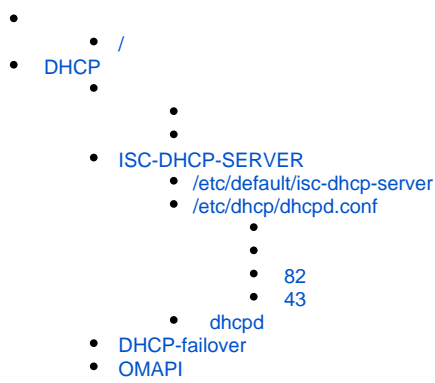


# v1.14\_ DHCP



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/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";
    }
}
```

...

**82**

82 :

```
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")
        )
    );
}
```

,:

;

SoftWLC :

<b>10</b>	EMS-.
<b>11</b>	management-.
<b>12</b>	data-.
<b>13</b>	, .

RFC2132 :

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

$$\begin{array}{cc} 1,1 & 1,1 \\ \cdot, & , \cdot \end{array}$$

• •

- 43 (11 12) :

•

12, 11, 10.203.5.11.

- 43 (10) :

$$\vdots$$

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;
```

## dhcpcd

DHCP , dhcpcd.

dhcpcd -t , -cf

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

:

```
root@vagrant-ubuntu-trusty-64-test1111:~# dhcpcd -t -cf /etc/dhcp/dhcpcd_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/dhcpcd_test.conf line 97: semicolon expected.
    range
    ^
/etc/dhcp/dhcpcd_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/dhcpcd.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/MSQxinN01TifbLwaQd0SvvhtW+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