НИУ ИТМО
Факультет программной инженерии и компьютерных технологий

Отчет по лабораторной работе №5
по дисциплине Администрирование систем и сетей

Студент группы № P34151 Шипулин Павел Андреевич

Желаемая оценка: 3

Преподаватель Афанасьев Дмитрий Борисович

Санкт-Петербург
2024

Оглавление

Топология

Конфигурация

1 Настройка основных параметров устройств

1.1 Имена устройств

```
[Huawei]sysname AC
[AC]

[Huawei]sys S1
[S1]

[Huawei]sys S3
[S3]
```

1.2 Отключение ненужных портов между S1 и AC

```
[S1]interface GigabitEthernet 0/0/11
[S1-GigabitEthernet0/0/11]shutdown
[S1-GigabitEthernet0/0/11]quit
[S1]
Nov  6 2024 15:30:04-08:00 S1 DS/4/DATASYNC_CFGCHANGE:OID 1.3.6.1.4.1.2011.5.25.
191.3.1 configurations have been changed. The current change number is 5, the ch
ange loop count is 0, and the maximum number of records is 4095.
[S1]interface GigabitEthernet 0/0/12
[S1-GigabitEthernet0/0/12]shutdown
[S1-GigabitEthernet0/0/12]quit
[S1]
Nov  6 2024 15:30:24-08:00 S1 DS/4/DATASYNC_CFGCHANGE:OID 1.3.6.1.4.1.2011.5.25.
191.3.1 configurations have been changed. The current change number is 6, the ch
ange loop count is 0, and the maximum number of records is 4095.
```

1.3 Включение PoE на портах S3 и S4

```
[S3]interface G0/0/2
[S3-GigabitEthernet0/0/2]poe enable

[S4]interface G0/0/2
[S4-GigabitEthernet0/0/2]poe enable
```

2 Настройка параметров проводной сети

2.1 Настройка VLAN

```
[S1]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a moment...done.
[S1]interface G0/0/2
[S1-GigabitEthernet0/0/2]port link-type trunk
[S1-GigabitEthernet0/0/2]port trunk allow-pass vlan 100 101
[S1-GigabitEthernet0/0/2]quit

[S1]interface G0/0/3
[S1-GigabitEthernet0/0/3]port link-type trunk
[S1-GigabitEthernet0/0/3]port trunk allow-pass vlan 100 101
[S1-GigabitEthernet0/0/3]quit

[S1]interface G0/0/1
[S1-GigabitEthernet0/0/1]port link-type trunk
[S1-GigabitEthernet0/0/1]port trunk allow-pass vlan 100 101
[S1-GigabitEthernet0/0/1]quit


[AC]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a moment...done.
[AC]interface G0/0/1
[AC-GigabitEthernet0/0/1]port link-type trunk
[AC-GigabitEthernet0/0/1]port trunk allow-pass vlan 100 101
[AC-GigabitEthernet0/0/1]quit


[S3]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a moment...done.
[S3]interface G0/0/1
[S3-GigabitEthernet0/0/1]port link-type trunk
[S3-GigabitEthernet0/0/1]port trunk allow-pass vlan 100 101
[S3-GigabitEthernet0/0/1]quit
[S3]interface G0/0/2
[S3-GigabitEthernet0/0/2]port link-type trunk
[S3-GigabitEthernet0/0/2]port trunk pvid vlan 100
[S3-GigabitEthernet0/0/2]port trunk allow-pass vlan 100 101
[S3-GigabitEthernet0/0/2]quit


[S4]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a moment...done.
[S4]interface G0/0/1
[S4-GigabitEthernet0/0/1]port link-type trunk
[S4-GigabitEthernet0/0/1]port trunk allow-pass vlan 100 to 101
[S4-GigabitEthernet0/0/1]quit
[S4]interface G0/0/2
[S4-GigabitEthernet0/0/2]port link-type trunk
[S4-GigabitEthernet0/0/2]port trunk pvid vlan 100
[S4-GigabitEthernet0/0/2]port trunk allow-pass vlan 100 to 101
[S4-GigabitEthernet0/0/2]quit
```

2.2 Настройка IP-адресов

```
[S1]interface Vlanif 101
[S1-Vlanif101]
Nov  6 2024 16:02:12-08:00 S1 %%01IFNET/4/IF_STATE(l)[0]:Interface Vlanif101 has
 turned into UP state.
[S1-Vlanif101]ip address 192.168.101.254 24
[S1-Vlanif101]
Nov  6 2024 16:02:24-08:00 S1 %%01IFNET/4/LINK_STATE(l)[1]:The line protocol IP
on the interface Vlanif101 has entered the UP state.
[S1-Vlanif101]quit

[S1]interface LoopBack 0
[S1-LoopBack0]ip address 10.0.1.1 32
[S1-LoopBack0]quit
[S1]interface Vlanif 100
[S1-Vlanif100]
Nov  6 2024 16:03:20-08:00 S1 %%01IFNET/4/IF_STATE(l)[2]:Interface Vlanif100 has
 turned into UP state.
[S1-Vlanif100]ip address 192.168.100.254 24
[S1-Vlanif100]
Nov  6 2024 16:03:36-08:00 S1 %%01IFNET/4/LINK_STATE(l)[3]:The line protocol IP
on the interface Vlanif100 has entered the UP state.
[S1-Vlanif100]quit
[S1]


[AC]interface Vlanif 100
[AC-Vlanif100]ip address 192.168.100.254 24
```

2.3 Настройка DHCP

```
[S1]dhcp enable
Info: The operation may take a few seconds. Please wait for a moment.done.
[S1]ip pool sta
Info:It's successful to create an IP address pool.
[S1-ip-pool-sta]network 192.168.101.0 mask 24
[S1-ip-pool-sta]gateway-list 192.168.101.254
[S1-ip-pool-sta]quit
[S1]interface Vlanif 101
[S1-Vlanif101]dhcp select global
[S1-Vlanif101]quit
```

```
[AC]dhcp enable
Info: The operation may take a few seconds. Please wait for a moment.done.
[AC]ip pool ap
Info:It's successful to create an IP address pool.
[AC-ip-pool-ap]network 192.168.100.254 mask 24
[AC-ip-pool-ap]gateway-list 192.168.100.254
[AC-ip-pool-ap]quit
[AC]interface Vlanif 100
[AC-Vlanif100]
Nov  6 2024 16:07:32-08:00 AC %%01IFNET/4/IF_STATE(l)[0]:Interface Vlanif100 has
 turned into UP state.
[AC-Vlanif100]dhcp select global
[AC-Vlanif100]quit
[AC]
```

3 Настройка параметров точек доступа для выхода в сеть

3.1 Создание группы AP

```
[AC]wlan
[AC-wlan-view]ap-group name ap-group1
Info: This operation may take a few seconds. Please wait for a moment.done.
[AC-wlan-ap-group-ap-group1]quit
```

3.2 Создание профиля регулирующего домена и настройка кода страны AC в профиле

```
[AC-wlan-view]regulatory-domain-profile name default

[AC-wlan-regulate-domain-default]country-code cn
Info: The current country code is same with the input country code.

[AC-wlan-regulate-domain-default]quit
```

3.3 Установка привязки профиля регулирующего домена к группе AP

```
[AC-wlan-view]ap-group name ap-group1
[AC-wlan-ap-group-ap-group1]regulatory-domain-profile default
Warning: Modifying the country code will clear channel, power and antenna gain c
onfigurations of the radio and reset the AP. Continue?[Y/N]:y
```

3.4 Указание интерфейса источника на AC для установления туннелей CAPWAP

```
[AC]capwap source interface Vlanif 100
```

3.5 Добавление точек доступа в AP-group1

```
[AC]wlan
[AC-wlan-view]ap auth-mode mac-auth

[AC-wlan-view]ap-id 0 ap-mac 00e0-fc77-5660
[AC-wlan-ap-0]ap-name ap1
[AC-wlan-ap-0]ap-group ap-group1

[AC-wlan-view]ap-id 1 ap-mac 4c1f-cceb-59bd
[AC-wlan-ap-1]ap-name ap2
[AC-wlan-ap-1]ap-group ap-group1
Warning: This operation may cause AP reset. If the country code changes, it will
 clear channel, power and antenna gain configurations of the radio, Whether to c
ontinue? [Y/N]:y
Info: This operation may take a few seconds. Please wait for a moment.. done.
[AC-wlan-ap-1]quit
```

3.6 Информация о текущей AP

```
[AC-wlan-view]display ap all
Info: This operation may take a few seconds. Please wait for a moment.done.
Total AP information:
idle : idle            [1]
nor  : normal          [1]
-------------------------------------------------------------------------------------------
ID   MAC            Name Group     IP              Type            State STA Upt
ime
-------------------------------------------------------------------------------------------
0    00e0-fc77-5660 ap1  ap-group1 192.168.100.180 AP4030TN        nor   0   15S
1    4c1f-cceb-59bd ap2  ap-group1 -               -               idle  0   -
-------------------------------------------------------------------------------------------
Total: 2
```

4 Настройка параметров сервисов WLAN

4.1 Профиль безопасности HCIA-WLAN

```
[AC-wlan-view]security-profile name HCIA-WLAN
[AC-wlan-sec-prof-HCIA-WLAN]security wpa-wpa2 psk pass-phrase HCIA-Datacom aes
[AC-wlan-sec-prof-HCIA-WLAN]quit
```

4.2 Создание профиля SSID HCIA-WLAN

```
[AC-wlan-view]ssid-profile name HCIA-WLAN
[AC-wlan-ssid-prof-HCIA-WLAN]ssid HCIA-WLAN
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-ssid-prof-HCIA-WLAN]quit
```

4.3 Создание профиля VAP HCIA-WLAN

```
[AC-wlan-view]ssid-profile name HCIA-WLAN
[AC-wlan-ssid-prof-HCIA-WLAN]ssid HCIA-WLAN
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-ssid-prof-HCIA-WLAN]quit
[AC-wlan-view]vap-profile name HCIA-WLAN
[AC-wlan-vap-prof-HCIA-WLAN]forward-mode direct-forward
[AC-wlan-vap-prof-HCIA-WLAN]service-vlan vlan-id 101
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-vap-prof-HCIA-WLAN]security-profile HCIA-WLAN
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-vap-prof-HCIA-WLAN]ssid-profile HCIA-WLAN
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-vap-prof-HCIA-WLAN]quit
```

4.4 Привязка профиля VAP к группе AP

```
[AC-wlan-view]ap-group name ap-group1
[AC-wlan-ap-group-ap-group1]vap-profile HCIA-WLAN wlan 1 radio all
Info: This operation may take a few seconds, please wait...done.
[AC-wlan-ap-group-ap-group1]quit
```

5 Проверка

5.1 Проверка связи с помощью STA

```
STA>ipconfig

Link local IPv6 address...........: ::
IPv6 address......................: :: / 128
IPv6 gateway......................: ::
IPv4 address......................: 192.168.101.253
Subnet mask.......................: 255.255.255.0
Gateway...........................: 192.168.101.254
Physical address..................: 54-89-98-6D-02-B8
DNS server........................:


STA>ping 10.0.1.1

Ping 10.0.1.1: 32 data bytes, Press Ctrl_C to break
From 10.0.1.1: bytes=32 seq=1 ttl=255 time=234 ms
From 10.0.1.1: bytes=32 seq=2 ttl=255 time=235 ms
From 10.0.1.1: bytes=32 seq=3 ttl=255 time=234 ms
From 10.0.1.1: bytes=32 seq=4 ttl=255 time=250 ms
From 10.0.1.1: bytes=32 seq=5 ttl=255 time=250 ms

--- 10.0.1.1 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
  round-trip min/avg/max = 234/240/250 ms
```

5.2 Проверка информации на AC

```
[AC]display station all
Rf/WLAN: Radio ID/WLAN ID
Rx/Tx: link receive rate/link transmit rate(Mbps)
--------------------------------------------------------------------------------------------------------
STA MAC          AP ID Ap name  Rf/WLAN  Band  Type  Rx/Tx      RSSI  VLAN  IP address      SSID
--------------------------------------------------------------------------------------------------------
5489-986d-02b8   0     ap1      1/1      5G    11a   0/0        -     101   192.168.101.253 HCIA-WLAN
--------------------------------------------------------------------------------------------------------
Total: 1 2.4G: 0 5G: 1
```