IPSec VPN- Hub and Spoke (DSR-1000N)

[Prerequisites]

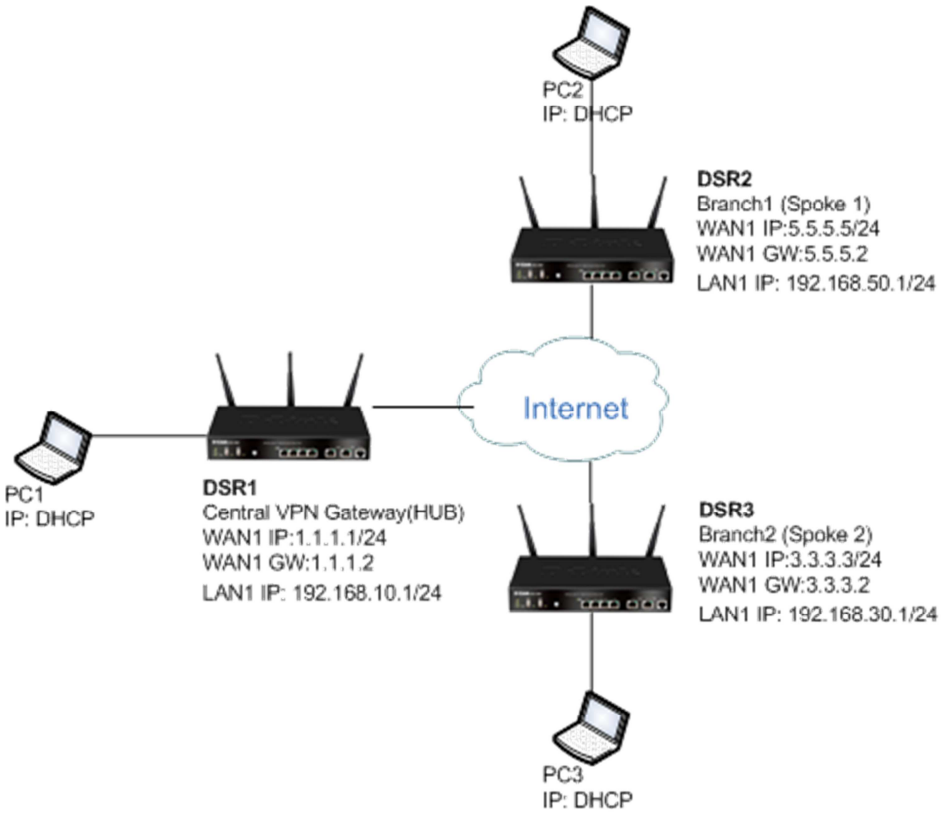
1. DSR-1000N x 3
2. Firmware version: v1.03B12_test_build (or later)

[Scenario]

Create an IPSEC “Hub and Spoke” VPN among DSR routers.
DSR1 plays a Hub role.
DSR2 and DSR3 play the Spoke role.
PC1, PC2, PC3 are able to reach each other.

[Topology]

PC1---(LAN)DSR1(WAN)---Internet---(WAN)DSR2(LAN)---PC2
__(WAN)DSR3(LAN)---PC3



DSR1 information:

LAN1 IP: 192.168.10.0/24
WAN IP: 1.1.1.1/24
WAN Gateway: 1.1.1.2

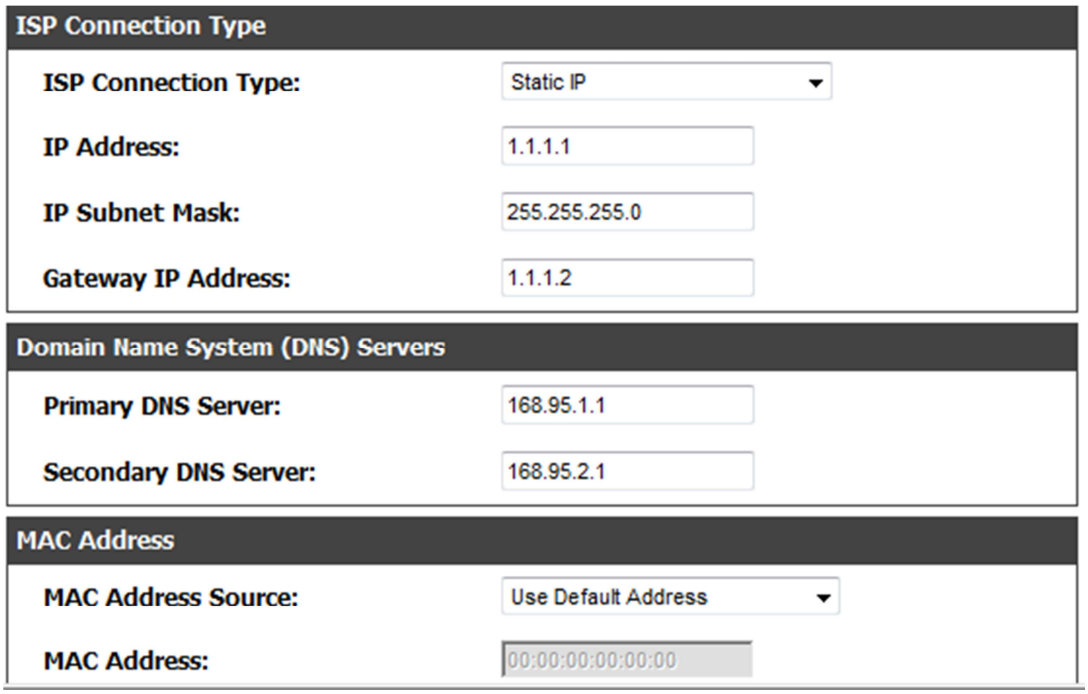
DSR2 information:

LAN1 IP: 192.168.50.1/24
WAN IP: 5.5.5.5/24

WAN Gateway: 5.5.5.2

DSR3 information:
LAN1 IP: 192.168.30.1/24
WAN IP: 3.3.3.3/24
WAN Gateway: 3.3.3.2

[Setup procedure]
VPN Hub settings:
DSR1
1. Set the WAN IP address to 1.1.1.1 and Gateway IP address to 1.1.1.2.



2. Set the LAN IP address to 192.168.10.1, and enable the function of DHCP server on the LAN interface, the DHCP client starts IP address is 192.168.10.100, the ending IP address is 192.168.10.200.

3. In the setting page of IPSEC Policy, create an IPSec policy and fill the necessary value in following columns: (Blue part)

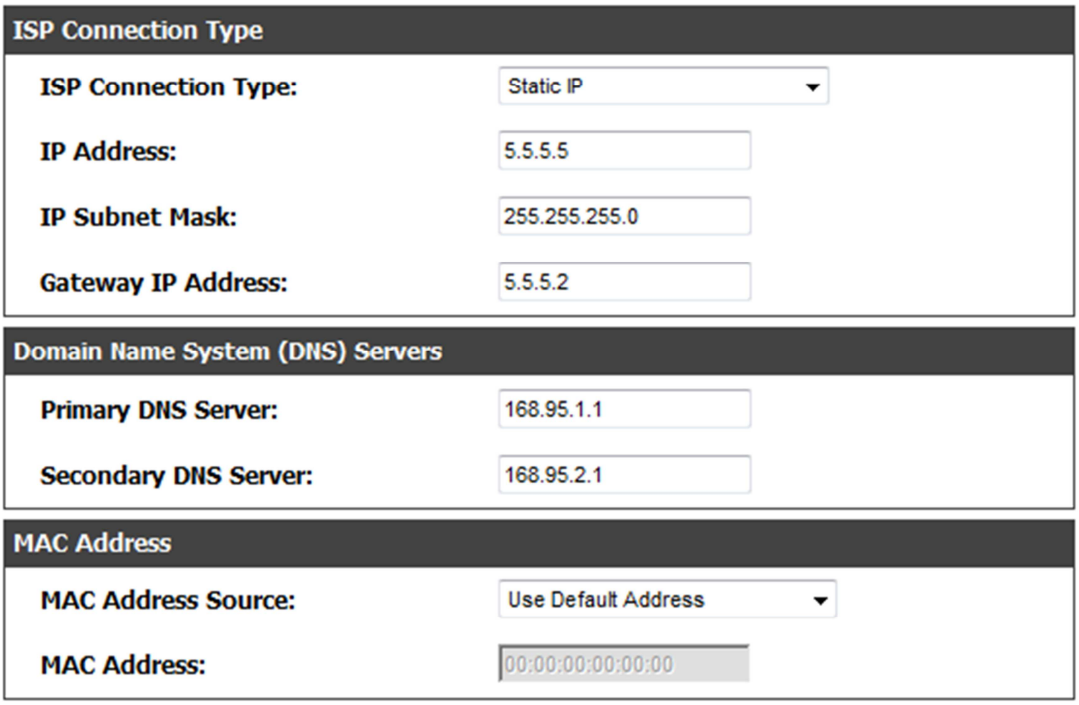
Policy Name:	Vpn1
Policy Type:	Auto Policy
IPsec Mode:	Tunnel Mode
Select Local Gateway:	Dedicated WAN
Remote Endpoint:	FQDN
[FQDN column]	0.0.0.0
Enable Mode Config:	Uncheck
Enable NetBIOS:	Uncheck
Enable Rollover:	Uncheck
Protocol:	ESP
Enable DHCP:	Uncheck

Local IP:	Any
Local Start IP Address:	[blank]
Local End IP address:	[blank]
Local Subnet Mask:	[blank]
Remote IP:	Any
Remote Start IP Address:	[blank]
Remote End IP Address	[blank]
Remote Subnet Mask:	[blank]
Phase1(IKE SA Parameters)	
Exchange Mode:	Main
Direction / Type:	Both
Nat Traversal:	On
NAT Keep Alive Frequency(In seconds):	20
Local Identifier Type:	Local Wan IP
Local Identifier:	[blank]
Remote Identifier Type:	Remote Wan IP
Remote Identifier:	[blank]
Encryption Algorithm:	AES-128
Key Length:	[blank]
Authentication Algorithm:	SHA-1
Authentication Method:	Pre-shared key
Pre-shared key:	testtest
Diffie-Hellman (DH) Group:	Group2 (1024bit)
SA-Lifetime(sec):	28800
Enable Dead Peer Detection:	Uncheck
Detection Period:	[Keep default]
Reconnect after failure count:	[Keep default]
Extended Authentication:	None
Authentication Type:	[Keep default]
Username:	[blank]
Password:	[blank]
Phase2-(Manual Policy Parameters)	
SPI-Incoming:	[Keep default]
SPI-Outgoing:	[Keep default]
Encryption Algorithm:	[Keep default]
Key Length:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Integrity Algorithm:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Phase2-(Auto Policy Parameters)	
SA Lifetime:	3600 seconds
Encryption Algorithm:	DES
Key Length:	[Keep default]
Integrity Algorithm:	SHA-1
PFS Key Group	Uncheck

VPN Spoke1 settings

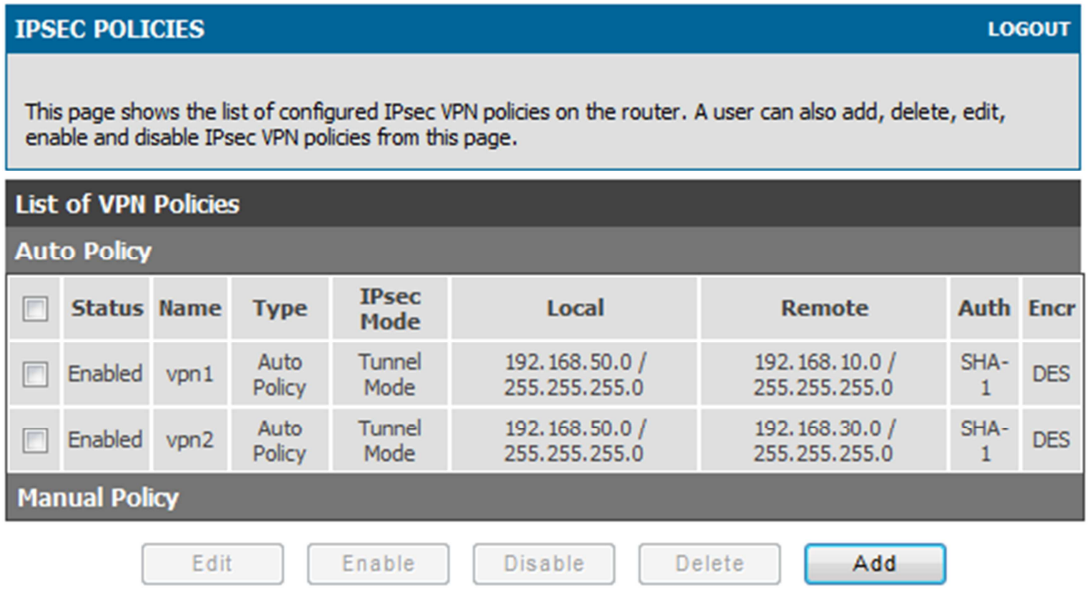
DSR2

1. Set the WAN1 IP address to 5.5.5.5 and Gateway IP address to 5.5.5.2.



2. Set the LAN IP address to 192.168.50.1, and enable the function of DHCP server on the LAN interface, the DHCP client starts IP address is 192.168.50.100, the ending IP address is 192.168.50.200.

3. In the setting page of IPSEC Policy, create two IPSec policies as below figure shown, one to the local net of **DSR1**, another to the local net of **DSR3**.



The detail parameters of IPSec policy of VPN1: (Blue part)

Policy Name:	Vpn1

Policy Type:	Auto Policy
IPsec Mode:	Tunnel Mode
Select Local Gateway:	Dedicated WAN
Remote Endpoint:	IP Address
[FQDN column]	1.1.1.1
Enable Mode Config:	Uncheck
Enable NetBIOS:	Uncheck
Enable Rollover:	Uncheck
Protocol:	ESP
Enable DHCP:	Uncheck
Local IP:	Subnet
Local Start IP Address:	192.168.50.0
Local End IP address:	[blank]
Local Subnet Mask:	255.255.255.0
Remote IP:	Subnet
Remote Start IP Address:	192.168.10.0
Remote End IP Address	[blank]
Remote Subnet Mask:	255.255.255.0
Phase1(IKE SA Parameters)	
Exchange Mode:	Main
Direction / Type:	Both
Nat Traversal:	On
NAT Keep Alive Frequency(In seconds):	20
Local Identifier Type:	Local Wan IP
Local Identifier:	[blank]
Remote Identifier Type:	Remote Wan IP
Remote Identifier:	[blank]
Encryption Algorithm:	AES-128
Key Length:	[blank]
Authentication Algorithm:	SHA-1
Authentication Method:	Pre-shared key
Pre-shared key:	testtest
Diffie-Hellman (DH) Group:	Group2 (1024bit)
SA-Lifetime(sec):	28800
Enable Dead Peer Detection:	Uncheck
Detection Period:	[Keep default]
Reconnect after failure count:	[Keep default]
Extended Authentication:	None
Authentication Type:	[Keep default]
Username:	[blank]
Password:	[blank]
Phase2-(Manual Policy Parameters)	
SPI-Incoming:	[Keep default]
SPI-Outgoing:	[Keep default]
Encryption Algorithm:	[Keep default]
Key Length:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Integrity Algorithm:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]

Phase2-(Auto Policy Parameters)	
SA Lifetime:	3600 seconds
Encryption Algorithm:	DES
Key Length:	[Keep default]
Integrity Algorithm:	SHA-1
PFS Key Group	Uncheck

The detail parameters of IPSec policy of VPN2: (Blue part)

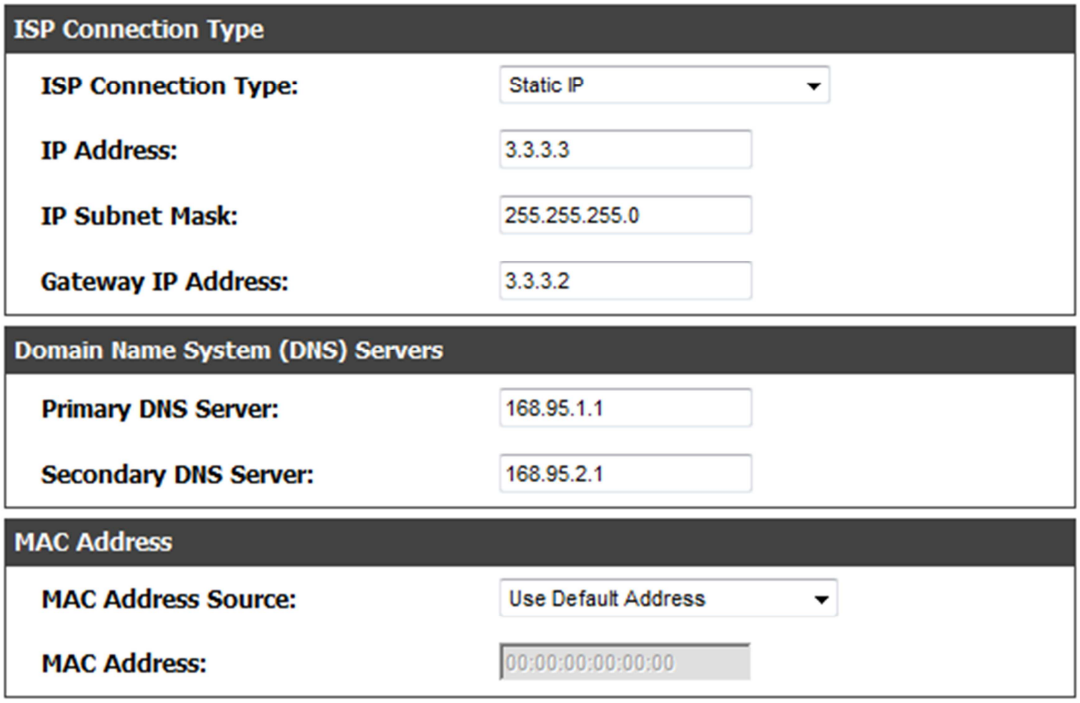
Policy Name:	Vpn2
Policy Type:	Auto Policy
IPsec Mode:	Tunnel Mode
Select Local Gateway:	Dedicated WAN
Remote Endpoint:	IP Address
[FQDN column]	1.1.1.1
Enable Mode Config:	Uncheck
Enable NetBIOS:	Uncheck
Enable Rollover:	Uncheck
Protocol:	ESP
Enable DHCP:	Uncheck
Local IP:	Subnet
Local Start IP Address:	192.168.50.0
Local End IP address:	[blank]
Local Subnet Mask:	255.255.255.0
Remote IP:	Subnet
Remote Start IP Address:	192.168.30.0
Remote End IP Address	[blank]
Remote Subnet Mask:	255.255.255.0
Phase1(IKE SA Parameters)	
Exchange Mode:	Main
Direction / Type:	Both
Nat Traversal:	On
NAT Keep Alive Frequency(In seconds):	20
Local Identifier Type:	Local Wan IP
Local Identifier:	[blank]
Remote Identifier Type:	Remote Wan IP
Remote Identifier:	[blank]
Encryption Algorithm:	AES-128
Key Length:	[blank]
Authentication Algorithm:	SHA-1
Authentication Method:	Pre-shared key
Pre-shared key:	testtest
Diffie-Hellman (DH) Group:	Group2 (1024bit)
SA-Lifetime(sec):	28800
Enable Dead Peer Detection:	Uncheck
Detection Period:	[Keep default]
Reconnect after failure count:	[Keep default]
Extended Authentication:	None

Authentication Type:	[Keep default]
Username:	[blank]
Password:	[blank]
Phase2-(Manual Policy Parameters)	
SPI-Incoming:	[Keep default]
SPI-Outgoing:	[Keep default]
Encryption Algorithm:	[Keep default]
Key Length:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Integrity Algorithm:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Phase2-(Auto Policy Parameters)	
SA Lifetime:	3600 seconds
Encryption Algorithm:	DES
Key Length:	[Keep default]
Integrity Algorithm:	SHA-1
PFS Key Group	Uncheck

VPN Spoke2 settings

DSR3

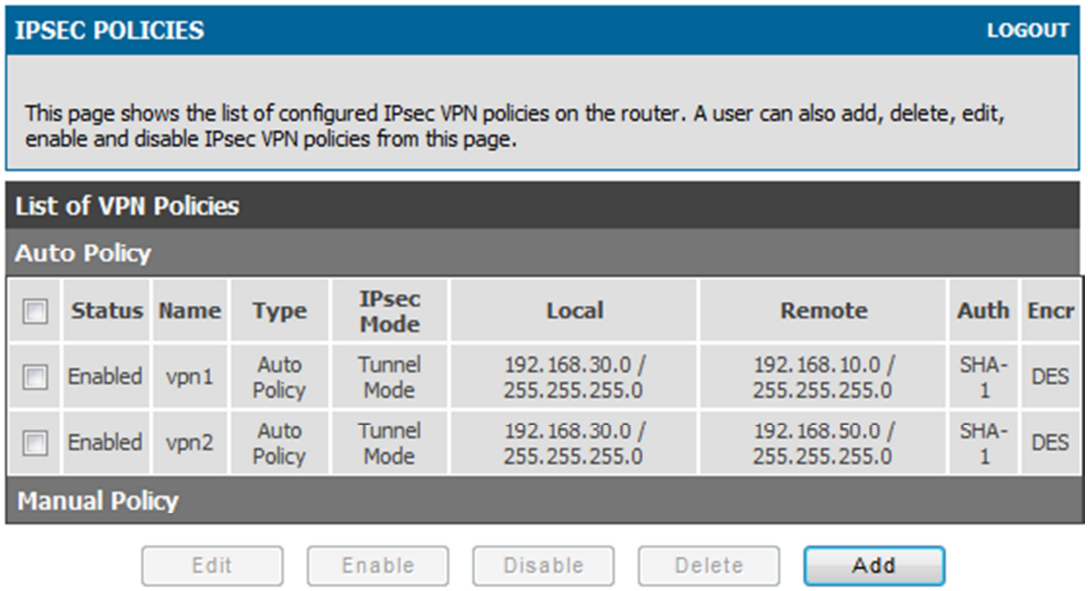
1. Set the WAN1 IP address to 3.3.3.3 and Gateway IP address to 3.3.3.2.



2. Set the LAN IP address to 192.168.30.1, and enable the function of DHCP server on the LAN interface, the DHCP client starts IP address is 192.168.30.100, the ending IP address is 192.168.30.200.

3. In the setting page of IPSEC Policy, create two IPSec policies as below figure shown, one to the local net of **DSR1**,

another to the local net of **DSR2**.



The detail parameters of IPSec policy of VPN1: (Blue part)

Policy Name:	Vpn1
Policy Type:	Auto Policy
IPsec Mode:	Tunnel Mode
Select Local Gateway:	Dedicated WAN
Remote Endpoint:	IP Address
[FQDN column]	1.1.1.1
Enable Mode Config:	Uncheck
Enable NetBIOS:	Uncheck
Enable Rollover:	Uncheck
Protocol:	ESP
Enable DHCP:	Uncheck
Local IP:	Subnet
Local Start IP Address:	192.168.30.0
Local End IP address:	[blank]
Local Subnet Mask:	255.255.255.0
Remote IP:	Subnet
Remote Start IP Address:	192.168.10.0
Remote End IP Address	[blank]
Remote Subnet Mask:	255.255.255.0
Phase1(IKE SA Parameters)	
Exchange Mode:	Main
Direction / Type:	Both
Nat Traversal:	On
NAT Keep Alive Frequency(In seconds):	20
Local Identifier Type:	Local Wan IP
Local Identifier:	[blank]
Remote Identifier Type:	Remote Wan IP
Remote Identifier:	[blank]
Encryption Algorithm:	AES-128

Key Length:	[blank]
Authentication Algorithm:	SHA-1
Authentication Method:	Pre-shared key
Pre-shared key:	testtest
Diffie-Hellman (DH) Group:	Group2 (1024bit)
SA-Lifetime(sec):	28800
Enable Dead Peer Detection:	Uncheck
Detection Period:	[Keep default]
Reconnect after failure count:	[Keep default]
Extended Authentication:	None
Authentication Type:	[Keep default]
Username:	[blank]
Password:	[blank]
Phase2-(Manual Policy Parameters)	
SPI-Incoming:	[Keep default]
SPI-Outgoing:	[Keep default]
Encryption Algorithm:	[Keep default]
Key Length:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Integrity Algorithm:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Phase2-(Auto Policy Parameters)	
SA Lifetime:	3600 seconds
Encryption Algorithm:	DES
Key Length:	[Keep default]
Integrity Algorithm:	SHA-1
PFS Key Group	Uncheck

The detail parameters of IPSec policy of VPN2: (Blue part)

Policy Name:	Vpn2
Policy Type:	Auto Policy
IPsec Mode:	Tunnel Mode
Select Local Gateway:	Dedicated WAN
Remote Endpoint:	IP Address
[FQDN column]	1.1.1.1
Enable Mode Config:	Uncheck
Enable NetBIOS:	Uncheck
Enable Rollover:	Uncheck
Protocol:	ESP
Enable DHCP:	Uncheck
Local IP:	Subnet
Local Start IP Address:	192.168.30.0
Local End IP address:	[blank]
Local Subnet Mask:	255.255.255.0
Remote IP:	Subnet

Remote Start IP Address:	192.168.50.0
Remote End IP Address	[blank]
Remote Subnet Mask:	255.255.255.0
Phase1(IKE SA Parameters)	
Exchange Mode:	Main
Direction / Type:	Both
Nat Traversal:	On
NAT Keep Alive Frequency(In seconds):	20
Local Identifier Type:	Local Wan IP
Local Identifier:	[blank]
Remote Identifier Type:	Remote Wan IP
Remote Identifier:	[blank]
Encryption Algorithm:	AES-128
Key Length:	[blank]
Authentication Algorithm:	SHA-1
Authentication Method:	Pre-shared key
Pre-shared key:	testtest
Diffie-Hellman (DH) Group:	Group2 (1024bit)
SA-Lifetime(sec):	28800
Enable Dead Peer Detection:	Uncheck
Detection Period:	[Keep default]
Reconnect after failure count:	[Keep default]
Extended Authentication:	None
Authentication Type:	[Keep default]
Username:	[blank]
Password:	[blank]
Phase2-(Manual Policy Parameters)	
SPI-Incoming:	[Keep default]
SPI-Outgoing:	[Keep default]
Encryption Algorithm:	[Keep default]
Key Length:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Integrity Algorithm:	[Keep default]
Key-In:	[Keep default]
Key-Out:	[Keep default]
Phase2-(Auto Policy Parameters)	
SA Lifetime:	3600 seconds
Encryption Algorithm:	DES
Key Length:	[Keep default]
Integrity Algorithm:	SHA-1
PFS Key Group	Uncheck

[Expected result]

PC1, PC2, and PC3 are able to reach each other by private IP address.

End of document

Author: Summer Chang