Technical Note : FortiOS v4.0 MR3 L2TP/IPSEC and Windows7 with PSK

Products: FortiGate

Scope :FortiOS v 4.0 MR3

Description: -

This Technical Note explains the Windows 7 settings and FortiGate configuration in order to set up a L2TP/IPSEC tunnel.

Solution:

1. On the FGT, create a user group with LDAP and use it in L2TP configuration

```
config user group
    edit "L2tp_users"
            set member "LDAP_Server"
    next
end
```

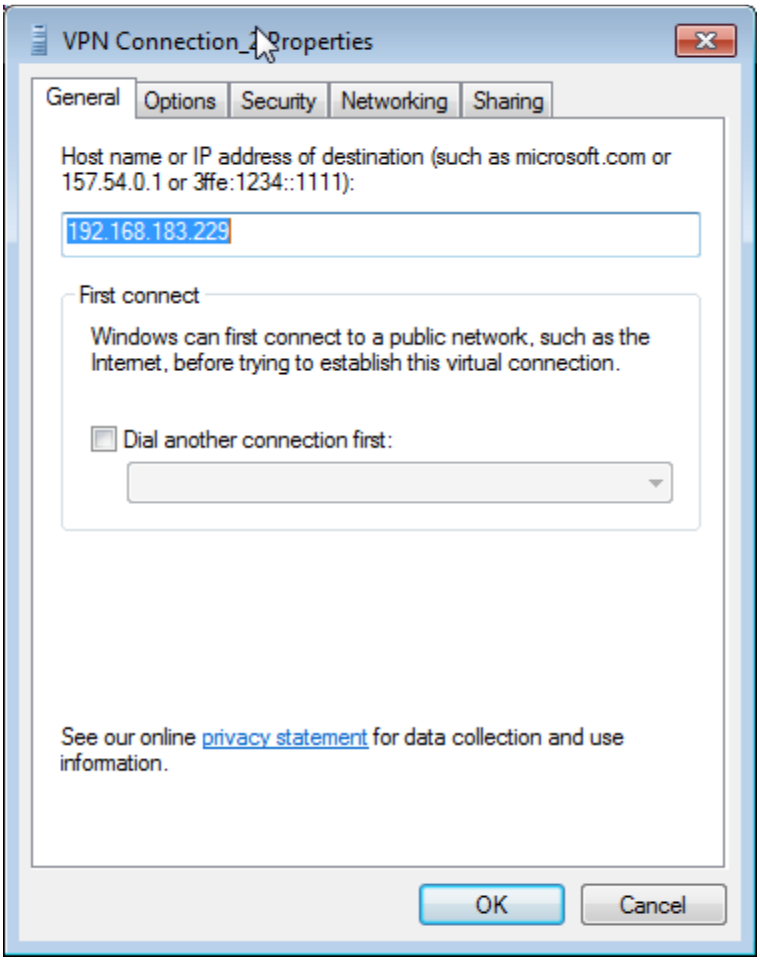
2. Create L2TP VPN

```
config vpn l2tp
set eip 20.1.1.10
set sip 20.1.1.1
set status enable
set usrgrp "L2tp_users"
end
```

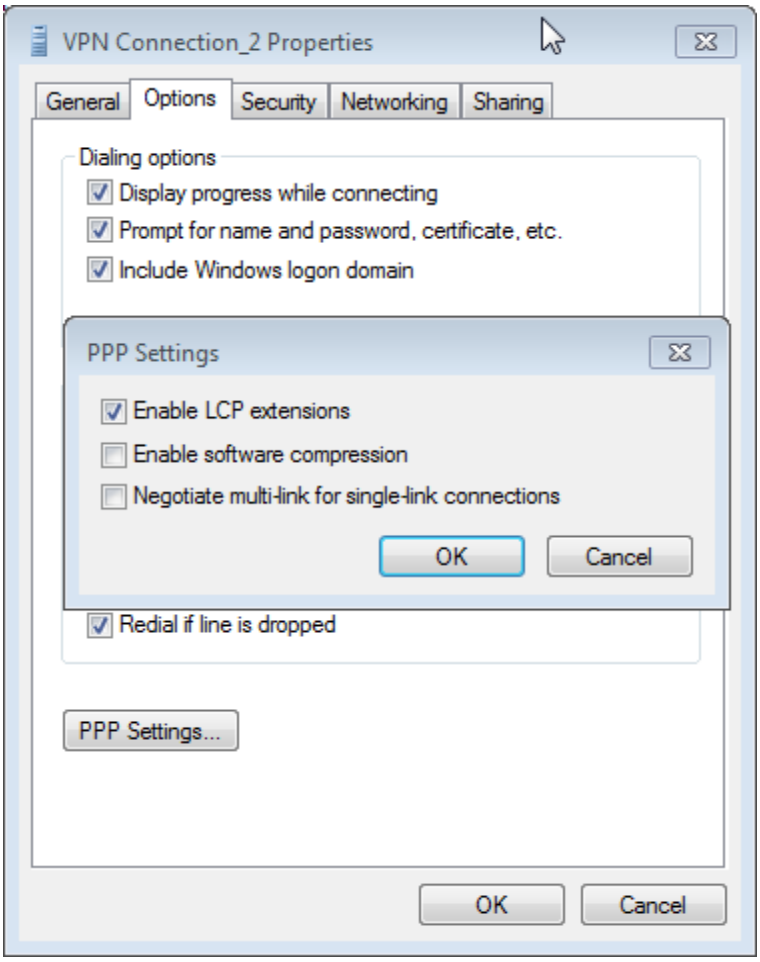
3. Create IPSEC phase1 and phase2 and create a firewall policy.

```
config vpn ipsec phase1
    edit "l2tp"
        set type dynamic
        set interface "port31"
        set dhgrp 1 2 5 14
        set proposal 3des-sha1 aes128-sha1 3des-sha256
        set psksecret ENC
LdXlCKODyiw4ZO+lZmaRt6X9TCMrx7wJuo+p/ZxXf+UF+qKYsblVbr5oaiPcZC5TeoTARXNup9U4wl9Y8C
5wx64FznduPZZvteFUKxQ/EiYXqM/n
    next
end

show vpn ipsec phase2
config vpn ipsec phase2
    edit "L2tp_ph2"
        set encapsulation transport-mode
        set keylife-type both (*)
        set pfs disable
        set phase1name "l2tp"
        set proposal 3des-sha1 aes128-sha1 des-sha1
        set keylifekbs 250000  (*)
        set keylifeseconds 3600 (*)
    next
end

(*) = Very important settings

show firewall policy 7
config firewall policy
    edit 7
        set srcintf "port31"
        set dstintf "port31"
            set srcaddr "all"
            set dstaddr "all"
        set action ipsec
        set schedule "always"
            set service "ANY"
        set logtraffic-app disable
        set inbound enable
        set outbound enable
        set vpntunnel "l2tp"
    next
end
```

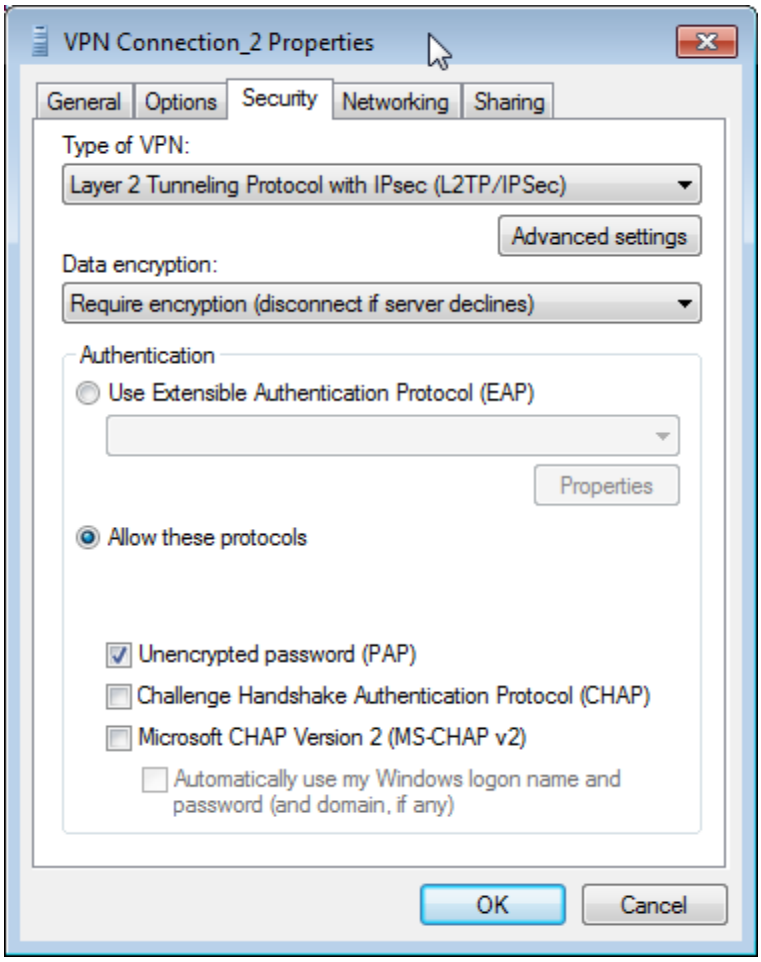
4. On the Windows PC, create an IPSEC/L2TP connection with the following settings



- 192.168.183.229 it is the tunnel end on FGT



- Click on “PPP settings” button in order to check the box “Enable LCP extension”



- Set “Type of VPN” and “Data encryption”as above, also check the box for PAP

5. Finally connect and verify with the following commands:-

```
# diagnose debug application ike -1
# diagnose debug application l2tp -1
# diagnose debug enable
```

```
ike 3: comes 192.168.171.218:500->192.168.183.229:500,ifindex=35....
ike 3: IKEv1 exchange=Identity Protection id=da6eb3975c937a8c/0000000000000000 len=384
ike 3: in
DA6EB3975C937A8C0000000000000000011002000000000000001800D0000D400000001000000010000000C801010
00503000028010100008001000780 0E0100800200028004001480030001800B0001000C000400007080030000280301000080010000
7800E0100800200028004000E80030001800B0001000C000400007080030000240401000080010005800200028004
000E80030001800B0001000C000400007080000000240501000080010005800200028004000280030001800B00010
00C0004000070800D0000181E2B516905991C7D7C96FCBFB587E461000000080D0000144A131C81070358455C5728
F20E95452F0D00001490CB80913EBB696E086381B5EC427B1F0D0000144048B7D56EBCE88525E7DE7F00D6C2D30D0
00014FB1DE3CDF341B7EA16B7E5BE0855F1200D00001426244D38EDDB61B3172A36E3D0CFB81900000014E3A5966A
76379FE707228231E5CE8652
ike 3:l2tp:46: responder: main mode get 1st message...
ike 3:l2tp:46: VID MS NT5 ISAKMPOAKLEY 1E2B516905991C7D7C96FCBFB587E46100000008
ike 3:l2tp:46: VID RFC 3947 4A131C81070358455C5728F20E95452F
ike 3:l2tp:46: VID draft-ietf-ipsec-nat-t-ike-02\n 90CB80913EBB696E086381B5EC427B1F
ike 3:l2tp:46: VID FRAGMENTATION 4048B7D56EBCE88525E7DE7F00D6C2D3
ike 3:l2tp:46: VID unknown (16): FB1DE3CDF341B7EA16B7E5BE0855F120
ike 3:l2tp:46: VID unknown (16): 26244D38EDDB61B3172A36E3D0CFB819
ike 3:l2tp:46: VID unknown (16): E3A5966A76379FE707228231E5CE8652
ike 3:l2tp:46: negotiation result
ike 3:l2tp:46: proposal id = 1:
ike 3:l2tp:46:   protocol id = ISAKMP:
ike 3:l2tp:46:      trans_id = KEY_IKE.
ike 3:l2tp:46:      encapsulation = IKE/none
ike 3:l2tp:46:         type=OAKLEY_ENCRYPT_ALG, val=3DES_CBC.
ike 3:l2tp:46:         type=OAKLEY_HASH_ALG, val=SHA.
ike 3:l2tp:46:         type=AUTH_METHOD, val=PRESHARED_KEY.
ike 3:l2tp:46:         type=OAKLEY_GROUP, val=2048.
ike 3:l2tp:46: ISKAMP SA lifetime=28800
ike 3:l2tp:46: selected NAT-T version: RFC 3947
ike 3:l2tp:46: cookie da6eb3975c937a8c/c48abc7ad283e1a1
 receive 1st message
ike 3:l2tp:46: out


DA6EB3975C937A8CC48ABC7AD283E1A101100200000000000000007C0D000038000000010000000100000002C01010
00100000024040100008001000580020002800 4000E80030001800B0001000C000400007080 0D0000144A131C8107
0358455C5728F20E95452F00000014AFCAD71368A1F1C96B8696FC77570100

ike 3:l2tp:46: sent IKE msg (ident_r1send): 192.168.183.229:500->192.168.171.218:500,
len=124, id=da6eb3975c937a8c/c48abc7ad283e1a1
ike 3: comes 192.168.171.218:500->192.168.183.229:500,ifindex=35....
ike 3: IKEv1 exchange=Identity Protection id=da6eb3975c937a8c/c48abc7ad283e1a1 len=388
ike 3: in
```

```
DA6EB3975C937A8CC48ABC7AD283E1A1041002000000000000000001840A00010469C2077D3592319DD4A0BDBA4BB7C
E37FA6FFFB0F53061264E1F9EB8A2BD7EACEBEF76809CF8C5E272B167B5DF5E9FFE26356204BEECF9F6A8079B28AD
CDF31E400EEB21ADDF5B0FB77991B0465FAABA19A3508FC3A5C8751F6B470C02EDEDE4DCF40AA6FAED76DCA358059
52A9D53CDC095A8B49A4CD8DE4615DC913C4297974E652FB6EE674E3A33EFEC02E6FFD416E79C9E7C96C720D37457
537278B5566D13E33C94B0878A617D470EE4891263B7220C7897DE0B3B6ED59B43100472AB404D4F6DCCD5F83B3F3
6AC15DE0D6EBC6309D44CFD33B6C60ED1438355C7E97A863AEE10D2BE7D6A18DF21B1F589606523D875042A7EC62D
B607A5D455159FF1E114000034384E8ABF3CC0B48FDABBE60312FB51389647A24C2B9F384313C3159FD8684C7CED4
EC4104101D20033F5F6C0F11247011400001854581OEC579D1D3031B15BE6A4F1356724C520AA00000018515C8C72
0049516504F41D121336001FB1D5796A

ike 3:l2tp:46: responder:main mode get 2nd message...
ike 3:l2tp:46: NAT not detected
ike 3:l2tp:46: out

DA6EB3975C937A8CC48ABC7AD283E1A1041002000000000000000001640A0001048D8DF561DD327DFB35E0BACC008E1
49CF2CA26BD7AA5FBDD02B384C4EE8C6EDEA32F7B4E447CBDC56627DBE633CC6903D7016404D17688DB9D2CEEDAC5
AF1CB2FAB1AD52C69546469FDC498814837C1C11CED7E7222A7C3BED5739C8B917BB4D85CA1EF84BC33C4FBCB8277
0A0BA44B9D7B196EE22AFB646D2777803453FCAE44BD19DA1CCB9AFFAA8725ECC8178561537C7243B423D28A6C2FC
2D97EDFACDD9F8314A5A2C4F81DEA9F7C1ACA2E1BB542A81D82615E61128813D0C3E0B32FD0673CD6B3F8D4338F7C
80668C68A0757E1BC3F38CDE701A4188A2A62D37D15A406B89F46060767CE14DD9D258B0C80C55B30A1811797EE67
65CEE75273A649A4A6140000145A9339C2CCD683CA721E9DA72D8E97E9140000185I5C8C720049516504F41D12133
6001FB1D5796A00000018545810EC579D1D3031B15BE6A4F1356724C520AA

ike 3:l2tp:46: sent IKE msg (ident_r2send): 192.168.183.229:500->192.168.171.218:500,
len=356, id=da6eb3975c937a8c/c48abc7ad283e1a1
ike 3:l2tp:46: ISAKMP SA da6eb3975c937a8c/c48abc7ad283e1a1 key
24:33A49331E3036DAE66FE48B23BD6EE0A857C4607DC832B24
ike 3: comes 192.168.171.218:500->192.168.183.229:500,ifindex=35....
ike 3: IKEv1 exchange=Identity Protection id=da6eb3975c937a8c/c48abc7ad283e1a1 len=68
ike 3: in

DA6EB3975C937A8CC48ABC7AD283E1A1051002010000000000000044E763EDDFDF6BEF82D5DA17DE077B0E508FFD9
AE0A50C4107ABDB2BD452BD16DDABE03B78655CDA86

ike 3:l2tp:46: responder: main mode get 3rd message...
ike 3:l2tp:46: dec

DA6EB3975C937A8CC48ABC7AD283E1A1051002010000000000000004408000000C01000000C0A8ABDA00000018DB8BF
59A601986B1E07D558CDEBABAC6F499890C00000000

ike 3:l2tp:46: PSK authentication succeeded
ike 3:l2tp:46: authentication OK
ike 3:l2tp:46: enc

DA6EB3975C937A8CC48ABC7AD283E1A105100201000000000000000400800000C01000000C0A8B7E5000000188A95E
388C5025DA45933A442B50F214A12DF6F66

ike 3:l2tp:46: out

DA6EB3975C937A8CC48ABC7AD283E1A1051002010000000000000004497384BC95BB5F9EB0CF8EDE20912711B83B64
F2B83BCAEBE0A44223F7BE731AA69BE040C79C23F74



ike 3:l2tp:46: sent IKE msg (ident_r3send): 192.168.183.229:500->192.168.171.218:500, len=68,
id=da6eb3975c937a8c/c48abc7ad283e1a1
ike 3:l2tp:46: established IKE SA da6eb3975c937a8c/c48abc7ad283e1a1
ike 3:l2tp: adding new dynamic tunnel for 192.168.171.218:500
ike 3:l2tp_0: added new dynamic tunnel for 192.168.171.218:500
ike 3:l2tp_0: DPD disabled, not negotiated
ike 3:l2tp_0:46: no pending Quick-Mode negotiation
```

Phase 1 negotiation

```
ike 3: comes 192.168.171.218:500->192.168.183.229:500,ifindex=35....
ike 3: IKEv1 exchange=Quick id=da6eb3975c937a8c/c48abc7ad283e1a1:00000001 len=412
ike 3: in
DA6EB3975C937A8CC48ABC7AD283E1A108102001000000010000019CD339F76359D5D8A93AE10E56E7C1D9215B05A
29035DBDDB6335EC6483F3B103D0A71FAB3AFA556B1449E228AF8935D604009A297BBD531D81CDE8AE1E69237B3D0
61947C54BB11F670D0734824D57797CE9BE78F699D4F5A61F63684326CAE7C47A3E63B0AA63770A4CFF3474C60C6E
B7FD0AC3E9EE85863C8F7C2F1C169E9757B76957225A59716E27133897F41F98DAEFDBEBCEE55325E41D112DA239C
69E9CD8FBE7683FD47D362AD814C785BAC2F1DD384A4D0BA5998D1ABC9038E3AC378F021D21F76930B9E37C5A334F
6A1CD26784E29BD75FF45F891A65EC8D430FF9EBFB973EB74D6767A97E31009A8B8E40FDDE3B2F7CBC739AAD40C1B
25DF9C18A9169DCDF03B12FC56D303BFF0E9D0CE11DDF74DD9F7FB631CC74D6A7E13874FCD0A2755A26776E2DD8A9
471D83A14C3DFC9E71BF849A0F0804C8D28AAE5189AED71F9436EBF39EF1CB4968445EE0A483CFDD223AF50EA71B7
AB6F87A3F70D900576DBFBA045B78EB4F26D6A601A3354BE06E24804D6537D0A30C5B3BD208CDD13
ike 3:l2tp_0:46:70: responder received first quick-mode message
ike 3:l2tp_0:46: dec

DA6EB3975C937A8CC48ABC7AD283E1A108102001000000010000019C010000187CD87694F8BF1AA33E87BB2719747
10C770ED7A30A000114000000010000000102000038010304012961114000000002C010C000080040002800600808
0500028001000100020004000000E10800100020002000400003D0900200003402030401296111400000000280103000
0800400028005000280010001000200040000E10800100020002000400003D0900200003403030401296111400000
0028010200008004000280050002800100010002000400000E10800100020002000400003D0900200003404030401
2961114000000028010B0000800400028005000280010001000200040000E10800100020002000400003D090000000
3405020401296111400000002801030000800400028005000280010001000200040000E10800100020002000400
3D09005000034FA4A9861F70FF6F218CF820832EA63779F01EC8F4F96FB7A6565C1D0D151BE0C03783130E7D29EBF
A63A5F3FAD3865990500000C011106A5C0A8ABDA0000000C011106A5C0A8B7E50000000000000000

ike 3:l2tp_0:46:70: peer proposal is: peer:17:192.168.171.218-192.168.171.218:1701,
me:17:192.168.183.229-192.168.183.229:1701
ike 3:l2tp_0:46:L2tp_ph2:70: trying
ike 3:l2tp_0:46:L2tp_ph2:70: matched phase2
ike 3:l2tp_0:46:L2tp_ph2:70: dynamic client
ike 3:l2tp_0:46:L2tp_ph2:70: my proposal:
ike 3:l2tp_0:46:L2tp_ph2:70: proposal id = 1:
ike 3:l2tp_0:46:L2tp_ph2:70:   protocol id = IPSEC_ESP:
ike 3:l2tp_0:46:L2tp_ph2:70:      trans_id = ESP_3DES
ike 3:l2tp_0:46:L2tp_ph2:70:      encapsulation = ENCAPSULATION_MODE_TRANSPORT
ike 3:l2tp_0:46:L2tp_ph2:70:         type = AUTH_ALG, val=SHA1
ike 3:l2tp_0:46:L2tp_ph2:70:      trans_id = ESP_AES (key_len = 128)
ike 3:l2tp_0:46:L2tp_ph2:70:      encapsulation = ENCAPSULATION_MODE_TRANSPORT
ike 3:l2tp_0:46:L2tp_ph2:70:         type = AUTH_ALG, val=SHA1
ike 3:l2tp_0:46:L2tp_ph2:70:      trans_id = ESP_DES
ike 3:l2tp_0:46:L2tp_ph2:70:      encapsulation = ENCAPSULATION_MODE_TRANSPORT
ike 3:l2tp_0:46:L2tp_ph2:70:         type = AUTH_ALG, val=SHA1
ike 3:l2tp_0:46:L2tp_ph2:70: incoming proposal:
ike 3:l2tp_0:46:L2tp_ph2:70: proposal id = 1:
ike 3:l2tp_0:46:L2tp_ph2:70:   protocol id = IPSEC_ESP:
ike 3:l2tp_0:46:L2tp_ph2:70:      trans_id = ESP_AES (key_len = 128)
ike 3:l2tp_0:46:L2tp_ph2:70:      encapsulation = ENCAPSULATION_MODE_TRANSPORT
ike 3:l2tp_0:46:L2tp_ph2:70:         type = AUTH_ALG, val=SHA1
ike 3:l2tp_0:46:L2tp_ph2:70: negotiation result
ike 3:l2tp_0:46:L2tp_ph2:70: proposal id = 1:
ike 3:l2tp_0:46:L2tp_ph2:70:   protocol id = IPSEC_ESP:
ike 3:l2tp_0:46:L2tp_ph2:70:      trans_id = ESP_AES (key_len = 128)
ike 3:l2tp_0:46:L2tp_ph2:70:      encapsulation = ENCAPSULATION_MODE_TRANSPORT
ike 3:l2tp_0:46:L2tp_ph2:70:         type = AUTH_ALG, val=SHA1
ike 3:l2tp_0:46:L2tp_ph2:70: using transport mode.
ike 3:l2tp_0:46: enc
```

```
DA6EB3975C937A8CC48ABC7AD283E1A1081020010000000010000000A4010000180B3B3F8001AA1750B3FD7B4836E59
BF394C3D23C0A000044000000001000000010000003801030401B38F82750000002C010C000080040002800600808080
05000280010001000200040000E10800100020002000400003D09005000014824C4C317211F765C53B0A311B7A6C7
60500000C011106A5C0A8ABDA0000000C011106A5C0A8B7E5

ike 3:l2tp_0:46: out
DA6EB3975C937A8CC48ABC7AD283E1A1081020010000000010000000AC9C9F1944A2673F9C23ABD744C0F45891BDFDC
0657357FD569C978B6C300E28CBC7F03E77507BC1B5F2CFC60DE40C76CF1EA85928BFFD5A7CA89D86966323F3EEA8
17DC34920BBC0C0817E4822BFC9D5A2B9F87FAC9C310D0411C9F9A3DBFAD79315E46F855514303D7F7700B6E1D193
F817C52272F2B159D97BBEC29F58229A03F77AAABB5F129E114A1427C71A060F5

ike 3:l2tp_0:46: sent IKE msg (quick_r1send): 192.168.183.229:500->192.168.171.218:500,
len=172, id=da6eb3975c937a8c/c48abc7ad283e1a1:00000001
ike 3: comes 192.168.171.218:500->192.168.183.229:500,ifindex=35....
ike 3: IKEv1 exchange=Quick id=da6eb3975c937a8c/c48abc7ad283e1a1:00000001 len=60
ike 3: in

DA6EB3975C937A8CC48ABC7AD283E1A1081020010000000010000003C314FEA4450C232927370C271CA067B191DC56
F34DC1CF219E287D6FED4B1E828

ike 3:l2tp_0:46: dec
DA6EB3975C937A8CC48ABC7AD283E1A1081020010000000010000003C0000001861356F84333B5950EA2B8731FF024
E334E1B79A40000000000000000

ike 3:l2tp_0:46:L2tp_ph2:70: replay protection enabled
ike 3:l2tp_0:46:L2tp_ph2:70: SA life soft seconds=3591.
ike 3:l2tp_0:46:L2tp_ph2:70: SA life hard seconds=3600.
ike 3:l2tp_0:46:L2tp_ph2:70: set sa life soft bytes=255475712.
ike 3:l2tp_0:46:L2tp_ph2:70: set sa life hard bytes=256000000.
ike 3:l2tp_0:46:L2tp_ph2:70: IPsec SA selectors #src=1 #dst=1
ike 3:l2tp_0:46:L2tp_ph2:70: src 0 7 17:192.168.183.229-192.168.183.229:1701
ike 3:l2tp_0:46:L2tp_ph2:70: dst 0 7 17:192.168.171.218-192.168.171.218:1701
ike 3:l2tp_0:46:L2tp_ph2:70: add dynamic IPsec SA selectors
ike 3:l2tp_0:46:L2tp_ph2:70: tunnel 1 of VDOM limit 0/0
ike 3:l2tp_0:46:L2tp_ph2:70: add IPsec SA: SPIs=b38f8275/29611140
ike 3:l2tp_0:46:L2tp_ph2:70: IPsec SA dec spi b38f8275 key
16:096C323D8996A6E72E7B8B95FBBE4B4F auth 20:062F269D4AF58A60649550C5F3691A6D713F850A
ike 3:l2tp_0:46:L2tp_ph2:70: IPsec SA enc spi 29611140 key
16:B5D252EB220E1779800E67ED48D01492 auth 20:A7E1C820CEBC6A6FE4DBC437062810426468C8ED
ike 3:l2tp_0:46:L2tp_ph2:70: transport mode encapsulation is enabled
ike 3:l2tp_0:46:L2tp_ph2:70: added IPsec SA: SPIs=b38f8275/29611140
ike 3:l2tp_0:46:L2tp_ph2:70: sending SNMP tunnel UP trap
```

Phase 2 negotiation

```
create_new_tunnel()-91: Allocated new Tunnel id=25, total count = 1
handle_control_packet()-550:
check_control_hdr()-173: check_control_hdr: control, peer_call_id = 0, Ns = 0, Nr = 0
check_control_hdr()-185: Updated control rec seqno. Value is now 1
__avp_protocol_version()-233: peer is using version 8, revision 128.
__avp_framing_caps()-248: supported peer framing:
__avp_bearer_caps()-264: supported peer bearers:
__avp_firmware_rev()-279: peer's firmware version 2048
_avp_hostname()-295: Peer's hostname is 'MuratsLaptop'
__avp_vendor()-310: peer's vendor 'Microsoft'
__avp_assigned_tunnel()-339: peer's tunnel 6
avp_receive_window_size()-359: peer's RWS 8.
run_ctrl_state_machine()-91: run_ctrl_state_machine: message type is (1).  Tunnel is 6, call
is 0.
run_ctrl_state_machine()-97: ** run_ctrl_state_machine - SCCRQ **
run_ctrl_state_machine()-108: Rule 192.168.171.218 to 192.168.171.218avp_put_hostname()-84:
Sent the host name = 192.1
run_ctrl_state_machine()-165: Sending SCCRP
schedule_event()-94:
schedule_event()-100: Message due 32287614, now = 32287514
handle_control_packet()-550:
check_control_hdr()-173: check_control_hdr: control, peer_call_id = 0, Ns = 1, Nr = 1
check_control_hdr()-185: Updated control rec seqno. Value is now 2
run_ctrl_state_machine()-91: run_ctrl_state_machine: message type is (3).  Tunnel is 6, call
is 0.
run_ctrl_state_machine()-174: ** run_ctrl_state_machine - SCCCN **
L2TPD 97: 179:Connection established to 192.168.171.218, 1701.  Local: 25, Remote: 6.
start_hello_timer()-59: L2TP: starting Hello timer for tunnel 6, next in 60 seconds.
schedule_event()-94:
schedule_event()-100: Message due 32293514, now = 32287514
handle_network_packet()-274: Sending a ZLB to acknowledge last message
send_zlb()-73: ** send_zlb **
handle_control_packet()-550:
check_control_hdr()-173: check_control_hdr: control, peer_call_id = 0, Ns = 2, Nr = 1
check_control_hdr()-185: Updated control rec seqno. Value is now 3
__avp_assigned_call()-392: Parsed new call id of 1
__avp_call_serno()-418: serial number is 0
__avp_bearer_type()-445: peer's bears anamylog
avp_handler()-723: AVP 1 was ignored
run_ctrl_state_machine()-91: run_ctrl_state_machine: message type is (10).  Tunnel is 6, call
is 1.
run_ctrl_state_machine()-224: ** run_ctrl_state_machine - ICRQ **
run_ctrl_state_machine()-234: New call was created for tunnel 6, call id = 1
run_ctrl_state_machine()-290: This call is the master_call, its peer_call_id = 26
run_ctrl_state_machine()-298: run_ctrl_state_machine: sending ICRP
schedule_event()-94:
schedule_event()-100: Message due 32287614, now = 32287514
handle_control_packet()-550:
check_control_hdr()-173: check_control_hdr: control, peer_call_id = 1, Ns = 3, Nr = 2
check_control_hdr()-185: Updated control rec seqno. Value is now 4
__avp_tx_speed()-495: TX is 100000000
__avp_frame_type()-474: peer's framing sync
avp_handler()-723: AVP 29 was ignored
run_ctrl_state_machine()-91: run_ctrl_state_machine: message type is (12).  Tunnel is 6, call
is 1.
run_ctrl_state_machine()-307: ** run_ctrl_state_machine - ICCN **
start_pppd()-156: Starting pppd
L2TPD 29: 157:Starting call (launching pppd, opening GRE)
```

```
run_ctrl_state_machine()-327: Call established with 192.168.171.218, Local: 26, Remote: 1,
Serial: 0
handle_network_packet()-274: Sending a ZLB to acknowledge last message
send_zlb()-73: ** send_zlb **
handle_control_packet()-550:
handle_control_packet()-579: L2TP received control ZLB.
L2TPD 25: 315:Client 192.168.171.218 control connection started (id 25), assigned ip 20.1.1.1
start_pppd()-328: /bin/pppd start_pppd()-328: 3 start_pppd()-328: l2tp start_pppd()-328:
port31 start_pppd()-328: local start_pppd()-328: file start_pppd()-328: /etc/ppp/options
start_pppd()-328: 115200 start_pppd()-328: 192.168.183.229:20.1.1.1 start_pppd()-328: +pap
start_pppd()-328: +chap start_pppd()-328: peer-remote start_pppd()-328: 192.168.171.218
start_pppd()-328: lcp-echo-interval start_pppd()-328: 5 start_pppd()-328: lcp-echo-failure
start_pppd()-328: 3 start_pppd()-330:
monitor_ctrl_pkt_xmit()-94:
monitor_ctrl_pkt_xmit()-116: L2TP: Peer ack'ed control packet.
monitor_ctrl_pkt_xmit()-94:
monitor_ctrl_pkt_xmit()-116: L2TP: Peer ack'ed control packet.
```

L2TP negotiation

```
#diagnose vpn tunnel list

list all ipsec tunnel in vd 3
------------------------------------------------------
name=l2tp_0 ver=1 serial=21 192.168.183.229:0->192.168.171.218:0 lgwy=static tun=tunnel
mode=dial_inst bound_if=35
parent=l2tp index=0
proxyid_num=1 child_num=0 refcnt=7 ilast=0 olast=0
stat: rxp=68 txp=22 rxb=11728 txb=1239
dpd: mode=active on=1 idle=300000ms retry=3 count=0 seqno=0
natt: mode=none draft=0 interval=0 remote_port=0
proxyid=L2tp_ph2 proto=17 sa=1 ref=2 auto_negotiate=0 serial=1 transport-mode
  src: 17:192.168.183.229-192.168.183.229:1701
  dst: 17:192.168.171.218-192.168.171.218:1701
  SA: ref=4 options=00000006 type=00 soft=0 mtu=1432 expire=3583 replaywin=1024 seqno=17
  life: type=03 bytes=255475712/256000000 timeout=3591/3600
  dec: spi=b38f8275 esp=aes key=16 096c323d8996a6e72e7b8b95fbbe4b4f
       ah=sha1 key=20 062f269d4af58a60649550c5f3691a6d713f850a
  enc: spi=29611140 esp=aes key=16 b5d252eb220e1779800e67ed48d01492
       ah=sha1 key=20 a7e1c820cebc6a6fe4dbc437062810426468c8ed
  npu_flag=00 npu_rgwy=192.168.171.218 npu_lgwy=192.168.183.229 npu_selid=c,
dec:pkts/bytes=68/7196, enc:pkts/bytes=22/2208
------------------------------------------------------
name=l2tp ver=1 serial=1 0.0.0.0:0->0.0.0.0:0 lgwy=dyn tun=tunnel mode=dialup bound_if=35
proxyid_num=0 child_num=1 refcnt=6 ilast=184 olast=184
stat: rxp=0 txp=0 rxb=0 txb=0
dpd: mode=active on=0 idle=5000ms retry=3 count=0 seqno=0
natt: mode=none draft=0 interval=0 remote_port=0
```

```
#diagnose vpn l2tp status

l2tp_handle_admin()-118: receive admin message from vdom=3

--- l2tp status -------
Scheduler entries:
1: HELLO to 6
Total Events scheduled: 1
Beta4_3 (TestingVDOM) #
-----------------------
num tunnels open: 1
Total vdom: 1
-----------------------
Tunnel ID = 25 (local id), 6 (remote id)  to 192.168.171.218:1701
   control_seq_num = 2, control_rec_seq_num = 4,
   last recv pkt = 2
Call ID = 26 (local id), 1 (remote id), serno = 0,
      assigned ip = 20.1.1.1
      data_seq_num = 19,
      tx = 511 bytes (19), rx= 7446 bytes (76)
--- Configurations ----
--VD 3: Startip = 20.1.1.1, Endip = 20.1.1.10
```