



????????EtherIP / L2TPv3 over IPsec ???  
??

[03.png](#)

????????L2TPv3 ?????? (????) ? VPN Server ???? IPsec ?????????????????? ISAKMP  
(IKE) Phase 1 ? ID ?????????? HUB ?? HUB ???

[02.png](#)

???????????????????? L2TPv3 ?????? ??? VPN ?????? HUB ?DEFAULT????????????l2tpv3?  
??  
(?????l2tpv3????? HUB ?DEFAULT?????????????????????)  
???????? SEIL ???? VPN Server ????????? ISAKMP (IKE) Phase 1 ? ID ??? ??? IP ??????  
????????????????????????????????????\*? (?????) ??? 1 ??? ID ?????????????????????????????????  
ID ?????? VPN ?????????????????????????????????  
?????????????????VPN Server ?????? ID ???? SEIL ?????????????????????????????????  
???????????????

**SEIL ????????????? #1 (?? IP ??????????)**

1 ???????? SEIL ????????????????????? PacketiX VPN Server ??? VPN ??????????????????  
?????

????????????????SEIL ???????? IP ??? (???? IP ???????? NAT ????????? IP ??????????  
????????) ?????????????????????Cisco ??????? IP ?????????????????PPPoE ?? ISP ?? IP ?????  
????????????????????????????????  
??

- **Ethernet ??????**

lan1: WAN ? (?? IP: 2.3.4.5?NAT ??????)

lan0: ????? (???????? IP: 192.168.0.234)

- **???????????? (????????????????????) ????? IP ????**

lan1 ??? Ethernet ?????????

IP ????: 2.3.4.5 / 255.255.255.0

?????????????: 2.3.4.254

????????????????????????????

- **?????? PacketiX VPN Server ??????? IP ????**

1.2.3.4

- **?????? PacketiX VPN Server ??????**

HOSTNAME\_SERVER

(??? Config ?? "HOSTNAME\_SERVER" ????????? VPN Server ? OS ??????????)

?? (Windows ??????????) ?????????????????? ". ?????????????????? ". ??????????

????????????OS ?????????????????????????????????????HOSTNAME\_SERVER ??????

?????????????????)

- **ISAKMP SA ????????????**

AES-256 / SHA / DH Group 2 (1024 bit)

- **IPsec SA ????????????**

AES-256 / SHA

- **IPsec Pre-Shared Key (?????) ???**

vpn

?????????? SEIL ?????????????????????????????????

```
interface pppoe0 over none
```

```
interface lan0 delete all
```

```
interface lan0 media auto
```

```
interface lan0 mdi auto
```

```
interface lan0 mtu system-default
```

```
interface lan0 address 192.168.0.234/24
```

```
interface lan1 delete all
```

```
interface lan1 media auto
```

```
interface lan1 mdi auto
```

```
interface lan1 mtu system-default
```

```
interface lan1 queue normal
```

```
interface lan1 address 2.3.4.5/24
```

```
route add default 2.3.4.254
```

```

dhcp disable
rtadvd disable
ike proposal delete all
ipsec security-association delete all
ike preshared-key add 1.2.3.4 vpn
ike proposal add IKE_PROPOSAL1 encryption aes256 hash sha1 authentication
ipsec security-association proposal add IPSEC_SA_PROP1 pfs-group modp1024
ipsec security-association add IPSEC_SA1 transport 2.3.4.5 1.2.3.4 ike IPSEC_SA1
ike peer add vpnserver address 1.2.3.4 exchange-mode main proposals IKE_PROPOSAL1
ipsec security-policy add IPSEC_SECPOL1 security-association IPSEC_SA1
ike auto-initiation enable
ike dpd-interval 7
ike dpd-maxfail 5
ike nat-keepalive-interval 30
l2tp hostname seil
l2tp add vpnserver hostname HOSTNAME_SERVER cookie off hello-interval 1
interface l2tp0 tunnel 2.3.4.5 1.2.3.4
interface l2tp0 l2tp vpnserver remote-end-id HOSTNAME_SERVER
l2tp modify vpnserver hostname HOSTNAME_SERVER cookie off hello-interval 1
bridge group add BRIDGE1 stp off aging-time 300
bridge interface lan0 group BRIDGE1 stp off
bridge interface l2tp0 group BRIDGE1 stp off
????????SEIL ???PacketiX VPN Server (IP ????: 1.2.3.4) ??? IPsec ?????????
??????? L2TPv3 ?????????? VPN ?????????
lan1 ??? WAN ? (?????)?lan0 ? VPN ????? (VPN ??????????) ?????
??lan0 ?????????? PC ??Ethernet ????? (L2) ?? PacketiX VPN Server ??? HUB ?
????????????????????

```

**SEIL ?????????? #2 (DHCP ??? IP ??????)**

```

1 ?????? SEIL ?????????? PacketiX VPN Server ??? VPN ??????????
?????
????????SEIL ?????????? IP ??? (???? IP ?????? NAT ??????)
IP ??????????) ? DHCP ??????????
????????????????????
    • Ethernet ??????
      lan1: WAN ? (DHCP ??? IP ??????NAT ??????)
      lan0: ??? (?????? IP: 192.168.0.234)
    • ????????? (?????????????) ????? IP ????
      lan1 ??? Ethernet ????????? DHCP ????? IP ?????????????????????
      ?????????????????????
    • ????? PacketiX VPN Server ?????? IP ????
      1.2.3.4

```

- **????? PacketiX VPN Server ?????**

HOSTNAME\_SERVER

(?? Config ?? "HOSTNAME\_SERVER" ??????? VPN Server ? OS ???????  
?? (Windows ????????) ?????????? ". ??????????"  
?????????OS ??????????????????????HOSTNAME\_SERVER ??????  
?????????)

- **ISAKMP SA ?????????**

AES-256 / SHA / DH Group 2 (1024 bit)

- **IPsec SA ?????????**

AES-256 / SHA

- **IPsec Pre-Shared Key (?????) ???**

vpn

???????? SEIL ?????????????????????

interface pppoe0 over none

interface lan0 delete all

interface lan0 media auto

interface lan0 mdi auto

interface lan0 mtu system-default

interface lan0 address 192.168.0.234/24

interface lan1 delete all

interface lan1 media auto

interface lan1 mdi auto

interface lan1 mtu system-default

interface lan1 queue normal

interface lan1 address dhcp

interface lan1 add 192.168.255.1/24

route add default dhcp

dhcp disable

rtadvd disable

ike proposal delete all

ipsec security-association delete all

ike preshared-key add 1.2.3.4 vpn

ike proposal add IKE\_PROPOSAL1 encryption aes256 hash sha1 authentication

ipsec security-association proposal add IPSEC\_SA\_PROP1 pfs-group modp1024

ipsec security-association add IPSEC\_SA1 tunnel lan1 1.2.3.4 ike IPSEC\_SA

ike peer add vpnserver address 1.2.3.4 exchange-mode aggressive proposals

ipsec security-policy add IPSEC\_SECPOL1 security-association IPSEC\_SA1 sr

ike auto-initiation enable

ike dpd-interval 7

ike dpd-maxfail 5

ike nat-keepalive-interval 30

l2tp hostname seil

l2tp add vpnserver hostname HOSTNAME\_SERVER cookie off hello-interval 1 r

interface l2tp0 tunnel 192.168.255.1 1.2.3.4

interface l2tp0 l2tp vpnserver remote-end-id HOSTNAME\_SERVER

```
l2tp modify vpnserver hostname HOSTNAME_SERVER cookie off hello-interval
bridge group add BRIDGE1 stp off aging-time 300
bridge interface lan0 group BRIDGE1 stp off
bridge interface l2tp0 group BRIDGE1 stp off
```

- ??????

```
????????? lan1 ??192.168.255.1???? IP ?????????????????? IP ????? SEIL ???
IPsec ?????????????????? IP ?????????????????????????????????SEIL ??????????WAN ??
?????? IP ?????????????????????????????? IP ??????????????????????????????
```

```
????????????SEIL ???PacketiX VPN Server (IP ????: 1.2.3.4) ??? IPsec ?????????????????
????????? L2TPv3 ?????????????????? VPN ?????????????
lan1 ??? WAN ? (?????????)lan0 ? VPN ?????? (VPN ??????????????????????????) ?????????
??lan0 ?????????????????? PC ??Ethernet ?????? (L2) ??? PacketiX VPN Server ??? HUB ?
????????????????????????????????????????????????????????????????????????????????
```

### SEIL ????????????? #3 (PPPoE ??? IP ????????)

```
1 ????????? SEIL ?????????????????????? PacketiX VPN Server ??? VPN ??????????????????
??????
```

```
????????????????SEIL ?????????????????? PPPoE ??? ISP ?????????????????? ISP ??? IP ???????
????????????????
```

```
????????????????????????????????????????????????????????????????????????????????
```

- **Ethernet ??????**

```
lan1: WAN ? (PPPoE ?? IP ?????????NAT ??????)
```

```
lan0: ????? (????????? IP: 192.168.0.234)
```

- **????????????? (?????????????????????) ?????? IP ?????**

```
lan1 ??? Ethernet ?????? NTT ?????????????? ONU ?????????????????????????????? NTT ???
```

```
?? PPPoE ?????????? ISP ??????ISP ?? IP ?????????????????????????????????????????????????????
```

```
????????????????????
```

- **SEIL ?????????????? PPPoE ??????????????**

```
ID: abc12345@isp.ad.jp
```

```
?????: nekojamu
```

- **??????? PacketiX VPN Server ??????? IP ?????**

```
1.2.3.4
```

- **??????? PacketiX VPN Server ??????**

```
HOSTNAME_SERVER
```

```
(??? Config ??? "HOSTNAME_SERVER" ?????????? VPN Server ? OS ????????????)
```

```
?? (Windows ??????????????) ?????????????????????? "." ?????????????????????? "." ?????????????
```

????????????OS ???HOSTNAME\_SERVER ??????  
?????????????????)

- **ISAKMP SA ??????????**  
AES-256 / SHA / DH Group 2 (1024 bit)
- **IPsec SA ??????????**  
AES-256 / SHA
- **IPsec Pre-Shared Key (?????) ???**  
vpn

????????? SEIL ???

```
interface lan0 delete all
interface lan0 media auto
interface lan0 mdi auto
interface lan0 mtu system-default
interface lan0 address 192.168.0.234/24
interface lan1 delete all
interface lan1 media auto
interface lan1 mdi auto
interface lan1 mtu system-default
interface lan1 queue normal
interface lan1 address dhcp
interface lan1 add 192.168.255.1/24
ppp add PPP1 keepalive 30 ipcp enable ipv6cp disable ipcp-address on ipcp
interface pppoe0 over lan1
interface pppoe0 ppp-configuration PPP1
interface pppoe0 numbered
route delete default
route add default pppoe0
dhcp disable
rtadvd disable
ike proposal delete all
ipsec security-association delete all
ike preshared-key add 1.2.3.4 vpn
ike proposal add IKE_PROPOSAL1 encryption aes256 hash sha1 authentication
ipsec security-association proposal add IPSEC_SA_PROP1 pfs-group modp1024
ipsec security-association add IPSEC_SA1 tunnel pppoe0 1.2.3.4 ike IPSEC_
ike peer add vpnserver address 1.2.3.4 exchange-mode aggressive proposals
ipsec security-policy add IPSEC_SECPOL1 security-association IPSEC_SA1 sr
ike auto-initiation enable
ike dpd-interval 7
ike dpd-maxfail 5
ike nat-keepalive-interval 30
l2tp hostname seil
l2tp add vpnserver hostname HOSTNAME_SERVER cookie off hello-interval 1 m
```

```
interface l2tp0 tunnel 192.168.255.1 1.2.3.4
interface l2tp0 l2tp vpnserver remote-end-id HOSTNAME_SERVER
l2tp modify vpnserver hostname HOSTNAME_SERVER cookie off hello-interval
bridge group add BRIDGE1 stp off aging-time 300
bridge interface lan0 group BRIDGE1 stp off
bridge interface l2tp0 group BRIDGE1 stp off
• ???????
```

????????? lan1 ?192.168.255.1???? IP ????????????????? IP ????? SEIL ???  
IPsec ????????????????? IP ?????????????????????????????????SEIL ??????????WAN ??  
?????? IP ????????????????????????????? IP ?????????????????????

????????????SEIL ???PacketiX VPN Server (IP ????: 1.2.3.4) ??? IPsec ?????????????  
????????? L2TPv3 ????????????????? VPN ??????????  
lan1 ??? WAN ? (?????????)lan0 ? VPN ?????? (VPN ??????????????????????) ?????????  
??lan0 ?????????????????? PC ??Ethernet ?????? (L2) ??? PacketiX VPN Server ??? HUB ?  
????????????????????????????????????

**SEIL ????????????? #4 (IPv6 ?????????????????)**

SEIL ? L2TPv3 ? IPv6 ?????????????????????IPv6 ?????????? (IPv4 ??????) ????? PacketiX  
VPN Server ??? VPN ?????????????? (?????????????????)????????NTT ?????????????????????  
????????????????????? ISP ????????????????????? VPN ??????????  
??????1 ????????? SEIL ????????????? (???? IPv6 ??????????????????)????????? PacketiX VPN  
Server (IPv6 ?????????????????) ??? VPN ?????????????????????????  
??

- **Ethernet ??????**  
lan1: WAN ? (IPv6 RA ??? IP ??????)  
lan0: ????? (???????? IP: 192.168.0.234)
- **???????????? (?????????????????) ????? IPv6 ????**  
WAN ?????????2001:abcd::/64???? Prefix ? IPv6 ?????????????????????????????  
??lan1 ?????2001:abcd::20c:29ff:fe6b:7172???? IPv6 ?????????????????????????
- **?????? PacketiX VPN Server ??????? IP ????**  
2001:1234::1
- **?????? PacketiX VPN Server ?????**  
HOSTNAME\_SERVER  
(?? Config ?? "HOSTNAME\_SERVER" ????????? VPN Server ? OS ??????????  
?? (Windows ??????????) ????????????????????? " " ????????????????? " " ??????????)

????????????OS ?????????????????????????????????????HOSTNAME\_SERVER ??????  
?????????????????)

- **ISAKMP SA ??????????**  
AES-256 / SHA / DH Group 2 (1024 bit)
- **IPsec SA ??????????**  
AES-256 / SHA
- **IPsec Pre-Shared Key (?????) ???**  
vpn

????????? SEIL ??????????????????????????????????????)

```
interface pppoe0 over none
interface lan0 delete all
interface lan0 media auto
interface lan0 mdi auto
interface lan0 mtu system-default
interface lan0 address 192.168.0.234/24
interface lan1 delete all
interface lan1 media auto
interface lan1 mdi auto
interface lan1 mtu system-default
interface lan1 queue normal
interface lan1 add router-advertisement
route6 add default router-advertisement interface lan1
dhcp disable
rtadvd disable
ike proposal delete all
ipsec security-association delete all
ike preshared-key add 2001:1234::1 vpn
ike proposal add IKE_PROPOSAL1 encryption aes256 hash sha1 authentication
ipsec security-association proposal add IPSEC_SA_PROP1 pfs-group modp1024
ipsec security-association add IPSEC_SA1 transport 2001:abcd::20c:29ff:fe
ike peer add vpnserver address 2001:1234::1 exchange-mode main proposals
ipsec security-policy add IPSEC_SECPOL1 security-association IPSEC_SA1 sr
ike auto-initiation enable
ike dpd-interval 7
ike dpd-maxfail 5
ike nat-keepalive-interval 30
l2tp hostname seil
l2tp add vpnserver hostname HOSTNAME_SERVER cookie off hello-interval 1 r
interface l2tp0 tunnel 2001:abcd::20c:29ff:fe6b:7172 2001:1234::1
interface l2tp0 l2tp vpnserver remote-end-id HOSTNAME_SERVER
l2tp modify vpnserver hostname HOSTNAME_SERVER cookie off hello-interval
bridge group add BRIDGE1 stp off aging-time 300
bridge interface lan0 group BRIDGE1 stp off
bridge interface l2tp0 group BRIDGE1 stp off
```

????????SEIL ???PacketiX VPN Server (IPv6 ????: 2001:1234::1) ??? IPsec ???  
???????? L2TPv3 ?????????? VPN ??????  
lan1 ??? WAN ? (IPv6 ??????)lan0 ? VPN ????? (VPN ??????????????) ???  
????lan0 ?????????? PC ?Ethernet ??? (L2) ?? PacketiX VPN Server ??  
HUB ??????????????????????