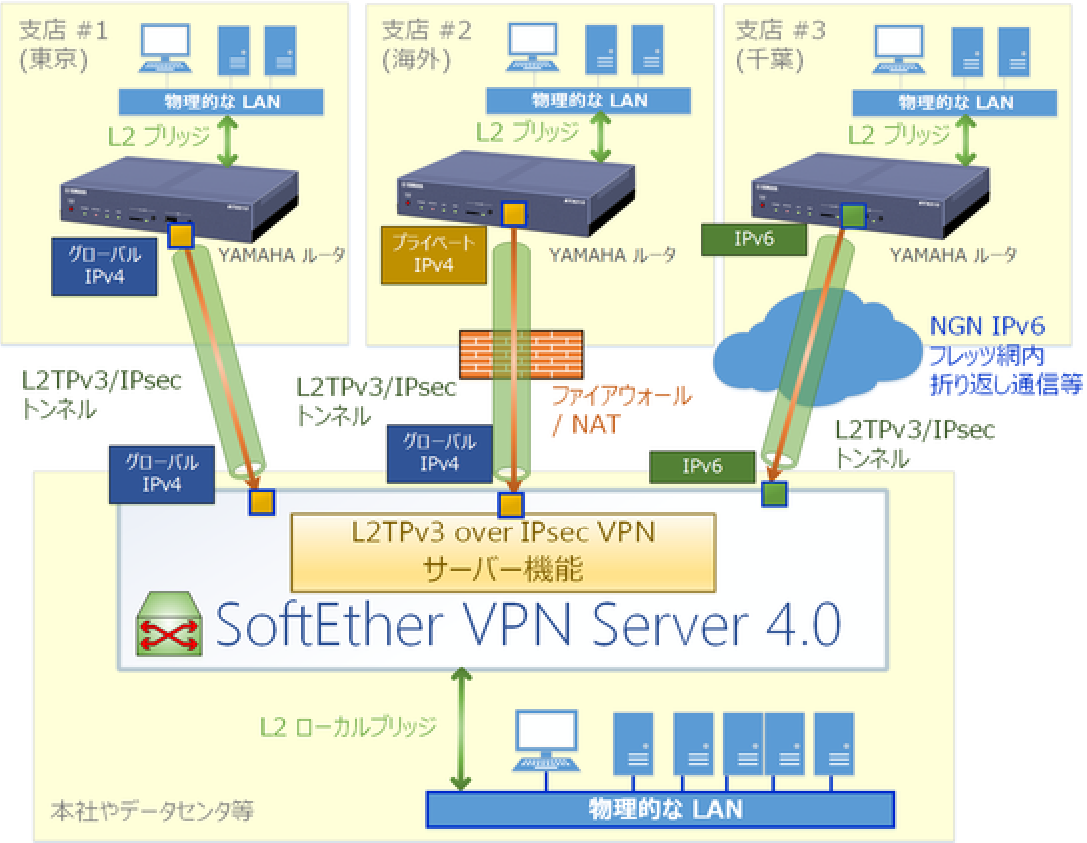
SoftEther VPN Server ? Build 9582 ????????YAMAHA ????? (RTX ????) ?????L2TPv3 over IPsec VPN ????? (?????? 2 ??????) ???????????

????????????????????????? YAMAHA ???? LAN ???? Ethernet ????????????? (???????????) ? SoftEther VPN Server ??? HUB ? Ethernet ??????????????????????


支店 #1
(東京)
物理的な LAN
L2 ブリッジ
グローバル
IPv4
YAMAHA ルータ
支店 #2
(海外)
物理的な LAN
L2 ブリッジ
プライベート
IPv4
YAMAHA ルータ
支店 #3
(千葉)
物理的な LAN
L2 ブリッジ
IPv6
YAMAHA ルータ
NGN IPv6
フレッツ網内
折り返し通信等
L2TPv3/IPsec
トンネル
L2TPv3/IPsec
トンネル
ファイアウォール
/ NAT
L2TPv3/IPsec
トンネル
グローバル
IPv4
グローバル
IPv4
IPv6
L2TPv3 over IPsec VPN
サーバー機能
SoftEther VPN Server 4.0
L2 ローカルブリッジ
本社やデータセンタ等
物理的な LAN

YAMAHA ???? SoftEther VPN Server ? IPv4 (NAT ?) ??? IPv6 ???????????????

RTX ????? SoftEther VPN Server ???????????

YAMAHA ?????? SoftEther VPN Server ????? VPN ???????????????

???SoftEther VPN Server ???? 2 ????????????????? VPN ???????SoftEther VPN Bridge ???????????? Windows ? Linux ?? VPN ??????????????Cisco ????NEC IX ??????????? IIJ SEIL ??????????????????IT ??????????????? ??????????? Windows ? Linux ? VPN ???????????????????????????Cisco ???? NEC IX ?????????IIJ SEIL ?????? ??????????????? Amazon.co.jp ??????????????????????????????

???SoftEther VPN Server ? YAMAHA ?????? L2TPv3 over IPsec ?????????????????????????????????????? Amazon.co.jp ????????????????? YAMAHA ??????????????SoftEther VPN Server ????????????????? SoftEther VPN Server ??????? YAMAHA ??????????????????????

YAMAHA
DOWN LOAD
POWER
STATUS
LAN
WAN
microSD
USB
RTX810
OPEN

YAMAHA RTX810 ???

SoftEther VPN Server ??????????? YAMAHA ????????????????????

???SoftEther VPN Server ??????????? YAMAHA ?????? (???? L2TPv3 ??????) ???????????????? YAMAHA ???? ??????????????????????????????????YAMAHA RTX810 ??2 ???? YAMAHA ??????? L2TPv3 ????????????????? ??????????????????????? RTX810 ???????????YAMAHA RTX1210 ???????????? 9 ?? YAMAHA ?????? L2TPv3 ??????????????????????????????SoftEther VPN Server ????????????? YAMAHA ???? 1 ????? SoftEther VPN Server ??????????????????? SoftEther VPN Server ?????? HUB (??? 2 ?????) ?????YAMAHA ???? ID ????????? ???????????? SoftEther VPN Server ??PC ??????????? VPN ??????????????????????

???? IPv6 ????????????????????????? L2 VPN ????????

????SoftEther VPN Server ? YAMAHA ????????????IPv6 ?????????????????NTT ????????????????? ???? ??(NGN) ? IPv6 ??????????????????? VPN ? IPv6 ??????????????SoftEther VPN Server ???????????? IPv6 ????? ??????????????????(?????? DNS ?) ? YAMAHA ????????? VPN ???????????????????????(?????? DNS ?) ??????? ??SoftEther VPN Server ? IPv6 ????????????????????????? VPN ???????????????

IEEE802.1Q ???? VLAN ???????

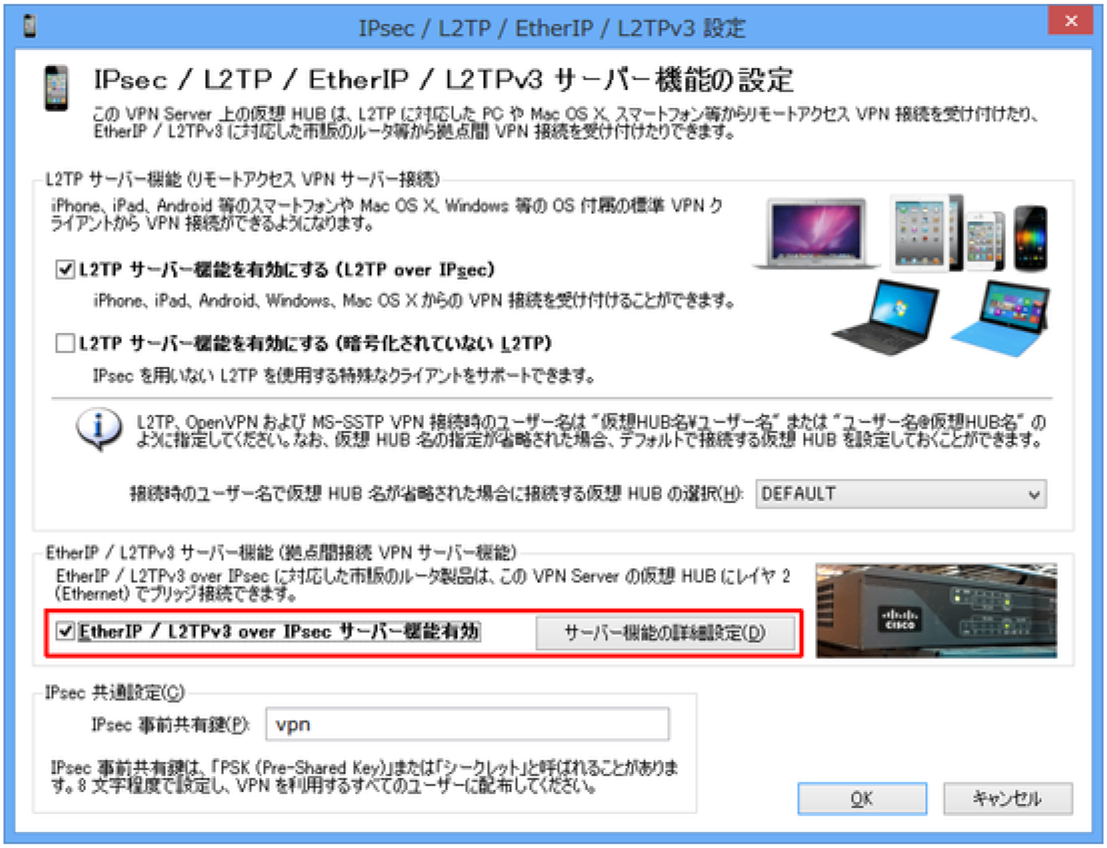
????SoftEther VPN Server ? YAMAHA ????????????IEEE802.1Q ???? VLAN ?????????????????????????????? 2 ??????????????????? VLAN ??????????????????????????????????????? YAMAHA ???? LAN ???????????????? ????????????????????SoftEther VPN Server ????? HUB ???????????????????? IEEE802.1Q ????????????????? ??????? (??? L2 ???????????? VLAN ?????????) ????????????????????? VLAN ID ????????????????

YAMAHA ???????? RTX ????????????????

YAMAHA ???????RTX1210?RTX5000?RTX3500?RTX810 ??? RTX1200 ? SoftEther VPN Server (Build 9582 ??) ?? L2TPv3 over IPsec ?? YAMAHA ?? Web ??? http://www.rtpro.yamaha.co.jp/RT/docs/l2tpv3/ ??????????

????

YAMAHA ??????????????SoftEther VPN ? IPsec ????????????????



IPsec / L2TP / EtherIP / L2TPv3 設定

IPsec / L2TP / EtherIP / L2TPv3 サーバー機能の設定

この VPN Server 上の仮想 HUB は、L2TP に対応した PC や Mac OS X、スマートフォン等からリモートアクセス VPN 接続を受け付けたり、EtherIP / L2TPv3 に対応した市販のルータ等から拠点間 VPN 接続を受け付けたりできます。

L2TP サーバー機能 (リモートアクセス VPN サーバー接続)

iPhone、iPad、Android 等のスマートフォンや Mac OS X、Windows 等の OS 付属の標準 VPN クライアントから VPN 接続ができるようになります。

☑ L2TP サーバー機能を有効にする (L2TP over IPsec)

iPhone、iPad、Android、Windows、Mac OS X からの VPN 接続を受け付けることができます。

☐ L2TP サーバー機能を有効にする (暗号化されていない L2TP)

IPsec を用いない L2TP を使用する特殊なクライアントをサポートできます。

L2TP、OpenVPN および MS-SSTP VPN 接続時のユーザー名は "仮想HUB名¥ユーザー名" または "ユーザー名@仮想HUB名" のように指定してください。なお、仮想 HUB 名の指定が省略された場合、デフォルトで接続する仮想 HUB を設定しておくことができます。

接続時のユーザー名で仮想 HUB 名が省略された場合に接続する仮想 HUB の選択(H): DEFAULT

EtherIP / L2TPv3 サーバー機能 (拠点間接続 VPN サーバー機能)

EtherIP / L2TPv3 over IPsec に対応した市販のルータ製品は、この VPN Server の仮想 HUB にレイヤ 2 (Ethernet) でブリッジ接続できます。

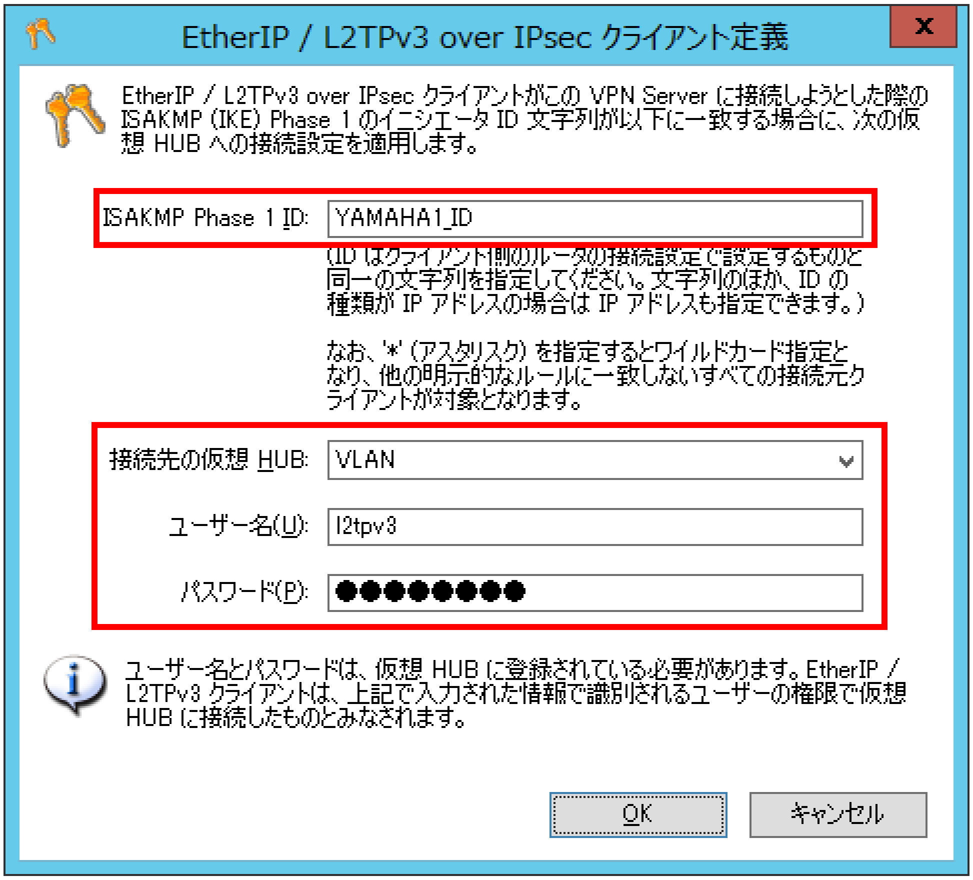
☑ EtherIP / L2TPv3 over IPsec サーバー機能有効

IPsec 共通設定(C)

IPsec 事前共有鍵(P): vpn

IPsec 事前共有鍵は、「PSK (Pre-Shared Key)」または「シークレット」と呼ばれることがあります。8 文字程度で設定し、VPN を利用するすべてのユーザーに配布してください。

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



EtherIP / L2TPv3 over IPsec クライアントがこの VPN Server に接続しようとした際の ISAKMP (IKE) Phase 1 のイニシエータ ID 文字列が以下に一致する場合に、次の仮想 HUB への接続設定を適用します。

ISAKMP Phase 1 ID: YAMAHA1_ID

(ID はクライアント側のルータの接続設定で設定するものと同一の文字列を指定してください。文字列のほか、ID の種類が IP アドレスの場合は IP アドレスも指定できます。)

なお、'*' (アスタリスク) を指定するとワイルドカード指定となり、他の明示的なルールに一致しないすべての接続元クライアントが対象となります。

接続先の仮想 HUB: VLAN

ユーザー名(U): l2tpv3

パスワード(P): ●●●●●●●●●

ユーザー名とパスワードは、仮想 HUB に登録されている必要があります。EtherIP / L2TPv3 クライアントは、上記で入力された情報で識別されるユーザーの権限で仮想 HUB に接続したものとみなされます。

?EtherIP / L2TPv3 ???????????????????L2TPv3 ?????? (????) ? VPN Server ???? IPSec ???????????????? ISAKMP (IKE) Phase1 ? ID ??????????? HUB ??? HUB ???????????????????????????

??????????????????????????? L2TPv3 ??????? 1 ?? VPN Server ? IPSec ????????????????? L2TPv3 ????????? HUB ?? VPN Server ????????????????

?????L2TPv3 ????????? VPN Server ? IPSec ???????? IPSec ????????? (ISAKMP / IKEv1) ? Phase 1 ? ID ??????? ???????? ID ????????? HUB ?????????????????????????????????????

?????????**?YAMAHA1_ID?**??? ID ???????????? L2TPv3 ?????? HUB **?VLAN?**???????**?l2tpv3?**???????????????? (????????????????????????) ???????????????????????????????????VPN Server ?????? ID ???? YAMAHA ???? **??ipsec ike local name 1?**???

(????l2tpv3???? HUB ?VLAN???????????????????)

???ISAKMP (IKEv1) ? Phase 1 ID ????*? (??????) ?????????????????????????????????? VPN ?????????????????? ?????????????IPSec ??

YAMAHA ??????????? #1 (?? IP ?????????)

1 ???????? YAMAHA ?????????????????? SoftEther VPN Server ???? VPN ?????????????????????

?????????????YAMAHA ???????? IP ???? (????? IP ???????? NAT ????????? IP ??????????????????) ????????? ??????????YAMAHA ??????? IP ????????????PPPoE ?? ISP ?? IP ??????????????????????????????

???

- **Ethernet ??????**
  lan1: ?????
  lan2: WAN ? (IP ??????: 2.3.4.5?NAT ??????)
- **?????????? (???????????????) ????? IP ????**
  lan2 ???? Ethernet ?????????
  IP ????: 2.3.4.5 / 255.255.255.0
  ???????????: 2.3.4.254
  ????????????????????????
- **?????? SoftEther VPN Server ??????? IP ????**
  1.2.3.4
  (??? test.softether.net ???? DNS ??????????????????????????????????)
- **ISAKMP SA ??????????**
  AES-256 / SHA / DH Group 2 (1024 bit)
- **IPsec SA ??????????**
  AES-256 / SHA
- **IPsec Pre-Shared Key (?????) ???**
  vpn
- **ISAKMP Phase 1 ID**
  YAMAHA1_ID

????????? YAMAHA ??????????????????????????????

```
# ??????????? (?????? IP ????? DHCP ??????????)
login timer 300
no dhcp service
no dhcp server rfc2131 compliant except remain-silent
no dhcp scope 1
no ip lan1 address

# WAN ???? IP ???????
ip routing on
ip lan2 address 2.3.4.5/24
ip route default gateway 2.3.4.254

# VPN ???????
ipsec auto refresh on
ipsec transport 1 101 udp 1701
tunnel select 1
 tunnel encapsulation l2tpv3
 # VPN Server ????????: IPv4 ?????????????
 tunnel endpoint address 1.2.3.4
 # VPN Server ????????: IPv4 DNS ???????????
 tunnel endpoint name test.softether.net fqdn
 ipsec tunnel 101
  ipsec sa policy 101 1 esp aes-cbc sha-hmac
  ipsec ike restrict-dangling-sa 1 off
  ipsec ike nat-traversal 1 on keepalive=30 force=off
  ipsec ike keepalive log 1 on
  ipsec ike keepalive use 1 on dpd 10 6 0
  ipsec ike pre-shared-key 1 text vpn
  ipsec ike local name 1 YAMAHA1_ID fqdn
  ipsec ike duration isakmp-sa 1 691200 rekey 90%
  ipsec ike duration ipsec-sa 1 691200 rekey 90%
  # VPN Server ????????: IPv4 ?????????????
  ipsec ike remote address 1 1.2.3.4
  # VPN Server ????????: IPv4 DNS ???????????
  ipsec ike remote address 1 test.softether.net
 l2tp always-on on
 l2tp tunnel disconnect time off
 l2tp keepalive use on 5 10
 l2tp keepalive log on
 l2tp syslog on
 l2tp remote end-id vpn
 tunnel enable 1

l2tp service on l2tpv3

# lan1 ? VPN ???????? L2 ??????
bridge member bridge1 lan1 tunnel1

# L2 ????? IPv4 ????????
# VPN ??????????????? IPv4 ????????????
# (????? VPN ??????????????? IP ??????
#  telnet ??????????????????)
# ??VPN ??????????????? IPv4 ?????????
# ????? IPv4 ????????? heartbeat2 ???????????
# ????? VPN ????????????? VPN ??????????
# ??????????????????????????
# ????????????
ip bridge1 address 10.255.255.253/22

# heartbeat2 ????????VPN ?????????????????
# ??????????? VPN ???????????
heartbeat2 myname keepalive
heartbeat2 transmit 1 auth keepalive 10.255.255.255
heartbeat2 transmit interval 30
heartbeat2 transmit enable 1

# YAMAHA ????????????????????????
# ??????????????????????L2TPv3 ????????
# ???????????????????????????
save
restart
```

YAMAHA ??????????? #2 (DHCP ??? IP ???????)

1 ???????? YAMAHA ??????????????????? SoftEther VPN Server ???? VPN ?????????????????????

?????????????YAMAHA ????????????????????? IP ???? (????? IP ???????? NAT ????????? IP ???????????????? ???) ? DHCP ???????????????????????

???

- **Ethernet ??????**
  lan1: ?????
  lan2: WAN ? (DHCP ??? IP ?????????NAT ??????)
- **?????????? (???????????????) ????? IP ????**
  lan2 ???? Ethernet ????????? DHCP ??? IP ??????????????????????????
- **?????? SoftEther VPN Server ??????? IP ????**
  1.2.3.4
  (??? test.softether.net ???? DNS ??????????????????????????????????)
- **ISAKMP SA ??????????**
  AES-256 / SHA / DH Group 2 (1024 bit)
- **IPsec SA ??????????**
  AES-256 / SHA
- **IPsec Pre-Shared Key (?????) ???**
  vpn
- **ISAKMP Phase 1 ID**
  YAMAHA1_ID

????????? YAMAHA ??????????????????????????????

```
# ??????????? (?????? IP ????? DHCP ??????????)
login timer 300
no dhcp service
no dhcp server rfc2131 compliant except remain-silent
no dhcp scope 1
no ip lan1 address

# WAN ???? DHCP ???????
ip routing on
ip lan2 address dhcp
ip route default gateway dhcp lan2
dns server dhcp lan2

# VPN ???????
ipsec auto refresh on
ipsec transport 1 101 udp 1701
tunnel select 1
 tunnel encapsulation l2tpv3
 # VPN Server ????????: IPv4 ?????????????
 tunnel endpoint address 1.2.3.4
 # VPN Server ????????: IPv4 DNS ???????????
 tunnel endpoint name test.softether.net fqdn
 ipsec tunnel 101
  ipsec sa policy 101 1 esp aes-cbc sha-hmac
  ipsec ike restrict-dangling-sa 1 off
  ipsec ike nat-traversal 1 on keepalive=30 force=off
  ipsec ike keepalive log 1 on
  ipsec ike keepalive use 1 on dpd 10 6 0
  ipsec ike pre-shared-key 1 text vpn
  ipsec ike local name 1 YAMAHA1_ID fqdn
  ipsec ike duration isakmp-sa 1 691200 rekey 90%
  ipsec ike duration ipsec-sa 1 691200 rekey 90%
  # VPN Server ????????: IPv4 ?????????????
  ipsec ike remote address 1 1.2.3.4
  # VPN Server ????????: IPv4 DNS ???????????
  ipsec ike remote address 1 test.softether.net
 l2tp always-on on
 l2tp tunnel disconnect time off
 l2tp keepalive use on 5 10
 l2tp keepalive log on
 l2tp syslog on
 l2tp remote end-id vpn
 tunnel enable 1

l2tp service on l2tpv3

# lan1 ? VPN ???????? L2 ??????
bridge member bridge1 lan1 tunnel1

# L2 ????? IPv4 ????????
# VPN ?????????????? IPv4 ????????????
# (????? VPN ?????????????? IP ??????
#  telnet ?????????????????)
# ??VPN ?????????????? IPv4 ?????????
# ????? IPv4 ????????? heartbeat2 ???????????
# ????? VPN ????????????? VPN ??????????
# ?????????????????????????
# ????????????
ip bridge1 address 10.255.255.253/22

# heartbeat2 ????????VPN ?????????????????
# ??????????? VPN ???????????
heartbeat2 myname keepalive
heartbeat2 transmit 1 auth keepalive 10.255.255.255
heartbeat2 transmit interval 30
heartbeat2 transmit enable 1

# YAMAHA ????????????????????????
# ?????????????????????L2TPv3 ????????
# ???????????????????????????
```

```
save
restart
```

YAMAHA ??????????? #3 (PPPoE ??? IP ???????)

1 ???????? YAMAHA ??????????????????? SoftEther VPN Server ???? VPN ??????????????????????

?????????????YAMAHA ?????????????? PPPoE ???? ISP ?????????????? ISP ??? IP ????????????????????

???

- **Ethernet ??????**
  lan1: ?????
  lan2: WAN ? (PPPoE ??? IP ????????)
- **?????????? (???????????????) ????? IP ????**
  lan2 ??????? PPPoE ??? IP ??????????????????????????
- **?????? SoftEther VPN Server ??????? IP ????**
  1.2.3.4
  (??? test.softether.net ???? DNS ??????????????????????????????????)
- **ISAKMP SA ??????????**
  AES-256 / SHA / DH Group 2 (1024 bit)
- **IPsec SA ??????????**
  AES-256 / SHA
- **IPsec Pre-Shared Key (?????) ???**
  vpn
- **ISAKMP Phase 1 ID**
  YAMAHA1_ID

????????? YAMAHA ??????????????????????????????

```
# ??????????? (?????? IP ????? DHCP ??????????)
login timer 300
no dhcp service
no dhcp server rfc2131 compliant except remain-silent
no dhcp scope 1
no ip lan1 address

# PPPoE ?????? (lan2 ??????????????)
pp select 1
 pp keepalive interval 30 retry-interval=1 count=6
 pp keepalive use lcp-echo
 pp always-on on
 pppoe use lan2
 pppoe auto disconnect off
 pppoe tcp mss limit 1414
 pp auth accept pap chap
 # PPPoE ?????????????????
 pp auth myname pppoe_username@isp.net PPPoEPassword
 ppp lcp mru on 1454
 ppp ipcp msext on
 ppp ipcp ipaddress on
 ppp ccp type none
 pp enable 1
ip route default gateway pp 1
dns server pp 1


# VPN ???????
ipsec auto refresh on
ipsec transport 1 101 udp 1701
tunnel select 1
 tunnel encapsulation l2tpv3
 # VPN Server ????????: IPv4 ?????????????
 tunnel endpoint address 1.2.3.4
 # VPN Server ????????: IPv4 DNS ???????????
 tunnel endpoint name test.softether.net fqdn
 ipsec tunnel 101
  ipsec sa policy 101 1 esp aes-cbc sha-hmac
  ipsec ike restrict-dangling-sa 1 off
  ipsec ike nat-traversal 1 on keepalive=30 force=off
  ipsec ike keepalive log 1 on
  ipsec ike keepalive use 1 on dpd 10 6 0
  ipsec ike pre-shared-key 1 text vpn
  ipsec ike local name 1 YAMAHA1_ID fqdn
  ipsec ike duration isakmp-sa 1 691200 rekey 90%
  ipsec ike duration ipsec-sa 1 691200 rekey 90%
  # VPN Server ????????: IPv4 ?????????????
  ipsec ike remote address 1 1.2.3.4
  # VPN Server ????????: IPv4 DNS ???????????
  ipsec ike remote address 1 test.softether.net
 l2tp always-on on
 l2tp tunnel disconnect time off
 l2tp keepalive use on 5 10
 l2tp keepalive log on
 l2tp syslog on
 l2tp remote end-id vpn
 tunnel enable 1

l2tp service on l2tpv3

# lan1 ? VPN ???????? L2 ??????
bridge member bridge1 lan1 tunnel1

# L2 ????? IPv4 ????????
# VPN ??????????????? IPv4 ????????????
# (????? VPN ??????????????? IP ??????
#  telnet ?????????????????)
# ??VPN ??????????????? IPv4 ?????????
# ????? IPv4 ????????? heartbeat2 ???????????
# ????? VPN ????????????? VPN ??????????
# ??????????????????????????
# ????????????
ip bridge1 address 10.255.255.253/22

# heartbeat2 ????????VPN ?????????????????
# ??????????? VPN ???????????
heartbeat2 myname keepalive
heartbeat2 transmit 1 auth keepalive 10.255.255.255
heartbeat2 transmit interval 30
heartbeat2 transmit enable 1

# YAMAHA ????????????????????????
# ??????????????????????L2TPv3 ????????
# ???????????????????????????
save
restart
```

YAMAHA ??????????? #4 (IPv6 ???????? ??????????????)

1 ???????? YAMAHA ??????????????????? SoftEther VPN Server ???? VPN ??????????????????????

???? YAMAHA ???? SoftEther VPN Server ????? IPv6 ????????????????????????IPv6 ????????????????? ?????? ? IPv6 ?????????????? VPN ?????????

???

- **Ethernet ??????**
  lan1: ?????
  lan2: WAN ? (IPv6 ??????? DNS ??? RA ??? DHCP ?????)
- **?????????? (???????????????) ????? IP ????**
  lan2 ???? Ethernet ????????? IPv6 ??????? DNS ??? RA ??? DHCP ????????????????????
- **?????? SoftEther VPN Server ??????? IP ????**
  2001:AF80::1234
  (???IPv6 ???????????test123.aoi.flets-east.jp????? DNS ??????????? IPv6 ??????????? DNS ?????????? ?????????????????????????)
- **ISAKMP SA ??????????**
  AES-256 / SHA / DH Group 2 (1024 bit)
- **IPsec SA ??????????**
  AES-256 / SHA
- **IPsec Pre-Shared Key (?????) ???**
  vpn
- **ISAKMP Phase 1 ID**
  YAMAHA1_ID

????????? YAMAHA ??????????????????????????????

```
# ??????????? (?????? IP ????? DHCP ??????????)
login timer 300
no dhcp service
no dhcp server rfc2131 compliant except remain-silent
no dhcp scope 1
no ip lan1 address

# WAN ???? IPv6 ???????????
ipv6 routing on
ipv6 lan2 address auto
ipv6 lan2 dhcp service client ir=on

# VPN ???????
ipsec auto refresh on
ipsec transport 1 101 udp 1701
tunnel select 1
 tunnel encapsulation l2tpv3
 # VPN Server ????????: IPv6 ?????????????
 tunnel endpoint address 2001:AF80::1234
 # VPN Server ????????: IPv6 DNS ???????????
 tunnel endpoint name test123.aoi.flets-east.jp fqdn
 ipsec tunnel 101
  ipsec sa policy 101 1 esp aes-cbc sha-hmac
  ipsec ike restrict-dangling-sa 1 off
  ipsec ike nat-traversal 1 on keepalive=30 force=off
  ipsec ike keepalive log 1 on
  ipsec ike keepalive use 1 on dpd 10 6 0
  ipsec ike pre-shared-key 1 text vpn
  ipsec ike local name 1 YAMAHA1_ID fqdn
  ipsec ike duration isakmp-sa 1 691200 rekey 90%
  ipsec ike duration ipsec-sa 1 691200 rekey 90%
  # VPN Server ????????: IPv6 ?????????????
  ipsec ike remote address 1 2001:AF80::1234
  # VPN Server ????????: IPv6 DNS ???????????
  ipsec ike remote address 1 test123.aoi.flets-east.jp
 l2tp always-on on
 l2tp tunnel disconnect time off
 l2tp keepalive use on 5 10
 l2tp keepalive log on
 l2tp syslog on
 l2tp remote end-id vpn
 tunnel enable 1

l2tp service on l2tpv3

# lan1 ? VPN ???????? L2 ??????
bridge member bridge1 lan1 tunnel1

# L2 ????? IPv4 ????????
# VPN ??????????????? IPv4 ????????????
# (????? VPN ?????????????? IP ??????
#  telnet ?????????????????)
# ??VPN ?????????????? IPv4 ?????????
# ????? IPv4 ????????? heartbeat2 ???????????
# ????? VPN ????????????? VPN ??????????
# ???????????????????????????
# ????????????
ip bridge1 address 10.255.255.253/22

# heartbeat2 ????????VPN ?????????????????
# ??????????? VPN ???????????
heartbeat2 myname keepalive
heartbeat2 transmit 1 auth keepalive 10.255.255.255
heartbeat2 transmit interval 30
heartbeat2 transmit enable 1


# YAMAHA ?????????????????????????
# ??????????????????????L2TPv3 ????????
# ????????????????????????????
save
restart
```