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Университет ИТМО

Дисциплина: Администрирование систем и сетей

## **Лабораторная работа 6**

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**Желаемая оценка: 4**

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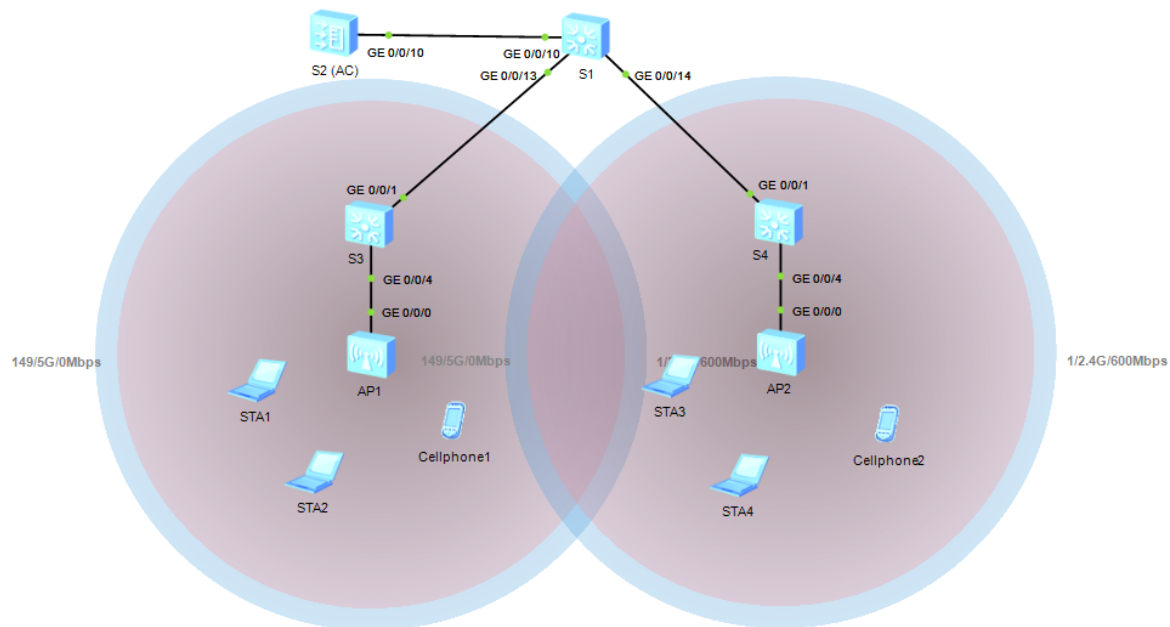
Санкт-Петербург

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# Создание WLAN

## Топология



## Конфигурирование

### Настройка параметров проводной сети

#### Настройка VLAN:

```
[S1]vlan batch 100 101
Info: This operation may take a few seconds. Please wait for a moment...done.
[S1]interface g0/0/13
[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 g0/0/14
[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 g0/0/10
[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 g0/0/10

[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 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 g0/0/4

[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 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 g0/0/4

[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

Настройка IP-адресов интерфейсов:

[S1]interface Vlanif 101

[S1-Vlanif101]ip addr 192.168.101.254 24

[S1-Vlanif101]quit

[S1]interface LoopBack 0

[S1-LoopBack0] ip address 10.0.1.1 32

[S1-LoopBack0]quit

[AC]interface Vlanif 100

[AC-Vlanif100]ip addr 192.168.100.254 24

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 is 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]dhcp select global
[AC-Vlanif100]quit
```

## Настройка параметров точек доступа для выхода в сеть

Создание группы AP ap-group1:

```
[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
```

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

```
[AC]wlan
[AC-wlan-view]regulatory-domain-profile name default
[AC-wlan-regulate-domain-default]country-code on
Error: The country code is invalid.
```

Установка привязки профиля 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
[AC-wlan-ap-group-ap-group1]quit
```

Указание интерфейса-источника на AC для установления туннелей CAPWAP:

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

Импорт точки доступа в AC и добавление 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-fc57-02f0
[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
[AC-wlan-ap-0]quit

[AC-wlan-view]ap-id 1 ap-mac 00e0-fc3b-07c0
[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
[AC-wlan-ap-1]quit

```

Вывод на экран информации о текущей AP:

```

[AC]wlan
[AC-wlan-view]dis 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 Upt
ime
-----
-----
0   00e0-fc57-02f0 ap1  ap-group1  192.168.100.161 AP2050DN      nor  0  25S
1   00e0-fc3b-07c0 ap2  ap-group1  192.168.100.201 AP2050DN      nor  0  -
-----
-----
Total: 2

```

## Настройка параметров сервисов WLAN

Создание профиля безопасности HCIA-WLAN и настройка 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

```

Создание профиля SSID HCIA-WLAN и задание имени 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
```

Создание профиля VAP HCIA-WLAN, настройка режима передачи данных и сервисного VLAN и применение профиля безопасности и профиля SSID к профилю VAP:

```
[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
```

Установление привязки профиля VAP к группе AP и применение конфигурации профиля VAP HCIA-WLAN к радиомодулю 0 и радиомодулю 1 точек доступа в 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.
```

## Проверка

Перед проверкой нужно подключиться к WLAN!!!

Пароль: HCIA-Datacom

MAC Address:

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-CE-5A-50	1	802.11bgn
	HCIA-WLAN	NULL	Disconnected	00-E0-FC-CE-5A-60	36	

```
<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=141 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=125 ms
From 10.0.1.1: bytes=32 seq=5 ttl=255 time=125 ms
```

```
--- 10.0.1.1 ping statistics ---
 5 packet(s) transmitted
 5 packet(s) received
 0.00% packet loss
 round-trip min/avg/max = 125/131/141 ms
```

```
[AC]dis 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
5489-98e7-61a7	0	ap1	0/1	2.4G	-	-/-	-	101	192.168.101.253	HCIA-WLAN
Total: 1 2.4G: 1 5G: 0										

## Вывод

В ходе выполнения данной лабораторной работы мы сконфигурировали WLAN с помощью контроллера доступа (AC) и точек доступа AP, чтобы обеспечить доступ STA к WLAN.