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MPLS

forwarding interface

MPLS- .

(no) MPLS- .

```
[no] forwarding interface { <IF> | <TUN> }
```

<IF> - , , ;
<TUN> - , , .

.

10

CONFIG-MPLS

```
esr(config-mpls)# forwarding interface gi 1/0/14
```

history statistics

/.
(no) /.

[no] history statistics

.

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CONFIG-AUTODISCOVERY-BGP

CONFIG-L2VPN-PW

```
esr(config-autodiscovery-bgp)# history statistics
```

l2vpn

MPLS-L2-.
(no) MPLS-L2-.

[no] l2vpn

.

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CONFIG-MPLS

```
esr(config-mpls)# l2vpn
```

ldp

LDP.

(no) LDP.

[no] ldp

.

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CONFIG-MPLS

```
esr(config-mpls)# ldp
```

mpls

MPLS.

(no) LDP.

[no] mpls

.

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CONFIG

```
esr(config)# mpls
```

system cpu load-balance mpls passenger

CPU .

(no) .

```
system cpu load-balance mpls passenger [ <OPTION> ]
no system cpu load-balance mpls passenger [ <OPTION> ]
```

<OPTION> :

- ip – ip-src ip-dst;
- ipoe-pw-with-cw – , Control Word.
- ipoe-pw-without-cw – , Control Word.

. ip-src ip-dst.

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CONFIG

```
esr(config)# system cpu load-balance mpls passenger ip
```

LDP

address-family

LDP address family.

(no) .

```
[no] address-family ipv4
```

.

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CONFIG-LDP

```
esr(config-ldp)# address-family ipv4
```

advertise-labels

FEC, LDP .

(no)

```
advertise-labels <OBJ-GROUP-NETWORK-NAME>
```

```
no advertise-labels
```

<OBJ-GROUP-NETWORK-NAME>- IP-, 31 .

FEC

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CONFIG-LDP

```
esr(config-ldp)# advertise-labels mpls_adv
```

clear mpls ldp neighbor

LDP .

clear mpls ldp neighbor [<ADDR>]

<ADDR>- IP- LDP , AAA.BBB.CCC.DDD, [0..255].

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ROOT

```
ESR1# clear mpls ldp neighbor 1.1.1.1
```

description

LDP-.

(no) LDP-.

description <STRING>
no description

<STRING>- 1 255 .

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CONFIG-LDP-NEIGH

```
esr(config-ldp-neig)# description ESR1
```

discovery hello holdtime

holdtime. Holdtime – LDP Hello .

(no) .

```
discovery hello holdtime <TIME>
```

```
no discovery hello holdtime
```

<TIME> – [3..65535].

15

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CONFIG-LDP

CONFIG-LDP-AF-IPV4-IF

```
esr(config-ldp-af-ipv4-if)# discovery hello holdtime 45
```

discovery hello interval

hello interval. Hello interval – LDP hello .

(no) .

```
discovery hello interval <TIME>
```

```
no discovery hello interval
```

<TIME> – [1..65535].

5

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CONFIG-LDP

CONFIG-LDP-AF-IPV4-IF

```
esr(config-ldp-af-ipv4-if)# discovery hello interval 15
```

discovery targeted-hello accept

targeted-hello .

(no) targeted-hello .

discovery targeted-hello accept

no targeted-hello accept

.

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CONFIG-LDP-AF-IPV4

```
esr(config-ldp-af-ipv4)# discovery targeted-hello accept
```

discovery targeted-hello interval

hello interval. Hello interval – LDP hello targeted-.

(no) .

discovery targeted-hello interval <TIME>

no discovery targeted-hello interval

<TIME> – [1..65535].

5

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CONFIG-LDP

CONFIG-LDP-NEIGH

```
esr(config-ldp-neig)# discovery targeted-hello interval 15
```

discovery targeted-hello holdtime

holdtime targeted-. Holdtime – , LDP Hello .

(no) .

```
discovery targeted-hello holdtime <TIME>
no discovery targeted-hello holdtime
```

<TIME> – [3..65535].

45

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CONFIG-LDP

CONFIG-LDP-NEIGH

```
esr(config-ldp-af-ipv4-if)# discovery hello holdtime 45
```

egress-label-type

, FEC egress lsr explicit-null (0) implicit null (3).

(no) .

```
egress-label-type explicit-null
no egress-label-type
```

.

IMPLICIT NULL (3)

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CONFIG-LDP

```
esr(config-ldp)# egress-label-type explicit-null
```

enable

LDP.

(no) LDP.

[no] enable

.

.

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CONFIG-LDP

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

interface

LDP hello address-family.

(no) LDP hello .

[no] interface { <IF> | <TUN> }

<IF> – , , ;

<TUN> – , , .

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CONFIG-LDP-AF-IPV4

```
esr(config-ldp-af-ipv4)# interface gigabitethernet 1/0/1
```

keepalive

keepalive- .

(no) .

keepalive <TIMER>

no keepalive

<TIMER> – [3..65535].

180

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CONFIG-LDP

CONFIG-LDP-NEIGH

```
esr(config-ldp)# keepalive 120
esr(config-ldp-neig)# keepalive 160
```

neighbor

LDP-targeted .

(no) targeted .

[no] neighbor <ADDR>

<ADDR> – ip- , AAA.BBB.CCC.DDD, [0..255];

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CONFIG-LDP

```
esr(config-ldp)# neighbor 2.2.2.2
```

password

.

(no) .

password { <TEXT> | encrypted <ENCRYPTED-TEXT> }

no password

<CLEAR-TEXT> – , , [8..16];

<ENCRYPTED-TEXT> – [8..16] ([16..32]) (0xYYYY...) (YYYY...).

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CONFIG-LDP-NEIGH

```
esr(config-ldp-neig)# password cleartextpassword
```

router-id

LDP-.

(no) LDP-.

router-id <ID>

no router-id

<ID> -, AAA.BBB.CCC.DDD, [0..255].

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CONFIG-LDP

```
esr(config-ldp)# router-id 1.1.1.1
```

show mpls ldp binding

show mpls ldp binding [detailed] [{ <ADDR/LEN> | neighbor <ADDR> | [local <LABEL-ID>] [remote <LABEL-ID>] }]

<ADDR/LEN> - IP-, AAA.BBB.CCC.DDD/EE, AAA - DDD [0..255] EE [1..32].

<LABEL-ID> -, [0-104875].

<ADDR> - ip- LDP, AAA.BBB.CCC.DDD, [0..255].

detailed - .

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ROOT

```

ESR1# sh mpls ldp bindings
10.10.0.4/32:
  local label:      16
  remote label:    16          lsr: 10.10.0.1
  remote label:    149        lsr: 10.10.0.3
  remote label:    imp-null   lsr: 10.10.0.4      inuse
10.10.0.2/32:
  local label:      imp-null
  remote label:    34          lsr: 10.10.0.1
  remote label:    152        lsr: 10.10.0.3
  remote label:    142        lsr: 10.10.0.4
10.10.0.1/32:
  local label:      20
  remote label:    imp-null   lsr: 10.10.0.1      inuse
  remote label:    139        lsr: 10.10.0.3
  remote label:    127        lsr: 10.10.0.4

```

show mpls ldp discovery

LDP.

```
show mpls ldp discovery [ detailed ]
```

detailed – .

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ROOT

```

ESR1# show mpls ldp discovery detailed
Local LDP ID: 1.1.1.1
Discovery sources:
Interfaces:
gigabitethernet 1/0/1:
Hello interval: 5 seconds
Transport IP address: 1.1.1.1
LDP ID: 4.4.4.4
Source IP address: 10.10.10.2
Transport IP address: 4.4.4.4
Hold time: 15 seconds
Proposed hold time: 15/15 (local/peer) seconds
Targeted hellos:
1.1.1.1 -> 4.4.4.4:
Hello interval: 5 seconds
Transport IP address: 1.1.1.1
LDP ID: 4.4.4.4
Source IP address: 4.4.4.4
Transport IP address: 4.4.4.4
Hold time: 45 seconds
Proposed hold time: 45/45 (local/peer) seconds

```

show mpls forwarding-table

(LFIB).

```
show mpls forwarding-table [ { <ADDR/LEN> | label <LABEL-ID> | nexthop <ADDR> | tunnel <ID> } ]
```

<ADDR/LEN> – IP-, AAA.BBB.CCC.DDD/EE, AAA – DDD [0..255] EE [1..32].
<LABEL-ID> – , [0..104875].
<ADDR> – ip- LDP , AAA.BBB.CCC.DDD, [0..255].
<ID> – [1..2000000].

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ROOT

ESR1# show mpls forwarding-table

Local	Outgoing	Prefix		Outgoing	Next Hop
label	label	or tunnel ID Interface			

18	16	PW	ID 100	--	4.4.4.4
17	imp-null	4.4.4.4/32		gil/0/1	10.10.10.2

show mpls ldp neighbor

LDP .

```
show mpls ldp neighbor [ { <ADDR> | interface { <IF> | <TUN> } } ]
```

<ADDR> – ip- LDP , AAA.BBB.CCC.DDD, [0..255].
<IF> – , , ;
<TUN> – , , .

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ROOT

ESR1# show mpls ldp neighbor

Peer LDP ID: 4.4.4.4; Local LDP ID 1.1.1.1
State: Operational
TCP connection: 4.4.4.4:38759 - 1.1.1.1:646
Messages sent/received: 195/194
Uptime: 03:07:33
LDP discovery sources:
gigabitethernet 1/0/1
1.1.1.1 -> 4.4.4.4

targeted

targeted hello .

(no) targeted hello .

[no] targeted

.

.

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CONFIG-LDP-NEIGH

```
esr(config-ldp-neig)# targeted
```

transport-address

ip- LDP-, .

(no) ip- LDP-.

transport-address <ADDR>
no transport-address

<ADDR> – AAA.BBB.CCC.DDD, [0..255].

10

CONFIG-LDP-AF-IPV4

```
esr(config-ldp-af-ipv4)# transport-address 1.1.1.1
```

MPLS L2VPN

autodiscovery bgp

BGP auto-discovery and signaling.

(no) .

[no] autodiscovery bgp

10

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-vpls)# autodiscovery bgp
```

ignore encapsulation-mismatch

(no) .

```
[ no ] ignore encapsulation-mismatch
```

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-autodiscovery-bgp)# ignore encapsulation-mismatch
```

ignore mtu-mismatch

MTU.

(no) MTU .

```
[no] ignore mtu-mismatch
```

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-autodiscovery-bgp)# ignore mtu-mismatch
```

mtu

MTU . extended community.

(no) MTU .

mtu <VALUE>

no mtu

<VALUE> – MTU, [552..10000].

1500

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-autodiscovery-bgp)# mtu 1510
```

rd

Route Distinguisher VPLS.

(no) .

rd <RD>

no rd

<RD> – Route distinguisher, :

- <ASN>:<nn> – <ASN> – [1..65535], nn – [1..65535];
- <ADDR>:<nn> – <ADDR> – AAA.BBB.CCC.DDD/EE AAA-DDD [0..255], nn – [1..65535];
- <4BASN>:<nn> – <4ASN> – [1..4294967295], nn – [1..65535];

10

CONFIG-AUTODISCOVERY-BGP


```
esr(config-vrf)# rd 65000:10001
```

route-target

route-target extended community.

```
[no] route-target { import | export } <RT>
```

import – L2VPN <RT>, VPLS.

export – <RT>, VPLS BGP.

<RT> – route-target, :

- <ASN>:<nn> – <ASN> – [1..65535], nn – [1..65535];
- <ADDR>:<nn> – <ADDR> – AAA.BBB.CCC.DDD/EE AAA-DDD [0..255], nn – [1..65535];
- <4BASN>:<nn> – <4ASN> – [1..4294967295], nn – [1..65535];

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-vrf)# route-target export 65000:10001
```

ve id

VPLS.

(no) .

```
ve id <ID>
```

```
no ve id
```

<ID> – VPLS, [1..16384].

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-autodiscovery-bgp)# ve id 5
```

ve range

VPLS.

(no) ve range .

```
ve range <ID>
no ve range
```

<ID> – , [8..100].

10

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-autodiscovery-bgp)# ve range 20
```

vpn id

```
VPN .
(no) .
```

```
vpn id <ID>
no vpn id
```

<ID> – VPN , [1..4294967295].

10

CONFIG-AUTODISCOVERY-BGP

```
esr(config-autodiscovery-bgp)# vpn id 5
```

bridge-group

C VSI (Virtual Switching Instance),
(no) .

```
bridge-group <INDEX>
no bridge-group
```

<INDEX> – bridge-group. Bridge .

10

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-vpls)# bridge-group 25
```

description

.

(no) .

```
description <LINE>  
no description
```

<LINE> -. [1-255]

10

CONFIG-L2VPN-PW

CONFIG-L2VPN-PW-CLASS

```
esr(config-l2vpn-pw)# description PW_FOR_VLAN398
```

enable

.

(no) .

[no] enable

10

CONFIG-L2VPN-PW

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-pw)# enable
```

encapsulation mpls mtu

MTU pseudowire- pw-class.

(no) MTU .

```
encapsulation mpls mtu <MTU>  
no encapsulation mpls mtu
```

<MTU> – MTU, [552..10000]

1500

10

CONFIG-L2VPN-PW-CLASS

```
esr(config-l2vpn-pw-class)# encapsulation mpls mtu 1464
```

encapsulation mpls status-tlv disable

status-tlv .

(no) .

```
[no] encapsulation mpls status-tlv disable
```

.

status-tlv enable

10

CONFIG-L2VPN-PW-CLASS

```
esr(config-l2vpn-pw-class)# encapsulation mpls status-tlv disable
```

interface

C Attached Circuit .

(no) Attached Circuit .

```
interface { <IF> | <TUN> }  
no interface
```

<IF> – , , ;

<TUN> – , , .

10

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-p2p)# interface gigabitethernet 1/0/4.398
```

neighbor-address

C , .

(no) .

```
neighbor-address <ADDR>  
no neighbor-address
```

<ADDR> – IP-, AAA.BBB.CCC.DDD, [0..255].

LSR_ID

10

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-pw)# neighbor-address 192.168.24.78
```

p2p

C L2VPN - (VPWS).

(no) p2p.

[no] p2p <NAME>

<NAME> – p2p, 31 .

10

CONFIG-L2VPN

```
esr(config-l2vpn)# p2p VLAN_398
```

pw

C .

(no) .

pw <PW_ID> <LSR_ID>

no pw

<PW_ID> – pseedwire, [1..4294967295]

<LSR_ID> – LSR pseudo-wire, AAA.BBB.CCC.DDD, [0..255]

10

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-p2p)# pw 398 1.1.1.1
```

pw-class

C pw-class.

(no) pw-class .

[no] pw-class <WORD>

<WORD> – pw-class [1..31] .

10

CONFIG-L2VPN

```
esr(config-l2vpn)# pw-class Class1
```

pw-class

C pw class .
 (no) pw-class .

pw-class <WORD>
no pw-class

<WORD> – pw-class, [1..31].

10

CONFIG-L2VPN-PW

```
esr(config-l2vpn-pw)# pw-class Class1
```

transport-mode

.
(no)

transport-mode { ethernet | vlan }
no transport-mode

ethernet – pseudo-wire 802.1Q;
vlan – 802.1Q pseudo-wire.

ethernet

10

CONFIG-L2VPN-EOMPLS

```
esr(config-l2vpn-p2p)# transport-mode vlan
```

vpls

C L2VPN point-to-multipoint.
 (no) vpls.

[no] vpls <NAME>

<NAME> - vpls, 31.

10

CONFIG-L2VPN

```
(config-l2vpn)# vpls Customer1
```

show mpls l2vpn bindings

show mpls l2vpn binding [{ [local <LABEL-ID>] [remote <LABEL ID>] | neighbor <ADDR> | pw <PW-ID> | ve-id <VE-ID> }]

<LABEL-ID> - MPLS-, [0..104875];

<ADDR> - ip- LDP, AAA.BBB.CCC.DDD, [0..255];

<PW-ID> - pseudowire, [1..4294967295];

<VE-ID> - PE- VPLS [1..16384].

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ROOT

```
esr# show mpls l2vpn bindings pw 100
Neighbor: 1.1.1.1, PW ID: 100
Local label: 19
Type: Eth Tagged
Group ID: 0
MTU: 1500
Remote label: 28
Type: Eth Tagged
Group ID: 0
MTU: 1500
```

show mpls l2vpn pseudowire

show mpls l2vpn pseudowire [pw <PW-ID>] [neighbor <ADDR>]

<PW-ID> – pseudowire, [1..4294967295]
<ADDR> – ip- targeted LDP , AAA.BBB.CCC.DDD, [0..255];

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ROOT

esr# show mpls l2vpn pseudowire		
Neighbor	PW ID	Type
Status		
-----	-----	-----

1.1.1.1	100	Eth
Tagged	Up	

show mpls l2vpn p2p

VPWS.

show mpls l2vpn p2p [name <WORD>]

<WORD> – , [1..31].

1

ROOT

esr# sh mpls l2vpn p2p	
P2P: VPWS	
gigabitethernet 1/0/4.10:	
MTU:	1500
Status:	Up
PW ID 100, Neighbor 10.10.0.2:	
MTU:	1500
Status TLV:	Enable
Last change:	00:05:35
Status:	Up

show mpls l2vpn pw-class

, .

show mpls l2vpn pw-class [name <WORD>]

<WORD> – , [1..31].

1

ROOT

```
PE1# sh mpls l2vpn pw-class
PW-class      Neighbor  PW ID      Status Status-tlv MTU
-----
PW_template   10.10.0.2  100        UP    Enable    1500
```

show mpls l2vpn vpls

VPLS.

```
show mpls l2vpn vpls [ name <WORD> ]
```

<WORD> – , [1..31].

1

ROOT

```
esr# sh mpls l2vpn vpls
VPLS: VPLS
  bridge 100:
    MTU:      1500
    Status: UP
  PWs:
    PW ID 23, Neighbor 10.10.0.1:
      MTU:      1500
      Status TLV: Enable
      Last change: 19:00:07
      Status:    UP
```