

Университет ИТМО

Факультет программной инженерии и компьютерной техники

Лабораторная работа №6
по Администрированию систем и сетей
«Создание WLAN»

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Желаемая оценка: 3

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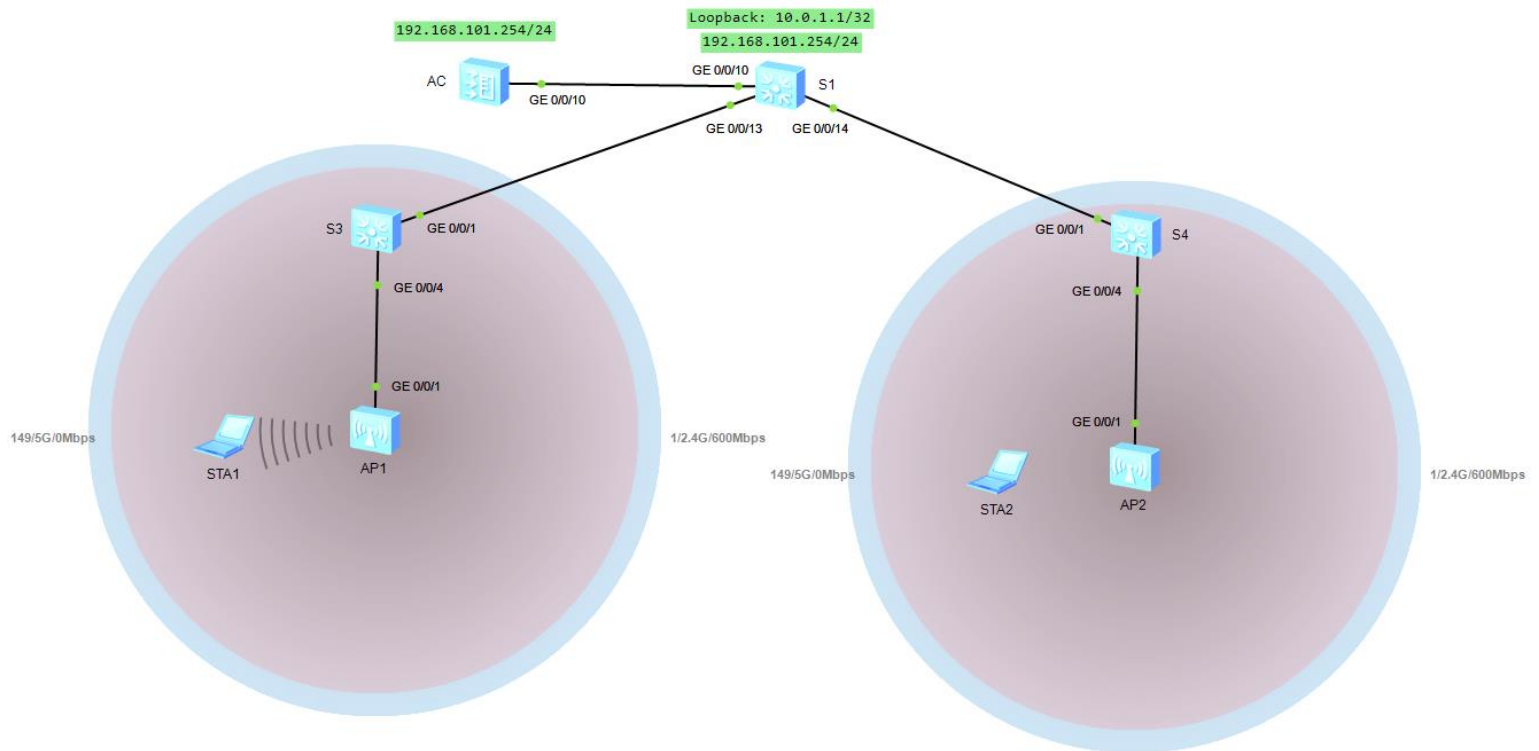
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Выполнение

Топология



Шаг 1. Настройка основных параметров устройств

Отключение ненужных портов:

```
[S1]interface GigabitEthernet 0/0/11
[S1-GigabitEthernet0/0/11]shutdown
[S1-GigabitEthernet0/0/11]quit
[S1]interface GigabitEthernet 0/0/12
[S1-GigabitEthernet0/0/12]shutdown
[S1-GigabitEthernet0/0/12]quit
```

Шаг 2. Настройка параметров проводной сети

Команда настройки VLAN:

```
[S1]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a
moment...done.
[S1]interface GigabitEthernet 0/0/13
[S1-GigabitEthernet0/0/13]port link-type trunk
[S1-GigabitEthernet0/0/13]port trunk allow-pass vlan 100 101
[S1-GigabitEthernet0/0/13]quit
[S1]interface GigabitEthernet 0/0/14
[S1-GigabitEthernet0/0/14]port link-type trunk
[S1-GigabitEthernet0/0/14]port trunk allow-pass vlan 100 101
[S1-GigabitEthernet0/0/14]quit
[S1]interface GigabitEthernet 0/0/10
[S1-GigabitEthernet0/0/10]port link-type trunk
[S1-GigabitEthernet0/0/10]port trunk allow-pass vlan 100 101
[S1-GigabitEthernet0/0/10]quit

[AC]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a
moment...done.
[AC]interface GigabitEthernet 0/0/10
[AC-GigabitEthernet0/0/10]port link-type trunk
[AC-GigabitEthernet0/0/10]port trunk allow-pass vlan 100 101
[AC-GigabitEthernet0/0/10]quit

[S3]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a
moment...done.
[S3]interface GigabitEthernet 0/0/1
[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 GigabitEthernet 0/0/4
[S3-GigabitEthernet0/0/4]port link-type trunk
[S3-GigabitEthernet0/0/4]port trunk pvid vlan 100
[S3-GigabitEthernet0/0/4]port trunk allow-pass vlan 100 101
[S3-GigabitEthernet0/0/4]quit

[S4]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a
moment...done.
[S4]interface GigabitEthernet0/0/1
[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 GigabitEthernet0/0/4
[S4-GigabitEthernet0/0/4] port link-type trunk
[S4-GigabitEthernet0/0/4] port trunk pvid vlan 100
[S4-GigabitEthernet0/0/4] port trunk allow-pass vlan 100 to 101
```

```
[S4-GigabitEthernet0/0/4]quit
```

Команда настройки ip-адресов интерфейсов:

```
[S1]interface Vlanif 101
[S1-Vlanif101]ip address 192.168.101.254 24
[S1-Vlanif101]quit
[S1]interface LoopBack 0
[S1-LoopBack0] ip address 10.0.1.1 32
[S1-LoopBack0]quit
```

Команда настройки 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.
IP address pool for STAs
[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 is successful to create an IP address pool.
IP address pool for APs
[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]dhcp select global
[AC-Vlanif100]quit
```

Шаг 3. Настройка параметров точек доступа для входа в сеть

Команды создания 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
```

Команды создания и настройки профиля регулирующего домена:

```
[AC]wlan
[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
```

Команды привязки домена регулирующего домена к группе AP:

```
[AC]wlan
[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 configurations of the radio and reset the
AP. Continue?[Y/N]:y
```

Команды указания интерфейса-источника на AC для установления туннелей CAPWAP:

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

Команды импорта точек доступа в AC и добавления их в группу AP с именем ap-group1:

```
[AC]wlan
[AC-wlan-view]ap auth-mode mac-auth
[AC-wlan-view]ap-id 0 ap-mac 00E0-FCC0-0570
AC-wlan-ap-0]ap-name ap1
[AC-wlan-ap-0]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 continue? [Y/N]:y //Введите y
для подтверждения.
Info: This operation may take a few seconds. Please wait for a
moment.. done.
[AC-wlan-ap-0]quit
[AC-wlan-view]ap-id 1 ap-mac 00E0-FC0D-34D0
[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 continue? [Y/N]:y //Введите y
для подтверждения.
```

```
Info: This operation may take a few seconds. Please wait for a
moment.. done.
[AC-wlan-ap-1]quit
```

Вывод на экран информации 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:
nor   : normal           [2]
-----
ID MAC                Name Group IP                Type        State STA Uptime
-----
0  00e0-fcc0-0570 ap1   ap-group1  192.168.100.14 AP9131DN    nor    0   22S
1  00e0-fc0d-34d0 ap2   ap-group1  192.168.100.59 AP9131DN    nor    0    -
-----
Total: 2
```

Шаг 4. Настройка параметров сервисов WLAN

Команды создания профиля безопасности HCIA-WLAN и настройки политики безопасности:

```
[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
```

Команды создания профиля SSID HCIA-WLAN:

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

Команды создания профиля VAP HCIA-WLAN:

```
[AC]wlan
[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
Security profile HCIA-WLAN is bound.
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-vap-prof-HCIA-WLAN]ssid-profile HCIA-WLAN
SSID profile HCIA-WLAN is bound.
Info: This operation may take a few seconds, please wait.done.
[AC-wlan-vap-prof-HCIA-WLAN]quit
```

Команды установки привязки профиля VAP к группе AP и применения конфигурацию профиля VAP HCIA-WLAN к радиомодулю 0 и радиомодулю 1 точек доступа в группе A:

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

Шаг 5. Проверка

Подключение к WLAN:

STA1

Vap MapCommandUDP Packet

MAC Address: 54-89-98-5E-08-26

IPv4 Configuration





☐ Static

☒ DHCP

IP Address: . . . Subnet Mask: . . .

Gateway: . . .

Vap List

	SSID	Encription	Status	VAP MAC	Channel	Radio Type
 	HCIA-WLAN	NULL	Connected	00-E0-FC-C0-05-70	1	802.11bgn
 	HCIA-WLAN	NULL	Disconnected	00-E0-FC-C0-05-80	149	

Connect

Disconnect

Refresh

Apply

Проверка связи с S1:

```
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=125 ms
From 10.0.1.1: bytes=32 seq=2 ttl=255 time=125 ms
From 10.0.1.1: bytes=32 seq=3 ttl=255 time=141 ms
From 10.0.1.1: bytes=32 seq=4 ttl=255 time=141 ms
From 10.0.1.1: bytes=32 seq=5 ttl=255 time=140 ms
```

```
--- 10.0.1.1 ping statistics ---
  5 packet(s) transmitted
  5 packet(s) received
  0.00% packet loss
 round-trip min/avg/max = 125/134/141 ms
```

Вывод команды “display station all” на AC:

```
[AC-wlan-view]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
-----
5489-985e-0826 0      ap1     0/1      2.4G   -   -/-      -    101   192.168.101.252  HCIA-WLAN
-----
Total: 1 2.4G: 1 5G: 0
```

Вывод

В процессе выполнения лабораторной работы мы получили базовые навыки конфигурации WLAN. По ходу выполнения потребовалось настроить некоторые параметры WLAN, а также создать и настроить профиль WLAN. В результате получилось создать сеть, обеспечивающую мобильность устройств в ней, благодаря двум точкам доступа.