

# MPLS

- MPLS
  - forwarding interface
  - history statistics
  - l2vpn
  - ldp
  - mpls
  - system cpu load-balance mpls passenger
- LDP
  - address-family
  - advertise-labels
  - clear mpls ldp neighbor
  - description
  - discovery hello holdtime
  - discovery hello interval
  - discovery targeted-hello accept
  - discovery targeted-hello interval
  - discovery targeted-hello holdtime
  - egress-label-type
  - enable
  - interface
  - keepalive
  - neighbor
  - password
  - router-id
  - show mpls ldp binding
  - show mpls ldp discovery
  - show mpls forwarding-table
  - show mpls ldp neighbor
  - targeted
  - transport-address
- MPLS L2VPN
  - autodiscovery bgp
  - ignore encapsulation-mismatch
  - ignore mtu-mismatch
  - mtu
  - rd
  - route-target
  - ve id
  - ve range
  - vpn id
  - bridge-group
  - description
  - enable
  - encapsulation mpls mtu
  - encapsulation mpls status-tlv disable
  - interface
  - neighbor-address
  - p2p
  - pw
  - pw-class
  - pw-class
  - transport-mode
  - vpls
  - show mpls l2vpn bindings
  - show mpls l2vpn pseudowire
  - show mpls l2vpn p2p
  - show mpls l2vpn pw-class
  - show mpls l2vpn vpls

## 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].

1

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

.

.

10

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 - .

1

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 – .

1

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].

1

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> – , , .

1

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].

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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

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#### 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];

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## 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]

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## 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] .

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## 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

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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].

1

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];

1

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
```