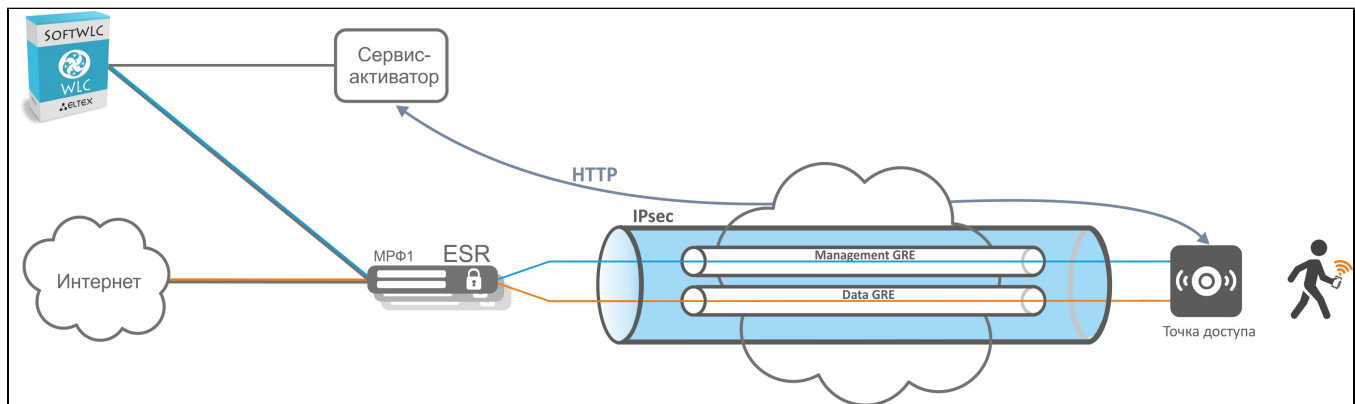


v1.25_OTT

- Quickstart
- -
- -
- -
- ESR
- ESR
- ESR
- OTT link
- OTT link
- ESR OTT-
- NBI OTT
- IPsec , -
- OTT link
- OTT link
- ESR OTT-
- NBI OTT
- 1. IPsec
- 2. , -
- 3. ESR
- Troubleshooting



. 1.

Quickstart

- ```

1. SoftWLC -:
2. /etc/eltex-wifi-sa/factory-fw.conf , () . downgrade false. /var/lib/eltex-wifi-sa/firmware/ , /etc/eltex-wifi-sa/factory-fw.conf.
3. /etc/eltex-wifi-sa/ -: .
4. /etc/eltex-wifi-sa/application.conf -: CheckMAC yes. -:
 service eltex-wifi-sa restart.
5. ESR .
6. . SNMP TCP . (.)
7. . "Connected". (.)
8. OTT IPsec. "IPsec password" , ESR, "testing123". NBI – CreateOttProfile. (ESR OTT)
9. EMS ESR - OTT: ServiceProvider BRAS. , ESR SoftWLC. (ESR OTT)
10. NAS (Radius -) RADIUS ESR , "testing123".
11. ESR OTT IP ESR OTT. NBI – CreateOttStation. (ESR OTT)
12. SSID. SSID Location, ESR, "testing2". (.)
13. "" " " " " . ()

```

14. " " SSID.( )

-

-- x86, Ubuntu 16.04 18.04 . POST HTTPs , SoftWLC. -- WEB-. - 8043 IP-. - URL, IP- - DNS-. - EMS, SoftWLC. - EMS (firewall). - SoftWLC firewall 8080 (HTTP), - EMS.

- -c IP- , -c POST- - TCP-. - TCP-, .

, HTTPs- - , - , Provider-ID. Provider-ID - . , , , - . - MAC- , MAC- . , handshake .. , - . /etc/eltex-wifi-sa/factory-fw.conf. - , , - . - .

- , -, . , -, " " .



() . , , -.

2 :

1. **OTT.** IPsec, ESR IPsec-.

1. NBI *CreateOttProfile*.

2. **OTT ESR.** IP- ESR , . IPsec OTT ESR. , -, ESR, IP- IPsec, ESR. , ESR IPsec. ESR IPsec, . OTT ESR NBI *CreateOttStation*.

OTT ESR - ESR , ESR EMS. ( Service Provider), ESR . , IP- ESR , OTT. , ESR.

, , MAC. OTT Connected. , ESR OTT .

- ESR, IPsec :- ESR OTT , . ESR, , OTT ESR. OTT ESR , - 4022. ESR - , . - X-Auth , IP ESR, IPsec, ESR, / X-Auth.



, , ESR. ESR, , , ESR, .

.

- . Wi-Fi . "ott.root" "ott\_default" "ott.root". SSID . SSID , , , . ESR OTT OTT.

:

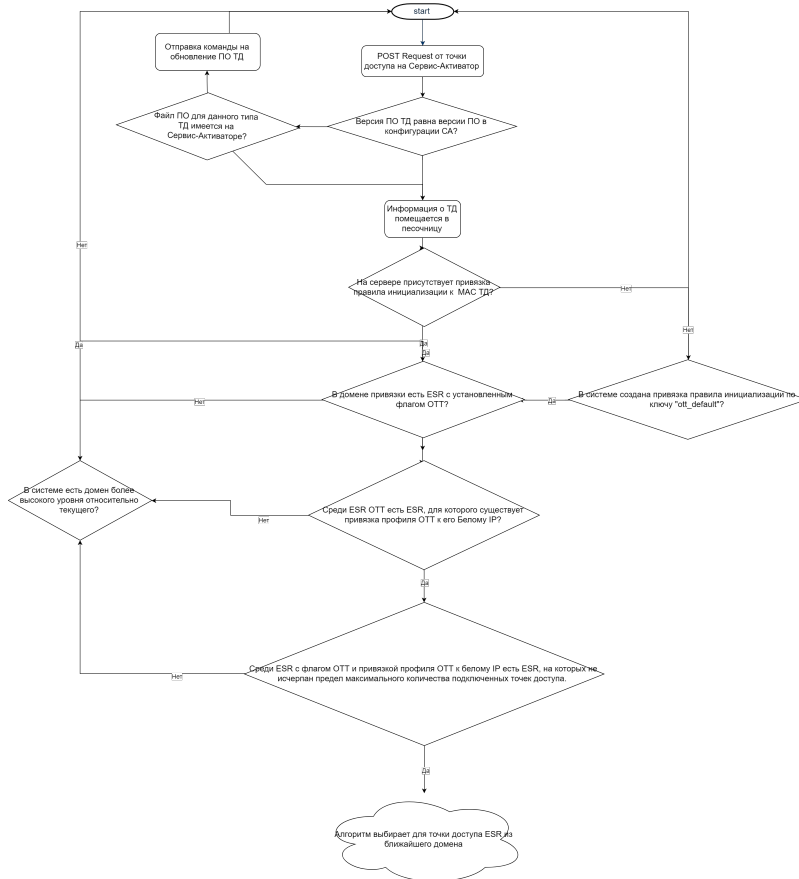
- POST- - .
- -, MAC- ESR .
- , IPsec-.
- SoftWLC, SSID, .

.



, MA, . , , -, . - . MAC , . .

-



. 2.

- "/etc/eltex-wifi-sa/" - : "service eltex-wifi-sa restart".

,

"application.conf".

..

/etc/eltex-wifi-sa/application.conf

```

service {
 # One of: debug, info, warn, error
 logLevel = info
 gelfHost = "udp:localhost"
 gelfPort = 12201
 gelfLevel = OFF
 docker = false
}

server {
 # Max request processing time (0 for infinite)
 # If it is exceed, the server considered overloaded
 requestTimeout = 45

 http {
 enabled = no
 port = 8042
 }

 https {
 enabled = yes
 port = 8043

 # SA server certificate created via ott/ca/generateServer restful api
 keyStore {
 path = "/etc/eltex-wifi-sa/public-server.pl2"
 password = ""
 }

 # CA public root certificate, part of private ca.pl2 container.
 clients {
 certificate = "/etc/eltex-wifi-sa/eltex-ca.crt"

 # Check that MAC in request is same as CN of certificate
 checkMAC = yes

 # Check server certificate at client side while upgrading firmware
 # Set 'yes' for production installations
 fwCheckCrt = yes
 }
 }
}

ems {
 host = "localhost"
 port = 8080

 ### Settings for circuitBreaker

 # The time that the CircuitBreaker should wait before transitioning from open to half-open.[ms]
 waitDurationInOpenState = 100000
 # Configures the number of permitted calls when the CircuitBreaker is half open.
 permittedNumberOfCallsInHalfOpenState = 5
 # Configures the minimum number of calls which are required before the CircuitBreaker
 # can calculate the error rate or slow call rate.
 minimumNumberOfCalls = 3
}

paul {
 host = "localhost"
 port = 8098
}

SA client parameters for WEP
ipsec-activator {
 # 30-7200 s - timeout for ipsec connection before next SA request
 wait-timer = 180
 # 120-7200 s - timeout for update firmware before next SA request
 update-time = 300
}

```

|                                             |                              |                               |                                    |
|---------------------------------------------|------------------------------|-------------------------------|------------------------------------|
|                                             |                              |                               |                                    |
| logLevel                                    | debug, info, warn, error     | info                          | . /var/log/eltex-wifi-sa/main.log. |
| gelfHost                                    | localhost IP                 | "udp:localhost"               |                                    |
| gelfPort                                    | integer<br>(0-65535)         | 12201                         |                                    |
| gelfLevel                                   | OFF,debug, info, warn, error |                               | . OFF -                            |
| docker                                      | yes, no                      | false                         |                                    |
| requestTimeout                              | integer                      | 45                            | M (0 ).<br>, .                     |
| http { enabled                              | yes, no                      | false                         | HTTP.                              |
| http { port                                 | integer<br>(0-65535)         | 8042                          | TCP, - HTTP.                       |
| https { enabled                             | yes, no                      | true                          | HTTP.                              |
| https { port                                | integer<br>(0-65535)         | 8043                          | TCP, - HTTPs.                      |
| https { keyStore { path                     | string                       | /etc/eltex-wifi-sa/server.p12 | -. SoftWLC 1.20 .                  |
| https { keyStore { password                 | string                       | ""                            | -. - .                             |
| https { clients { certificate               | string                       | /etc/eltex-wifi-sa/client.crt | . SoftWLC 1.20 .                   |
| https { clients { checkMAC                  | yes, no                      | yes                           | MAC-, .                            |
| https { clients { fwCheckCrt                | yes, no                      | yes                           | ProviderID , .                     |
| ems { host                                  | localhost IP                 |                               | EMS-, -.                           |
| ems { port                                  | integer<br>(0-65535)         | 8080                          | , - EMS.                           |
| ems { waitDurationInOpenState               | Int32<br>(0-2147483647)      | 2000                          | , CircuitBreaker .                 |
| ems { permittedNumberOfCallsInHalfOpenState | integer<br>(0-65535)         | 5                             | -, CircuitBreaker Eltex-EMS.       |
| ems { minimumNumberOfCalls                  | integer<br>(0-65535)         | 3                             | Eltex-EMS, CircuitBreaker .        |
| paul { host                                 | localhost IP                 |                               | Eltex-OTT-paul                     |
| paul { port                                 | integer<br>(0-65535)         | 8098                          | Eltex-OTT-paul                     |
| ipsec-activator { wait-timer                | integer                      | 180                           | , IPsec-. .                        |
| ipsec-activator { update-time               | integer                      | 600                           | , -. .                             |

## "factory-fw.conf"

.

### /etc/eltex-wifi-sa/factory-fw.conf

```
Map factory types to firmware filename
#
Example:
"WEP-12ac" {
min = 1.12.0.0 - full factory device type, don't change it!
file = WEP-12ac-1.12.0.0.tar.gz - minimal firmware version to work with OTT
}
file = WEP-12ac-1.12.0.0.tar.gz - valid filename at /var/lib/eltex-wifi-sa/firmware
}

Allow downgrade fw version from higher versions
downgrade = true

"WEP-12ac" {
 min = 1.21.0.41
```

```
 file = WEP-12ac-1.21.0.41.tar.gz1
}
"WEP-12ac:rev.B" {
 min = 1.12.0.0
 file = WEP-12ac-revB-1.12.0.0.tar.gz
}
"WEP-12ac:rev.C" {
 min = 1.21.0.41
 file = WEP-12ac-revC-1.21.0.41.tar.gz1
}
"WEP-2ac" {
 min = 1.22.4.3
 file = WEP-2ac-1.22.4.3.tar.gz
}
"WEP-2ac Smart" {
 min = 1.12.0.0
 file = WEP-2ac-1.12.0.0.tar.gz
}
"WEP-2ac-Z" {
 min = 1.19.3.1
 file = WEP-2ac-1.19.3.1.tar.gz
}
"WEP-2L" {
 min = 1.2.0 build 966
 file = WEP-2L-1.2.0_build_966.tar.gz23
}
"WEP-1L" {
 min = 1.2.0 build 966
 file = WEP-1L-1.2.0_build_966.tar.gz1
}
"WOP-12ac AC" {
 min = 1.12.0.0
 file = WOP-12ac-1.12.0.0.tar.gz
}
"WOP-12ac DC" {
 min = 1.12.0.0
 file = WOP-12ac-1.12.0.0.tar.gz
}
"WOP-12ac ER" {
 min = 1.12.0.0
 file = WOP-12ac-ER-1.12.0.0.tar.gz
}
"WOP-12ac ER SFP" {
 min = 1.12.0.0
 file = WOP-12ac-ER-1.12.0.0.tar.gz
}
"WOP-12ac ER GPON" {
 min = 1.12.0.0
 file = WOP-12ac-ER-1.12.0.0.tar.gz
}
"WOP-12ac-LR AC" {
 min = 1.12.0.0
 file = WOP-12ac-LR-1.12.0.0.tar.gz
}
"WOP-12ac-LR DC" {
 min = 1.12.0.0
 file = WOP-12ac-LR-1.12.0.0.tar.gz
}
"WOP-12ac-LR:rev.B DC" {
 min = 1.12.0.20
 file = WOP-12ac-LR-revB-1.12.0.0.tar.gz
}
"WOP-12ac-LR:rev.C DC" {
 min = 1.12.0.0
 file = WOP-12ac-LR-revC-1.12.0.0.tar.gz
}
"WOP-12ac-LR:rev.D" {
 min = 1.12.0.0
 file = WOP-12ac-LR-revD-1.12.0.0.tar.gz
}
"WOP-12ac:rev.B DC" {
```

```
 min = 1.12.0.0
 file = WOP-12ac-revB-1.12.0.0.tar.gz
}
"WOP-12ac:rev.C" {
 min = 1.12.0.0
 file = WOP-12ac-revC-1.12.0.0.tar.gz
}
"WOP-12ac-LR:rev.D SFP" {
 min = 1.12.0.0
 file = WOP-12ac-LR-revD-1.12.0.0.tar.gz
}
"WOP-12ac-LR:rev.D GPON" {
 min = 1.12.0.0
 file = WOP-12ac-LR-revD-1.12.0.0.tar.gz
}
"WOP-2ac" {
 min = 1.12.0.0
 file = WOP-2ac-1.12.0.0.tar.gz
}
"WOP-2ac SFP" {
 min = 1.12.0.0
 file = WOP-2ac-1.12.0.0.tar.gz
}
"WOP-2ac GPON" {
 min = 1.12.0.0
 file = WOP-2ac-1.12.0.0.tar.gz
}
"WOP-2ac:rev.B" {
 min = 1.12.0.0
 file = WOP-2ac-revB-1.12.0.0.tar.gz
}
"WOP-2ac:rev.B SFP" {
 min = 1.12.0.0
 file = WOP-2ac-revB-1.12.0.0.tar.gz
}
"WOP-2ac:rev.B GPON" {
 min = 1.12.0.0
 file = WOP-2ac-revB-1.12.0.0.tar.gz
}
"WOP-2L" {
 min = 1.2.0.966
 file = WOP-2L-1.2.0_build_966.tar.gzasd
}
"WB-15-W" {
 min = 1.0.0.0
 file = WB-15-W-1.0.0.0.tar.gz
}
"ESR-10" {
 min = 1.11.6 build 1
 file = esrlx-1.11.6-build1.firmware
}
"ESR-12V" {
 min = 1.6.0.0
 file = esrlx-1.6.0-build0.firmware
}
"ESR100" {
 min = 1.6.0.0
 file = esr100-1.6.0-build0.firmware
}
"ESR200" {
 min = 1.6.0.0
 file = esr200-1.6.0-build0.firmware
}
"ESR1000" {
 min = 1.6.0.0
 file = esr1000-1.6.0-build0.firmware
}
"ESR1200" {
 min = 1.6.0.0
 file = esr1200-1.6.0-build0.firmware
}
```

```
"ESR-1700" {
 min = 1.6.0.0
 file = esr1700-1.6.0-build0.firmware
}
```

|           |             |       |                                    |
|-----------|-------------|-------|------------------------------------|
|           |             |       |                                    |
| downgrade | true, false | false | \ ,                                |
| min       | string      |       | ,                                  |
| file      | string      |       | , /var/lib/eltex-wifi-sa/firmware/ |

/usr/lib/eltex-radius-nbi/conf/ott/ott.xml

, ESR. - , - ESR OTT , . , ESR, - ESR , ESR.

|   |                                         |                                  |  |                                                                |
|---|-----------------------------------------|----------------------------------|--|----------------------------------------------------------------|
|   |                                         |                                  |  |                                                                |
| 1 | subtype                                 | 100, 200, 1000, 1200, 1500, 1700 |  | ESR (ESR-100, ESR-200, ESR-1000, ESR-1200, ESR-1500, ESR-1700) |
| 2 | max                                     |                                  |  | ESR                                                            |
| 3 | param name, default, regex, description |                                  |  | , , , .                                                        |

-.

- CPU 2 Core
- RAM 8GB
- HDD 100GB ( 5000 )

-

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# echo "deb [arch=amd64] http://archive.eltex-co.ru/wireless softwlc-1.18-xenial main" >> /etc/apt/sources.list.d/eltex.list
```

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# wget -O - http://archive.eltex-co.ru/wireless/repo.gpg.key | sudo apt-key add -
```

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# apt-get update
```

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# apt-get install openjdk-8-jdk
```

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# update-java-alternatives -s java-1.8.0-openjdk-amd64
```

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# apt-get install eltex-wifi-sa
```

, - , /etc/eltex-wifi-sa/application.conf EMS -:

```
ems {
 host = "localhost"
 port = 8080
```

ESR

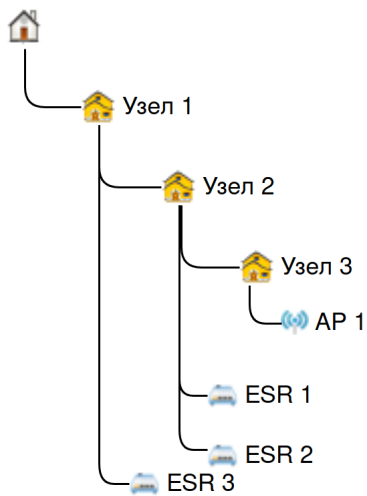
ESR 2 . , Default Gateway, ESR IPsec. ESR IP-. IP- IPsec, 500 4500 . ESR , . , 2 , Next-Hop Bridge, , Bridge, , Next-Hop Default Gateway.

IPsec X-Auth . ESR ( - ) RADIUS- PCRF SoftWLC. PCRF Mongo DB ESR .

ESR N+1. ESR IPsec- - ESR.- ESR . ESR . ESR .

ESR -, C- ESR , . ESR ESR, - . ESR, .. ESR . ESR. , ESR . OTT ESR. ESR - , ESR. , ESR , . ESR OTT IPsec, ,.. - IPsec, ESR, .





. 3.

, . 3:

- 3.
- -, , ESR 1 ESR2 2, .
- ESR 1, - ESR 2.
- ESR 1 ESR 2 - ESR 3, 1.
- -, ESR OTT-.
- ESR 1 ESR 2, -, ESR.

ESR "" . ESR "" "" .

**ESR**

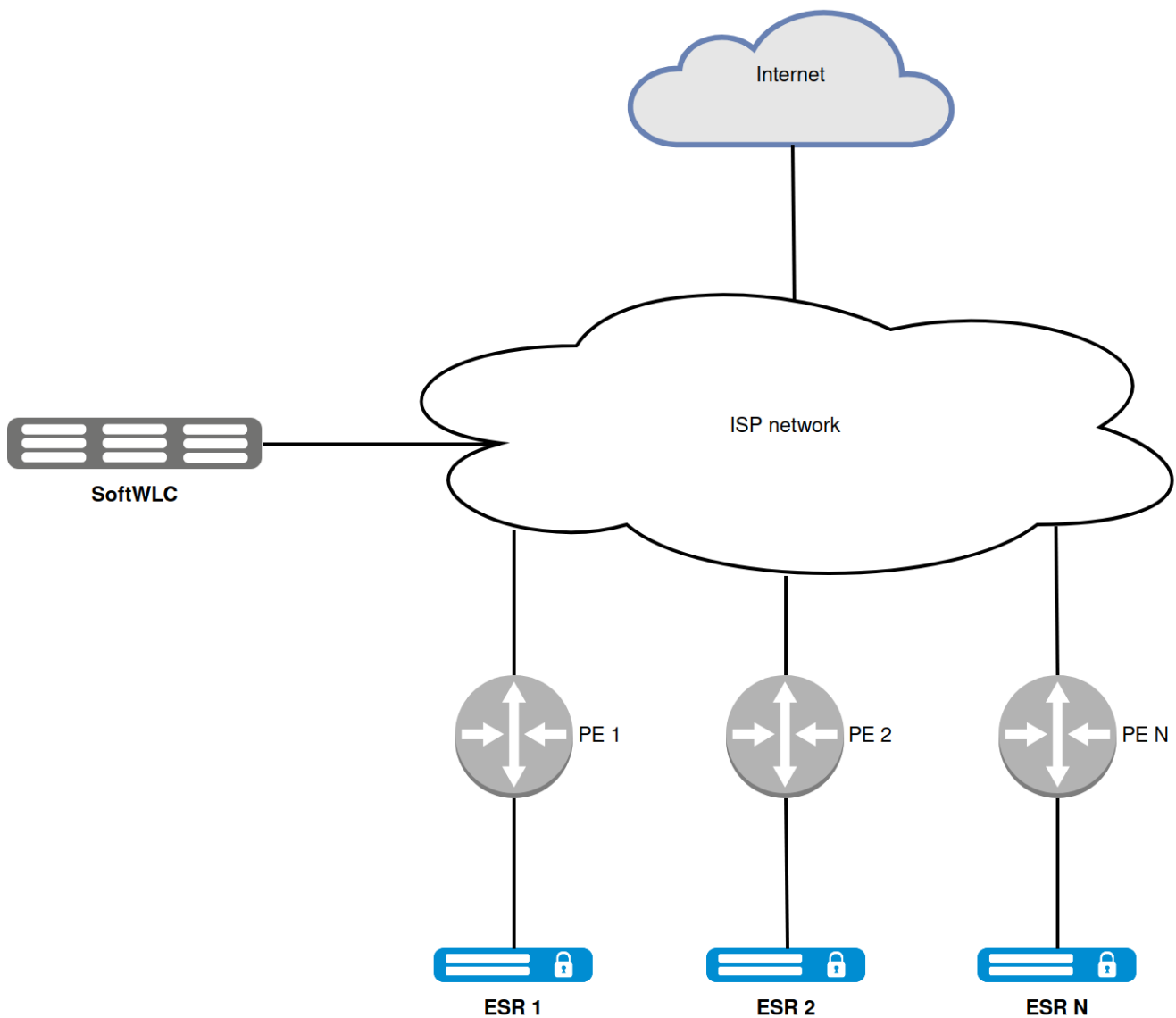
|                                 |                                     |
|---------------------------------|-------------------------------------|
| Описание                        | нет                                 |
| IP адрес                        | 10.255.0.2                          |
| SNMP порт                       | 161                                 |
| SNMP транспорт                  | UDP                                 |
| Файловый протокол               | TFTP                                |
| Таймаут обмена, мс              | 60000                               |
| Read community / User v3        | •••••                               |
| Write community / Password v3   | ••••••••                            |
| Версия SNMP                     | v3                                  |
| Тип аутентификации              | AUTH_PRIV                           |
| Протокол аутентификации         | SHA                                 |
| Ключ шифрования                 | ••••••••••                          |
| Протокол шифрования             | AES-128                             |
| Регистрация трапов              | Accept                              |
| Выведено из обслуживания        | <input type="checkbox"/>            |
| Дата 'Выведено из обслуживания' | 09.12.2022 14:13:03                 |
| Статус                          | AVAILABLE                           |
| Время статуса                   | 16.01.2023 11:38:08                 |
| Telnet/SSH login                | admin                               |
| Telnet/SSH password             | ••••••••                            |
| SSH порт                        | 22                                  |
| MAC адрес                       | A8:F9:4B:AB:DA:E0                   |
| Получение статуса VRRP          | <input type="checkbox"/>            |
| BRAS сервис                     | <input checked="" type="checkbox"/> |
| Режим ESR                       | Station                             |
| OTT (Over-the-top)              | ServiceProvider                     |
| Режим кластера                  | None                                |
| Дата инициализации устройства   | 02.12.2020 15:23:44                 |

☒ Принять
 ☒ Заполнить местоположение
 ☒ Заполнить геокоординаты
 ☒ Отменить

. 4.

1. .
2. bridge1. .
3. IPsec bridge 1.
4. IPsec bridge 1. GRE- bridge 2.
5. GRE VLAN bridge 6.
6. bridge 7 route-map , .

ESR



.5.

1. ESR 1, ESR 2 ESR N, IPsec, PE 1, PE 2, PE N.
2. ESR 1, ESR 2, ESR N, IPsec, BGP, PE 1, PE 2, PE N.
3. PE 1, PE 2, PE N, SoftWLC.
4. ESR, IPsec, ESR.
5. ESR IP WiFi.

, ESR .3.

ESR 3.

-, IPsec IPsec-, HTTPS, URL-, . :

- 1) , "Provider-ID", URL-, ., URL . - URL . - - "Provider-ID", - , - . , , .
  - 2) , Provider-ID, Provider-ID = "eltex" URL-. URL- , - OTT . URL- CLI WEB- . - Provider-ID = "eltex". Provider-ID - , URL, , , .
- MAC- . - MAC, MAC . , - . MAC.



, . , . , . , . , .



(URL - ), IP- DHCP 43 DHCP, . . .

ESR - :

$(GRE\_ping\_counter \times 10) + waite\_timer$ ,

$GRE\_ping\_counter - , waite\_timer - -$ .

$310 + 180 = 210$  .

1) Eltex , . URL - .- SoftWLC. IP- , DNS .

2) IP- DHCP, . DHCP 43, , IPsec . 43 . 43, .

3) HTTPs - :

- 
- MAC-
- 
- HW
- Provider-ID ( )
- MAC- ( )

4) -, , Provider-ID MAC handshake, NBI EMS, .

5) :

- MAC- , : .
- OTT, EMS ""
- OTT, , , MAC, OTT - .
- , ""

6) IPsec-, EMS MAC-.  
OTT , , . EMS - OTT . , .

7) EMS, , :

- , ESR-1000. , EMS ESR-1000 IP-.
- EMS - IPsec- (MongoDB ott.xauth).
- -, EMS : IP- ESR, (x-auth), ( ESR-1000 , IPsec-), IPsec ESR.
- - .

8) , IPsec- ESR-1000. IPsec- ESR-1000 PCRF SoftWLC. PCRF ott , , . , RADIUS access-accept.

IPsec IP- IPsec- . IP- EoGRE (Management Data) ESR-1000 IPsec .



, RADIUS :

```
root@vagrant-ubuntu-trusty-64:/home/vagrant# mongo
> show databases;
local 0.078125GB
notification-gw 0.203125GB
ott 0.203125GB
pcrf 0.453125GB
wifi-customer-cab 0.203125GB
> use ott

> show tables

system.indexes

xauth

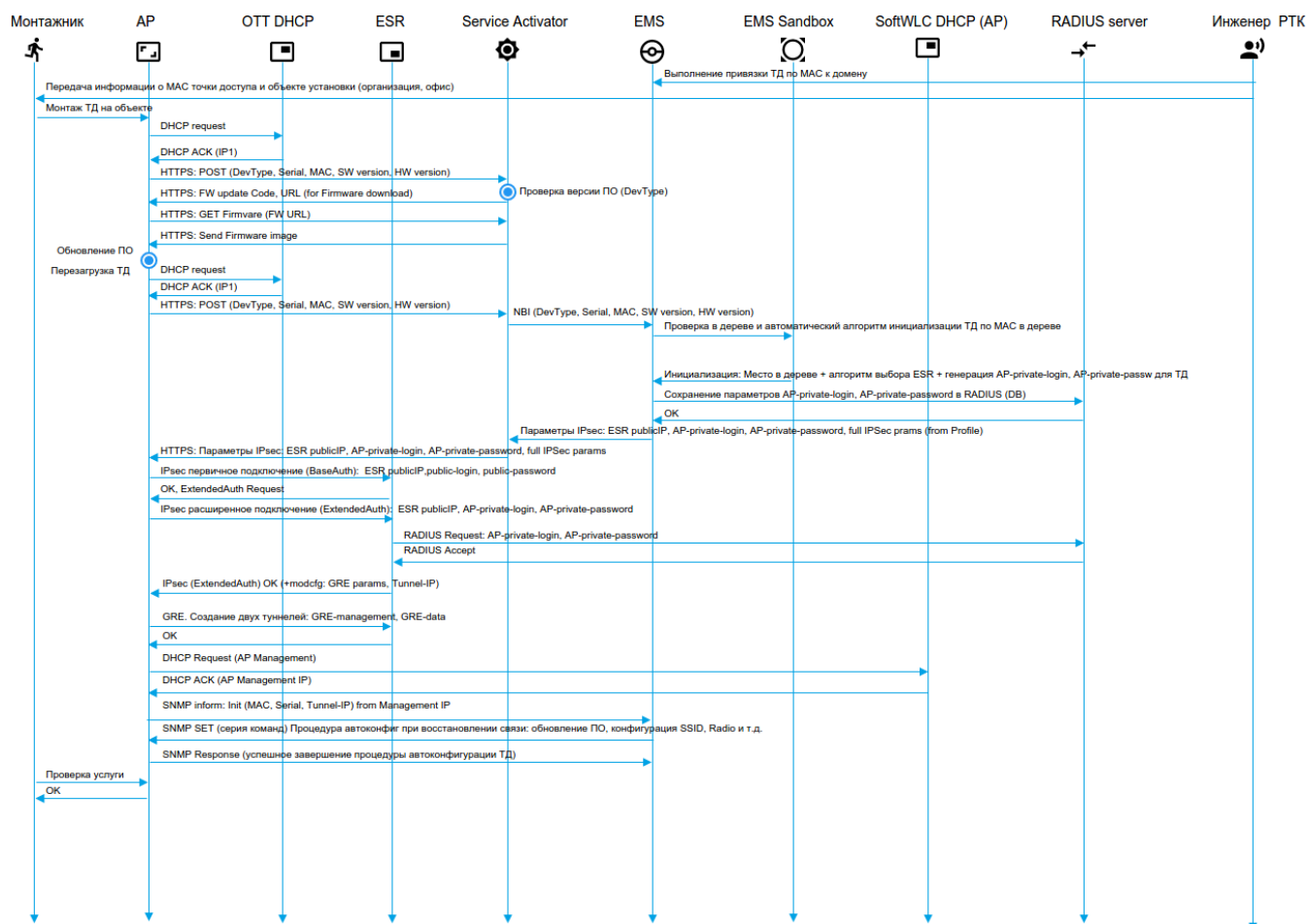
> db.xauth.find()

{ "_id" : ObjectId("5a6816b4e14c08c4d9c0854d"), "ipsec_login" : "login1", "ipsec_pass" : "password1" }
{ "_id" : ObjectId("5a6816b4e14c08c4d9c0854e"), "ipsec_login" : "login2", "ipsec_pass" : "password2" }
{ "_id" : ObjectId("5a6816b4e14c08c4d9c0854f"), "ipsec_login" : "login3", "ipsec_pass" : "password3" }
```

9) SoftWLC SNMP Management GRE , .

10) Data GRE ESR-1000 NAT.


#### Инициализация ТД Элтекс в сетях сторонних операторов (ОТТ). Сценарий предконфигурации



. 6.

, OTT, ott.root EMS.

ott ( Wireless/ /). ott . \_SNMP TCP.

| Главное        |                                                                                                |
|----------------|------------------------------------------------------------------------------------------------|
| Тип устройства | ★ WEP-12ac ▼                                                                                   |
| Имя правила    | ★ ott                                                                                          |
| Домен правила  | ★ ott.root  |
| Описание       |                                                                                                |

| RADIUS               |                                     |
|----------------------|-------------------------------------|
| Добавить ТД в RADIUS | <input checked="" type="checkbox"/> |
| Ключ                 | ★ eltex                             |

| Обновление ПО                      |                          |
|------------------------------------|--------------------------|
| Обновить на актуальный файл ПО     | <input type="checkbox"/> |
| Обновить на актуальный файл ПО OTT | <input type="checkbox"/> |
| Протокол загрузки ПО               | HTTP ▼                   |

| Конфигурация                           |                          |
|----------------------------------------|--------------------------|
| Восстановить конфигурацию по умолчанию | <input type="checkbox"/> |
| Использовать индивидуальный шаблон     | <input type="checkbox"/> |
| Шаблон конфигурации                    | ▼                        |

| Доступ                         |           |
|--------------------------------|-----------|
| SNMP транспорт                 | TCP ▼     |
| SNMP Community (только чтение) | ★ public  |
| SNMP Community (чтение/запись) | ★ private |

. 7.

ott\_default, ott ott.root.

|                          |                          |   |
|--------------------------|--------------------------|---|
| Имя устройства           | WEP-12ac                 |   |
| Ключ                     | ★ ott_default            | ? |
| Имя правила              | ★ ott                    | ← |
| Домен правила            | ott.root                 | ● |
| Домен узла               | ★ root                   | 🌐 |
| ОТТ (Over-the-top)       | <input type="checkbox"/> |   |
| ОТТ индивидуальная конф. |                          | ← |
| ФИО                      |                          |   |
| Номер заявки             |                          |   |
| Почтовый индекс          |                          |   |
| Номер региона            |                          |   |
| Страна                   |                          |   |
| Область                  |                          |   |
| Район                    |                          |   |
| Город                    |                          |   |
| Улица                    |                          |   |
| Номер дома               |                          |   |
| ИНН                      |                          |   |
| Корпус                   |                          |   |
| Этаж                     |                          |   |
| Офис                     |                          |   |
| Широта                   |                          |   |
| Долгота                  |                          |   |
| WIPS/WIDS service        | <input type="checkbox"/> |   |
| DPI (Step Logic)         | <input type="checkbox"/> |   |

✓ Заполнить местоположение

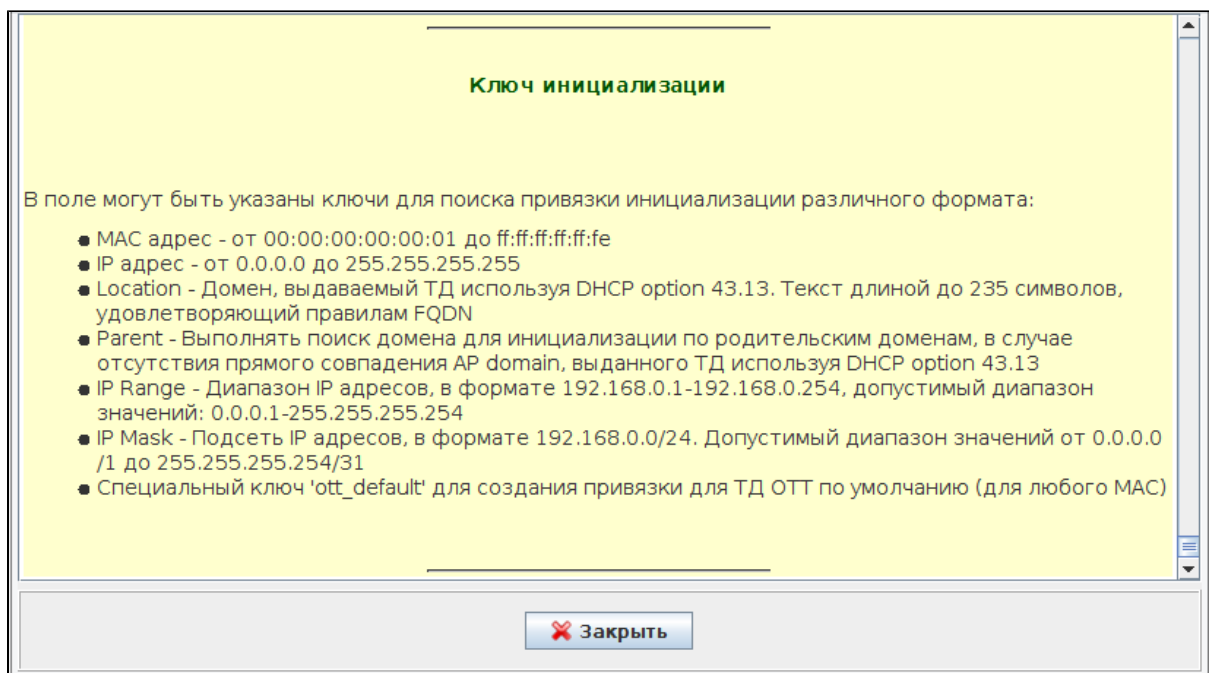
✓ Заполнить геокоординаты

✓ Принять

✗ Отменить

. 8.

ott\_default ,  :



.9.






, , Wireless/ .

|                          |                                                               |                   |              |                     |                   |             |                          |
|--------------------------|---------------------------------------------------------------|-------------------|--------------|---------------------|-------------------|-------------|--------------------------|
| Правила                  | Страница: 229 / 229 на странице: 20 Фильтр:                   |                   |              |                     |                   |             |                          |
| Привязки                 | Фильтр по домену                                              |                   |              |                     |                   |             |                          |
| ОТТ профили              | Изменить поля Обновить Добавить Редактировать Удалить Экспорт |                   |              |                     |                   |             |                          |
| ОТТ привязки             |                                                               |                   |              |                     |                   |             |                          |
| Черный список ОТТ        |                                                               |                   |              |                     |                   |             |                          |
| ОТТ индивидуальная конф. | Логин                                                         | MAC ^             | ESR IP       | Домен ТД            | Дата создания     | Ключ        | Strict                   |
| ОТТ статистика           | e0:d9:e3:00:05:cc                                             | e0:d9:e3:00:05:cc | 10.255.255.6 | Unknown.Vostok.0... | 17.01.2023 11:... | ott_default | <input type="checkbox"/> |

. 10.

SSID ott.root (Wireless/ SSID). Bridge, Location location, bridge ESR.



|                                    |                                                                                                            |
|------------------------------------|------------------------------------------------------------------------------------------------------------|
| Тип                                | Hotspot                                                                                                    |
| Имя                                | ★ hotspot_ott                                                                                              |
| Описание                           |                                                                                                            |
| Domain                             | ★ ott.root                                                                                                 |
| Статус SSID                        | Operational                                                                                                |
| Дата создания                      | 2021-03-23 15:33:41                                                                                        |
| Дата изменения                     | 2021-03-23 15:33:41                                                                                        |
| ----- Параметры окружения -----    |                                                                                                            |
| Bridge Location                    | data10                                                                                                     |
| VRF                                | 1                                                                                                          |
| Switch Community                   | <input type="checkbox"/>                                                                                   |
| Требовать наличие Opt82            | <input type="checkbox"/>                                                                                   |
| DPI (Step Logic)                   | <input type="checkbox"/>                                                                                   |
| ----- Опции -----                  |                                                                                                            |
| Статус VAP                         | Up                                                                                                         |
| Режим трафика VAP (только для GRE) | Tunnel                                                                                                     |
| Broadcast SSID                     | <input checked="" type="checkbox"/>                                                                        |
| Radio                              | All                                                                                                        |
| Режим безопасности                 | Без шифрования                                                                                             |
| MAC Auth Type                      | Disable                                                                                                    |
| Статус Client QoS                  | on                                                                                                         |
| VLAN-ID                            | <input checked="" type="checkbox"/> 10                                                                     |
| QoS method (down link)             | 802.1p                                                                                                     |
| VLAN trunk                         | <input type="checkbox"/>                                                                                   |
| General Mode                       | <input type="checkbox"/>                                                                                   |
| General VLAN-ID                    | 1                                                                                                          |
| 802.1p priority (up link)          | 0                                                                                                          |
| Изоляция клиентов                  | <input type="checkbox"/>                                                                                   |
| Band steer                         | <input checked="" type="checkbox"/>                                                                        |
| Support 802.11k                    | <input type="checkbox"/>                                                                                   |
| Wireless Multicast Forwarding      | <input type="checkbox"/>                                                                                   |
| Hotspot 2.0                        | <input type="text"/>  |
| DiffServ Policy Up                 | <input type="text"/>  |
| DiffServ Policy Down               | <input type="text"/>  |
| Bandwidth Limit Up, kbps           | 0                                                                                                          |
| Bandwidth Limit Down, kbps         | 0                                                                                                          |
| VAP Limit Up, kbps                 | 0                                                                                                          |
| VAP Limit Down, kbps               | 0                                                                                                          |
| ----- Minimal signal -----         |                                                                                                            |
| Enabled                            | <input type="checkbox"/>                                                                                   |
| ----- RADIUS -----                 |                                                                                                            |
| Active Server                      | primary                                                                                                    |
| RADIUS IP Address:                 | 100.123.0.2                                                                                                |
| RADIUS IP Address-1                |                                                                                                            |
| RADIUS IP Address-2                |                                                                                                            |
| RADIUS IP Address-3                |                                                                                                            |
| RADIUS Key:                        | eltex                                                                                                      |
| RADIUS Key-1                       |                                                                                                            |
| RADIUS Key-2                       |                                                                                                            |
| RADIUS Key-3                       |                                                                                                            |
| RADIUS accounting (on/off)         | On                                                                                                         |

RADIUS accounting (вкл/выкл) ☒

RADIUS accounting period, s 600

RADIUS порт 1812

----- Captive portal -----

Enabled ☒

Virtual portal name default

Протокол HTTP

Verification CaptivePortal

External ☒

External URL http://100.123.0.2:8080/eltex\_portal/

Away Time, min 0

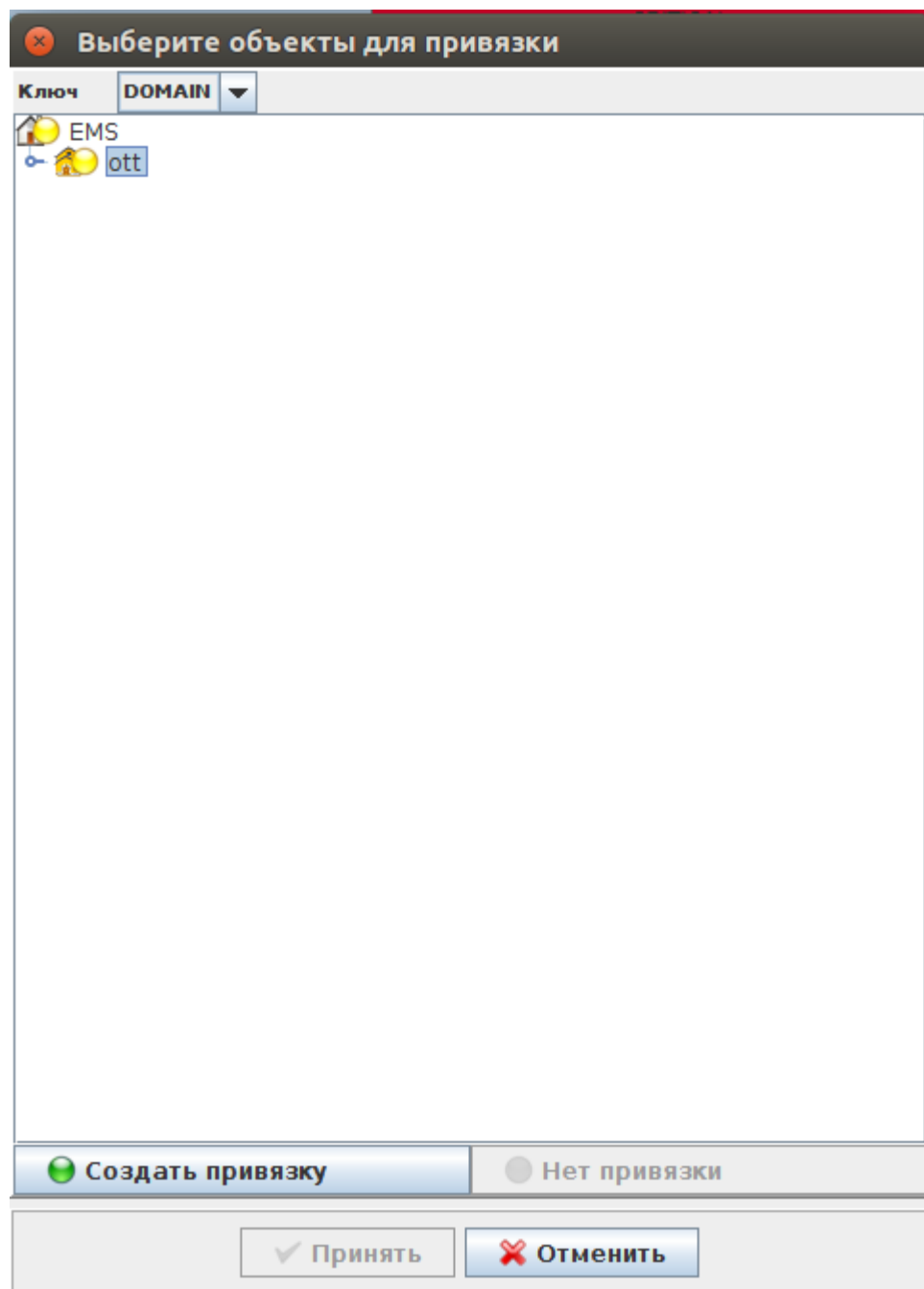
Session Timeout, min 0

User mobility domain (FW 1.9.0) ott.root

----- Расписание работы ----- ?

Включить ☐

✓ Принять ✗ Отменить



. 12.

ESR OTT

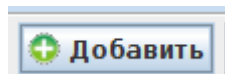
: *ServiceProvider* ESR, .

|                                 |                                     |
|---------------------------------|-------------------------------------|
| Описание                        | нет                                 |
| IP адрес                        | 10.255.0.2                          |
| SNMP порт                       | 161                                 |
| SNMP транспорт                  | UDP                                 |
| Файловый протокол               | TFTP                                |
| Таймаут обмена, мс              | 60000                               |
| Read community / User v3        | •••••                               |
| Write community / Password v3   | ••••••••                            |
| Версия SNMP                     | v3                                  |
| Тип аутентификации              | AUTH_PRIV                           |
| Протокол аутентификации         | SHA                                 |
| Ключ шифрования                 | ••••••••••                          |
| Протокол шифрования             | AES-128                             |
| Регистрация трапов              | Accept                              |
| Выведено из обслуживания        | <input type="checkbox"/>            |
| Дата 'Выведено из обслуживания' | 09.12.2022 14:13:03                 |
| Статус                          | AVAILABLE                           |
| Время статуса                   | 16.01.2023 11:38:08                 |
| Telnet/SSH login                | admin                               |
| Telnet/SSH password             | ••••••••                            |
| SSH порт                        | 22                                  |
| MAC адрес                       | A8:F9:4B:AB:DA:E0                   |
| Получение статуса VRRP          | <input type="checkbox"/>            |
| BRAS сервис                     | <input checked="" type="checkbox"/> |
| Режим ESR                       | Station                             |
| OTT (Over-the-top)              | ServiceProvider                     |
| Режим кластера                  | None                                |
| Дата инициализации устройства   | 02.12.2020 15:23:44                 |

. 13.

IPsec ESR. ESR.

, Wireless/ OTT profiles. ,



Менеджер правил инициализации ТД

Правила  
Привязки  
OTT profiles

Обновить Редактировать Profile

Добавить Удалить

Profile \*

----- IKE proposal -----

IKE authentication algorithm md5

IKE DH Group 1

IKE encryption algorithm aes

----- IKE policy -----

Use ISAKMP mode config UP

Use XAUTH password as IPsec password off

IKE lifetime 86400

Use NAT-T UP

IPsec NAT Keepalive 30

IPsec password

----- IPsec proposal -----

IPsec authentication algorithm md5

IPsec DH Group 0

IPsec encryption algorithm aes

----- IPsec policy -----

IPsec DPD Delay 60

IPsec child SA lifetime 3600

----- IPsec VPN -----

Force establish tunnel UP

IPsec operational status UP

----- GRE over IPSEC -----

Use GRE mode UP

GRE MTU offset 148

GRE ping counter 3

Закреть

. 14.

, , ESR. EMS ESR .

| Описание                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Мониторинг | Конфигурация | Доступ |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------|--------|
| <div> <div> <div>Firmware</div> <div>CLI/telnet</div> <div>CLI/ssh</div> <div>ОТТ</div> </div> <div> <div>Обновить</div> <div>Редактировать</div> </div> </div>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |              |        |
| <div>----- Добавить станцию ОТТ -----</div> <div> <div>Profile</div> <div>*</div> <div>---</div> <div>▼</div> </div> <div>----- IKE gateway -----</div> <div> <div>IPsec remote gateway</div> <div>*</div> <div></div> </div> <div>----- IKE proposal -----</div> <div> <div>IKE authentication algorithm</div> <div><input type="checkbox"/></div> <div>md5</div> <div>▼</div> </div> <div> <div>IKE DH Group</div> <div><input type="checkbox"/></div> <div>1</div> <div>▼</div> </div> <div> <div>IKE encryption algorithm</div> <div><input type="checkbox"/></div> <div>aes</div> <div>▼</div> </div> <div>----- IKE policy -----</div> <div> <div>IKE lifetime</div> <div><input type="checkbox"/></div> <div>86400</div> </div> <div> <div>Use NAT-T</div> <div><input type="checkbox"/></div> <div>UP</div> <div>▼</div> </div> <div> <div>IPsec NAT Keepalive</div> <div><input type="checkbox"/></div> <div>30</div> </div> <div> <div>IPsec password</div> <div><input type="checkbox"/></div> <div></div> </div> <div>----- IPsec proposal -----</div> <div> <div>IPsec authentication algorithm</div> <div><input type="checkbox"/></div> <div>md5</div> <div>▼</div> </div> <div> <div>IPsec encryption algorithm</div> <div><input type="checkbox"/></div> <div>aes</div> <div>▼</div> </div> <div>----- IPsec policy -----</div> <div> <div>IPsec DPD Delay</div> <div><input type="checkbox"/></div> <div>60</div> </div> <div> <div>IPsec child SA lifetime</div> <div><input type="checkbox"/></div> <div>3600</div> </div> <div>----- GRE over IPSEC -----</div> <div> <div>GRE MTU offset</div> <div><input type="checkbox"/></div> <div>148</div> </div> <div> <div>GRE ping counter</div> <div><input type="checkbox"/></div> <div>3</div> </div> |            |              |        |

. 15.

, . , IP- ESR. IPsec remote gateway , . ESR .

✖

🔍

Редактировать 'OTT'

Profile

\*

ott

▼

----- IKE gateway -----

IPsec remote gateway

\*

192.168.51.10

----- IKE proposal -----

IKE authentication algorithm

☐

md5

▼

IKE DH Group

☐

1

▼

IKE encryption algorithm

☐

aes

▼

----- IKE policy -----

IKE lifetime

☐

86400

Use NAT-T

☐

UP

▼

IPsec NAT Keepalive

☐

30

IPsec password

☐

----- IPsec proposal -----

IPsec authentication algorithm

☐

md5

▼

IPsec encryption algorithm

☐

aes

▼

----- IPsec policy -----

IPsec DPD Delay

☐

60

IPsec child SA lifetime

☐

3600

----- GRE over IPSEC -----

GRE MTU offset

☐

148

GRE ping counter

☐

3

✓ Принять

✖ Отменить

. 16.



!

"IPsec remote gateway" ESR, IPsec . : " IPsec remote gateway '<IP->' '< ESR EMS>".

## IPsec , -

WEB- , Manage/OTT Settings

## OTT Settings

IPsec Remote Gateway  (xxx.xxx.xxx.xxx / Domain name)

IPsec Operational Status ☐

XAUTH User  (Range: 4-16 chars)

XAUTH Password  (Range: 8-48 chars)

Advanced Settings

Click "Update" to save the new settings.

. 17.

IPsec, XAUTH ( , XAUTH IPsec).



Use XAUTH Password, XAUTH IPsec. IPsec Password .

Advanced Settings, IPsec



|                                          |                                                               |                                 |
|------------------------------------------|---------------------------------------------------------------|---------------------------------|
| IPsec Remote Gateway                     | <input type="text" value=""/>                                 | (xxx.xxx.xxx.xxx / Domain name) |
| IPsec Operational Status                 | <input type="checkbox"/>                                      |                                 |
| XAUTH User                               | <input type="text" value="user"/>                             | (Range: 4-16 chars)             |
| XAUTH Password                           | <input type="text" value="password"/>                         | (Range: 8-48 chars)             |
| Advanced Settings                        | <input type="checkbox"/>                                      |                                 |
| <b>IKE Proposal</b>                      |                                                               |                                 |
| IKE Authentication Algorithm             | <input type="text" value="md5"/>                              |                                 |
| IKE DH Group                             | <input type="text" value="1"/>                                |                                 |
| IKE Encryption Algorithm                 | <input type="text" value="aes"/>                              |                                 |
| <b>IKE Policy</b>                        |                                                               |                                 |
| Use ISAKMP Mode Config                   | <input checked="" type="radio"/> On <input type="radio"/> Off |                                 |
| IKE Lifetime                             | <input type="text" value="86400"/>                            | (Sec, Range: 180-86400)         |
| Use NAT-T                                | <input checked="" type="checkbox"/>                           |                                 |
| IPsec NAT Keepalive                      | <input type="text" value="180"/>                              | (Sec, Range: 1-300)             |
| IPsec Password                           | <input type="text" value="password"/>                         | (Range: 8-48 chars)             |
|                                          | <input checked="" type="checkbox"/> Use XAUTH Password        |                                 |
| <b>IPsec Proposal</b>                    |                                                               |                                 |
| IPsec Authentication Algorithm           | <input type="text" value="md5"/>                              |                                 |
| IPsec DH Group                           | <input type="text" value="0"/>                                |                                 |
| IPsec Encryption Algorithm               | <input type="text" value="aes"/>                              |                                 |
| <b>IPsec Policy</b>                      |                                                               |                                 |
| IPsec DPD Delay                          | <input type="text" value="180"/>                              | (Sec, Range: 5-600)             |
| IPsec Child SA Lifetime                  | <input type="text" value="3600"/>                             | (Sec, Range: 180-86400)         |
| <b>IPsec VPN</b>                         |                                                               |                                 |
| Force Establish Tunnel                   | <input checked="" type="checkbox"/>                           |                                 |
| <b>GRE Over IPsec</b>                    |                                                               |                                 |
| Use GRE Mode                             | <input checked="" type="radio"/> On <input type="radio"/> Off |                                 |
| GRE Over IPsec Mgmt                      | <input type="text" value="192.168.3.2"/>                      | (xxx.xxx.xxx.xxx)               |
| GRE Over IPsec Data                      | <input type="text" value="192.168.3.3"/>                      | (xxx.xxx.xxx.xxx)               |
| GRE MTU Offset                           | <input type="text" value="148"/>                              | (Range: 0-220)                  |
| GRE Ping Counter                         | <input type="text" value="3"/>                                | (Range: 3-60)                   |
| Click "Update" to save the new settings. |                                                               |                                 |
|                                          | <input type="button" value="Update"/>                         |                                 |

. 18.

Use ISAKMP Mode Config On, GRE Over IPsec Mgmt GRE Over IPsec Data . Use ISAKMP Mode Config Off, IKE Gateway GRE Over IPsec Mgmt GRE Over IPsec Data.

IPsec Remote Gateway  (xxx.xxx.xxx.xxx / Domain name)

IPsec Operational Status ☐

Advanced Settings ☐

### IKE Proposal

IKE Authentication Algorithm

IKE DH Group

IKE Encryption Algorithm

### IKE Policy

Use ISAKMP Mode Config ☐ On ☒ Off

IKE Lifetime  (Sec, Range: 180-86400)

Use NAT-T ☒

IPsec NAT Keepalive  (Sec, Range: 1-300)

IPsec Password  (Range: 8-48 chars)

### IKE Gateway

IPsec Local Address  (xxx.xxx.xxx.xxx)

IPsec Remote Network  (xxx.xxx.xxx.xxx)

IPsec Remote Mask  (xxx.xxx.xxx.xxx)

### IPsec Proposal

IPsec Authentication Algorithm

IPsec DH Group

IPsec Encryption Algorithm

### IPsec Policy

IPsec DPD Delay  (Sec, Range: 5-600)

IPsec Child SA Lifetime  (Sec, Range: 180-86400)

### IPsec VPN

Force Establish Tunnel ☒

### GRE Over IPsec

Use GRE Mode ☒ On ☐ Off

GRE Over IPsec Mgmt  (xxx.xxx.xxx.xxx)


GRE Over IPsec Data  (xxx.xxx.xxx.xxx)

GRE MTU Offset  (Range: 0-220)

GRE Ping Counter  (Range: 3-60)

Click "Update" to save the new settings.

- **IPsec Remote Gateway** – IP- (xxx.xxx.xxx.xxx / ).
- **IPsec Operational Status** – IPsec.
- **XAUTH User** – XAUTH, "Use ISAKMP Mode Config On" (: 4-16 ).
- **XAUTH Password** – XAUTH, "Use ISAKMP Mode Config On" (: 4-16 ).
- **IKE Authentication Algorithm** – , (md5, sha1).
- **IKE DH Group** – -, (1,2,5).
- **IKE Encryption Algorithm** – 1 IPsec (AES128, DES, 3DES).
- **Use ISAKMP Mode Config** – «On» – «GRE Over IPsec Mgmt», «GRE Over IPsec Data», « IPsec», « IPsec», « IPsec Remote Mask».
- **IKE Lifetime** – IKE SA ( 1) . IKE/IPsec (, : 180–86400).
- **Use NAT-T** – , NAT.
- **IPsec NAT Keepalive** – keepalive NAT (Sec, Range: 1-300).
- **IPsec Password** – IKE/ISPEC (: 8-48 ).
- **IPsec Local Address** – , IKE 255.255.255.255 (/ 32), , « ISAKMP Config On» (xxx.xxx.xxx.xxx).
- **IPsec Remote Network** – IKE. , « ISAKMP Config On» (xxx.xxx.xxx.xxx).
- **IPsec Remote Mask** – IKE , « ISAKMP Config On» (xxx.xxx.xxx.xxx).
- **IPsec Authentication Algorithm** – , (md5, sha1).
- **IPsec DH Group** – - . 0 IKE (0,1,2,5).
- **IPsec Encryption Algorithm** – 1 IPsec (AES128, DES, 3DES).
- **IPsec DPD Delay** – ESR , (: 5-600).
- **IPsec Child SA Lifetime** – IPsec VPN SA ( 2) . **IKE/IPsec.** , IKE Lifetime (Sec, Range: 180-86400).
- **Force Establish Tunnel** – GRE IPsec. IP- GRE IPsec.
- **GRE Over IPsec Mgmt** – IP- GRE (xxx.xxx.xxx.xxx).
- **GRE Over IPsec Data** – IP- GRE (xxx.xxx.xxx.xxx).
- **GRE MTU Offset** – MTU . MTU - GRE MTU Offset.
- **GRE Ping Counter** – gre-managment-ip, IPsec- . 10 . 3 60. 3.

 IPsec child SA lifetime IKE lifetime. . IKE lifetime 86400 (), IPsec child SA lifetime 3600 (). IPsec 24 , IKE .

GUI EMS.

Wireless/ /

Правила

Привязки

ОТТ профили

ОТТ привязки

Черный список ОТТ

ОТТ индивидуальная конф.

ОТТ статистика

Страница: 1 / 1

на странице: 20

Изменить поля

Обновить

Добавить

Удалить

Экспорт

| Mac               | LockDate            |
|-------------------|---------------------|
| e8:28:c1:da:ae:70 | 18.01.2023 15:49:40 |

Закреть

. 20.

"" - -. MAC- .

Mac

Принять

Отменить

. 21.

-. MAC-, .

, aa:bb:01, aa:bb:01:02:03:04 " aa:bb:01". , "".

OTT link

, OTT link:

- EMS ;
- EMS OTT, ;
- ESR EMS ;
- IP ESR EMS ;
- ESR EMS station;

- ESR    OTT ;

OTT :

```
$ mongo
> use ott;
> db.station.find({esr_ip: '<ip esr>'}).pretty();
```

OTT :

```
$ mongo
> use ott;
> db.xauth.find({esr_ip: '<ip esr>'}).pretty();
> db.xauth.find({mac: '<mac >'}).pretty();
```

## OTT link

SoftWLC 1.25.    ESR OTT    .    "Strict",    -    ESR .

"Wireless" " " "OTT ":

Правила

Привязки

OTT профили

OTT привязки

Черный список OTT

OTT индивидуальная конф.

OTT статистика

Страница: 228 / 229 на странице: 20

Фильтр:

Фильтр по домену

Изменить поля

Обновить

Добавить

Редактировать

Удалить

Экспорт

| Логин             | MAC ^             | ESR IP       | Домен ТД            | Дата создания     | Ключ        | Strict |
|-------------------|-------------------|--------------|---------------------|-------------------|-------------|--------|
| e0:d9:e3:00:05:c2 | e0:d9:e3:00:05:c2 | 10.255.255.6 | Unknown.Vostok.O... | 17.01.2023 11:... | ott_default |        |
| e0:d9:e3:00:05:ca | e0:d9:e3:00:05:ca | 10.255.255.6 | Unknown.Vostok.O... | 17.01.2023 11:... | ott_default |        |
| e0:d9:e3:00:05:d1 | e0:d9:e3:00:05:d1 | 10.255.255.6 | Unknown.Vostok.O... | 16.01.2023 16:... | ott_default |        |
| e0:d9:e3:00:05:d7 | e0:d9:e3:00:05:d7 | 10.255.255.6 | Unknown.Vostok.O... | 16.01.2023 16:... | ott_default |        |
| e0:d9:e3:00:07:a3 | e0:d9:e3:00:07:a3 | 10.255.255.6 | Unknown.Vostok.O... | 13.01.2023 13:... | ott_default |        |
| e0:d9:e3:00:07:a9 | e0:d9:e3:00:07:a9 | 10.255.255.6 | Unknown.Vostok.O... | 13.01.2023 13:... | ott_default |        |
| e0:d9:e3:00:07:b2 | e0:d9:e3:00:07:b2 | 10.255.255.6 | Unknown.Vostok.O... | 13.01.2023 13:... | ott_default |        |
| e0:d9:e3:00:07:b3 | e0:d9:e3:00:07:b3 | 10.255.255.6 | Unknown.Vostok.O... | 13.01.2023 13:... | ott_default |        |
| e0:d9:e3:00:07:b5 | e0:d9:e3:00:07:b5 | 10.255.255.6 | Unknown.Vostok.O... | 13.01.2023 13:... | ott_default |        |

Закрыть


. 22.

" " :

|        |                                     |
|--------|-------------------------------------|
| MAC    | ★ e0:d9:e3:50:71:e0                 |
| ESR IP | ★ 192.168.128.1                     |
| Strict | <input checked="" type="checkbox"/> |

. 23.

- MAC --

- ESR IP - ESR ( EMS) . ESR, " " "OTT (Over-the-top)" "ServiceProvider".  ESR.
- Strict - - ESR . - ESR ESR IP . - OTT- ESR, . ESR . , " OTT link".

"",

OTT . :

- ":", ( ) :

Правила

Привязки

ОТТ профили

ОТТ привязки

Черный список ОТТ

ОТТ индивидуальная конф.

ОТТ статистика

Страница: 1 / 1 на странице: 20

Фильтр: e8:28:c1:da:cf:70

Фильтр по домену

Изменить поля

Обновить

Добавить

Редактировать

Удалить

Экспорт

| Логин             | MAC               | ESR IP       | Домен ТД            | Дата создания     | Ключ        | Strict                   |
|-------------------|-------------------|--------------|---------------------|-------------------|-------------|--------------------------|
| e8:28:c1:da:cf:70 | e8:28:c1:da:cf:70 | 10.255.255.6 | Unknown.Vostok.O... | 16.01.2023 15:... | ott_default | <input type="checkbox"/> |

Заккрыть

. 24.

- "".
- . 23, ОТТ-:

MAC

ESR IP

Strict

★ e8:28:c1:da:cf:70

★ 10.255.255.6

☐

Принять

Отменить

. 25.

- ESR IP "Strict".
- "".

ESR OTT-

ESR OTT- "Wireless" " " "ОТТ ":

|                          |                                                                                         |            |                      |                   |                     |               |
|--------------------------|-----------------------------------------------------------------------------------------|------------|----------------------|-------------------|---------------------|---------------|
| Правила                  | <div><div></div><div></div>Изменить поля</div> <div></div> Обновить <div></div> Экспорт |            |                      |                   |                     |               |
| Привязки                 |                                                                                         |            |                      |                   |                     |               |
| ОТТ профили              | ESR IP                                                                                  | Имя ESR    | Домен ESR            | Максимум привязок | Количество привя... | Загруженность |
| ОТТ привязки             | 10.255.0.2                                                                              | 1700-ipsec | VST.OTT_routers.root | 1000              | 1000                | 1.0           |
| Черный список ОТТ        | 10.255.255.6                                                                            | 1200-ipsec | VST.OTT_routers.root | 1000              | 493                 | 0.493         |
| ОТТ индивидуальная конф. | 192.168.0.12                                                                            | 1500-ipsec | VST.OTT_routers.root | 1000              | 0                   | 0.0           |
| ОТТ статистика           | 192.168.128.1                                                                           | 1000-ipsec | OTT_routers.root     | 100               | 3                   | 0.03          |
|                          |                                                                                         |            |                      |                   |                     |               |

Заккрыть

. 26.

:

- ESR IP - ip- ESR OTT, "" ( "" "ОТТ (Over-the-top)" "ServiceProvider").
- ESR - ESR EMS.
- ESR -, ESR.
- - - OTT- ESR ( ESR).
- - - OTT- ESR.
- - ESR OTT-. 0 ( ) 1 ( , OTT- , ... ).

" " - OTT- ESR - .

NBI OTT

OTT NBI.

eltex-radius-nbi. <http://<IP- NBI>:8080/eltex-radius-nbi/asciidoc/> " OTT)".

WSDL- <http://localhost:8080/axis2/services/RadiusNbiService?wsdl>

## Подключение ТД через сети сторонних операторов (ОТТ)

- [GetOttConfig](#) - Получить список параметров ОТТ
- [CreateOttLink](#) - Создать привязку ОТТ к ESR
- [GetOttLink](#) - Найти привязку ОТТ
- [GetOttLinkList](#) - Получить список привязок ОТТ
- [GetOttLinksStats](#) - Получить статистику привязок ОТТ
- [EditOttLink](#) - Изменить привязку ОТТ к ESR
- [DeleteOttLinks](#) - Удалить привязки ОТТ по key
- [GetOttLinkSummary](#) - Получить данные о загрузженности по всем ОТТ ESR, которые установлены в этом домене
- [GetOttLinkSummaryLocal](#) - Получить данные о загрузженности ОТТ ESR, к которым есть привязки ТД, установленных в указанном домене
- [CreateOttProfile](#) - Создать профиль ОТТ
- [EditOttProfile](#) - Редактировать профиль ОТТ
- [GetOttProfile](#) - Получить профиль ОТТ
- [GetOttProfileList](#) - Получить список профилей ОТТ
- [GetOttProfileNameList](#) - Получить список имен профилей ОТТ
- [DeleteOttProfile](#) - Удалить профили ОТТ
- [CreateOttStation](#) - Создать станцию ОТТ (конфигурацию ОТТ ESR)
- [EditOttStation](#) - Полное редактирование станцию ОТТ
- [UpdateOttStation](#) - Редактировать отдельные параметры станций ОТТ
- [GetOttStation](#) - Получить параметры станции ОТТ
- [MergeOttStation](#) - Получить все параметры ОТТ по ESR IP (комбинация параметров профиля и станции)
- [GetOttStationList](#) - Получить список станций ОТТ
- [DeleteOttStation](#) - Удалить станцию ОТТ
- [AddOttBlack](#) - Добавить записи в черный список ОТТ
- [GetOttBlackList](#) - Получить список записей черного списка ОТТ
- [DeleteOttBlack](#) - Удалить записи черного списка ОТТ
- [IsLockedOttBlack](#) - Проверить блокировку ТД по черному списку ОТТ
- [OttDocument](#) - Объект конфигурации ОТТ

. 27.

## 1. IPsec

```
Description IKE authentication algorithm (md5, sha1), md5 by default
Name ipsec.auth-alg
Regex (md5|sha1)
```

```
Description IKE DH Group (1, 2, 5), 1 by default
Name ipsec.dh-group
Regex (1|2|5)
```

Description IPSEC DPD Delay (5..600), 60 by default  
Name ipsec.dpd-delay  
Regex ([5-9]|[1-9][0-9]|10[0-9]|1[1-9][0-9]|[2-5][0-9][0-9]|600)

Description IKE encryption algorithm (aes, des, 3des), aes by default  
Name ipsec.encrypt-alg  
Regex (aes|des|3des)

Description Force establish tunnel (UP, DOWN), UP by default  
Name ipsec.force-establish  
Regex (UP|DOWN)

Description Use GRE mode (UP, DOWN), UP by default  
Name ipsec.gre-mode  
Regex (UP|DOWN)

Description GRE mtu offset (0..220), 148 by default  
Name ipsec.gre-mtu-offset  
Regex ([0-9]|[1-9][0-9]|10[0-9]|1[1-9][0-9]|220|2[0-1][0-9])

Description IKE lifetime (180..86400), 86400 by default  
Name ipsec.lifetime  
Regex (18[0-9]|19[0-9]|[2-9][0-9][0-9]|[1-9][0-9][0-9][0-9]|1000[0-9]|100[1-9][0-9]|10[1-9][0-9][0-9]|1[1-9][0-9][0-9][0-9]|[2-7][0-9][0-9][0-9][0-9]|86400|86[0-3][0-9][0-9]|8[0-5][0-9][0-9][0-9])

Description Use ISAKMP mode config (UP, DOWN), UP by default  
Name ipsec.mode-cfg  
Regex (UP|DOWN)

Description Use NAT-T (UP, DOWN), UP by default  
Name ipsec.nat  
Regex (UP|DOWN)

Description IPSEC NAT Keepalive (1..300), 30 by default  
Name ipsec.nat-keepalive  
Regex ([1-9]|[1-9][0-9]|10[0-9]|1[1-9][0-9]|2[0-9][0-9]|300)

Description IPSEC password (8-48 chars)  
Name ipsec.password  
Regex ([A-Za-z0-9]{8,48})

Description IPSEC DH Group (0, 1, 2, 5), 0 by default  
Name ipsec.pfs-group  
Regex (0|1|2|5)

Description IPSEC authentication algorithm (md5, sha1), md5 by default  
Name ipsec.sa-auth-alg  
Regex (md5|sha1)

Description IPSEC encryption algorithm (aes, des, 3des), aes by default  
Name ipsec.sa-encrypt-alg  
Regex (aes|des|3des)

Description IPSEC child SA lifetime (180..86400), 3600 by default  
Name ipsec.sa-lifetime  
Regex (18[0-9]|19[0-9]|[2-9][0-9][0-9]|[1-9][0-9][0-9][0-9]|1000[0-9]|100[1-9][0-9]|10[1-9][0-9][0-9]|1[1-9][0-9][0-9][0-9]|[2-7][0-9][0-9][0-9][0-9]|86400|86[0-3][0-9][0-9]|8[0-5][0-9][0-9][0-9])

Description IPSEC operational status (UP, DOWN), UP by default  
Name ipsec.status  
Regex (UP|DOWN)

Description Use XAUTH password as IPSEC password (on/off) default off  
Name ipsec.use-xauth-passwd  
Regex (on|off)

Description XAUTH password (8-48 chars)  
Name ipsec.xauth-password  
Regex ([A-Za-z0-9]{8,48})

Description XAUTH user (4-16 chars)

```
Name ipsec.xauth-user
Regex ([A-Za-z0-9]{4,16})

Description IPSEC remote gateway (IP or URL)
Name ipsec.remote-gateway
<ax273:valueRegex xsi:nil="true"/>
```

2. , -

| Message                                                             |                              |
|---------------------------------------------------------------------|------------------------------|
| Connection refused                                                  | - 8042                       |
| "code":4022, "msg":"No init link found"                             |                              |
| "code":1, "msg":"In request by key 'domain' value is empty or null" | , , ESR OTT (OTT "")         |
| "code":4024, "msg":"No OTT station configured"                      | ESR, OTT IP- ESR OTT, ESR, . |
| "code":4023                                                         | NB                           |
| "code": 4025, "msg": "/ott/upgrade/WOP-12ac-LR-RevB.tar.gz"         | .                            |
| "code": 4026, "msg": "OTT AP locked by black list (<mac- >)"        | -                            |

3. ESR

ESR .

1

1.6.2, BGP, ESR, EoGRE. :

- 1) gi1/0/1.4092: 10.12.20.4/28 - , , IPsec;
- 2) gi1/0/1.212: 100.64.0.66/30 - , VRF backbone SoftWLC, DHCP DNS ;
- 3) gi1/0/1.213: 100.64.0.70/30 - , VRF nat ;
- 4) bridge 1: 192.168.200.49/28 192.168.200.50/28 - EoGRE , ;
- 5) bridge 3: 192.168.128.0/22 - . 192.168.128.1 ESR SoftWLC;
- 6) bridge 10: 198.18.160.0/22 - . - 198.18.160.1, DNS 100.123.0.2;
- 7) 172.31.252.0/22 - , mode config, EoGRE ;
- 8) 100.123.0.0/24 - . 100.123.0.2 - SoftWLC, DHCP, DNS.

.. gi1/0/1.4092, gi1/0/1.213 PBR, ESR "users\_map".

```
#!/usr/bin/clish
#18
hostname esr-ipsec

object-group service dhcp_server
 port-range 67
exit
object-group service dhcp_client
 port-range 68
exit
object-group service ipsec_ports
 port-range 500
 port-range 4500
exit
object-group service dns
 port-range 53
```



```
exit

object-group network SoftWLC
 ip prefix 100.123.0.0/24
exit
object-group network ipsec_remote_address
 ip prefix 10.100.0.0/16
 ip prefix 172.31.252.0/22
exit
object-group network gre_termination
 ip prefix 192.168.200.48/28
exit
object-group network AP_mgmt
 ip prefix 192.168.128.0/22
 ip prefix 198.18.160.0/22
exit
object-group network AP_users
 ip prefix 198.18.160.0/22
exit

syslog console none

radius-server timeout 10
radius-server retransmit 5
radius-server host 100.123.0.2
 key ascii-text testing123
 timeout 11
 priority 20
 source-address 192.168.128.1
 auth-port 31812
 acct-port 31813
 retransmit 10
 dead-interval 10
exit
aaa radius-profile PCRF
 radius-server host 100.123.0.2
exit
das-server COA
 key ascii-text testing123
 port 3799
 clients object-group SoftWLC
exit
aaa das-profile COA
 das-server COA
exit

tech-support login enable
root login enable

vlan 3
 force-up
exit
vlan 10
 force-up
exit

security zone trusted
exit
security zone untrusted
exit
security zone ipsec
exit
security zone gre
exit
security zone users
exit

ip access-list extended users_pbr
 rule 10
 action deny
 match protocol udp
```

```

 match source-port 68
 match destination-port 67
 enable
 exit
rule 11
 action deny
 match protocol udp
 match destination-port 53
 enable
exit
rule 20
 action permit
 enable
exit
exit

route-map out_BGP_AP
 rule 10
 match ip address object-group AP_mgmt
 action permit
 exit
exit
route-map out_BGP_NAT
 rule 10
 match ip address object-group AP_users
 action permit
 exit
exit
route-map users_map
 rule 10
 match ip access-group users_pbr
 action set ip next-hop verify-availability 100.64.0.69 10
 action permit
 exit
exit
router bgp 64604
 router-id 198.18.156.1
 neighbor 100.64.0.65
 remote-as 65001
 update-source 100.64.0.66
 address-family ipv4 unicast
 route-map out_BGP_AP out
 enable
 exit
 enable
 exit
 neighbor 100.64.0.69
 remote-as 65001
 update-source 100.64.0.70
 address-family ipv4 unicast
 route-map out_BGP_NAT out
 enable
 exit
 enable
 exit
 address-family ipv4 unicast
 redistribute connected
 exit
 enable
exit

snmp-server
snmp-server system-shutdown
snmp-server community "private1" rw
snmp-server community "public11" ro

snmp-server host 100.123.0.2
exit

snmp-server enable traps
snmp-server enable traps config

```

```
snmp-server enable traps config commit
snmp-server enable traps config confirm
snmp-server enable traps environment
snmp-server enable traps environment fan
snmp-server enable traps environment fan-speed-changed
snmp-server enable traps environment fan-speed-high
snmp-server enable traps environment memory-flash-critical-low
snmp-server enable traps environment memory-flash-low
snmp-server enable traps environment memory-ram-critical-low
snmp-server enable traps environment memory-ram-low
snmp-server enable traps environment cpu-load
snmp-server enable traps environment cpu-critical-temp
snmp-server enable traps environment cpu-overheat-temp
snmp-server enable traps environment cpu-supercooling-temp
snmp-server enable traps environment board-overheat-temp
snmp-server enable traps environment board-supercooling-temp
snmp-server enable traps wifi
snmp-server enable traps wifi wifi-tunnels-number-in-bridge-high
snmp-server enable traps file-operations
snmp-server enable traps file-operations successful
snmp-server enable traps file-operations failed
snmp-server enable traps file-operations canceled
snmp-server enable traps interfaces
snmp-server enable traps interfaces rx-utilization-high
snmp-server enable traps interfaces tx-utilization-high
snmp-server enable traps interfaces number-high
snmp-server enable traps bras
snmp-server enable traps bras sessions-number-high
snmp-server enable traps screen
snmp-server enable traps screen dest-limit
snmp-server enable traps screen source-limit
snmp-server enable traps screen icmp-threshold
snmp-server enable traps screen udp-threshold
snmp-server enable traps screen syn-flood
snmp-server enable traps screen land
snmp-server enable traps screen winnuke
snmp-server enable traps screen icmp-frag
snmp-server enable traps screen udp-frag
snmp-server enable traps screen icmp-large
snmp-server enable traps screen syn-frag
snmp-server enable traps screen unknown-proto
snmp-server enable traps screen ip-frag
snmp-server enable traps screen port-scan
snmp-server enable traps screen ip-sweep
snmp-server enable traps screen syn-fin
snmp-server enable traps screen fin-no-ack
snmp-server enable traps screen no-flag
snmp-server enable traps screen spoofing
snmp-server enable traps screen reserved
snmp-server enable traps screen quench
snmp-server enable traps screen echo-request
snmp-server enable traps screen time-exceeded
snmp-server enable traps screen unreachable
snmp-server enable traps screen tcp-all-flags
snmp-server enable traps entity
snmp-server enable traps entity config-change
snmp-server enable traps entity-sensor
snmp-server enable traps entity-sensor threshold
snmp-server enable traps envmon
snmp-server enable traps envmon fan
snmp-server enable traps envmon shutdown
snmp-server enable traps envmon temperature
snmp-server enable traps flash
snmp-server enable traps flash insertion
snmp-server enable traps flash removal
snmp-server enable traps snmp
snmp-server enable traps snmp authentication
snmp-server enable traps snmp coldstart
snmp-server enable traps snmp linkdown
snmp-server enable traps snmp linkup
snmp-server enable traps syslog
```

```
bridge 1
 description "gre_termination"
 vlan 1
 security-zone gre
 ip address 192.168.200.49/28
 ip address 192.168.200.50/28
 enable
exit
bridge 3
 description "AP_mgmt"
 vlan 3
 security-zone trusted
 ip address 192.168.128.1/22
 ip helper-address 100.123.0.2
 ip tcp adjust-mss 1312
 enable
exit
bridge 10
 description "Users"
 vlan 10
 security-zone users
 ip address 198.18.160.1/22
 ip helper-address 100.123.0.2
 ip policy route-map users_map
 ip tcp adjust-mss 1312
 location data10
 enable
exit

interface gigabitethernet 1/0/1
 description "UpLink"
exit
interface gigabitethernet 1/0/1.212
 description "VRF_backbone"
 security-zone trusted
 ip address 100.64.0.66/30
 ip tcp adjust-mss 1312
exit
interface gigabitethernet 1/0/1.213
 description "VRF_nat"
 security-zone untrusted
 ip address 100.64.0.70/30
 ip tcp adjust-mss 1312
exit
interface gigabitethernet 1/0/1.4092
 description "IPsec"
 security-zone ipsec
 ip address 10.12.20.4/28
exit
tunnel softgre 1
 description "mgmt"
 mode management
 local address 192.168.200.49
 default-profile
 enable
exit
tunnel softgre 1.1
 bridge-group 3
 enable
exit
tunnel softgre 2
 description "data"
 mode data
 local address 192.168.200.50
 default-profile
 enable
exit

security zone-pair trusted self
 rule 10
```

```

 action permit
 enable
 exit
exit
security zone-pair users self
 rule 10
 action permit
 match protocol udp
 match source-port dhcp_client
 match destination-port dhcp_server
 enable
 exit
exit
security zone-pair users untrusted
 rule 10
 action permit
 enable
 exit
exit
security zone-pair users trusted
 rule 10
 action permit
 match protocol udp
 match source-port dhcp_client
 match destination-port dhcp_server
 enable
 exit
 rule 20
 action permit
 match protocol udp
 match destination-port dns
 enable
 exit
exit
security zone-pair ipsec self
 rule 1
 action permit
 match protocol udp
 match destination-port ipsec_ports
 enable
 exit
 rule 2
 action permit
 match protocol esp
 enable
 exit
 rule 3
 action permit
 match protocol gre
 match source-address ipsec_remote_address
 match destination-address gre_termination
 enable
 exit
 rule 4
 action permit
 match protocol icmp
 enable
 exit
exit
security zone-pair trusted trusted
 rule 10
 action permit
 enable
 exit
exit

address-assignment pool ipsec_xauth_pool
 ip prefix 172.31.252.0/22
 data-tunnel address 192.168.200.50
 management-tunnel address 192.168.200.49
exit

```

```
security ike proposal dh1_md5_aes128
 authentication algorithm md5
 encryption algorithm aes128
exit

security ike policy psk_xauth
 lifetime seconds 86400
 pre-shared-key ascii-text testing123
 authentication method xauth-psk-key
 authentication mode radius
 proposal dh1_md5_aes128
exit

security ike gateway xauth_gw
 ike-policy psk_xauth
 local address 10.12.20.4
 local network 192.168.200.48/28
 remote address any
 remote network dynamic pool ipsec_xauth_pool
 mode policy-based
 dead-peer-detection action clear
 dead-peer-detection interval 60
 dead-peer-detection timeout 180
exit

security ipsec proposal md5_aes128_esp
 authentication algorithm md5
 encryption algorithm aes128
exit

security ipsec policy ipsec_pol
 proposal md5_aes128_esp
exit

security ipsec vpn xauth_ipsec
 mode ike
 ike establish-tunnel by-request
 ike gateway xauth_gw
 ike ipsec-policy ipsec_pol
 enable
exit

security passwords history 0
ip dhcp-relay

ip route 0.0.0.0/0 10.12.20.2

wireless-controller
 nas-ip-address 192.168.128.1
 resp-time 3
 failure-count 3
 data-tunnel configuration radius
 aaa das-profile COA
 aaa radius-profile PCRF
 enable
exit
ip telnet server
ip ssh server

clock timezone gmt +7

ntp enable
ntp server 100.123.0.2
exit
```

## 2

1.4.0, , ESR, EoGRE . :

- 1) bridge 1: 192.168.171/24 - , , IPsec;
  - 2) bridge 2: 192.168.110.0.37/24 - , ;
  - 2) bridge 3: 101.0.0.171/24 - SoftWLC, DHCP DNS . SoftWLC. SoftWLC 101.0.0.24;
  - 3) bridge 5: 192.168.7.1/30 192.168.7.2.30 - EoGRE , ;
  - 4) bridge 6: 172.31.239.1/26 - ;
  - 5) bridge 7: 172.31.239.65/26 - ;
  - 6) bridge 94: 10.12.12.1/30 - ;
  - 7) 172.31.250.0/24 - , mode config, EoGRE .
- .. bridge 1, bridge 94 PBR, ESR "clients\_br7".

```
hostname esr-ipsec

tech-support login enable
root login enable

syslog max-files 3
syslog file-size 512

object-group service telnet
 port-range 23
exit
object-group service ssh
 port-range 22
exit
object-group service dhcp_server
 port-range 67
exit
object-group service dhcp_client
 port-range 68
exit
object-group service ntp
 port-range 123
exit
object-group service ipsec_ports
 port-range 500
 port-range 4500
exit
object-group service snmp
 port-range 161-162
exit
object-group service COA
 port-range 3799
 port-range 31812-31813
 port-range 1812-1813
exit
object-group service redirect
 port-range 3128
 port-range 3129
exit

object-group network SoftWLC
 ip address-range 101.0.0.24
exit
object-group network ipsec_remote_address
 ip prefix 172.31.250.0/24
exit
object-group network gre_termination
 ip prefix 192.168.7.0/30
```

```
exit

object-group url defaultserv
 url http://eltex-co.ru
exit

-, data- .
radius-server timeout 10
radius-server retransmit 5
radius-server host 101.0.0.24
 key ascii-text testing123
 timeout 11
 priority 20
 source-address 101.0.0.171
 auth-port 31812
 acct-port 31813
 retransmit 10
 dead-interval 10
exit
aaa radius-profile PCRF
 radius-server host 101.0.0.24
exit

ESR, -.
das-server COA
 key ascii-text testing123
 port 3799
 clients object-group SoftWLC
exit
aaa das-profile COA
 das-server COA
exit

vlan 2
 force-up
exit
vlan 7
 name "mgmt"
 force-up
exit
vlan 100
 name "user"
 force-up
exit
vlan 808
 name "GRE"
 force-up
exit
vlan 1001
 name "from_SoftWLC"
 force-up
exit
vlan 1108
 force-up
exit
vlan 4094
 force-up
exit

security zone trusted
exit
security zone user
exit
security zone mgmt
exit
security zone gre
exit
security zone ipsec
exit
security zone clients_inet
exit
```



```

, , policy-based routing.
ip access-list extended users_filter
 rule 1
 action permit
 match protocol any
 match source-address 172.31.239.64 255.255.255.192
 match destination-address any
 enable
 exit
exit

#DHCP-request DHCP-, ip, SotfWLC.
ip access-list extended clients_dhcp
 rule 1
 action permit
 match protocol udp
 match source-address 172.31.239.64 255.255.255.192
 match destination-address 101.0.0.24 255.255.255.255
 match source-port 68
 match destination-port 67
 enable
 exit
exit

route-map, , .
route-map clients_br7
 rule 1 #DHCP-request DHCP .
 match ip access-group clients_dhcp
 action set ip next-hop verify-availability 101.0.0.24 10
 action permit
 exit
 rule 2 # , .
 match ip access-group users_filter
 action set ip next-hop verify-availability 10.12.12.2 10
 action permit
 exit
exit

snmp-server
snmp-server system-shutdown # ESR SNMP- EMS.
snmp-server community "private1" rw
snmp-server community "public11" ro

snmp-server host 101.0.0.24
exit

#, , IPSec .
bridge 1
 vlan 1108
 security-zone ipsec
 ip address 192.168.108.171/24
 enable
exit

, .
bridge 2
 vlan 2
 security-zone trusted
 ip address 192.168.110.37/24
 enable
exit

SoftWLC.
bridge 3
 description "SoftWLC"
 vlan 1001
 security-zone mgmt
 ip address 101.0.0.171/24
 enable
exit

```

```

GRE .
bridge 5
 vlan 808
 security-zone gre
 ip address 192.168.7.1/30
 ip address 192.168.7.2/30
 enable
exit

.
bridge 6
 vlan 7
 security-zone mgmt
 ip address 172.31.239.1/26
 ip helper-address 101.0.0.24
 ip tcp adjust-mss 1312
 protected-ports
 protected-ports exclude vlan
 enable
exit

#, .
bridge 7
 vlan 100
 security-zone user
 ip address 172.31.239.65/26
 ip helper-address 101.0.0.24
 ip policy route-map clients_br7 # policy-based routing .
 ip tcp adjust-mss 1312
 location testing2
 protected-ports
 protected-ports exclude vlan
 enable
exit

#, , .
bridge 94
 vlan 4094
 security-zone clients_inet
 ip address 10.12.12.1/30
 ip tcp adjust-mss 1312
 enable
exit

interface port-channel 1
 switchport forbidden default-vlan
 switchport general acceptable-frame-type tagged-only
 switchport general allowed vlan add 2,1001,1108,4094 tagged
exit
interface gigabitethernet 1/0/1
 channel-group 1 mode auto
exit
interface gigabitethernet 1/0/2
 channel-group 1 mode auto
exit
interface gigabitethernet 1/0/3
 shutdown
 security-zone trusted
 ip firewall disable
exit
interface gigabitethernet 1/0/4
 shutdown
 security-zone trusted
 ip firewall disable
exit
interface tengigabitethernet 1/0/1
 shutdown
 ip firewall disable
 switchport forbidden default-vlan
exit

```

```
interface tengigabitethernet 1/0/2
 shutdown
 ip firewall disable
 switchport forbidden default-vlan
exit
exit
tunnel softgre 1
 description "mgmt"
 mode management
 local address 192.168.7.1
 default-profile
 enable
exit
tunnel softgre 1.1
 bridge-group 6
 enable
exit
tunnel softgre 2
 description "data"
 mode data
 local address 192.168.7.2
 default-profile
 enable
exit

security zone-pair trusted self
 rule 1
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port ssh
 enable
exit
 rule 2
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port telnet
 enable
exit
 rule 3
 action permit
 match protocol icmp
 match source-address SoftWLC
 match destination-address any
 enable
exit
exit
security zone-pair user self
 rule 10
 action permit
 match protocol udp
 match source-address any
 match destination-address any
 match source-port dhcp_client
 match destination-port dhcp_server
 enable
exit
 rule 20
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port redirect
 enable
exit
```

```

exit
security zone-pair clients_inet self
 rule 10
 action permit
 match protocol any
 match source-address any
 match destination-address any
 exit
exit
security zone-pair user clients_inet
 rule 1
 action permit
 match protocol any
 match source-address any
 match destination-address any
 enable
 exit
exit
security zone-pair ipsec self
 rule 1
 action permit
 match protocol udp
 match source-address any
 match destination-address any
 match source-port ipsec_ports
 match destination-port ipsec_ports
 enable
 exit
 rule 2
 action permit
 match protocol esp
 match source-address any
 match destination-address any
 enable
 exit
 rule 3 #.. GRE IPSec , , .
 action permit
 match protocol gre
 match source-address ipsec_remote_address
 match destination-address gre_termination
 enable
 exit
 rule 4
 action permit
 match protocol icmp
 match source-address ipsec_remote_address
 match destination-address gre_termination
 enable
 exit
exit
security zone-pair mgmt self
 rule 1
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port ssh
 enable
 exit
 rule 2
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port telnet
 enable
 exit
 rule 3
 action permit

```

```
 match protocol icmp
 match source-address SoftWLC
 match destination-address any
 enable
exit
rule 4
 action permit
 match protocol udp
 match source-address SoftWLC
 match destination-address any
 match source-port any
 match destination-port snmp
 enable
exit
rule 5
 action permit
 match protocol udp
 match source-address SoftWLC
 match destination-address any
 match source-port any
 match destination-port COA
 enable
exit
rule 6
 action permit
 match protocol tcp
 match source-address SoftWLC
 match destination-address any
 match source-port any
 match destination-port COA
 enable
exit
rule 7
 action permit
 match protocol icmp
 match source-address any
 match destination-address any
 enable
exit
rule 10
 action permit
 match protocol udp
 match source-address any
 match destination-address any
 match source-port dhcp_client
 match destination-port dhcp_server
 enable
exit
rule 11
 action permit
 match protocol udp
 match source-address any
 match destination-address any
 match source-port dhcp_server
 match destination-port dhcp_server
 enable
exit
exit
security zone-pair mgmt mgmt
rule 1
 action permit
 match protocol icmp
 match source-address any
 match destination-address any
 enable
exit
rule 10
 action permit
 match protocol udp
 match source-address any
 match destination-address any
```

```
 match source-port dhcp_client
 match destination-port dhcp_server
 enable
exit
rule 20
 action permit
 match protocol udp
 match source-address SoftWLC
 match destination-address any
 match source-port any
 match destination-port snmp
 enable
exit
rule 21
 action permit
 match protocol udp
 match source-address any
 match destination-address SoftWLC
 match source-port any
 match destination-port snmp
 enable
exit
rule 22
 action permit
 match protocol tcp
 match source-address SoftWLC
 match destination-address any
 match source-port any
 match destination-port snmp
 enable
exit
rule 23
 action permit
 match protocol tcp
 match source-address any
 match destination-address SoftWLC
 match source-port any
 match destination-port snmp
exit
rule 30
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port telnet
 enable
exit
rule 31
 action permit
 match protocol tcp
 match source-address any
 match destination-address any
 match source-port any
 match destination-port ssh
 enable
exit
rule 49
 action permit
 match protocol udp
 match source-address any
 match destination-address SoftWLC
 match source-port any
 match destination-port ntp
 enable
exit
rule 50
 action permit
 match protocol udp
 match source-address any
 match destination-address SoftWLC
```

```

 match source-port any
 match destination-port COA
 enable
exit
exit
security zone-pair mgmt user
 rule 10
 action permit
 match protocol udp
 match source-address SoftWLC
 match destination-address any
 match source-port dhcp_server
 match destination-port dhcp_server
 enable
 exit
exit
security zone-pair gre ipsec
 rule 1
 action permit
 match protocol any
 match source-address gre_termination
 match destination-address ipsec_remote_address
 enable
 exit
exit

, mode config.
address-assignment pool ipsec_pool_1
 ip prefix 172.31.250.0/24 # ,
 # ip (tunnel ip) GRE .
 # tunnel ip EMS.
 data-tunnel address 192.168.7.2 #, GRE data .
 management-tunnel address 192.168.7.1 #, GRE .
exit

IKE : MD5, - DH1, aes128.
security ike proposal dh1_md5_aes128
 authentication algorithm md5
 encryption algorithm aes128
exit

IKE.
security ike policy psk_xauth1
 lifetime seconds 86400 # ().
 pre-shared-key ascii-text testing123 #
 authentication method xauth-psk-key # XAUTH.
 authentication mode radius # - .
 proposal dh1_md5_aes128 # .
exit

, .
security ike gateway ike1_from_inet
 ike-policy psk_xauth1 # IKE.
 local address 192.168.108.171 #, IPSec .
 local network 192.168.7.0/30 # , IPSec .
 remote address any # IPSec - .
 remote network dynamic pool ipsec_pool_1 # .
 mode policy-based # policy-based
 dead-peer-detection action clear # IPSec .
 dead-peer-detection interval 60 # dead-peer-detection .
 dead-peer-detection interval 180 #, , IPSec ,
 # DPD .
exit

IPSec: MD5, AES128, ESP.
security ipsec proposal md5_aes128_esp
 authentication algorithm md5
 encryption algorithm aes128
exit

IPSec.

```

```

security ipsec policy vpn1_poll
 lifetime seconds 3600 # IPSec hield SA ().
 proposal md5_aes128_esp # IPSec, .
exit

IPSec VPN, .
security ipsec vpn for_INET_1
 mode ike # IKE.
 ike establish-tunnel by-request # IPSec .
 ike gateway ike1_from_inet # , , IKE.
 ike ipsec-policy vpn1_poll # IPSec, .
 enable
exit

ip dhcp-relay

ip route 0.0.0.0/0 192.168.108.1 200

wireless-controller
 nas-ip-address 101.0.0.171
 data-tunnel configuration radius # data-
 aaa das-profile COA
 aaa radius-profile PCRF
 enable
exit
ip telnet server
ip ssh server

clock timezone gmt +7

ntp enable
ntp server 101.0.0.24
 prefer
exit

```

ESR 1200/1500/1700 1.4.1 - , EoGRE. : [ESR OTT](#) .

## Troubleshooting



OTT ssh/telnet GUI EMS - "".

- 
- `/var/log/eltex-wifi-sa/wifi-sa-server.log`. `application.conf` `LogLevel = debug`

CLI :

- :

WEP-12ac\_rev\_C# *get ipsec-activator*

IPsec, -:

WEP-12ac\_rev\_C# *get ipsec-dynamic*

URL -, :

WEP-12ac\_rev\_C# *sh*



```
/mnt/root # cd /etc/cert/
/etc/cert # cat sa-host.txt
https://126.0.10.4:8043
```

provider-id MAC :

```
WEP-12ac_rev_C# sh
```

```
/etc/cert # openssl x509 -in /etc/cert/cert.pem -text -noout
WARNING: can't open config file: /etc/pki/tls/openssl.cnf
Certificate:
Data:
Version: 3 (0x2)
Serial Number:
e0:d9:e3:70:1d:00:bc:2a:aa:28:54:ee:9f:27:5a:77
Signature Algorithm: sha256WithRSAEncryption
Issuer: CN=OTT Certification Root (Test), O=Eltex Enterprise Ltd., OU=Wi-Fi, C=RU, L=Novosibirsk
Validity
Not Before: Jan 1 00:00:00 1999 GMT
Not After : Jan 1 00:00:00 2100 GMT
Subject: CN=E0:D9:E3:70:1D:00, O=provider_eltex
Subject Public Key Info:
Public Key Algorithm: rsaEncryption
Public-Key: (2048 bit)
Modulus:
.....
```

e0:d9:e3:70:1d:00 - MAC ,

provider\_eltex - Provider-ID

-

```
service-activator https://<URL ->:8043 --msg-type register --timeout 300 -C /etc/cert/cert.pem -K /etc/cert/key.pem -A /etc/cert/ca.pem -d 15
```

- .