

RFC 1918

10.0.0.0/8

172.16.0.0/16 to 172.31.0.0/16 --> 172.16.0.0/12

192.168.0.0/24 to 192.168.255.0 --> 192.168.0.0/16

	1st								2nd							
	128	64	32	16	8	4	2	1	128	64	32	16	8	4	2	1
172.16.0.0	1	0	1	0	1	1	0	0	0	0	0	1	0	0	0	0
172.31.0.0	1	0	1	0	1	1	0	0	0	0	0	1	1	1	1	1

07982c55db2b9985d3391f02e639db9c
f40064d4a0bdb8b132ef447e5473e29a
e73f1ece5087b8a5ae33998952202202

Ipssec Tunnel

Control plane Isakmp/Ikev1/Ikev2 ,Phase1 Main mode (6)/Aggressive mode (4)
Data plane ipsec -Esp50 ,AH 51,phase 2 Quick mode (3)

```
=====
R1
conf t
int e0/0
Desc conn to Internet
ip add 1.1.1.1 255.255.255.0
no shut
int e0/1
Desc LAN
ip add 10.1.1.1 255.255.255.0
no shut
exit

ip route 0.0.0.0 0.0.0.0 e0/0 1.1.1.2
```

```
R3:
conf t
int e0/0
Desc conn to Internet
ip add 3.3.3.3 255.255.255.0
no shut
int e0/1
Desc LAN
ip add 192.168.3.1 255.255.255.0
no shut
exit
```

```
ip route 0.0.0.0 0.0.0.0 e0/0 3.3.3.2
```

```
R2:Internet
conf t
int e0/0
```

```
ip add 1.1.1.2 255.255.255.0
no sh
int e0/1
ip add 3.3.3.2 255.255.255.0
no shut
exit
```

=====

PHASE I

```
Hash : Sha,MD5
Authentication : PSK,RSA-sig
Group       : 2,5,17
Lifetime    : 86400 ( 1 DAY) 43200
Encrption   :des,3des,AES
```

```
R1:
Crypto isakmp policy 10
hash md5
group 2
Authentication pre-share
Enc 3des
exit
```

```
Cry isa key cisco123 address 3.3.3.3
exit
```

PHASE II

```
ACL
Transform-set (Tunnel/Transport)
Crypto MAP
Applied on
WAN interface
```

```
Access-list 101 permit ip 10.1.1.0 0.0.0.255 192.168.3.0 0.0.0.255
```

```
crypto ipsec transform-set tset esp-aes esp-sha-hmac
exit
```

```
crypto map cmap 10 ipsec-isakmp
set peer 3.3.3.3
set transform-set tset
match address 101
exit
```

```
int e0/0
Cry map cmap
exit
```

```
R3:
Crypto isakmp policy 10
hash md5
group 2
Authentication pre-share
```

```
Enc 3des
exit
```

```
Cry isa key cisco123 address 1.1.1.1
exit
PHASE II
```

```
Access-list 101 permit ip 192.168.3.0 0.0.0.255 10.1.1.0 0.0.0.255
```

```
crypto ipsec transform-set tset esp-aes esp-sha-hmac
exit
```

```
crypto map cmap 10 ipsec-isakmp
set peer 1.1.1.1
set transform-set tset
match address 101
exit
```

```
int e0/0
Cry map cmap
exit
```

```
=====
Transport Mode
```

```
R1:
no Access-list 101 permit ip 10.1.1.0 0.0.0.255 192.168.3.0 0.0.0.255
```

```
Access-list 101 permit ip host 1.1.1.1 host 3.3.3.3
```

```
crypto ipsec transform-set tset esp-aes esp-sha-hmac
mode transport
exit
```

```
R3:
no Access-list 101 permit ip 192.168.3.0 0.0.0.255 10.1.1.0 0.0.0.255
```

```
Access-list 101 permit ip host 3.3.3.3 host 1.1.1.1
```

```
crypto ipsec transform-set tset esp-aes esp-sha-hmac
mode transport
exit
```

```
=====
Tunnel mode
```

```
R1
no Access-list 101 permit ip host 1.1.1.1 host 3.3.3.3
Access-list 101 permit ip 10.1.1.0 0.0.0.255 192.168.3.0 0.0.0.255
```

```
R3
no Access-list 101 permit ip host 3.3.3.3 host 1.1.1.1
Access-list 101 permit ip 192.168.3.0 0.0.0.255 10.1.1.0 0.0.0.255
```

