

L2-

- L2-
 - bridge
 - bridge-group
 - description
 - enable
 - mac-address
 - ports vrrp filtering
 - protected-ports
 - protected-ports exclude vlan
 - show interfaces bridge
 - thresholds wifi-tunnels-number high
 - thresholds wifi-tunnels-number low
 - unknown-unicast-forwarding disable
 - vlan
- Spanning Tree
 - instance
 - name
 - revision
 - show spanning-tree
 - show spanning-tree active
 - show spanning-tree bpd
 - spanning-tree
 - spanning-tree bpd
 - spanning-tree cost
 - spanning-tree disable
 - spanning-tree forward-time
 - spanning-tree hello-time
 - spanning-tree link-type
 - spanning-tree max-age
 - spanning-tree mode
 - spanning-tree mst
 - spanning-tree mst configuration
 - spanning-tree mst cost
 - spanning-tree mst max-hops
 - spanning-tree mst port-priority
 - spanning-tree pathcost method
 - spanning-tree portfast
 - spanning-tree port-priority
 - spanning-tree priority
- VLAN
 - force-up
 - ip internal-usage-vlan
 - name
 - show interfaces switch-port vlans
 - show vlans
 - show vlans internal-usage
 - switchport access vlan
 - switchport default-vlan tagged
 - switchport forbidden default-vlan
 - switchport general acceptable-frame-type
 - switchport general allowed vlan
 - switchport general allowed vlan auto-all
 - switchport general ingress-filtering disable
 - switchport general macs-group
 - switchport general pvid
 - switchport macs-group
 - switchport trunk allowed vlan
 - switchport trunk allowed vlan auto-all
 - switchport trunk native-vlan
 - vlan
- Voice-VLAN
 - application
 - dscp
 - lldp network-policy
 - network-policy
 - priority
 - vlan

L2-

bridge

(no) .

```
[no] bridge <BRIDGE-ID>
```

<BRIDGE-ID> – , , .

10

CONFIG

bridge 10.

```
esr(config)# bridge 10
esr(config-bridge)#
```

bridge-group

L2-.

(no) L2-.

```
bridge-group <BRIDGE-ID> [tagged]
no bridge-group
```

<BRIDGE-ID> – , , .

tagged – bridge. ESR-10/12V/12VF/14VF/20/21/100/200/3100.

10

CONFIG-IF-GI

CONFIG-IF-TE

CONFIG-PORT-CHANNEL

CONFIG-SUBIF

CONFIG-QINQ-IF

CONFIG-L2TPV3

CONFIG-GRE

CONFIG-SUBTUNNEL

CONFIG-OPENVPN

```
esr(config-subif)# bridge-group 15
```

description

.
(no) .

description <DESCRIPTION>
no description

<DESCRIPTION> – , 255 .

10

CONFIG-BRIDGE

```
esr(config-bridge)# description "broadway"
```

enable

. , .
(no) .

[no] enable

.

.

10

CONFIG-BRIDGE

```
esr(config-bridge)# enable
```

mac-address

MAC- , , .
(no) .

mac-address <ADDR>
no mac-address

<ADDR> -- , XX:XX:XX:XX:XX:XX, [00..FF].

MAC-.

15

CONFIG-IF-GI

CONFIG-IF-TE

CONFIG-PORT-CHANNEL

CONFIG-BRIDGE

```
esr(config-bridge)# mac-address A8:F9:B0:00:00:04
```

ports vrrp filtering

VRRP- , L2-.

(no) .

[no] ports vrrp filtering {enable | exclude vlan}

enable – VRRP- , L2-;

exclude vlan – VLAN .

VRRP- .

10

CONFIG-BRIDGE

```
esr(config-bridge)# ports vrrp filtering enable
```

protected-ports

.

(no) .

protected-ports <MODE>

<MODE> – , :

- none – . .
- local – . .
- radius – . WiFi "radius". , SoftGRE DATA . SoftGRE DATA RADIUS-.

none

10

CONFIG-BRIDGE

```
esr(config-bridge)# protected-ports local
```

protected-ports exclude vlan

VLAN, , bridge . [protected-ports](#) .

(no) .

[no] protected-ports exclude vlan

.

.

10

CONFIG-BRIDGE

```
esr(config-bridge)# protected-ports exclude vlan
```

show interfaces bridge

VLAN, , .

show interfaces bridge [<BRIDGE-ID>]

<BRIDGE-ID> – , , .

ROOT

```
esr# show interfaces bridge 1
Bridges      Interfaces
-----
bridge 1     vlan 1,gil/0/1.10
```

thresholds wifi-tunnels-number high

 WiFi-controller.

softgre bridge.

(no) .

thresholds wifi-tunnels-number high<NUM>
no thresholds wifi-tunnels-number high

<NUM> – softgre bridge, [1..1000]

950

10

CONFIG-BRIDGE

```
esr(config)# thresholds wifi-tunnels-number high 200
```

thresholds wifi-tunnels-number low

 WiFi-controller.

softgre bridge.

(no) .

thresholds wifi-tunnels-number low <NUM>
no thresholds wifi-tunnels-number low

<NUM> – softgre bridge, [1..1000]

925

10

CONFIG-BRIDGE

```
esr(config)# thresholds wifi-tunnels-number low 20
```

unknown-unicast-forwarding disable

MAC- MAC- .

(no) .

[no] unknown-unicast-forwarding disable

.

MAC- .

10

CONFIG-BRIDGE

```
esr(config-bridge)# unknown-unicast-forwarding disable
```

vlan

VLAN. , VLAN, L2. VLAN , [VLAN](#).

(no) VLAN .

vlan <VID>

no vlan

<VID> – VLAN, [1..4095].

10

CONFIG-BRIDGE

```
esr(config-vlan)# vlan 40
```

Spanning Tree



ESR-1000.

instance

MSTP VLAN.

(no) .

```
[no] instance <INSTANCE> vlan <VID>
```

<INSTANCE> – MST-, [1..15];

<VID> – VLAN, [1...4094].

10

CONFIG-MST

```
esr(config-mst)#instance 5 vlan 10-250
```

name

MSTP.

(no) .

```
name <NAME>
```

```
no name
```

<NAME> – MSTP, 31 .

10

CONFIG-MST

```
esr(config-mst)# name test
```


revision

MSTP.

(no) .

revision <NUM>

no revision

<NUM> – MSTP, [0..65535].

0

10

CONFIG-MST

```
esr(config-mst)#revision 5000
```

show spanning-tree

STP .

show spanning-tree { <IF> | bridge }

<IF> – , , ;

bridge – .

1

ROOT

```

esr# show spanning-tree gigabitethernet 1/0/10
Port gil/0/10 disabled
State: BLK
Port id: ---
Type: ---
Designated bridge Priority: ---
Designated port id: ---
Role: ---
Port cost: ---
Designated path cost: ---
Address: ---
Port Fast: ---
esr# show spanning-tree bridge
Protocol version: STP
    Root ID: [32768] 02:01:02:03:04:55
        Root port: [128] gigabitethernet 1/0/14
        Pathcost 4
        Message Age 1
        Hello time: 2 Max age time: 20 Forward delay: 15
    Bridge ID: [32768] 02:20:03:A0:04:90
        Hello time: 2 Max age time: 20 Forward delay: 15
        Transmit hold count: 6 Topology change: 0
        Time since topology change: 13736 Topology change count: 2 show

```

show spanning-tree active

STP, .

show spanning-tree active

.

1

ROOT

```

esr# show spanning-tree active
Protocol version: RSTP
    Root ID: [32768] A8:F9:4B:83:52:C0
        Root port: [128] gigabitethernet 1/0/20
        Pathcost 20000
        Message Age 1
        Hello time: 2 Max age time: 20 Forward delay: 15
    Bridge ID: [32768] A8:F9:4B:AA:03:00
        Hello time: 2 Max age time: 20 Forward delay: 15
        Transmit hold count: 6 Topology change: 0
        Time since topology change: 2318 Topology change count: 1

```

Name	State	Prio.Num	Cost	Status	Role	Type
gil/0/20	en	128.2318	20000	FRW	Root	RSTP

show spanning-tree bpd

BPDU-.

```
show spanning-tree bpdu
```

.

1

ROOT

```
esr# show spanning-tree bpdu
Global: filtering
```

spanning-tree

Spanning Tree (STP, RSTP, MSTP) .

(no) Spanning Tree.

```
[no] spanning-tree
```

.

.

10

CONFIG

```
esr(config)# spanning-tree
```

spanning-tree bpdu



" Spanning Tree", ESR

BPDU-, STP.

(no) .

```
spanning-tree bpdu <MODE>
```

```
no spanning-tree bpdu
```

<MODE> - :

- filtering – STP BPDU-;
- flooding – STP BPDU-, –.

flooding

10

CONFIG

```
esr(config)# spanning-tree bpdu filtering
```

spanning-tree cost

.

(no) .

spanning-tree cost <COST>

no spanning-tree cost

<COST> – , [1..20000000].

4

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# spanning-tree cost 115
```

spanning-tree disable

STP .

(no) .

[no] spanning-tree disable

.

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# spanning-tree disable
```

spanning-tree forward-time

, .

(no) .

spanning-tree forward-time <TIME>

no spanning-tree forward-time

<TIME> – , [4..30].

15

10

CONFIG

```
esr(config)# spanning-tree forward-time 20
```

spanning-tree hello-time

BPDU-.

(no) .

spanning-tree hello-time <TIME>

no spanning-tree hello-time

<TIME> – , [1..10].

2

10

CONFIG

```
esr(config)# spanning-tree hello-time 20
```

spanning-tree link-type

RSTP — «-», «».

(no) .

```
spanning-tree link-type {point-to-point | shared}
```

```
no spanning-tree link-type
```

point-to-point — «-»;

shared — «».

point-to-point

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# spanning-tree link-type point-to-point
```

spanning-tree max-age

STP.

(no) .

```
spanning-tree max-age <TIME>
```

```
no spanning-tree max-age
```

<TIME> — , [6..40].

20

10

CONFIG

```
esr(config)# spanning-tree max-age 35
```

spanning-tree mode

STP.

(no) .

spanning-tree mode <MODE>

no spanning-tree mode

<MODE> – STP:

- STP – IEEE 802.1D Spanning Tree Protocol;
- RSTP – IEEE 802.1W Rapid Spanning Tree Protocol;
- MSTP – IEEE 802.1s Multiple Spanning Trees.

RSTP

10

CONFIG

```
esr(config)# spanning-tree mode STP
```

spanning-tree mst

MSTP.

(no) .

spanning-tree mst <INSTANCE> priority <PRIORITY>

no spanning-tree mst <INSTANCE> priority

<INSTANCE> – MST-, [1..15];

<PRIORITY> –, c 4096 [0..61440].

32768

10

CONFIG

```
esr(config)# spanning-tree mst 14 priority 4096
```

spanning-tree mst configuration

MSTP-.

spanning-tree mst configuration

.

10

CONFIG

```
esr(config)# spanning-tree mst configuration
esr(config-mst)#
```

spanning-tree mst cost

MST.

(no) .

spanning-tree mst <INSTANCE> cost <COST>

no spanning-tree mst <INSTANCE>

<INSTANCE> – MST-, [1..15];

<COST> – , [1..20000000].

4

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL


```
esr(config-if-gi)# spanning-tree mst 1 cost 115
```

spanning-tree mst max-hops

BPDU, . . .

(no) .

```
spanning-tree mst max-hops <NUM>
```

```
no spanning-tree mst max-hops
```

<NUM> – , [6..40].

20

10

CONFIG

```
esr(config)# spanning-tree mst max-hops 10
```

spanning-tree mst port-priority

MST.

(no) .

```
spanning-tree mst <INSTANCE> port-priority <PRIORITY>
```

```
no spanning-tree mst <INSTANCE> port-priority
```

<INSTANCE> – MST-, [1..15];

<PRIORITY> – , c 16 [0..240].

128

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# spanning-tree port-priority 160
```

spanning-tree pathcost method

.
(no) .

```
spanning-tree pathcost method {short | long}  
no spanning-tree pathcost method
```

long – [1..200000000];
short – [1..65535].

short

10

CONFIG

```
esr(config)# spanning-tree pathcost method short
```

spanning-tree portfast

, , , , .
(no) .

```
[no] spanning-tree portfast
```

.

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# spanning-tree portfast
```

spanning-tree port-priority

STP.

(no) .

```
spanning-tree port-priority <PRIORITY>
```

```
no spanning-tree port-priority
```

<PRIORITY> -, c 16 [0..240].

128

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# spanning-tree port-priority 160
```

spanning-tree priority

STP.

(no) .

```
spanning-tree priority <PRIORITY>
```

```
no spanning-tree priority
```

<PRIORITY> -, c 4096 [0..61440].

32768

10

CONFIG

```
esr(config)# spanning-tree priority 4096
```

VLAN

force-up

VLAN , VLAN.

(no) VLAN .

[no] force-up

.

.

10

CONFIG-VLAN

```
esr(config-vlan)# force-up
```

ip internal-usage-vlan



ESR-1000/1200/1500/1511/1700

VLAN .

(no) .

ip internal-usage-vlan <VID>

no ip internal-usage-vlan

<VID> – VLAN, [2...4094].

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# ip internal-usage-vlan 1500
```

name

VLAN.
(no) .

name <NAME>
no name

<NAME> – VLAN, 255 .

.

10

CONFIG-VLAN

```
esr(config)# name L2-ACCESS
```

show interfaces switch-port vlans

 ESR-1000/1200/1500/1511/1700.

VLAN.

show interfaces switch-port vlans [<IF>]

<IF> – , , .
. , . .

1

ROOT

```

esr# show interfaces switch-port vlans gigabitethernet 1/0/1-7
Interface  PVID  Frame types      Ingress      Tagged      Untagged
          -----
          filtering
-----
gil/0/1    1      All              yes          101         1
gil/0/2    1      All              yes          150-151     1
gil/0/3    1      All              yes          none        1
gil/0/4    1      All              yes          none        1
gil/0/5    1      All              yes          55          1
gil/0/6    1      All              yes          none        1
gil/0/7    1      All              yes          none        1
N/A - interface doesn't exist
N/S - interface is not a 802.1Q bridge port
ERR - can't get vlan setting for interface

```

show vlans

VLAN.

show vlans [<VID>]

<VID> - VLAN, [1 .. 4094].

VLAN «,» VLAN «-». VLAN.

1

ROOT

```

esr# show vlans
VID  Name      Tagged      Untagged
----  -----
1    default
2    --        gil/0/3-4, gil/0/6-24,
                        pol
                        gil/0/1, tel/0/1-2

```

show vlans internal-usage



ESR-1000/1200/1500/1511/1700.

VLAN, .

show vlans internal-usage

.

1

ROOT

```
esr# show vlans internal-usage
Usage      VID      Reserved  IP address
-----
gil/0/18   4088     No        Active
gil/0/16   4089     No        Active
gil/0/15   4090     No        Active
```

switchport access vlan



ESR-10/12V/12VF/14VF/20/21/100/200/3100.

// VLAN access.

```
switchport access vlan <VID>
no switchport access vlan
```

<VID> – VLAN, [2...4094].

10

CONFIG-GI

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport access vlan 50
```

switchport default-vlan tagged

VLAN .
(no) VLAN .

```
[no] switchport default-vlan tagged
```

.

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport default-vlan tagged
```

switchport forbidden default-vlan

VLAN .

(no) vlan .

```
[no] switchport forbidden default-vlan
```

.

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# no switchport forbidden default-vlan
```

switchport general acceptable-frame-type



ESR-1000/1200/1500/1511/1700.

, .

(no) .

```
switchport general acceptable-frame-type { tagged-only | all }
```

```
no switchport general acceptable-frame-type
```

tagged-only – ;

all – .

all

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config)# switchport general acceptable-frame-type tagged-only
```

switchport general allowed vlan



ESR-1000/1200/1500/1511/1700.

/ / VLAN.

```
switchport general allowed vlan <ACT> <VID> [<TYPE>]
```

<ACT> – :

- add – VLAN;
- remove – VLAN.

<VID> – VLAN, [2...4094]. «-» «,»;

<TYPE> – :

- tagged – VLAN;
- untagged – VLAN . VLAN, , *switchport general pvid*, *switchport general pvid*.

<TYPE>, «tagged».

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

1

VLAN 50

```
esr(config-if-gi)# switchport general allowed vlan remove 50
```

2

VLAN 10-50

```
esr(config-if-gi)# switchport general allowed vlan add 10-50
```

switchport general allowed vlan auto-all



ESR-1000/1200/1500/1511/1700.

VLAN.

(no) VLAN.

```
[no] switchport general allowed vlan auto-all [ <TYPE> ]
```

<TYPE> – :

- tagged – VLAN ;
- untagged – VLAN . VLAN, , switchport general pvid, [switchport general pvid](#).

.

10

CONFIG-IF-GI

CONFIG-IF-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport general allowed vlan auto-all
```

switchport general ingress-filtering disable



ESR-1000/1200/1500/1511/1700.

VLAN ID.

(no) .

```
switchport general ingress-filtering disable
```

```
no switchport general ingress-filtering
```

.

.

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport general ingress-filtering disable
```

switchport general macs-group



ESR-1000/1200/1500/1511/1700.

MAC- VLAN-ID, MAC-, MAC- .

(no) MAC- VLAN-ID.

```
switchport general macs-group <NAME> vlan <VID>
```

```
no switchport general macs-group <NAME>
```

<NAME> – MAC-, 31 .

<VID> – VLAN, [2..4094].

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport general macs-group OGM1 vlan 999
```

switchport general pvid



ESR-1000/1200/1500/1511/1700.

VLAN- (PVID) .

(no) .

```
switchport general pvid <VID>
```

```
no switchport general pvid
```

<VID> – VLAN, [1...4094].

1

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport general pvid 999
```

switchport macs-group



ESR-10/12V/12VF/14VF/20/21/100/200/3100.

MAC- VLAN-ID, MAC-, MAC- .

(no) MAC- VLAN-ID.

```
switchport macs-group <NAME> vlan <VID>
```

```
no switchport macs-group <NAME>
```

<NAME> – MAC-, 31 .

<VID> – VLAN, [2..4094].

10

CONFIG-GI

CONFIG-TE

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport macs-group OGM1 vlan 999
```

switchport trunk allowed vlan



ESR-10/12V/12VF/14VF/20/21/100/200/3100.

/ / VLAN trunk .

```
switchport trunk allowed vlan <ACT> <VID>
```

<ACT> – :

- add – VLAN;
- remove – VLAN;

<VID> – VLAN, [2...4094]. «-» «,».

10

CONFIG-GI

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport trunk allowed vlan add 10-50
```

switchport trunk allowed vlan auto-all



ESR-10/12V/12VF/14VF/20/21/100/200/3100.

VLAN.

(no) VLAN.

```
[no] switchport trunk allowed vlan auto-all
```

.

.

10

CONFIG-IF-GI

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport trunk allowed vlan auto-all
```

switchport trunk native-vlan



ESR-10/12V/12VF/14VF/20/21/100/200/3100.

VLAN trunk . , , VLAN.

```
switchport trunk native-vlan <VID>
```

```
no switchport trunk native-vlan
```

<VID> – VLAN, [2...4094].

1

10

CONFIG-GI

CONFIG-PORT-CHANNEL

```
esr(config-if-gi)# switchport trunk native-vlan 55
```

vlan

VLAN VLAN. VLAN c 1, VLAN.

(no) VLAN.

[no] vlan <VID>

<VID> – VLAN, [2...4094].

10

CONFIG

```
esr(config)# vlan 40
```

Voice-VLAN

application

, LLDP-MED LLDPDU , (network-policy).

(no) .

application <APP-TYPE>

no application

<APP-TYPE> – , network-policy. :

- voice;
- voice-signaling;
- guest-voice;
- guest-voice-signaling;
- softphone-voice;
- video-conferencing;
- streaming-video;

- video-signaling.

10

CONFIG-NET-POLICY

```
esr(config-net-policy)# application voice
```

dscp

DSCP, LLDP-MED LLDPDU (network-policy).

(no) DSCP (network-policy).

dscp <DSCP>

dscp

<DSCP> – DSCP, [0..63].

DSCP LLDPDU-MED .

10

CONFIG-NET-POLICY

```
esr(config-net-policy)# dscp 62
```

lldp network-policy

(network-policy).

(no) .



LLDPDU-, , LLDP-MED (. [lldp med fast-start enable](#)).

[no] lldp network-policy <NAME>

<NAME> – , 31 .

10

CONFIG-GI

CONFIG-TE

```
esr(config-if-gi) lldp network-policy ip-phones
```

network-policy

(network-policy) .

(no) (network-policy).

[no] network-policy <NAME>

<NAME> – , 31.

10

CONFIG

```
esr(config)# network-policy ip-phones
```

priority

COS, LLDP-MED LLDPDU (network-policy).

(no) COS (network-policy).

priority <COS>

no priority

<COS> – , :

- best-effort – COS0;
- background – COS1;
- excellent-effort – COS2;
- critical-applications – COS3;
- video – COS4;
- voice – COS5;
- internetwork-control – COS6;
- network-control – COS7.

COS LLDPDU-MED .

CONFIG-NET-POLICY

```
esr(config-net-policy)# priority voice
```

vlan

VLAN, LLDP-MED LLDPDU (network-policy).

(no) VLAN (network-policy).

vlan <VID> [tagged]

<VID> – VLAN, [1...4094];

tagged –, Ethernet- .

.

CONFIG-NET-POLICY

```
esr(config-net-policy)# vlan 3258 tagged
```