**ЗАДАНИЕ**

Настроить маршрутизацию в локальной сети (см. рис. 1) между тремя VLAN-ами:

* VLAN A содержит PC A и PC D;
* VLAN B содержит PC B и PC E;
* VLAN C содержит PC C и PC F;

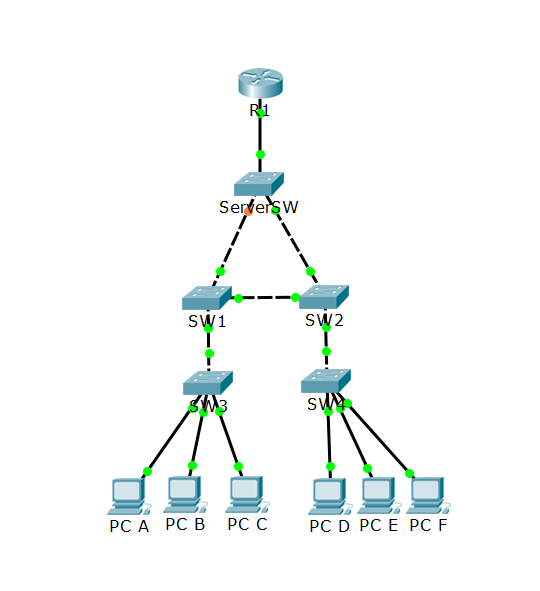


Рис. 1. Схема локальной сети с тремя VLAN-ами

### Расчет адресов сетей

|  |  |  |  |
| --- | --- | --- | --- |
| **Параметр** | **VLAN A** | **VLAN B** | **VLAN C** |
| Количество узлов | 1456 | 604 | 29 |
| Ближайшая сверху степень двойки | 11 | 10 | 5 |
| Маска (префиксная) | 21 | 22 | 27 |
| Маска (десятичная) | 255.255.248.0 | 255.255.252.0 | 255.255.255.224 |
| SUBNET | 10.14.0.0 | 172.16.12.0 | 192.168.14.0 |
| HOSTMIN (router) | 10.14.0.1 | 172.16.12.1 | 192.168.14.1 |
| HOSTMAX (host) | 10.14.7.254 | 172.16.15.254 | 192.168.14.30 |
| BROADCAST | 10.14.7.255 | 172.16.15.255 | 192.168.14.31 |

### Сведения о конфигурации L3 устройств

| **Устройство** | **Интерфейс** | **IP-адрес** | **Маска подсети** | **Основной шлюз** |
| --- | --- | --- | --- | --- |
| PC A | NIC | 10.14.7.254 | 255.255.248.0 | 10.14.0.1 |
| PC B | NIC | 172.16.15.254 | 255.255.252.0 | 172.16.12.1 |
| PC C | NIC | 192.168.14.30 | 255.255.255.224 | 192.168.14.1 |
| PC D | NIC | 10.14.7.253 | 255.255.248.0 | 10.14.0.1 |
| PC E | NIC | 172.16.15.253 | 255.255.252.0 | 172.16.12.1 |
| PC F | NIC | 192.168.14.29 | 255.255.255.224 | 192.168.14.1 |
| Router | Fa0/0.1\_\_\_ | 10.14.0.1 | 255.255.248.0 | - |
| Fa0/0.2\_\_\_ | 172.16.12.1 | 255.255.252.0 | - |
| Fa0/0.3\_\_\_ | 192.168.14.1 | 255.255.255.224 | - |
| Fa0/0 | - | - | - |

### Сведения о конфигурации L2 устройств

| **Устройство** | **VTP Домен** | **Интерфейс** | **VLAN или trunk** |
| --- | --- | --- | --- |
| **VTP Пароль** |
| **VTP-Роль** |
| SW1 | dprosyakova14 | Fa0/1 | trunk |
| dprosyakova14 | Fa0/2 | trunk |
| client | Fa0/3 | trunk |
| SW2 | dprosyakova14 | Fa0/1 | trunk |
| dprosyakova14 | Fa0/2 | trunk |
| client | Fa0/3 | trunk |
| SW3 | dprosyakova14 | Fa0/1 | trunk |
| dprosyakova14 | Fa0/3 | vlan |
| client | Fa0/4 | vlan |
|  | Fa0/5 | vlan |
| SW4 | dprosyakova14 | Fa0/1 | trunk |
| dprosyakova14 | Fa0/3 | vlan |
| client | Fa0/4 | vlan |
|  | Fa0/5 | vlan |
| ServerSw | dprosyakova14 | Fa0/1 | trunk |
| dprosyakova14 | Fa0/2 | trunk |
| server | Fa0/4 | trunk |

### Анализ маршрута и заголовков пакета PC A – PC D

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **На устройстве** | **IP-адрес** | | **MAC-адрес** | |
| **Source** | **Destination** | **Source** | **Destination** |
| PC A | 10.14.7.254 | 10.14.7.253 | 000B.BE56.1175 | 0002.17BC.2ABC |
| SW3 | - | - | 000B.BE56.1175 | 0002.17BC.2ABC |
| SW1 | - | - | 000B.BE56.1175 | 0002.17BC.2ABC |
| SW2 | - | - | 000B.BE56.1175 | 0002.17BC.2ABC |
| SW4 | - | - | 000B.BE56.1175 | 0002.17BC.2ABC |
| PC D | 10.14.7.254 | 10.14.7.253 | 000B.BE56.1175 | 0002.17BC.2ABC |

### Анализ маршрута и заголовков пакета PC A – PC E

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **На устройстве** | **IP-адрес** | | **MAC-адрес** | |
| **Source** | **Destination** | **Source** | **Destination** |
| PC A | 10.14.7.254 | 172.16.15.253 | 000B.BE56.1175 | 0050.0F7C.3A01 |
| SW3 | - | - | 000B.BE56.1175 | 0050.0F7C.3A01 |
| SW1 | - | - | 000B.BE56.1175 | 0050.0F7C.3A01 |
| SW2 | - | - | 000B.BE56.1175 | 0050.0F7C.3A01 |
| ServerSW | - | - | 000B.BE56.1175 | 0050.0F7C.3A01 |
| Router | 10.14.7.254 | 172.16.15.253 | 000B.BE56.1175 | 0050.0F7C.3A01 |
| ServerSW | - | - | 0050.0F7C.3A01 | 0090.0C74.EA0E |
| SW2 | - | - | 0050.0F7C.3A01 | 0090.0C74.EA0E |
| SW4 | - | - | 0050.0F7C.3A01 | 0090.0C74.EA0E |
| PC E | 10.14.7.254 | 172.16.15.253 | 0050.0F7C.3A01 | 0090.0C74.EA0E |

**Результат настройки маршрутизации**

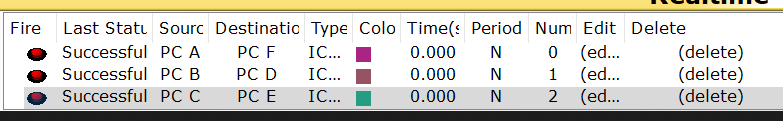
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Рис. 2. Статус отправки сообщений между PC в разных VLAN