v1.17_ DHCP

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DHCP **ISC-DHCP-SERVER**. Eltex.SoftWLC :

- () IP- 43 (11 12) , GRE ESR.
- (management,) IP- 43 (10 13) , .
- IP- Wi-Fi , .
- DHCP 82, 60 giAddrField.

/

:

```
service isc-dhcp-server stop
```

:

```
service isc-dhcp-server start
```

— , :

```
service isc-dhcp-server status
```

:

```
* isc-dhcp-server is running
```

,

```
* isc-dhcp-server is not running
```

.

DHCP

, , , !

DHCP- :

- ***(inner operator)*** – . GUI EMS, SMS gateway NorthboundInterface. (keepalived);
- ***(outer operator)*** – . . (keepalived);
- ***DHCP*** Relay- .

```
auto eth1.102 #
    iface eth1.102 inet static
    address 192.168.114.8
    netmask 255.255.255.192
    network 192.168.114.0
    vlan_raw_device eth1

auto eth1.100 #
    iface eth1.100 inet static
    address 172.17.209.9
    netmask 255.255.255.192
    network 172.17.209.0
    vlan_raw_device eth1

auto eth1.101 #     IP
    iface eth1.101 inet static
    address 10.203.5.7
    netmask 255.255.255.192
    network 10.203.5.0
    vlan_raw_device eth1
```

DHCP :

10.203.32.0 – IP- ;

192.168.200.0 – management IP- ;

100.65.64.0– IP- .

/etc/network/interfaces.

```
up ip route add 100.65.64.0/22 via 192.168.114.10
up ip route add 192.168.200.0/22 via 192.168.114.10
up ip route add 10.203.32.0/19 via 10.203.5.1
```

ISC-DHCP-SERVER

/etc/default/isc-dhcp-server

, , :

```
INTERFACES="eth1.101 eth1.102"
```

/etc/dhcp/dhcpd.conf

DHCP-.

```
default-lease-time 60;
max-lease-time 120;
log-facility local7;
class "ELTEX-DEVICES" {
    match if (
        (substring (option vendor-class-identifier, 0, 14) = "ELTEX_WEP-12AC") or
        (substring (option vendor-class-identifier, 0, 14) = "ELTEX_WOP-12AC") or
        (substring (option vendor-class-identifier, 0, 14) = "ELTX_WEP-12AC") or
        (substring (option vendor-class-identifier, 0, 14) = "ELTX_WOP-12AC")
    );
}
subnet 192.168.114.64 netmask 255.255.255.192 {}
subnet 10.203.5.64 netmask 255.255.255.192 {}
#first IP
subnet 10.203.32.0 netmask 255.255.254.0 {
    pool {
        option routers 10.203.32.2;
        range 10.203.32.130 10.203.32.230;
        failover peer "dhcp-failover";
        option vendor-encapsulated-options 0B:0c:31:30:2E:32:30:33:2E:35:2E:31:31:32:0C:0C:31:30:2E:32:30:33:2E:
35:2E:31:31:33;
        allow members of "ELTEX-DEVICES";
    }
}
#managed IP
subnet 192.168.200.0 netmask 255.255.252.0 {
    pool {
        option routers 192.168.200.5;
        range 192.168.200.120 192.168.200.164;
        failover peer "dhcp-failover";
        option vendor-encapsulated-options A:F:31:39:32:2E:31:36:38:2E:31:31:34:2E:31:30:34;
        allow members of "ELTEX-DEVICES";
    }
}
#User IP   ()
subnet 200.65.64.0 netmask 255.255.240.0 {
    pool {
        option routers 200.65.64.5;
        range 200.65.64.200 200.65.64.250;
        failover peer "dhcp-failover";
        option domain-name-servers 172.16.0.1, 8.8.8.8;
    }
}
```

IP- ( ), . **/etc/dhcp/dhcpd.conf,** :

1. , , **/var/lib/dhcp/touch /var/lib/dhcp/hosts.**

2. .

```
host wep_01 {   hardware ethernet a8:f9:4b:b0:00:00;  fixed-address 192.168.1.1;  }
```

,

host wep_01 – .

hardware ethernet a8:f9:4b:b0:00:01 – MAC- . , MAC , .

fixed-address 192.168.200.133 – IP- .

3. :

```
include "/var/lib/dhcp/hosts";
```

4. DHCP- , :

```
chown dhcpd:dhcpd /var/lib/dhcp/static/hosts
```

5. apparmor, **/etc/apparmor.d/usr.sbin.dhcpd** ( ):

```
/var/lib/dhcp/hosts r,
```

6.

```
service apparmor restart
service isc-dhcp-server restart
```

:

```
subnet 192.168.200.0 netmask 255.255.252.0 {
    pool {
        option routers 192.168.200.5;
        range 192.168.200.120 192.168.200.164;
        option vendor-encapsulated-options A:F:31:39:32:2E:31:36:38:2E:31:31:34:2E:31:30:34;
        include "/var/lib/dhcp/hosts";
    }
}
```

. .

```
class "NEW_class" {
match if (
    (option agent.circuit-id = "E320-1-210:GigabitEthernet 1/0/2.25030007:2503-7")
    and
        (
            (substring (option vendor-class-identifier, 0, 14) = "ELTEX_WEP-12AC") or
            (substring (option vendor-class-identifier, 0, 14) = "ELTEX_WOP-12AC") or
            (substring (option vendor-class-identifier, 0, 14) = "ELTX_WEP-12AC") or
            (substring (option vendor-class-identifier, 0, 14) = "ELTX_WOP-12AC")
        )
    );
}
```

, :

```
subnet 192.168.200.0 netmask 255.255.252.0 {
    pool {
        option routers 192.168.200.5;
        range 192.168.200.120 192.168.200.164;
        option vendor-encapsulated-options A:F:31:39:32:2E:31:36:38:2E:31:31:34:2E:31:30:34;
        allow members of "NEW_class";
    }
}
```

, .

43

DHCP- - .

SoftWLC :

10	EMS-.
11	management-.
12	data-.
13	, .

RFC2132 :

```
   When encapsulated vendor-specific extensions are used, the
   information bytes 1-n have the following format:

    Code   Len   Data item        Code   Len   Data item       Code
   +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
   |  T1 |  n  |  d1 |  d2 | ... |  T2 |  n  |  D1 |  D2 | ... | ... |
   +-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
```

HEX ( ). **ASCII HEX.**

':', ';'.

:

- 43 (11 12) :

```
option vendor-encapsulated-options 0B:0B:31:30:2E:32:30:33:2E:35:2E:31:30:0C:0B:31:30:2E:32:30:33:2E:35:2E:31:
31;
```

:

11 , 11 , 10.203.5.10;

12 , 11 , 10.203.5.11.

- 43 (10) :

```
option vendor-encapsulated-options 0A:0D:31:39:32:2E:31:36:38:2E:31:31:34:2E:34;
```

:

10 , 13 , 192.168.114.4

- 13 :

```
option vendor-encapsulated-options 0D:0A:65:6c:74:65:78:2e:72:6f:6f:74;
```

:

13 , 10 , : eltex.root

⚠ , , . 10 13 :

```
option vendor-encapsulated-options 0A:0D:31:39:32:2E:31:36:38:2E:31:31:34:2E:34:0D:0A:65:6c:74:65:78:2e:
72:6f:6f:74;
```

dhcpd

DHCP , dhcpd.

dhcpd -t , -cf

```
dhcpd -t -cf /path/to/dhcpd.conf
```

:

```
root@vagrant-ubuntu-trusty-64-test1111:~# dhcpd -t -cf /etc/dhcp/dhcpd_test.conf
Internet Systems Consortium DHCP Server 4.2.4
Copyright 2004-2012 Internet Systems Consortium.
All rights reserved.
For info, please visit https://www.isc.org/software/dhcp/
/etc/dhcp/dhcpd_test.conf line 97: semicolon expected.
        range
         ^
/etc/dhcp/dhcpd_test.conf line 105: Pool declaration with no address range.
          }
           ^
Pool declarations must always contain at least
one range statement.
Configuration file errors encountered -- exiting
```

DHCP-failover

/etc/dhcp/dhcpd.conf

:

```
failover peer "dhcp-failover" {
    primary;
    address 192.168.114.8;
    port 647;
    peer address 192.168.114.9;
    peer port 647;
    max-response-delay 30;
    max-unacked-updates 10;
    load balance max seconds 3;
    auto-partner-down 180;
    mclt 1800;
    split 128;
}
```

:

```
failover peer "dhcp-failover" {
    secondary;
    address 192.168.114.9;
    port 647;
    peer address 192.168.114.8;
    peer port 647;
    max-response-delay 30;
    max-unacked-updates 10;
    load balance max seconds 3;
    auto-partner-down 60;
}
```

(192.168.200.0)

```
failover peer "dhcp-failover";
```

DHCP-failover . .

OMAPI

DHCP , DHCP . , -K

```
root@vagrant-ubuntu-trusty-64-test1111:~# dnssec-keygen -K /etc/dhcp/ -r /dev/urandom -a HMAC-MD5 -b 512 -n
HOST omapi_key
Komapi_key.+157+35749
```

```
root@vagrant-ubuntu-trusty-64-test1111:~# cat /etc/dhcp/Komapi_key.+157+35749.key | awk '{print $7 $8}'
kvxcUNEtu0137tWK/uEKU/MSQxinN0lTifbLwaQd0SvvhtW+PpvlHqSbHJnNLIfo7KSA7KFWtjoEUqIIJXgxmg==
```

DHCP , , omapi_key

```
key omapi_key {
        algorithm HMAC-MD5;
        secret "kvxcUNEtu0137tWK/uEKU/MSQxinN0lTifbLwaQd0SvvhtW+PpvlHqSbHJnNLIfo7KSA7KFWtjoEUqIIJXgxmg==";
              };

omapi-port 7911;
omapi-key omapi_key;
```

isc-dhcp-server

```
service isc-dhcp-server  restart
```

EMS OMAPI key name, OMAPI key Failover peer name

OMAPI key name	omapi_key
OMAPI key	kvxcUNEtu0137tWK/uEKU/MSQxinN0lTifbLwaQd0SvvhtW+PpvlHqSbHJnNLIfo7KSA7KFWtjoEUqIIJXgxmg==
Failover peer name	dhcp-failover