-
  -
  - AAA RADIUS
  - AAA TACACS
  - AAA LDAP
  - telnet RADIUS-
-
  -
  -
-
  -
  -
  -
- Firewall
  -
  - Firewall
  - (DPI)
- (ACL)
  -
  -
- IPS/IDS
  -
  - IPS/IDS
  -
  - IPS/IDS
  -
  -
  -
  -
- Eltex Distribution Manager
  -
  -
-
  -
  -
- «»
  -
  -

AAA (Authentication, Authorization, Accounting) – .

- Authentication () – () . , .
- Authorization (, ,) – .
- Accounting () – .

1	local .	**esr(config)# aaa authentication login { default | <NAME> } <METHOD 1> [<METHOD 2>] [<METHOD 3>] [<METHOD 4>]**	<NAME> – , 31 . : • local – ; • tacacs – TACACS-; • radius – RADIUS-; • ldap – LDAP-.
2	enable .	**esr(config)# aaa authentication enable <NAME><METHOD 1> [<METHOD 2>]** **[<METHOD 3>] [<METHOD 4>]**	<NAME> – , 31 . : • local – ; • tacacs – TACACS-; • radius – RADIUS-; • ldap – LDAP-.

3	( ).	**esr(config)# aaa authentication mode <MODE>**	<MODE> – : • chain – FAIL, ; • break – FAIL, . , . : chain.
4	( ).	**esr(config)# aaa authentication attempts max-fail <COUNT> <TIME>**	<COUNT> – , , [1..65535]; <TIME> – , , [1..65535]. : <COUNT> – 5; <TIME> – 300.
5	admin ( ).	**esr(config)# security passwords default-expired**	
6	( ).	**esr(config)# security passwords history <COUNT>**	<COUNT> – . [1..15]. : 0.
7	( ).	**esr(config)# security passwords lifetime <TIME>**	<TIME> – . [1..365]. : .
8	ENABLE- ( ).	**esr(config)# security passwords min-length <NUM>**	<NUM> – . [8..128]. : 0.
9	ENABLE- ( ).	**esr(config)# security passwords max-length <NUM>**	<NUM> – . [8..128]. : .
10	, ENABLE- ( ).	**esr(config)# security passwords symbol-types <COUNT>**	<COUNT> – . [1..4]. : 1.
11	ENABLE- ( ).	**esr(config)# security passwords lower-case <COUNT>**	<COUNT> – ENABLE-. [0..128]. : 0.
12	() ENABLE- ( ).	**esr(config)# security passwords upper-case <COUNT>**	<COUNT> – () . [0..128]. : 0.
13	ENABLE- ( ).	**esr(config)# security passwords numeric-count <COUNT>**	<COUNT> – . [0..128]. : 0.
14	ENABLE- ( ).	**esr(config)# security passwords special-case <COUNT>**	<COUNT> – . [0..128]. : 0.
15	.	**esr(config)# username <NAME>**	<NAME> – , 31 .
16	.	**esr(config-user)# password { <CLEAR-TEXT> | encrypted <HASH_SHA512> }**	<CLEAR-TEXT> – , [8 .. 32] , [0-9a-fA-F]; <HASH_SHA512> – sha512, 110 .
17	.	**esr(config-user)# privilege <PRIV>**	<PRIV> – . [1..15].
18	.	**esr(config)# line console** **esr(config)# line telnet** **esr(config)# line ssh**	
19	.	**esr(config-line-ssh)# login authentication <NAME>**	<NAME> – , 31 .
20	.	**esr(config-line-ssh)# enable authentication <NAME>**	<NAME> – , 31 .
21	, .	**esr(config-line-ssh)# exec-timeout <SEC>**	<SEC> – , [1..65535].

AAA RADIUS

1	DSCP IP- RADIUS- ( ).	**esr(config)# radius-server dscp <DSCP>**	<DSCP> – DSCP, [0..63]. : 63.
2	RADIUS- ( ).	**esr(config)# radius-server retransmit <COUNT>**	<COUNT> – RADIUS-, [1..10]. : 1.

3	, , RADIUS- ( ).	**esr(config)# radius-server timeout <SEC>**	<SEC> – , [1..30]. : 3 .
4	RADIUS- .	**esr(config)# radius-server host { <IP-ADDR> | <IPV6-ADDR> } [vrf <VRF>]** **esr(config-radius-server)#**	<IP-ADDR> – IP- RADIUS-, AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6- RADIUS-, X:X:X:X::X, [0.. FFFF] <VRF> – VRF, 31 .
5	( ).	**aaa authentication attempts max-fail <COUNT> <TIME>**	<COUNT> – , , [1..65535]; <TIME> – , , [1..65535]. : <COUNT> – 5; <TIME> – 300.
6	RADIUS-.	**esr(config-radius-server)# key ascii-text** **{ <TEXT> | encrypted <ENCRYPTED-TEXT> }**	<TEXT> – [8..16] ASCII-; <ENCRYPTED-TEXT> – , [8..16] , [16..32] .
7	RADIUS- ( ).	**esr(config-radius-server)# priority <PRIORITY>**	<PRIORITY> – , [1..65535]. , . : 1.
8	, , RADIUS- ( ).	**esr(config-radius-server)# timeout <SEC>**	<SEC> – , [1..30]. : .
9	IPv4/IPv6-, IP/IPv6-RADIUS-.	**esr(config-radius-server)# source-address { <ADDR> | <IPV6-ADDR> }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6- , X:X:X:X::X, [0..FFFF].
10	radius .	**esr(config)# aaa authentication login { default | <NAME> }** **<METHOD 1>** **[<METHOD 2>] [<METHOD 3>] [<METHOD 4>]**	<NAME> – , 31 . : • local – ; • tacacs – TACACS-; • radius – RADIUS-; • ldap – LDAP-.
11	radius .	**esr(config)# aaa authentication enable <NAME><METHOD 1>** **[<METHOD 2>] [<METHOD 3>] [<METHOD 4>]**	<NAME> – 31 ; • default – . <METHOD> – : • enable – enable-; • tacacs – TACACS; • radius – RADIUS; • ldap – LDAP.
12	( ).	**esr(config)# aaa authentication mode <MODE>**	<MODE> – : • chain – FAIL, ; • break – FAIL, . , . : chain.
13	radius ( ).	**esr(config)# aaa accounting login start-stop <METHOD 1>** **[<METHOD 2>]**	<METHOD> – : • tacacs – TACACS; • radius – RADIUS.
14	.	**esr(config)# line <TYPE>**	<TYPE> – : • console – ; • ssh – .
15	.	**esr(config-line-console)# login authentication <NAME>**	<NAME> – , 31 . 8.
16	.	**esr(config-line-console)# enable authentication <NAME>**	<NAME> – , 31 . 9.

AAA TACACS

1	DSCP IP- TACACS- ( ).	**esr(config)# tacacs-server dscp <DSCP>**	<DSCP> – DSCP, [0..63]. : 63.
2	, , TACACS- ( ).	**esr(config)# tacacs-server timeout <SEC>**	<SEC> – , [1..30]. : 3 .
3	TACACS- .	**esr(config)# tacacs -server host { <IP-ADDR> | <IPV6-ADDR> } [vrf <VRF>]** **esr(config-tacacs-server)#**	<IP-ADDR> – IP- TACACS-, AAA.BBB.CCC. DDD, [0..255] <IPV6-ADDR> – IPv6- TACACS -, X:X:X:X::X, [0..FFFF] <VRF> – VRF, 31 .
4	( )	**aaa authentication attempts max-fail <COUNT> <TIME>**	<COUNT> – , , [1..65535]; <TIME> – , , [1..65535]. : <COUNT> – 5; <TIME> – 300.
5	TACACS-	**esr(config-tacacs-server)# key ascii-text { <TEXT> | encrypted <ENCRYPTED-TEXT> }**	<TEXT> – [8..16] ASCII-; <ENCRYPTED-TEXT> – , [8..16] , [16..32] .
6	c TACACS- ( ).	**esr(config-tacacs-server)# port <PORT>**	<PORT> – TCP- c , [1..65535]. : 49 TACACS-.
7	TACACS ( ).	**esr(config-tacacs-server)# priority <PRIORITY>**	<PRIORITY> – , [1..65535]. , . : 1.
8	IPv4/IPv6-, IP/IPv6- TACACS-.	**esr(config-tacacs-server)# source-address { <ADDR> | <IPV6-ADDR> }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255].
9	TACACS .	**esr(config)# aaa authentication enable <NAME><METHOD 1> [<METHOD 2>] [<METHOD 3>] [<METHOD 4>]**	<NAME> – 31 ; • default – . <METHOD> – : • enable – enable-; • tacacs – TACACS; • radius – RADIUS; • ldap – LDAP.
10	( ).	**esr(config)# aaa authentication mode <MODE>**	<MODE> – : • chain – FAIL, ; • break – FAIL, . , . : chain.
11	, CLI ( ).	**esr(config)# aaa accounting commands stop-only tacacs**	
12	tacacs ( ).	**esr(config)# aaa accounting login start-stop <METHOD 1> [<METHOD 2>]**	<METHOD> – : • tacacs – TACACS; • radius – RADIUS.
13	.	**esr(config)# line <TYPE>**	<TYPE> – : • console – ; • ssh – .
14	.	**esr(config-line-console)# login authentication <NAME>**	<NAME> – , 31 . 7.
15	.	**esr(config-line-console)# enable authentication <NAME>**	<NAME> – , 31 . 8.

AAA LDAP

1	DN (Distinguished name), .	**esr(config)# ldap-server base-dn <NAME>**	<NAME> – DN, 255 .
2	, , LDAP- ( ).	**esr(config)# ldap-server bind timeout <SEC>**	<SEC> – , [1..30]. : 3 .

3	DN (Distinguished name) , LDAP- .	**esr(config)# ldap-server bind authenticate root-dn <NAME>**	<NAME> – DN , 255 .
4	, LDAP- .	**esr(config)# ldap-server bind authenticate root-password ascii-text { <TEXT> | encrypted <ENCRYPTED-TEXT> }**	<TEXT> – [8..16] ASCII-; <ENCRYPTED-TEXT> – , [8..16] , [16..32] .
5	, LDAP- ( ).	**esr(config)# ldap-server search filter user-object-class <NAME>**	<NAME> – , 127 . : posixAccount.
6	LDAP- ( ).	**esr(config)# ldap-server search scope <SCOPE>**	<SCOPE> – LDAP-, : • onelevel – DN LDAP-; • subtree – DN LDAP . : subtree.
7	, , LDAP- , ( ).	**esr(config)# ldap-server search timeout <SEC>**	<SEC> – , [0..30] : 0 – LDAP-.
8	, LDAP- ( ).	**esr(config)# ldap-server naming-attribute <NAME>**	<NAME> – , 127 . : uid.
9	, ( ).	**esr(config)# ldap-server privilege-level-attribute <NAME>**	<NAME> – , 127 . : priv-lvl
10	DSCP IP- LDAP- ( ).	**esr(config)# ldap-server dscp <DSCP>**	<DSCP> – DSCP, [0..63]. : 63
11	LDAP- .	**esr(config)# ldap -server host { <IP-ADDR> | <IPV6-ADDR> } [vrf <VRF>]** **esr(config-ldap-server)#**	<IP-ADDR> – IP- LDAP-, AAA.BBB.CCC.DDD, [0..255] <IPV6-ADDR> – IPv6- LDAP-, X:X:X:X::X, [0.. FFFF] <VRF> – VRF, 31 .
12	( ).	**aaa authentication attempts max-fail <COUNT> <TIME>**	<COUNT> – , , [1..65535]; <TIME> – , , [1..65535]. : <COUNT> – 5; <TIME> – 300
13	c LDAP- ( ).	**esr(config-ldap-server)# port <PORT>**	<PORT> – TCP- c , [1..65535]. : 389 LDAP-.
14	LDAP- ( ).	**esr(config-ldap-server)# priority <PRIORITY>**	<PRIORITY> – , [1..65535]. , . : 1.
15	IPv4/IPv6-, IP/IPv6- LDAP-.	**esr(config-ldap-server)# source-address { <ADDR> | <IPV6-ADDR> }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6- , X:X:X:X::X, [0..FFFF].
16	LDAP .	**esr(config)# aaa authentication login { default | <NAME> } <METHOD 1> [<METHOD 2>] [<METHOD 3>] [<METHOD 4>]**	<NAME> – , 31 . : • local – ; • tacacs – TACACS-; • radius – RADIUS-; • ldap – LDAP-.
17	LDAP .	**esr(config)# aaa authentication enable <NAME> <METHOD 1> [<METHOD 2>] [<METHOD 3>] [<METHOD 4>]**	<NAME> – 31 ; • default – . <METHOD> – : • enable – enable-; • tacacs – TACACS; • radius – RADIUS; • ldap – LDAP.

18	.	**esr(config)# aaa authentication mode <MODE>**	<MODE> – : • chain – FAIL, ; • break – FAIL, . , . : chain.
19	.	**esr(config)# line <TYPE>**	<TYPE> – : • console – ; • ssh – .
20	.	**esr(config-line-console)# login authentication <NAME>**	<NAME> – , 31 . 14.
21	.	**esr(config-line-console)# enable authentication <NAME>**	<NAME> – , 31 . 15.

telnet RADIUS-

:

, Telnet, RADIUS (192.168.16.1/24).

:

RADIUS- (password):

```
esr# configure
esr(config)# radius-server host 192.168.16.1
esr(config-radius-server)# key ascii-text encrypted 8CB5107EA7005AFF
esr(config-radius-server)# exit
```

:

```
esr(config)# aaa authentication login log radius
```

, Telnet-:

```
esr(config)# line telnet
esr(config-line-telnet)# login authentication log
esr(config-line-telnet)# exit
esr(config)# exit
```

RADIUS- :

```
esr# show aaa radius-servers
```

:

```
esr# show aaa authentication
```

, (1-15). , .

- *1-9* – (show ...);
- *10-14* – , ;
- *15* – .

CLI :

```
esr(config)# privilege <COMMAND-MODE> level <PRIV><COMMAND>
```

<COMMAND-MODE> – ;

<PRIV> – , [1..15];

<COMMAND> – , 255 .

:

10, «show interfaces bridges». «show interfaces bridges» 3.

:

, 10 3:

```
esr(config)# privilege root level 3 "show interfaces bridge"
esr(config)# privilege root level 10 "show interfaces"
```

1	ICMP flood-.	**esr(config)# ip firewall screen dos-defense icmp-threshold { <NUM> }**	<NUM> – ICMP- [1..10000].
2	land-.	**esr(config)# firewall screen dos-defense land**	
3	,	**esr(config)# ip firewall screen dos-defense limit-session-destination { <NUM> }**	<NUM> – IP- [1..10000].
4	,	**esr(config)# ip firewall screen dos-defense limit-session-source { <NUM> }**	<NUM> – IP- [1..10000].
5	SYN flood-.	**esr(config)# ip firewall screen dos-defense syn-flood { <NUM> } [src-dsr]**	<NUM> – TCP SYN [1..10000]. src-dst – TCP SYN .
6	UDP flood-.	**esr(config)# ip firewall screen dos-defense udp-threshold { <NUM> }**	<NUM> – UDP [1..10000].
7	winnuke-.	**esr(config)# ip firewall screen dos-defense winnuke**	
8	TCP- FIN ACK.	**esr(config)# ip firewall screen spy-blocking fin-no-ack**	
9	ICMP- .	**esr(config)# ip firewall screen spy-blocking icmp-type**	<TYPE> – ICMP, : • destination-unreachable • echo-request • reserved • source-quench • time-exceeded
10	IP sweep-.	**esr(config)# ip firewall screen spy-blocking ip-sweep { <NUM> }**	<NUM> – ip sweep , [1..1000000].
11	port scan-.	**esr(config)# ip firewall screen spy-blocking port-scan { <threshold> } [<TIME>]**	<threshold> – , port scan- [1..10000]. <TIME> – [1..1000000].
12	IP spoofing-.	**esr(config)# ip firewall screen spy-blocking spoofing**	
13	TCP-, SYN FIN.	**esr(config)# ip firewall screen spy-blocking syn-fin**	
14	TCP-, : FIN, PSH, URG. XMAS.	**esr(config)# ip firewall screen spy-blocking tcp-all-flag**	
15	TCP-, flags.	**esr(config)# ip firewall screen spy-blocking tcp-no-flag**	
16	ICMP-.	**esr(config)# ip firewall screen suspicious-packets icmp-fragment**	

17	IP-.	**esr(config)# ip firewall screen suspicious-packets ip-fragment**	
18	ICMP- 1024 .	**esr(config)# ip firewall screen suspicious-packets icmp-fragment**	
19	TCP-, SYN.	**esr(config)# ip firewall screen suspicious-packets syn-fragment**	
20	UDP-.	**esr(config)# ip firewall screen suspicious-packets udp-fragment**	
21	, ID IP 137 .	**esr(config)# ip firewall screen suspicious-packets unknown-protocols**	
22	(SNMP, syslog CLI) .	**esr(config)# ip firewall logging interval <NUM>**	<NUM> – [30 .. 2147483647].
23	CLI.	**esr(config)# logging firewall screen detailed**	
24	DoS- CLI, syslog SNMP.	**esr(config)# logging firewall screen dos-defense <ATACK_TYPE>**	<ATACK_TYPE> – DoS-, : icmp-threshold, land, limit-session-destination, limit-session-source, syn-flood, udp-threshold, winnuke.
25	CLI, syslog SNMP	**esr(config)# logging firewall screen spy-blocking { <ATACK_TYPE> | icmp-type <ICMP_TYPE> }**	<ATACK_TYPE> – , : fin-no-ack, ip-sweep, port-scan, spoofing, syn-fin, tcp-all-flag, tcp-no-flag. <ICMP_TYPE> – ICMP, : destination-unreachable, echo-request, reserved, source-quench, time-exceeded.
26	CLI, syslog SNMP	**esr(config)# logging firewall screen suspicious-packets <PACKET_TYPE>**	<PACKET_TYPE> – , : icmp-fragment, ip-fragment, large-icmp, syn-fragment, udp-fragment, unknown-protocols.

ip firewall screen dos-defense icmp-threshold	ICMP flood-. ICMP- . - .
firewall screen dos-defense land	land-. source destination IP-, SYN TCP. - TCP SYN TCP .
ip firewall screen dos-defense limit-session-destination	IP- , (DoS-: SYN flood, UDP flood, ICMP flood, ..). , , DoS-.
ip firewall screen dos-defense limit-session-source	IP- , (DoS-: SYN flood, UDP flood, ICMP flood, ..). , , DoS-.
ip firewall screen dos-defense syn-flood	SYN flood-. TCP- SYN . - TCP SYN TCP-.
ip firewall screen dos-defense udp-threshold	UDP flood-. UDP . - UDP-.
ip firewall screen dos-defense winnuke	winnuke-. TCP- URG 139 . Windows (95).
ip firewall screen spy-blocking fin-no-ack	TCP- FIN ACK. .
ip firewall screen spy-blocking icmp-type destination-unreachable	ICMP- 3 (destination-unreachable), , . .
ip firewall screen spy-blocking icmp-type echo-request	ICMP- 8 (echo-request), , . .
ip firewall screen spy-blocking icmp-type reserved	ICMP- 2 7 (reserved), , . .
ip firewall screen spy-blocking icmp-type source-quench	ICMP- 4 (source quench), , . .
ip firewall screen spy-blocking icmp-type time-exceeded	ICMP- 11 (time exceeded), , . .
ip firewall screen spy-blocking ip-sweep	IP sweep-. , 10 ICMP- , 10 , 11 . .
ip firewall screen spy-blocking port-scan	port scan-. (<threshold>) 10 TCP- SYN TCP-, 10 UDP-, UDP-, port scan (<TIME>). .
ip firewall screen spy-blocking spoofing	ip spoofing-. . , 10.0.0.1/24 Gi1/0/1, Gi1/0/2, , . source IP-.
ip firewall screen spy-blocking syn-fin	TCP- SYN FIN. .
ip firewall screen spy-blocking tcp-all-flag	TCP- : FIN, PSH, URG. XMAS.
ip firewall screen spy-blocking tcp-no-flag	TCP- flags. .

ip firewall screen suspicious-packets icmp-fragment	ICMP-. ICMP- .
ip firewall screen suspicious-packets ip-fragment	.
ip firewall screen suspicious-packets large-icmp	ICMP- 1024 .
ip firewall screen suspicious-packets syn-fragment	TCP- SYN. TCP SYN . .
ip firewall screen suspicious-packets udp-fragment	UDP-.
ip firewall screen suspicious-packets unknown-protocols	, ID IP 137 .

:

LAN ESR land, syn-flood, ICMP flood SNMP SNMP- 192.168.0.10.

:

firewall (firewall):

```
esr(config)# security zone LAN
esr(config-zone)# exit
esr(config)# security zone WAN
esr(config-zone)# exit
esr(config)# security zone-pair LAN WAN
esr(config-zone-pair)# rule 100
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# ex
esr(config-zone-pair)# exit
esr(config)# security zone-pair WAN LAN
esr(config-zone-pair)# rule 100
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair)# exit
esr(config)# interface gigabitethernet 1/0/1
esr(config-if-gi)# security-zone LAN
esr(config-if-gi)# ip address 192.168.0.1/24
esr(config-if-gi)# exit
esr(config)# interface gigabitethernet 1/0/2
esr(config-if-gi)# security-zone WAN
esr(config-if-gi)# ip address 10.0.0.1/24
esr(config-if-gi)# exit
```

land, syn-flood, ICMP flood-:

```
esr(config)# ip firewall screen dos-defense land
esr(config)# ip firewall screen dos-defense syn-flood 100 src-dst
esr(config)# ip firewall screen dos-defense icmp-threshold 100
```

:

```
esr(config)# logging firewall screen dos-defense land
esr(config)# logging firewall screen dos-defense syn-flood
esr(config)# logging firewall screen dos-defense icmp-threshold
```

SNMP-, :

```
esr(config)# snmp-server
esr(config)# snmp-server host 192.168.0.10
esr(config)# snmp-server enable traps screen land
esr(config)# snmp-server enable traps screen syn-flood
esr(config)# snmp-server enable traps screen icmp-threshold
```

:

```
esr# show ip firewall screen counters
```

Firewall

Firewall – , .

1	.	**esr(config)# security zone <zone-name1>** **esr(config)# security zone <zone-name2>**	<zone-name> – 12 .
2	.	**esr(config-zone)# description <description>**	<description> – 255 .
3	VRF, ( ).	**esr(config- zone)# ip vrf forwarding <VRF>**	<VRF> – VRF, 31 .
4	NAT Firewall (,).	**esr(config)# ip firewall sessions counters**	
5	, - (,).	**esr(config)# ip firewall sessions allow-unknown**	
6	( ) stateless	**esr(config)# ip firewall mode <MODE>**	<MODE> – , : stateful, stateless. : stateful
7	( ).	**esr(config)# ip firewall sessions generic-timeout <TIME>**	<TIME> – , [1..8553600]. : 60 .
8	ICMP-, ( ).	**esr(config)# ip firewall sessions icmp-timeout <TIME>**	<TIME> – ICMP-, [1..8553600]. : 30 .
9	ICMPv6-, ( ).	**esr(config)# ip firewall sessions icmpv6-timeout <TIME>**	<TIME> – ICMP-, [1..8553600]. : 30 .
10	( ).	**esr(config)# ip firewall sessions max-expect <COUNT>**	<COUNT> – , [1..8553600]. : 256.
11	( ).	**esr(config)# ip firewall sessions max-tracking <COUNT>**	<COUNT> – , [1..8553600]. : 512000.
12	TCP- « », ( ).	**esr(config)# ip firewall sessions tcp-connect-timeout <TIME>**	<TIME> – TCP- " ", [1..8553600]. : 60 .
13	TCP- " ", ( ).	**esr(config)# ip firewall sessions tcp-disconnect-timeout <TIME>**	<TIME> – TCP- " ", [1..8553600]. : 30 .
14	TCP- " ", ( ).	**esr(config)# ip firewall sessions tcp-established-timeout <TIME>**	<TIME> – TCP- " ", [1..8553600]. : 120 .
15	, TCP- ( ).	**esr(config)# ip firewall sessions tcp-latecome-timeout <TIME>**	<TIME> – , [1..8553600]. : 120 .

16	( ).	**esr(config)# ip firewall sessions tracking**	<PROTOCOL> – [ftp, h323, pptp, netbios-ns, tftp], . <OBJECT-GROUP-SERVICE> – TCP/UDP- sip , 31 . , sip 5060. "all", . – .
17	UDP- " ", ( ).	**esr(config)# ip firewall sessions udp-assured-timeout <TIME>**	<TIME> – UDP- " ", [1..8553600]. : 180 .
18	UDP- « », .	**esr(config)# ip firewall sessions udp-wait-timeout <TIME>**	<TIME> – UDP- « », [1..8553600]. : 30 .
19	IP-, .	**esr(config)# object-group network <obj-group-name>**	<obj-group-name> – 31 .
20	IP- ( ).	**esr(config-object-group-network)# description <description>**	<description> – , 255 .
21	IPv4/IPv6- .	**esr(config-object-group-network)# ip prefix <ADDR/LEN>**	<ADDR/LEN> – , AAA.BBB.CCC.DDD/EE, AAA – DDD [0..255] EE [1..32].
		esr(config-object-group-network)# ip address-range <FROM-ADDR>-<TO-ADDR>	<FROM-ADDR> – IP- ; <TO-ADDR> – IP- , . , IP-. AAA.BBB.CCC.DDD, [0..255].
		esr(config-object-group-network)# ipv6 prefix <IPV6-ADDR/LEN>	<IPV6-ADDR/LEN> – IP- , X:X:X:X::X/EE, X [0..FFFF] EE [1..128].
		esr(config-object-group-network)# ipv6 address-range <FROM-ADDR>-<TO-ADDR>	<FROM-ADDR> – IPv6- ; <TO-ADDR> – IPv6- , . , IPv6-. X:X:X:X::X, [0..FFFF].
22	, .	**esr(config)# object-group service <obj-group-name>**	<obj-group-name> – , 31 .
23	( ).	**esr(config-object-group-service)# description <description>**	<description> – , 255 .
24	(tcp/udp-) .	**esr(config-object-group-service)# port-range <port>**	<port> – [1..65535]. «,» «-».
25	, DPI.	**esr(config)# object-group application <NAME>**	<NAME> – , 31 .
26	( ).	**esr(config-object-group-application)# description <description>**	<description> – , 255 .
27	.	**esr(config-object-group-application)# application < APPLICATION >**	<APPLICATION> –
28	(, , E1/Multilink), (l2tp, openvpn, pptp) (gre, ip4ip4, l2tp, lt, pppoe, pptp) ( ).	**esr(config-if-gi)# security-zone <zone-name>**	<zone-name> – 12 .
	Firewall (, , E1/Multilink), (l2tp, openvpn, pptp) (gre, ip4ip4, l2tp, lt, pppoe, pptp) ( )	**esr(config-if-gi)# ip firewall disable**	
29	.	**esr(config)# security zone-pair <src-zone-name1> <dst-zone-name2>**	<src-zone-name> – 12 . <dst-zone-name> – 12 .
30	.	**esr(config-zone-pair)# rule <rule-number>**	<rule-number> – 1..10000.
31	( ).	**esr(config-zone-rule)# description <description>**	<description> – 255 .
32	.	**esr(config-zone-rule)# action <action> [log]**	<action> – permit/deny/reject/netflow-sample/sflow-sample log – , .
33	IP-, ( ).	**esr(config-zone-rule)# match [not] protocol <protocol-type>**	<protocol-type> – , : esp, icmp, ah, eigrp, ospf, igmp, ipip, tcp, pim, udp, vrrp, rdp, l2tp, gre. «any» .
		esr(config-zone-rule)# match [not] protocol-id <protocol-id>	<protocol-id> – IP-, [0x00-0xFF].
34	IP- , ( ).	**esr(config-zone-rule)# match [not] source-address <OBJ-GROUP-NETWORK-NAME>**	<OBJ-GROUP-NETWORK-NAME> – IP-, 31 . «any» IP- /.

35	IP- , ( ).	**esr(config-zone-rule)# match [not] destination-address <OBJ-GROUP-NETWORK-NAME>**	
36	MAC- , ( ).	**esr(config-zone-rule)# match [not] source-mac <mac-addr>**	<mac-addr> – XX:XX:XX:XX:XX:XX, [00..FF].
37	MAC- , ( ).	**esr(config-zone-rule)# match [not] destination-mac <mac-addr>**	
38	TCP/UDP- , ( ).	**esr(config-zone-rule)# match [not] source-port <PORT-SET-NAME>**	<PORT-SET-NAME> – 31 . «any» TCP/UDP- /.
39	TCP/UDP- , ( ).	**esr(config-zone-rule)# match [not] destination-port <PORT-SET-NAME>**	
40	ICMP, (ICMP) ( ).	**esr(config-zone-rule)# match [not] icmp <ICMP_TYPE> <ICMP_CODE>**	<ICMP_TYPE> – ICMP, [0..255]; <ICMP_CODE> – ICMP, [0..255]. «any» ICMP.
41	, , IP- .	**esr(config-zone-rule)# match [not] destination-nat**	
42	(, zone-pair any self zone-pair <zone-name> any).	**esr(config-zone-pair-rule)# rate-limit pps <rate-pps>**	<rate-pps> – , . [1..10000].
43	IP- (, zone-pair any self zone-pair <zone-name> any).	**esr(config-zone-pair-rule)# match [not] fragment**	
44	IP-, ip-option (, zone-pair any self zone-pair <zone-name> any).	**esr(config-zone-pair-rule)# match [not] ip-option**	
45	.	**esr(config-zone-rule)# enable**	
46	Bridge- (, ESR-1000/1200/1500/1511 /1700 /3100).	**esr(config-bridge)# ports firewall enable**	

---

[1] not , .

«match» «not». , .

« CLI».

Firewall

:

ICMP R1, R2 ESR.

:

ESR :

```
esr# configure
esr(config)# security zone LAN
esr(config-zone)# exit
esr(config)# security zone WAN
esr(config-zone)# exit
```

:

```
esr(config)# interface gi1/0/2
esr(config-if-gi)# ip address 192.168.12.2/24
esr(config-if-gi)# security-zone LAN
esr(config-if-gi)# exit
esr(config)# interface gi1/0/3
esr(config-if-gi)# ip address 192.168.23.2/24
esr(config-if-gi)# security-zone WAN
esr(config-if-gi)# exit
```

«LAN», , «WAN», «WAN».

```
esr(config)# object-group network WAN
esr(config-object-group-network)# ip address-range 192.168.23.2
esr(config-object-group-network)# exit
esr(config)# object-group network LAN
esr(config-object-group-network)# ip address-range 192.168.12.2
esr(config-object-group-network)# exit
esr(config)# object-group network LAN_GATEWAY
esr(config-object-group-network)# ip address-range 192.168.12.1
esr(config-object-group-network)# exit
esr(config)# object-group network WAN_GATEWAY
esr(config-object-group-network)# ip address-range 192.168.23.3
esr(config-object-group-network)# exit
```

«LAN» «WAN» , ICMP- R1 R2. *enable:*

```
esr(config)# security zone-pair LAN WAN
esr(config-zone-pair)# rule 1
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# match protocol icmp
esr(config-zone-pair-rule)# match destination-address WAN_GATEWAY
esr(config-zone-pair-rule)# match source-address LAN_GATEWAY
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair-pair)# exit
```

«WAN» «LAN» , ICMP- R2 R1. *enable:*

```
esr(config)# security zone-pair WAN LAN
esr(config-zone-pair)# rule 1
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# match protocol icmp
esr(config-zone-pair-rule)# match destination-address LAN_GATEWAY
esr(config-zone-pair-rule)# match source-address WAN_GATEWAY
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair)# exit
```

«self». , , «self». , «WAN» «self». , ICMP- R2 ESR, ICMP- «WAN»:

```
esr(config)# security zone-pair WAN self
esr(config-zone-pair)# rule 1
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# match protocol icmp
esr(config-zone-pair-rule)# match destination-address WAN
esr(config-zone-pair-rule)# match source-address WAN_GATEWAY
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair)# exit
```

, «LAN» «self». , ICMP- R1 ESR, ICMP- «LAN»:

```
esr(config)# security zone-pair LAN self
esr(config-zone-pair)# rule 1
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# match protocol icmp
esr(config-zone-pair-rule)# match destination-address LAN
esr(config-zone-pair-rule)# match source-address LAN_GATEWAY
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair)# exit
esr(config)# exit
```

:

```
esr# show security zone
```

:

```
esr# show security zone-pair
esr# show security zone-pair configuration
```

:

```
esr# show ip firewall sessions
```

(DPI)

⚠ - . .

:

youtube, bittorrent facebook.

:

ESR :

```
esr# configure
esr(config)# security zone LAN
esr(config-zone)# exit
esr(config)# security zone WAN
esr(config-zone)# exit
```

:

```
esr(config)# interface gi1/0/1
esr(config-if-gi)# ip address 10.0.0.1/24
esr(config-if-gi)# security-zone WAN
esr(config-if-gi)# exit
esr(config)# interface gi1/0/2
esr(config-if-te)# ip address 192.168.0.1/24
esr(config-if-te)# security-zone LAN
esr(config-if-te)# exit
```

ESR stateless:

```
esr(config)# ip firewall mode stateless
```

, .

```
esr(config)# object-group application APP
esr(config-object-group-application)# application youtube
esr(config-object-group-application)# application bittorrent
esr(config-object-group-application)# application facebook
esr(config-object-group-application)# exit
```

«WAN» «LAN» , , , . *enable:*

```
esr(config)# security zone-pair WAN LAN
esr(config-zone-pair)# rule 1
esr(config-zone-pair-rule)# action deny
esr(config-zone-pair-rule)# match application APP
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair)# rule 2
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair-pair)# exit
```

«LAN» «WAN» , , , . *enable:*

```
esr(config)# security zone-pair LAN WAN
esr(config-zone-pair)# rule 1
esr(config-zone-pair-rule)# action deny
esr(config-zone-pair-rule)# match application APP
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair)# rule 2
esr(config-zone-pair-rule)# action permit
esr(config-zone-pair-rule)# enable
esr(config-zone-pair-rule)# exit
esr(config-zone-pair-pair)# exit
```

:

```
esr# show security zone
```

:

```
esr# show security zone-pair
esr# show security zone-pair configuration
```

:

```
esr# show ip firewall sessions
```

(ACL)

Access Control List ACL — , , .

1	.	**esr(config)# ip access-list extended <NAME>**	<NAME> – , 31 .
2	( ).	**esr(config-acl)# description <DESCRIPTION>**	<DESCRIPTION> – , 255 .
3	. .	**esr(config-acl)# rule <ORDER>**	<ORDER> – , [1..4094].
4	, , .	**esr(config-acl-rule)# action <ACT>**	<ACT> – : • permit – ; • deny – .
5	/ , ( ).	**esr(config-acl-rule)# match protocol <TYPE>**	<TYPE> – , : esp, icmp, ah, eigrp, ospf, igmp, ipip, tcp, pim, udp, vrrp, rdp, l2tp, gre. «any» ;
		esr(config-acl-rule)# match protocol-id <ID>	<ID> – IP-, [0x00-0xFF].
6	IP- , ( ).	**esr(config-acl-rule)# match source-address { <ADDR> <MASK> | any }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <MASK> – IP-, AAA.BBB.CCC.DDD, [0..255]. , 0, IP-, . «any» IP- /.
7	IP- , ( ).	**esr(config-acl-rule)# match destination-address { <ADDR> <MASK> | any }**	
8	MAC- , ( ).	**esr(config-acl-rule)# match source-mac <ADDR><WILDCARD>**	<ADDR> – - , XX:XX:XX:XX:XX:XX, [00..FF]; <WILDCARD> – -, XX:XX:XX:XX:XX:XX, [00..FF]. , 0, MAC-, .
9	MAC- , ( ).	**esr(config-acl-rule)# match destination-mac <ADDR><WILDCARD>**	
10	TCP/UDP- , ( ).	**esr(config-acl-rule)# match source-port { <PORT> | any }**	<PORT> – TCP/UDP- , [1..65535]. «any» TCP/UDP- .
11	TCP/UDP- , ( ).	**esr(config-acl-rule)# match destination-port { <PORT> | any }**	
12	802.1p , ( ).	**esr(config-acl-rule)# match os <COS>**	<COS> – 802.1p , [0..7].
13	DSCP, ( ). IP Precedence.	**esr(config-acl-rule)# match dscp <DSCP>**	<DSCP> – DSCP, [0..63].
14	IP Precedence, ( ). DSCP.	**esr(config-acl-rule)# match ip-precedence <IPP>**	<IPP> – IP Precedence, [0..7].
15	VLAN, ( ).	**esr(config-acl-rule)# match vlan <VID>**	<VID> – VLAN, [1..4094].
16	.	**esr(config-acl-rule)# enable**	
17	.	**esr(config-if-gi)# service-acl input <NAME>**	<NAME> – , 31 .

QoS.

:

192.168.20.0/24.

:

:

```
esr# configure
esr(config)# ip access-list extended white
esr(config-acl)# rule 1
esr(config-acl-rule)# action permit
esr(config-acl-rule)# match source-address 192.168.20.0 255.255.255.0
esr(config-acl-rule)# enable
esr(config-acl-rule)# exit
esr(config-acl)# exit
```

Gi1/0/19 :

```
esr(config)# interface gigabitethernet 1/0/19
esr(config-if-gi)# service-acl input white
```

:

```
esr# show ip access-list white
```

IPS/IDS

⚠ .

IPS/IDS (*Intrusion Prevention System/Intrusion Detection System*) – – , .

. IPS/IDS . ESR . CLI .

ESR EmergingThreats .

1	IPS/IDS.	**esr(config)# security ips policy <NAME>**	<NAME> – , 32
2	( ).	**esr(config-ips-policy)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
3	IP-, IPS/IDS.	**esr(config-ips-policy)# protect network-group <OBJ-GROUP-NETWORK_NAME>**	<OBJ-GROUP-NETWORK-NAME> – IP-, 32 .
4	IP-, IPS/IDS ( ).	**esr(config-ips-policy)# external network-group <OBJ-GROUP-NETWORK_NAME>**	<OBJ-GROUP-NETWORK-NAME> – IP-, 32 .
5	IPS/IDS.	**esr(config)# security ips**	
6	IPS/IDS.	**esr(config-ips)# policy <NAME>**	<NAME> – , 32
7	ESR IPS/IDS ( ).	**esr(config-ips)# perfomance max**	IPS/IDS .
8	IPS/IDS EVE (elasticsearch) ( ).	**esr(config-ips)# logging remote-server { <ADDR> | <IPV6-ADDR> } [<TRANSPORT>] [<PORT>] [source-address { <SRC-ADDR> | <IPV6-SRC-ADDR> }]**	<ADDR> – IP-, AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6-, X:X:X:X::X, [0..FFFF]; <TRANSPORT> – , - UDP, : • TCP – TCP; • UDP – UDP; <PORT> – TCP/UDP-, , [1..65535], 514; <SRC-ADDR> – IPv4- , IP- syslog , - ipv4- ; <IPV6-SRC-ADDR> – IPv6- , IPv6- syslog , – IPv6- .
9	IPS/IDS EVE (elasticsearch) ( ).	**esr(config-ips)# logging update-interval <INTERVAL>**	<INTERVAL> – IPS/IDS, .

10	IPS/IDS .	**esr(config-if-gi)# service-ips { inline | monitor }**	inline – , ESR IPS/IDS . monitor – ESR IPS/IDS .

IPS/IDS

1	.	**esr(config-ips)# auto-upgrade**	
2	.	**esr(config-ips-auto-upgrade)# user-server <WORD>**	<WORD> – , 32 .
3	( ).	**esr(config-ips-upgrade-user-server)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
4	URL.	**esr(config-ips-upgrade-user-server)# url <URL>**	<URL> – , URL- 8 255 . URL- : • .rule; • classification.config; • / .
5	( ).	**esr(config-ips-upgrade-user-server)# upgrade interval <HOURS>**	<HOURS> – , 1 240. : 24 .

IPS/IDS, , ESR .

ESR:

- ESR-1X – 25 ;
- ESR-2X – 50 ;

– 100 .

, , %STORAGE_IPS_MGR-I-ERR: There no free space in rules directory.
.

https://sslbl.abuse.ch/	SSL Blacklist «» SSL-, .. , . SHA1 SSL-.
https://feodotracker.abuse.ch/	Feodo Tracker – Feodo. Feodo (Cridex Bugat) (, /) . (A, B, C D), .
https://rules.emergingthreats.net/open/suricata/rules/botcc.rules	. : Shadowserver.org, Zeus Tracker, Palevo Tracker, Feodo Tracker, Ransomware Tracker.
https://rules.emergingthreats.net/open/suricata/rules/ciarmy.rules	www.cinsarmy.com.
https://rules.emergingthreats.net/open/suricata/rules/compromised.rules	. : Daniel Gerzo's BruteForceBlocker, The OpenBL, Emerging Threats Sandnet, SidReporter Projects.
https://rules.emergingthreats.net/open/suricata/rules/drop.rules	/ www.spamhaus.org.
https://rules.emergingthreats.net/open/suricata/rules/dshield.rules	www.dshield.org.
https://rules.emergingthreats.net/open/suricata/rules/emerging-activex.rules	ActiveX-.
https://rules.emergingthreats.net/open/suricata/rules/emerging-attack_response.rules	, .
https://rules.emergingthreats.net/open/suricata/rules/emerging-chat.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-current_events.rules	, .
https://rules.emergingthreats.net/open/suricata/rules/emerging-dns.rules	DNS, DNS , DNS.
https://rules.emergingthreats.net/open/suricata/rules/emerging-dos.rules	DOS-.

https://rules.emergingthreats.net/open/suricata/rules/emerging-exploit.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-ftp.rules	FTP, FTP.
https://rules.emergingthreats.net/open/suricata/rules/emerging-games.rules	: World of Warcraft, Starcraft ..
https://rules.emergingthreats.net/open/suricata/rules/emerging-icmp.rules	ICMP.
https://rules.emergingthreats.net/open/suricata/rules/emerging-icmp_info.rules	ICMP-.
https://rules.emergingthreats.net/open/suricata/rules/emerging-imap.rules	IMAP, IMAP.
https://rules.emergingthreats.net/open/suricata/rules/emerging-inappropriate.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-info.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-malware.rules	, HTTP.
https://rules.emergingthreats.net/open/suricata/rules/emerging-misc.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-mobile_malware.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-netbios.rules	NetBIOS, NetBIOS.
https://rules.emergingthreats.net/open/suricata/rules/emerging-p2p.rules	P2P- (Bittorrent, Gnutella, Limewire).
https://rules.emergingthreats.net/open/suricata/rules/emerging-policy.rules	(MySpace, Ebay).
https://rules.emergingthreats.net/open/suricata/rules/emerging-poprules	POP3, POP3.
https://rules.emergingthreats.net/open/suricata/rules/emerging-rpc.rules	RPC, RPC.
https://rules.emergingthreats.net/open/suricata/rules/emerging-scada.rules	SCADA-.
https://rules.emergingthreats.net/open/suricata/rules/emerging-scan.rules	, (Nessus, Nikto, portscanning).
https://rules.emergingthreats.net/open/suricata/rules/emerging-shellcode.rules	, - .
https://rules.emergingthreats.net/open/suricata/rules/emerging-smtp.rules	SMTP, SMTP.
https://rules.emergingthreats.net/open/suricata/rules/emerging-sql.rules	SQL.
https://rules.emergingthreats.net/open/suricata/rules/emerging-telnet.rules	telnet, telnet.
https://rules.emergingthreats.net/open/suricata/rules/emerging-tftp.rules	TFTP, TFTP.
https://rules.emergingthreats.net/open/suricata/rules/emerging-trojan.rules	.
https://rules.emergingthreats.net/open/suricata/rules/emerging-user_agents.rules	HTTP- (HTTP- User-Agent).
https://rules.emergingthreats.net/open/suricata/rules/emerging-l.rules	VoIP-.
https://rules.emergingthreats.net/open/suricata/rules/emerging-web_client.rules	-.

https://rules.emergingthreats.net/open/suricata/rules/emerging-web_server.rules	-.
https://rules.emergingthreats.net/open/suricata/rules/emerging-web_specific_apps.rules	-.
https://rules.emergingthreats.net/open/suricata/rules/emerging-worm.rules	.

IPS/IDS

:

.

192.168.1.0/24 – .

:

, :

```
esr(config)# object-group network LAN
esr(config-object-group-network)# ip prefix 192.168.1.0/24
esr(config-object-group-network)# exit
```

ESR DNS- IPS/IDS:

```
esr(config)# domain lookup enable
esr(config)# domain name-server 8.8.8.8
```

IPS/IDS:

```
esr(config)# security ips policy OFFICE
esr(config-ips-policy)# description "My Policy"
esr(config-ips-policy)# protect network-group LAN
```

IPS/IDS bridge 1:

```
esr(config)# bridge 1
esr(config-bridge)# service-ips inline
```

IPS/IDS:

```
esr(config)# security ips
esr(config-ips)# logging remote-server 192.168.10.1
esr(config-ips)# logging update-interval 15
esr(config-ips)# policy OFFICE
esr(config-ips)# enable
```

, IPS/IDS :

```
esr(config-ips)# perfomance max
```

EmergingThreats.net, etnetera.cz Abuse.ch:

```
esr(config-ips)# auto-upgrade
esr(config-auto-upgrade)# user-server ET-Open
esr(config-ips-upgrade-user-server)# description "emerging threats open rules"
esr(config-ips-upgrade-user-server)# url https://rules.emergingthreats.net/open/suricata-4.0/emerging-all.rules
esr(config-ips-upgrade-user-server)# exit
esr(config-auto-upgrade)# user-server Aggressive
esr(config-ips-upgrade-user-server)# description "Etnetera aggressive IP blacklist"
esr(config-ips-upgrade-user-server)# url https://security.etnetera.cz/feeds/etn_aggressive.rules
esr(config-ips-upgrade-user-server)# upgrade interval 4
esr(config-ips-upgrade-user-server)# exit
esr(config-auto-upgrade)# user-server SSL-BlackList
esr(config-ips-upgrade-user-server)# description "Abuse.ch SSL Blacklist"
esr(config-ips-upgrade-user-server)# url https://sslbl.abuse.ch/blacklist/sslblacklist.rules
esr(config-ips-upgrade-user-server)# upgrade interval 4
esr(config-ips-upgrade-user-server)# exit
esr(config-auto-upgrade)# user-server C2-Botnet
esr(config-ips-upgrade-user-server)# description "Abuse.ch Botnet C2 IP Blacklist"
esr(config-ips-upgrade-user-server)# url https://sslbl.abuse.ch/blacklist/sslipblacklist.rules
esr(config-ips-upgrade-user-server)# upgrade interval 4
esr(config-ips-upgrade-user-server)# exit
```

1	.	**esr(config)# security ips-category user-defined <WORD>**	<WORD> – , 32 .
2	( ).	**esr(config-ips-category)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
3	.	**esr(config-ips-category)# rule <ORDER>**	<ORDER> – , [1..512].
4	( ).	**esr(config-ips-category-rule)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
5	.	**esr(config-ips-category-rule)# action { alert | reject | pass | drop }**	• alert – , IPS/IDS ; • reject – . TCP TCP-RESET, ICMP-ERROR. IPS/IDS ; • pass – ; • drop – , IPS/IDS .
6	IP-, .	**esr(config-ips-category-rule)# protocol <PROTOCOL>**	<PROTOCOL> – any/ip/icmp/http/tcp/udp. «any» .
7	IP- , .	**esr(config-ips-category-rule)# source-address {ip <ADDR> | ip-prefix <ADDR/LEN> | object-group <OBJ_GR_NAME> | policy-object-group { protect | external } | any }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <ADDR/LEN> – IP- , AAA.BBB.CCC.DDD/EE, AAA – DDD [0..255] LEN [1..32]. < OBJ_GR_NAME> – IP-, IP- , 31 . • protect – protect- IPS/IDS; • external – external- IPS/IDS. «any» IP- .
8	TCP/UDP- , . protocol icmp, source-port any.	**esr(config-ips-category-rule)# source-port {any | <PORT> | object-group <OBJ-GR-NAME> }**	<PORT> – TCP/UDP- , [1..65535]. <OBJ_GR_NAME> – TCP/UDP , 31 . «any» TCP/UDP- .
9	IP- , .	**esr(config-ips-category-rule)# destination-address {ip <ADDR> | ip-prefix <ADDR/LEN> | object-group <OBJ_GR_NAME> | policy-object-group { protect | external } | any }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <ADDR/LEN> – IP- , AAA.BBB.CCC.DDD/EE, AAA – DDD [0..255] LEN [1..32]. <OBJ_GR_NAME> – IP-, IP- , 31 . • protect – , protect IPS/IDS; • external - , external IPS/IDS. «any» IP- .

10	TCP/UDP- , . protocol icmp, destination-port any.	**esr(config-ips-category-rule)# destination-port {any | <PORT> | object-group <OBJ-GR-NAME> }**	<PORT> – TCP/UDP- , [1..65535]. <OBJ_GR_NAME> – TCP/UDP , 31 . «any» TCP/UDP- .
11	, .	**esr(config-ips-category-rule)# direction { one-way | round-trip }**	• one-way – . • round-trip – .
12	IPS/IDS , .	**esr(config-ips-category-rule)# meta log-message <MESSAGE>**	<MESSAGE> – , 129 .
13	, , ( ).	**esr(config-ips-category-rule)# meta classification-type { not-suspicious | unknown | bad-unknown | attempted-recon | successful-recon-limited | successful-recon-largescale | attempted-dos | successful-dos | attempted-user | unsuccessful-user | successful-user | attempted-admin | successful-admin | rpc-portmap-decode | shellcode-detect | string-detect | suspicious-filename-detect | suspicious-login | system-call-detect | tcp-connection | trojan-activity | unusual-client-port-connection | network-scan | denial-of-service | non-standard-protocol | protocol-command-decode | web-application-activity | web-application-attack | misc-activity | misc-attack | icmp-event | inappropriate-content | policy-violation | default-login-attempt }**	• not-suspicious – . • unknown – . • bad-unknown – . • attempted-recon – . • successful-recon-limited – . • successful-recon-largescale – . • attempted-dos – . • successful-dos – . • attempted-user – . • unsuccessful-user – . • successful-user – . • attempted-admin – . • successful-admin – . • rpc-portmap-decode – RPC. • shellcode-detect – . • string-detect – . • suspicious-filename-detect – -. • suspicious-login – . • system-call-detect – . • tcp-connection – TCP-. • trojan-activity – . • unusual-client-port-connection – . • network-scan – . • denial-of-service – . • non-standard-protocol – . • protocol-command-decode – . • web-application-activity – -. • web-application-attack – -. • misc-activity – . • misc-attack – . • icmp-event – ICMP. • inappropriate-content – . • policy-violation – . • default-login-attempt – /.
14	DSCP, ( ).	**esr(config-ips-category-rule)# ip dscp <DSCP>**	<DSCP> – DSCP, [0..63].
15	(TTL), ( ).	**esr(config-ips-category-rule)# ip ttl <TTL>**	<TTL> – TTL, [1..255].
16	IP-, ( ). protocol any.	**esr(config-ips-category-rule)# ip protocol-id <ID>**	<ID> – IP-, [1..255].
17	ICMP CODE, ( ). protocol icmp.	**esr(config-ips-category-rule)# ip icmp code <CODE>**	<CODE> – CODE ICMP, [0..255].
		esr(config-ips-category-rule)# ip icmp code comparison-operator { greater-than | less-than }	ip icmp code: • greater-than – .. • less-than – ..
18	ICMP ID, ( ). protocol icmp.	**esr(config-ips-category-rule)# ip icmp id <ID>**	<ID> – ID ICMP, [0.. 65535].
19	ICMP Sequence-ID, ( ). protocol icmp.	**esr(config-ips-category-rule)# ip icmp sequence-id <SEQ-ID>**	<SEQ-ID> – Sequence-ID ICMP, [0.. 4294967295].
20	ICMP TYPE, ( ). protocol icmp.	**esr(config-ips-category-rule)# ip icmp type <TYPE>**	<TYPE> – TYPE ICMP, [0..255].
		esr(config-ips-category-rule)# ip icmp type comparison-operator { greater-than | less-than }	ip icmp type: • greater-than – . • less-than – .

21	TCP Acknowledgment-Number, ( ). protocol tcp.	**esr(config-ips-category-rule)# ip tcp acknowledgment-number <ACK-NUM>**	<ACK-NUM> – Acknowledgment-Number TCP, [0.. 4294967295].
22	TCP Sequence-ID, ( ). protocol tcp.	**esr(config-ips-category-rule)# ip tcp sequence-id <SEQ-ID>**	<SEQ-ID> – Sequence-ID TCP, [0.. 4294967295].
23	TCP Window-Size, ( ). protocol tcp.	**esr(config-ips-category-rule)# ip tcp window-size <SIZE>**	<SIZE> – Window-Size TCP, [0.. 65535].
24	HTTP, ( ). protocol http.	**esr(config-ips-category-rule)# ip http { accept | accept-enc | accept-lang | client-body | connection | content-type | cookie | file-data | header | header-names | host | method | protocol | referer | request-line | response-line | server-body | start | start-code | start-msg | uri | user-agent }**	Suricata 4.X. https://suricata.readthedocs.io/en/suricata-4.1.4/rules/http-keywords.html
25	URI LEN HTTP, ( ). protocol http.	**esr(config-ips-category-rule)# ip http urilen <LEN>**	<LEN> – [0.. 65535].
		esr(config-ips-category-rule)# ip http urilen comparison-operator { greater-than | less-than }	ip http urilen: • greater-than – .. • less-than – ..
26	(Payload content), ( ).	**esr(config-ips-category-rule)# payload content <CONTENT>**	<CONTENT> – , 1024 .
27	( ). payload content.	**esr(config-ips-category-rule)# payload no-case**	
28	( ). payload content.	**esr(config-ips-category-rule)# payload depth <DEPTH>**	<DEPTH> – , [1.. 65535]. .
29	( ). payload content.	**esr(config-ips-category-rule)# payload offset <OFFSET>**	<OFFSET> – , [1.. 65535]. .
30	, ( ).	**esr(config-ips-category-rule)# payload data-size <SIZE>**	<SIZE> – , [0.. 65535].
		esr(config-ips-category-rule)# payload data-size comparison-operator { greater-than | less-than }	payload data-size: • greater-than – .. • less-than – .
31	, ( ).	**esr(config-ips-category-rule)# threshold count <COUNT>**	<COUNT> – , [1.. 65535].
32	, (, threshold count).	**esr(config-ips-category-rule)# threshold second <SECOND>**	<SECOND> – , [1.. 65535].
33	. (, threshold count).	**esr(config-ips-category-rule)# threshold track { by-src | by-dst }**	• by-src – IP-. • by-dst – IP-.
34	.	**esr(config-ips-category-rule)# threshold type {threshold | limit | both }**	• threshold – . • limit – <COUNT> <SECOND>. • both – threshold limit. , <SECOND> <COUNT> , <SECOND>.
35	.	**esr(config-ips-category-rule)# enable**	

:

IP 192.168.1.10 DOS- ICMP- .

:

:

```
esr(config)# security ips-category user-defined USER
```

:

```
esr(config-ips-category)# rule 10
esr(config-ips-category-rule)# description "Big ICMP DoS"
```

:

```
esr(config-ips-category-rule)# action drop
```

:

```
esr(config-ips-category-rule)# meta log-message "Big ICMP DoS"
esr(config-ips-category-rule)# meta classification-type successful-dos
```

:

```
esr(config-ips-category-rule)# protocol icmp
```

icmp, any:

```
esr(config-ips-category-rule)# source-port any
esr(config-ips-category-rule)# destination-port any
```

:

```
esr(config-ips-category-rule)# destination-address ip 192.168.1.10
```

:

```
esr(config-ips-category-rule)# source-address any
```

:

```
esr(config-ips-category-rule)# direction one-way
```

1024 :

```
esr(config-ips-category-rule)# payload data-size 1024
esr(config-ips-category-rule)# payload data-size comparison-operator greate r-than
```

, 3 /, :

```
3 / = 3145728
  1 = 8192
3145728 / 8192 = 384
384 * 60 = 23040
```

```
esr(config-ips-category-rule)# threshold count 23040
esr(config-ips-category-rule)# threshold second 60
esr(config-ips-category-rule)# threshold track by-dst
esr(config-ips-category-rule)# threshold type both
```

1	.	**esr(config)# security ips-category user-defined <WORD>**	<WORD> – , 32 .
2	( ).	**esr(config-ips-category)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
3	.	**esr(config-ips-category)# rule-advanced <SID>**	<SID> – , [1.. 4294967295].
4	( ).	**esr(config-ips-category-rule-advanced)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
5	.	**esr(config-ips-category-rule-advanced)# rule-text <LINE>**	<CONTENT> – SNORT 2.X / Suricata 4.X, 1024 . ⚠ **("), (').**
6	.	**esr(config-ips-category-rule-advanced)# enable**	

:

, Slowloris.

:

:

```
esr(config)# security ips-category user-defined ADV
```

:

```
esr(config-ips-category)# rule-advanced 1
esr(config-ips-category-rule-advanced)# description "Slow Loris rule 1"
esr(config-ips-category-rule-advanced)# rule-text 'alert tcp any any -> any 80 (msg:"Possible Slowloris Attack
Detected"; flow:to_server,established; content:"X-a|3a|"; distance:0; pcre:"/\d\d\d\d/"; distance:0; content:"
|0d 0a|"; sid:10000001;)'
```

, , , :

```
esr(config-ips-category)# rule-advanced 2
esr(config-ips-category-rule-advanced)# description "Slow Loris rule 2"
esr(config-ips-category-rule-advanced)# rule-text 'alert tcp $EXTERNAL_NET any -> $HOME_NET $HTTP_PORTS (msg:"
SlowLoris.py DoS attempt"; flow:established,to_server,no_stream; content:"X-a:"; dsize:<15; detection_filter:
track by_dst, count 3, seconds 30; classtype:denial-of-service; sid: 10000002; rev:1; )'
```

Eltex Distribution Manager

EDM (Eltex Distribution Manager) — .

« » , « » Kaspersky Security Network Kaspersky SafeStream II, ESR (web, email, P2P, ..). , , -, .

IPS ESR , Kaspersky SafeStream II:

- IP- — IP- , ;
- URL- — URL-, -;
- URL- — URL-, « » . ;
- URL- — URL- ;
- URL- — URL- ;
- — , , ;
- — , ;
- URL- — URL- , ;
- URL- -, , Internet of Things (IoT).

EDM Server, ESR . , ESR . EDM Server .

1	- .	**esr (config)# content-provider**	
2	IP- edm-.	**esr (config-content-provider)# host address <A.B.C.D | WORD | X:X:X:X::X>**	<IP-ADDR> – IP-, AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6-, X:X:X:X::X, [0..FFFF]. WORD(1-31) - DNS .
3	edm-.	**esr (config-content-provider)# host port <PORT>**	<PORT> – TCP/UDP- , [1..65535].
4	.	**esr (config-content-provider)# storage-path <DEVICE>**	<DEVICE> – usb://Partion_name:/ mmc://Partion_name:/ exFAT
5	.	**esr (config-content-provider)# reboot immediately | [time <HH:MM:SS>]**	. time <HH:MM:SS> - , ESR <::>.
6	.	**enable**	
7	edm- .	**esr (config-content-provider)# upgrade interval <1-240>**	
8	( ).	**esr (config-content-provider)# description < LINE >**	LINE (1-255) String describing server
9	, EDM-Issue ( ).	**esr (config-content-provider)# system-name < WORD >**	<WORD> – , 255 .
10	, EDM-Issue ( ).	**esr (config-content-provider)# location < WORD >**	<WORD> – , 255 .
11	IP-, .	**esr (config)# object-group network <WORD>esr (config-object-group-network)# ip prefix <ADDR/LEN>**	<WORD> – , 32 . <ADDR/LEN> – , AAA.BBB.CCC.DDD /EE, AAA – DDD [0..255] EE [1..32].
10	service-ips.	**esr (config)# interface gigabitethernet 1/0/Xesr (config-if-gi)# service-ips enable**	
11	IPS/IDS.	**esr (config)# security ips policy WORD(1-31)**	WORD(1-31)
12	IP-, IPS/IDS.	**esr(config-ips-policy)# protect network-group <OBJ-GROUP-NETWORK_NAME>**	<OBJ-GROUP-NETWORK-NAME> – IP-, 32 .
13	.	**esr (config-ips-policy)# vendor kaspersky**	
14	.	**esr (config-ips-vendor)# category WORD(1-64)**	Phishing URL Data Feed – Phishing URL Malicious URL Data Feed – Malicious URL Botnet C&C URL Data Feed – Botnet C&C URL Malicious Hash Data Feed – Malicious Hashes Mobile Malicious Hash Data Feed – Malicious Hashes IP Reputation Data Feed – IP- Mobile Botnet Data Feed – Botnet Ransomware URL Data Feed – Ransomware URL Botnet C&C URL Exact Data Feed – Botnet C&C URL Exact Phishing URL Exact Data Feed – Phishing URL Exact Malicious URL Exact Data Feed – Malicious URL Exact Iot URL Data Feed – IoT URL

15	.	**esr (config-ips-vendor-category)# rules action <ACTION>**	<ACTION> - drop | reject | alert | pass - , . • alert – , IPS/IDS ; • reject – . TCP TCP-RESET, ICMP-ERROR. IPS/IDS ; • pass – ; • drop – , IPS/IDS .
16	.	**esr (config-ips-vendor-category)# rules count <number>**	<number>
17	.	**enable**	
18	IPS/IDS.	**esr (config)# security ips**	
19	IPS/IDS.	**esr(config-ips)# policy <NAME>**	<NAME> – , 32 .
20	ESR IPS/IDS ( ).	**esr(config-ips)# perfomance max**	
21	IPS/IDS EVE (elasticsearch) ( ).	**esr(config-ips)# logging remote-server { <ADDR> | <IPV6-ADDR> } [<TRANSPORT>] [<PORT>] [source-address { <SRC-ADDR> | <IPV6-SRC-ADDR> }]**	<ADDR> – IP-, AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6-, X:X:X:X::X, [0..FFFF]; <TRANSPORT> – , - UDP, : • TCP – TCP; • UDP – UDP; <PORT> – TCP/UDP-, , [1..65535], 514; <SRC-ADDR> – IPv4- , IP- syslog , - ipv4- ; <IPV6-SRC-ADDR> – IPv6- , IPv6- syslog , - ipv6- ;
22	IPS/IDS EVE (elasticsearch) ( ).	**esr(config-ips)# logging update-interval <INTERVAL>**	<INTERVAL> – IPS/IDS,
23	IPS/IDS.	**esr(config- ips)# enable**	

content-provider — Eltex. content-provider .

```
content-provider
  host address edm.eltex-co.ru
  host port 8098
  upgrade interval 1
  storage-path mmc://TEST:/
  reboot immediately
  enable
exit
```

, IPS.

IP-, IPS/IDS:

```
object-group network objectgroup0
  ip prefix 192.168.30.0/24
exit
```

IPS:

```
interface gigabitethernet 1/0/1
  service-ips enable
exit
```

:

```
security ips policy policy0
  protect network-group objectgroup0
  vendor kaspersky
    category MaliciousURLsDF
      rules action alert
      rules count 100
      enable
    exit
    category MobileBotnetCAndCDF
      rules action alert
      rules count 1000
      enable
    exit
    category APTIPDF
      rules action alert
      rules count 1000
      enable
    exit
```

```
    category APTURLsDF
      rules action alert
      rules count 1000
      enable
    exit
    category BotnetCAndCURLsDF
      rules action alert
      rules count 1000
      enable
    exit
    category IPReputationDF
      rules action alert
      rules count 1000
      enable
    exit
    category IoTURLsDF
      rules action alert
      rules count 1000
      enable
    exit
    category MaliciousHashDF
      rules action alert
      rules count 1
      enable
    exit
    category MobileMaliciousHashDF
      rules action alert
      rules count 1
      enable
    exit
    category PSMSTrojanDF
      rules action alert
      rules count 1
      enable
    exit
    category PhishingURLsDF
      rules action alert
      rules count 1000
      enable
    exit
    category RansomwareURLsDF
      rules action alert
      rules count 1000
      enable
    exit
  exit
exit
```

IPS- :

```
security ips
  performance max
  policy policy0
  enable
exit
```

IPS/IDS :

show security ips content-provider:

```
esr-20# show security ips content-provider
 Server: content-provider
                Last MD5 of received files:        c60bd0f10716d3f48e18f24828337135
                Next update: 30 October 2020 00:37:06
```

, - EDM (md5) .

show security ips counters:

```
esr-20# show security ips counters
TCP flows processed :     191
Alerts generated :        0
Blocked by ips engine :   7
Accepted by ips engine :  51483
```

IPS/IDS , , IPS/IDS.

⚠ .

HTTP- . . . ESR HTTPS- https://ksn-vt.kaspersky-labs.com.

(IPS) IPS.

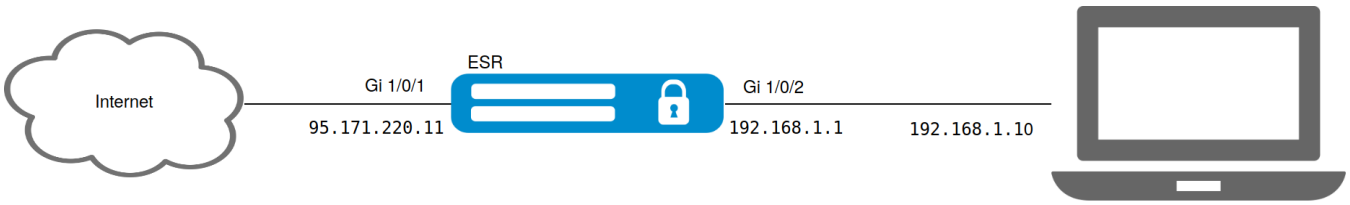
1	IP- DNS-, DNS-.	**esr(config)# domain name-server <IP>**	<IP> – IP- DNS-, AAA.BBB.CCC.DDD, [0..255].
2	DNS-	**esr(config)# domain lookup enable**	
3	IPS/IDS.	**esr(config)# security ips policy <NAME>**	<NAME> – , 32 .
4	( ).	**esr(config-ips-policy)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
5	IP-, .	**esr (config)# object-group network <WORD>** **esr (config-object-group-network)# ip prefix <ADDR/LEN>**	<WORD> – , 32 . <ADDR/LEN> – , AAA.BBB.CCC.DDD/EE, AAA – DDD [0..255] EE [1..32].
6	IP-, IPS/IDS.	**esr(config-ips-policy)# protect network-group <OBJ-GROUP-NETWORK_NAME>**	<OBJ-GROUP-NETWORK-NAME> – IP-, 32 .
7	IP-, IPS/IDS ( ).	**esr(config-ips-policy)# external network-group <OBJ-GROUP-NETWORK_NAME>**	<OBJ-GROUP-NETWORK-NAME> – IP-, 32 .
8		**esr(config)# object-group content-filter <NAME>**	<NAME> – , 31 .
9	( ).	**esr(config-object-group-content-filter)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
10	.	**esr(config-object-group-content-filter)# vendor <CONTENT-FILTER-VENDOR>**	<CONTENT-FILTER-VENDOR> – . .
11		**esr(config-object-group-cf-kaspersky)# category <CATEGORY>**	<CATEGORY> – . .

12	IPS/IDS.	**esr(config)# security ips**	
13	IPS/IDS.	**esr(config-ips)# policy <NAME>**	<NAME> – , 32 .
14	ESR IPS/IDS ( ).	**esr(config-ips)# perfomance max**	IPS/IDS .
15	IPS/IDS EVE (elasticsearch) ( ).	**esr(config-ips)# logging remote-server { <ADDR> | <IPV6-ADDR> } [<TRANSPORT>] [<PORT>] [source-address { <SRC-ADDR> | <IPV6-SRC-ADDR> }]**	<ADDR> – IP-, AAA.BBB.CCC.DDD, [0..255]; <IPV6-ADDR> – IPv6-, X:X:X:X::X, [0..FFFF]; <TRANSPORT> – , - UDP, : • TCP – TCP; • UDP – UDP; <PORT> – TCP/UDP-, , [1..65535], 514; <SRC-ADDR> – IPv4- , IP- syslog , - ipv4- ; <IPV6-SRC-ADDR> – IPv6- , IPv6- syslog , - ipv6- ;
16	IPS/IDS EVE (elasticsearch) ( ).	**esr(config-ips)# logging update-interval <INTERVAL>**	<INTERVAL> – IPS/IDS,
17	IPS/IDS.	**esr(config-ips)# enable**	
18	IPS/IDS .	**esr(config-if-gi)# service-ips enable**	
19	.	**esr(config)# security ips-category user-defined <WORD>**	<WORD> – , 32 .
20	( ).	**esr(config-ips-category)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
21	.	**esr(config-ips-category)# rule <ORDER>**	<ORDER> – , [1..512].
22	( ).	**esr(config-ips-category-rule)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
23	.	**esr(config-ips-category-rule)# action { alert | reject | pass | drop }**	• alert – , IPS/IDS ; • reject – . TCP- TCP-RESET, ICMP-ERROR. IPS/IDS ; • pass – ; • drop – , IPS/IDS .
24	IP-, HTTP.	**esr(config-ips-category-rule)# protocol http**	
25	IP- , .	**esr(config-ips-category-rule)# source-address {ip <ADDR> | ip-prefix <ADDR/LEN> | object-group <OBJ_GR_NAME> | policy-object-group { protect | external } | any }**	<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <ADDR/LEN> – IP- , AAA.BBB.CCC.DDD /EE, AAA – DDD [0..255] LEN [1..32]. <OBJ_GR_NAME> – IP-, IP- , 31 . • protect – , protect IPS/IDS; • external – , external IPS/IDS. «any» IP- .
26	TCP- , .	**esr(config-ips-category-rule)# source-port {any | <PORT> | object-group <OBJ-GR-NAME> }**	<PORT> – TCP/UDP- , [1..65535]. <OBJ_GR_NAME> – TCP/UDP , 31 . «any» TCP/UDP- .
27	IP- , .	**esr(config-ips-category-rule)# destination-address {ip <ADDR> | ip-prefix <ADDR/LEN> | object-group <OBJ_GR_NAME> | policy-object-group { protect | external } | any }**	<<ADDR> – IP- , AAA.BBB.CCC.DDD, [0..255]; <ADDR/LEN> – IP- , AAA.BBB.CCC.DDD /EE, AAA – DDD [0..255] LEN [1..32]. < OBJ_GR_NAME> – IP-, IP- , 31 . • protect – , protect IPS/IDS; • external - , external IPS/IDS. «any» IP- .
28	TCP- , . http TCP- 80. web- .	**esr(config-ips-category-rule)# destination-port {any | <PORT> | object-group <OBJ-GR-NAME> }**	<PORT> – TCP/UDP- , [1..65535]. <OBJ_GR_NAME> – TCP/UDP , 31 . «any» TCP/UDP- .

29	, .	**esr(config-ips-category-rule)# direction { one-way | round-trip }**	• one-way – . • round-trip – .
30	IPS/IDS , .	**esr(config-ips-category-rule)# meta log-message <MESSAGE>**	<MESSAGE> – , 129 .
31		**esr(config-ips-category-rule)# ip http content-filter <NAME>**	<NAME> – 31 . any – http- .
32	.	**esr(config-ips-category-rule)# enable**	

:

http- adult-content, casino, online-betting, online-lotteries 192.168.1.0/24



:

firewall.

, :

```
esr(config)# object-group network LAN
esr(config-object-group-network)# ip prefix 192.168.1.0/24
esr(config-object-group-network)# exit
```

ESR DNS- IPS/IDS:

```
esr(config)# domain lookup enable
esr(config)# domain name-server 8.8.8.8
```

IPS/IDS:

```
esr(config)# security ips policy OFFICE
esr(config-ips-policy)# description "My Policy"
esr(config-ips-policy)# protect network-group LAN
```

IPS/IDS gigabitethernet 1/0/2:

```
esr(config)# interface gigabitethernet 1/0/2
esr(config-if-gi)# service-ips inline
```

IPS/IDS:

```
esr(config)# security ips
esr(config-ips)# policy OFFICE
esr(config-ips)# enable
```

, IPS/IDS :

```
esr(config-ips)# perfomance max
```

:

```
esr(config)# object-group content-filter Black
esr(config-object-group-content-filter)# vendor kaspersky-lab
esr(config-object-group-cf-kaspersky)# category adult-content
esr(config-object-group-cf-kaspersky)# category casino
esr(config-object-group-cf-kaspersky)# category online-betting
esr(config-object-group-cf-kaspersky)# category online-lotteries
```

:

```
esr(config)# security ips-category user-defined USER
```

:

```
esr(config-ips-category)# rule 10
esr(config-ips-category-rule)# description "Content-Filter Block"
```

:

```
esr(config-ips-category-rule)# action drop
```

:

```
esr(config-ips-category-rule)# meta log-message "Corporate policy violation"
```

:

```
esr(config-ips-category-rule)# protocol http
```

http- TCP- , any:

```
esr(config-ips-category-rule)# source-port any
```

TCP- http 80 , , any:

```
esr(config-ips-category-rule)# destination-port any
```

:

```
esr(config-ips-category-rule)# destination-address any
```

:

```
esr(config-ips-category-rule)# source-address policy-object-group protect
```

:

```
esr(config-ips-category-rule)# direction one-way
```

Black:

```
esr(config-ips-category-rule)# ip http content-filter Black
```

:

```
esr(config-ips-category-rule)# enable
esr(config-ips-category-rule)# exit
esr(config-ips-category-rule)# threshold type both
```

«»

⚠ .

, - — , (, ..).

«» — . ESR «» , Mail Proxy.

, , «» :

- - SPF;
- , DKIM;
- DMARC;
- MX- , ;
- ;
- RBL;
- SMTP- SMTP-;
- Unicode, ;
- .

, , .

⚠ **«» , ESR.**

1) MX- , , IP- ESR «».

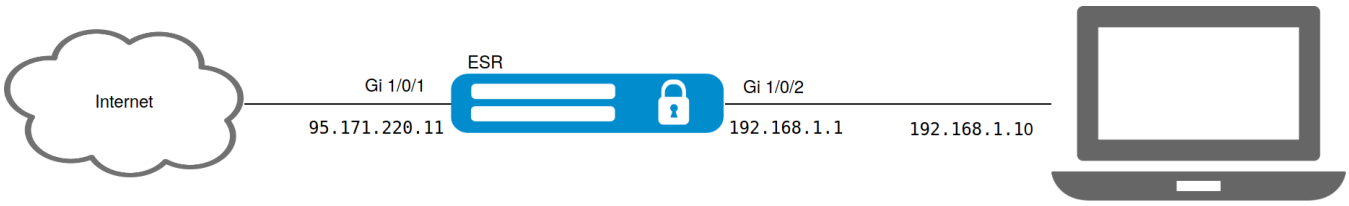
2) SMTP Proxy, Proxy ESR «».

1	.	**esr(config)# hostname <NAME>**	<NAME> – 64 .
2	.	**esr(config)# domain name <NAME>**	<NAME> – 255 .
3	IP- DNS-, DNS-.	**esr(config)# domain name-server <IP>**	<IP> – AAA.BBB.CCC.DDD, 0 255.
4	DNS.	**esr(config)# domain lookup enable**	
5	«»	**esr(config)# security antispam profile <NAME>**	<NAME> – 31 .
6	«» ().	**esr(config-antispam-profile)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
7	, «» «».	**esr(config-antispam-profile)# mark-type <MARK-TYPE>**	<MARK-TYPE> – , «». : - header – X-Spam ; - subject – [SPAM] .
8	().	**esr(config)# object-group email <NAME>**	<NAME> – 31 .
9	().	**esr(config-object-group-email)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
10	().	**esr(config-object-group-email)# email <NAME>**	<NAME> – 63 .
11	«» ().	**esr(config-antispam-profile)# rule <ORDER>**	<ORDER> – , 1 100.
12	«» ().	**esr(config-antispam-profile)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
13	IP- , ( ).	**esr(config-antispam-profile-rule)# sender ip <NAME>**	<NAME> – 31 .
14	, ( ).	**esr(config-antispam-profile-rule)# sender email <NAME>**	<NAME> – 31 .
15	.	**esr(config-antispam-profile-rule)# action <ACTION>**	<ACTION> – . : - reject – , .

16	«» ().	**esr(config-antispam-profile-rule)# enable**	
17	.	**esr(config)# mailserver domain <DOMAIN-NAME>**	<DOMAIN-NAME> – 31 .
18	().	**esr(config-mailserver-domain)# description <DESCRIPTION>**	<DESCRIPTION> – 255 .
19	.	**esr(config-mailserver-domain)# mail domain <NAME>**	<NAME> – 63 .
20	IP- , «» ESR SMTP Proxy.	**esr(config-mailserver-domain)# mail server ip <ADDR>**	<ADDR> – AAA.BBB.CCC.DDD, 0 255.
21	«», .	**esr(config-mailserver-domain)# profile antispam <NAME>**	<NAME> – 63 .
22	.	**esr(config-mailserver-domain)# enable**	
23	.	**esr(config)# mailserver**	
24	.	**esr(config-mailserver)# domain <NAME>**	<NAME> – 63 .
25	TLS ().	**esr(config-mailserver)# tls keyfile <TYPE> <NAME>**	<TYPE> – . : • ca – ; • server-key – ; • server-crt – ; • dh – -. <NAME> – , 31 .
26	TLS (). TLS , .	**esr(config-mailserver)# tls enable**	
27	().	**esr(config-mailserver)# headers max-size <SIZE>**	<SIZE> – , 50 200.
28	().	**esr(config-mailserver)# mail max-size <SIZE>**	<SIZE> – , 5120 51200.
29	SMTP- HELO EHLO SMTP- ().	**esr(config-mailserver)# smtp helo-required**	
30	SMTP VRFY SMTP- ().	**esr(config-mailserver)# smtp vrfy-enable**	
31	.	**esr(config-mailserver)# enable**	

:

ESR «» SMTP Proxy , , eltex-co.ru.



:

, MX- eltex-co.ru IP- ESR:

```
esr@eltex:~$ dig +noall +answer eltex-co.ru MX
eltex-co.ru.        3548        IN        MX        10 mail-gate.eltex-co.ru.
esr@eltex:~$ dig +noall +answer mail-gate.eltex-co.ru A
mail-gate.eltex-co.ru. 3453        IN        A        95.171.220.11
```

:

```
esr# config
esr(config)# interface gi1/0/1
esr(config-if-gi)# ip address 95.171.220.11/18
esr(config-if-gi)# ip firewall disable
esr(config-if-gi)# exit
esr(config)# interface gi1/0/2
esr(config-if-te)# ip address 192.168.1.1/24
esr(config-if-te)# ip firewall disable
esr(config-if-te)# exit
```

, DNS. FQDN (. Fully Qualified Domain Name —), MX eltex-co.ru:

```
esr(config)# hostname mail-gate
esr(config)# domain name eltex-co.ru
esr(config)# domain name-server 1.1.1.1
esr(config)# domain lookup enable
```

«», X-Spam , :

```
esr(config)# security antispam profile SimpleProfile
esr(config-antispam-profile)# description "Basic Antispam profile without rules"
esr(config-antispam-profile)# mark-type header
esr(config-antispam-profile)# exit
```

, eltex-co.ru . «», :

```
esr(config)# mailserver domain MainDomain
esr(config-mailserver-domain)# mail domain eltex-co.ru
esr(config-mailserver-domain)# description "Mail domain eltex-co.ru"
esr(config-mailserver-domain)# mail server ip 192.168.1.10
esr(config-mailserver-domain)# profile antispam SimpleProfile
esr(config-mailserver-domain)# enable
esr(config-mailserver-domain)# exit
```

TLS:

```
esr(config)# mailserver
esr(config-mailserver)# domain MainDomain
esr(config-mailserver)# tls keyfile ca ca.crt
esr(config-mailserver)# tls keyfile server-crt server.crt
esr(config-mailserver)# tls keyfile server-key server.key
esr(config-mailserver)# tls enable
esr(config-mailserver)# enable
esr(config-mailserver)# exit
```

.

firewall SMTP (TCP 25).