

Cisco ASA Site to Site

Verification: NAT or transparent mode

Value should return (Firewall mode: Router)

```
show firewall
```

Always do a backup!!!

```
copy running-config disk0:/running-config-backup-DDMMYYYY
```

ACL / No NAT Rules

Change net-local and and remote for local and remote IP

You do not need to create a object for the LAN if you already have one for another tunnel //
You also **can not** have 2 tunnels with the same remote IP's

```
object-group network net-local  
network-object 10.1.2.0 255.255.255.0  
object-group network net-remote  
network-object 192.168.1.0 255.255.255.0
```

Create a cryptomap ACL

```
access-list outside_1_cryptomap extended permit ip object-group net-local object-group net-remote
```

Allow traffic between the two sites to bypass NAT

Always check the name of interface on the port channel, the tunnel will not work if your interface is named inside3

nat (inside,outside) source static net-local net-local destination static net-remote net-remote

IKEV1 - Route based

```
tunnel-group 199.168.1.100 type ipsec-l2l
tunnel-group 199.168.1.100 ipsec-attributes
ikev1 pre-shared-key *****

crypto ikev1 policy 10
authentication pre-share
encryption aes-256
hash sha
lifetime 3600
group 5

crypto ipsec ikev1 transform-set ESP-AES-256-MD5 esp-aes-256 esp-md5-hmac

crypto ipsec profile vpn1
set ikev1 transform-set ESP-AES-256-SHA
set security-association lifetime seconds 3600

interface Tunnel1
nameif int-vpn1
ip address 192.168.0.1 255.255.255.252
tunnel source interface outside
tunnel destination 199.168.1.100
tunnel mode ipsec ipv4
tunnel protection ipsec profile vpn1

access-list vpn1-inbound extended permit ip any any
access-list vpn1-outbound extended permit ip any any
access-group vpn1-inbound in interface int-vpn1
access-group vpn1-outbound out interface int-vpn1

route int-vpn1 10.10.10.0 255.255.255.0 192.168.0.2 1
```

IKEV1 - Policy based

Create the tunnel group, and configure the pre-shared key. (In ex; 199.168.1.100 = Remote WAN)

```
tunnel-group 199.168.1.100 type ipsec-l2l
tunnel-group 199.168.1.100 ipsec-attributes
pre-shared-key INSERT_SECURE_PRE_SHARED_KEY_HERE
```

Declare the most common transform sets (only do once).

```
crypto ipsec ikev1 transform-set ESP-AES-128-SHA esp-aes esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-128-MD5 esp-aes esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-AES-192-SHA esp-aes-192 esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-192-MD5 esp-aes-192 esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-AES-256-SHA esp-aes-256 esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-AES-256-MD5 esp-aes-256 esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-3DES-MD5 esp-3des esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-DES-SHA esp-des esp-sha-hmac
crypto ipsec ikev1 transform-set ESP-DES-MD5 esp-des esp-md5-hmac
crypto ipsec ikev1 transform-set ESP-3DES-SHA esp-3des esp-sha-hmac
```

Phase 1 parameters

```
crypto ikev1 policy 10
authentication pre-share
encryption 3des
hash sha
group 2
lifetime 86400
### Enable ikev1 on the outside interface - THIS JUST NEED TO BE CONFIGURED ONCE YOU SETUP THE FIRST VPN
crypto ikev1 enable outside
crypto ikev1 am-disable # (// Main mode remove this line for aggressive mode)
```

Enable ikev1 on the outside interface -**THIS JUST NEED TO BE DONE ON THE FIRST IKEV1 VPN**

```
crypto ikev1 enable outside
```

Set main mode // Do not include this line for aggressive mode

This is a global setting, if you add the line below in a ASA that contains a tunnel that uses aggressive mode, it will break the other tunnel

```
crypto ikev1 am-disable
```

Phase 2 parameters

If you remove the ACL used by a tunnel, it will **remove** the line `crypto map outside_map 1 match address ACL_NAME` // Only set **PFS** if configured on the remote side, else skip the line

```
crypto map outside_map 1 match address outside_1_cryptomap
crypto map outside_map 1 set peer 199.168.1.100
crypto map outside_map 1 set transform-set ESP-3DES-SHA
crypto map outside_map 1 set pfs group2
crypto map outside_map 1 set security-association lifetime seconds 3600
```

Enable the crypto map in the outside interface - **THIS JUST NEED TO BE DONE ON THE FIRST IKEV1 VPN**

```
crypto map outside_map interface outside
```

IKEV2

Create the tunnel group, and configure the pre-shared key. (In ex; 199.168.1.100 = Remote WAN)

```
group-policy GroupPolicy_IKEv2 internal
group-policy GroupPolicy_IKEv2 attributes
vpn-idle-timeout none
vpn-tunnel-protocol ikev2

tunnel-group 199.168.1.100 type ipsec-l2l
tunnel-group 199.168.1.100 general-attributes
default-group-policy GroupPolicy_IKEv2
tunnel-group 199.168.1.100 ipsec-attributes
ikev2 remote-authentication pre-shared-key ***
ikev2 local-authentication pre-shared-key ***
```

Declare the transform sets

```
crypto ipsec ikev2 ipsec-proposal ESP-AES-256-SHA
protocol esp encryption aes-256
protocol esp integrity sha-1
```

Phase 1 parameters

```
crypto ikev2 policy 20
encryption aes-256
integrity sha
group 2
prf sha
lifetime seconds 86400
```

Phase 2 parameters

```
crypto map outside_map 1 match address outside_1_cryptomap
crypto map outside_map 1 set pfs
crypto map outside_map 1 set peer 199.168.1.100
crypto map outside_map 1 set ikev2 ipsec-proposal ESP-AES-256-SHA
crypto map outside_map 1 set security-association lifetime seconds 3600
crypto ikev2 enable outside
```

NAT

If the request needs to go over the nated IP, do not use the ACL / Nat rules above, configure something like this:

```
nat (INSIDE,OUTSIDE) source static PRENAT_IP POSTNAT_IP destination static DESTINATION_IP DESTINATION_IP
```

```
access-list outside_1_cryptomap extended permit ip host NATTED_SOURCE_IP host NATTED_DESTINATION_IP
```

Troubleshooting/Debug

Useful links:

- http://www.cisco.com/en/US/products/ps6120/products_tech_note09186a00807e0aca.shtml#solunf

- http://www.cisco.com/c/en/us/td/docs/security/asa/asa72/configuration/guide/conf_gd/ike.html
- http://www.cisco.com/c/en/us/td/docs/security/asa/asa90/configuration/guide/asa_90_cli_config/vpn_ike.html#pgfId-1042302

Test connection (Run command 2x)

```
packet-tracer input inside icmp 10.1.2.100 8 0 192.168.1.100
```

Check IKEV1 Logs

```
debug crypto ikev1 127
```

Check IKEV2 Logs

```
debug crypto ikev2 protocol
```

Clear tunnel session

```
clear isakmp sa
```

Find pre-shared key

```
more system:running-config | grep pre-shared
```

Check basic VPN session information

```
sh isakmp sa
```

Check details on VPN session (Detailed)

```
show vpn-sessiondb detail ra-ikev1-ipsec
```

Capture traffic for the ACL related to the VPN

```
capture test access-list outside_1_cryptomap interface inside real-time
```

Once you are done, always remember to save your config

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