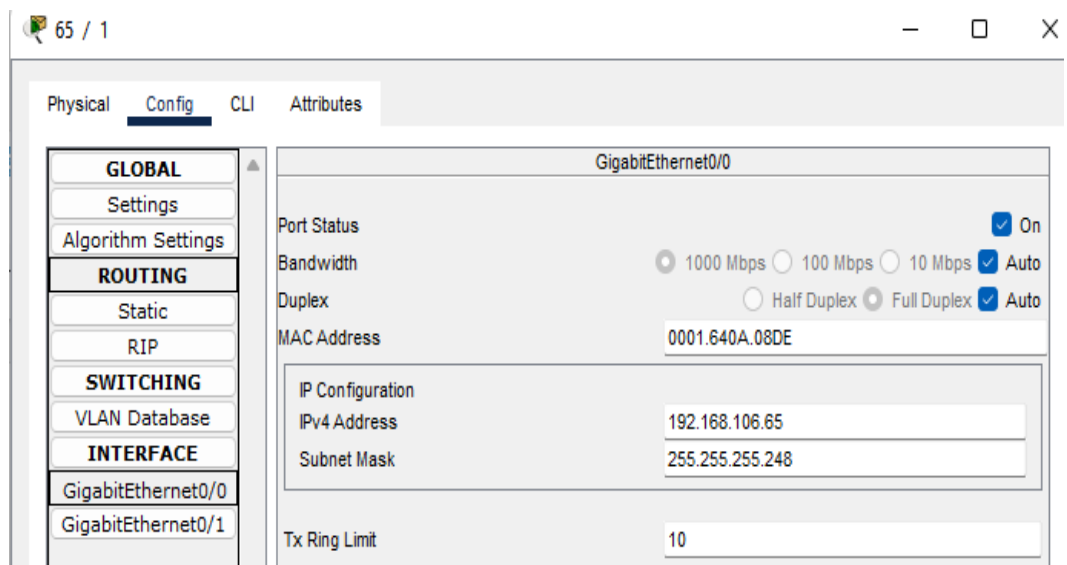
Фиг.2. структурна схема на подрежа



Фиг.3. Екранна снимка на конфигуриране на хост с IP адрес



Фиг.4. Екранна снимка за хост от подмрежа.



Фиг.5. Екранна снимка на конфигуриране на рутер от подмрежа.

```

Device Name: 65 / 1
Device Model: 1941
Hostname: Router

Port          Link  VLAN  IP Address      IPv6 Address      MAC Address
GigabitEthernet0/0  Up    --    192.168.106.65/29 <not set>        0001.640A.08DE
GigabitEthernet0/1  Up    --    192.168.1.1/24   <not set>        00D0.BC3A.0ACA
Vlan1          Down  1     <not set>       <not set>        00D0.9720.601A

Physical Location: Intercity > Home City > Corporate Office > Main Wiring Closet > Rack > 65 / 1

```

Фиг.6. Екранна снимка за рутер от подмрежа

Static Routes

Network:

Mask:

Next Hop:

| Network Address | Mask | Next Hop |
|--------------------|---------------|-------------|
| 192.168.106.72/29 | 255.255.255.0 | 192.168.1.2 |
| 192.168.106.80/29 | 255.255.255.0 | 192.168.1.3 |
| 192.168.106.88/29 | 255.255.255.0 | 192.168.1.4 |
| 192.168.106.96/29 | 255.255.255.0 | 192.168.1.5 |
| 192.168.106.104/29 | 255.255.255.0 | 192.168.1.6 |
| 192.168.106.112/29 | 255.255.255.0 | 192.168.1.7 |

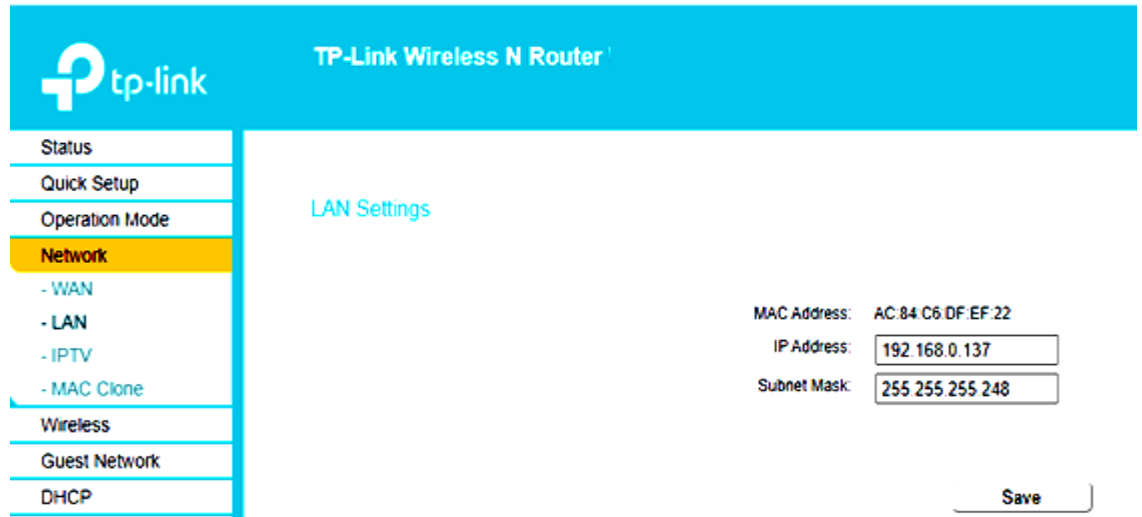
Фиг.7. Екранна снимка на маршрутизиращата таблица на рутер.

| Fire | Last Status | Source | Destination | Type | Color | Time(sec) | Periodic | Num | Edit |
|------|-------------|--------|-------------|------|-------|-----------|----------|-----|--------|
| | Successful | 68 | 74 | ICMP | | 0.000 | N | 0 | (edit) |
| | Successful | 68 | 75 | ICMP | | 0.000 | N | 1 | (edit) |
| | Successful | 69 | 76 | ICMP | | 0.000 | N | 2 | (edit) |

Фиг.8. Екранна снимка след ping между хостове в различни подмрежи.

Конфигуриране на 1-ви рутер

от задание IP адрес на рутера 192.168.xxx.xxx/xx

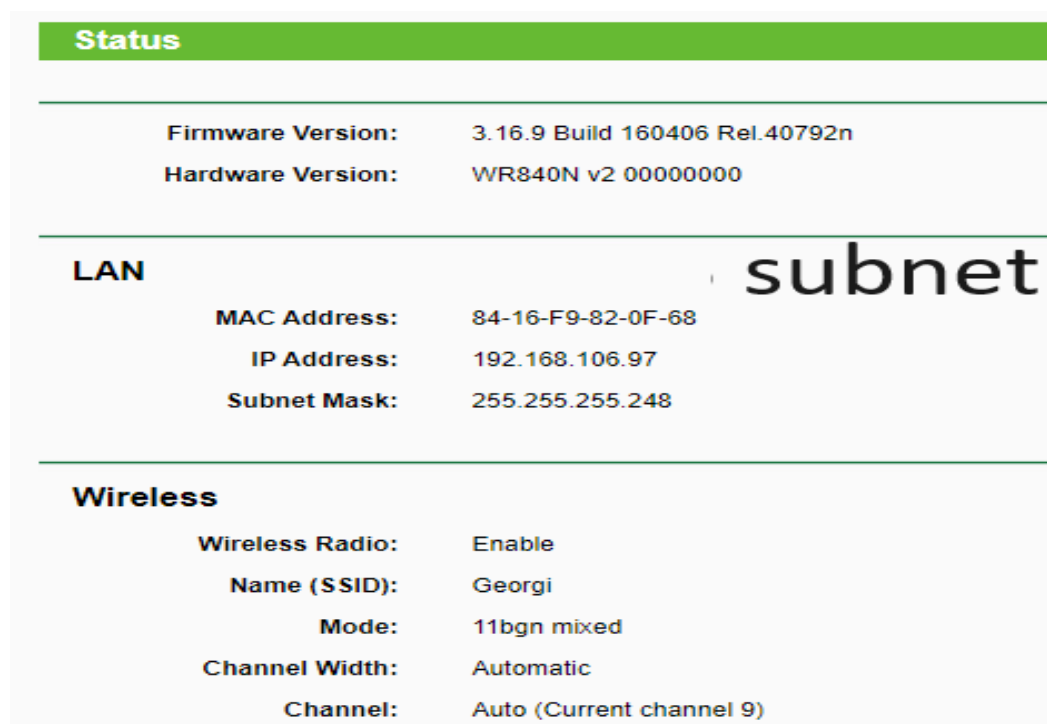


The screenshot shows the TP-Link Wireless N Router configuration interface. The top navigation bar is blue with the TP-Link logo and the text "TP-Link Wireless N Router". On the left, a sidebar menu lists various settings: Status, Quick Setup, Operation Mode, Network (highlighted in yellow), Wireless, Guest Network, and DHCP. Under the "Network" menu, there are sub-options: - WAN, - LAN, - IPTV, and - MAC Clone. The main content area is titled "LAN Settings" and displays the following information:

| | |
|--------------|--|
| MAC Address: | AC:84:C6:DF:EF:22 |
| IP Address: | <input type="text" value="192.168.0.137"/> |
| Subnet Mask: | <input type="text" value="255.255.255.248"/> |

A "Save" button is located at the bottom right of the configuration area.

Фиг.9. Конфигуриране на IP адрес на 1-ви рутер в меню **Network**.



The screenshot shows the "Status" page of the TP-Link router. The page is divided into several sections:

- Status**: Firmware Version: 3.16.9 Build 160406 Rel.40792n; Hardware Version: WR840N v2 00000000.
- LAN**: MAC Address: 84-16-F9-82-0F-68; IP Address: 192.168.106.97; Subnet Mask: 255.255.255.248. A "subnet" watermark is visible in the background.
- Wireless**: Wireless Radio: Enable; Name (SSID): Georgi; Mode: 11bgn mixed; Channel Width: Automatic; Channel: Auto (Current channel 9).

Фиг.10. Конфигуриране на IP адрес на първият рутер на вашата първа подмрежа.

конфигуриране на DHCP да раздава адреси от подмрежа

DHCP Settings

DHCP Server: Disable Enable

Start IP Address:

End IP Address:

Address Lease Time: minutes (1~2880 minutes, the

Default Gateway:

Default Domain: (Optional)

Primary DNS: (Optional)

Secondary DNS: (Optional)

Save

Фиг.11. Конфигуриране на DHCP как да раздава адреси от подмрежата.

-фиксиране по MAC адрес на конкретен IP адрес

DHCP Client List

| ID | Client Name | MAC Address | Assigned IP | Lease Time |
|----|-------------|-------------------|----------------|------------|
| 1 | L5 | 48-2A-E3-01-C3-A3 | 192.168.106.99 | Permanent |
| 2 | Unknown | BA-B2-5F-AE-0A-32 | 192.168.106.98 | 01:47:36 |

Refresh

Фиг.12. Фиксиране по MAC адрес на PC и GSM по конкретен IP адрес.

| | |
|---|------------------------------------|
| Скорост на връзката (получаване/предаване): | 100/100 (Mbps) |
| Локален за връзката IPv6 адрес: | fe80::8209:6d7d:ccb:1ef2%18 |
| IPv4 адрес: | 192.168.106.99 |
| IPv4 DNS сървъри: | 192.168.106.97 (нешифровано) |
| Производител: | Realtek |
| Описание: | Realtek PCIe GbE Family Controller |
| Версия на драйвера: | 10.36.701.2019 |
| Физически адрес (MAC): | 48-2A-E3-01-C3-A3 |

Фиг.13. IP settings на компютъра в Windows - показване адресите.

Wireless Security

Disable Security

WPA/WPA2 - Personal(Recommended)

Version:

Encryption:

Wireless Password:

(You can enter ASCII characters between 8 and 63 or Hexadecimal characters between 8 and 64.)

Group Key Update Period: Seconds

(Keep it default if you are not sure, minimum is 30, 0 means no update)

Фиг.14а,б Конфигуриране на WPA/WPA2 – Personal - Wireless security settings.

Wireless Settings

Wireless Network Name:

Mode:

Channel Width:

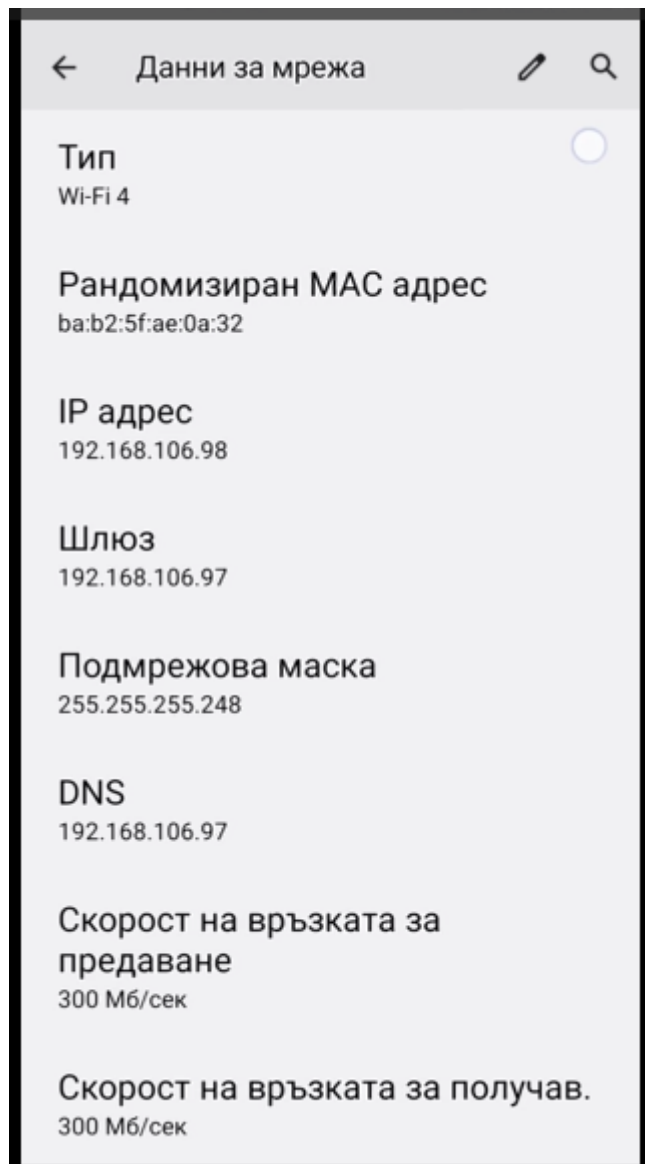
Channel:

Enable Wireless Router Radio

Enable SSID Broadcast

Enable WDS Bridging

Фиг.15. Конфигуриране на Wi-Fi - задаване на SSID име на ученика и парола.



Фиг.16. Екранна снимка от телефон на настройката на адресите