

Document Name: DMVPN

Dynamic Multipoint VPN or DMVPN is a hub and spoke based topology for remote site connectivity. It supports spoke-to-spoke traffic. It uses a combination of mGRE, NHRP, Routing, and IPsec Crypto Profiles. It is agnostic of SP connectivity the only requirement is IP connectivity between your hubs and spokes.

There are two parts the hub (NHRP Server) and the spokes (NHRP Clients). The spokes register with the hub via NHRP Registration Requests, and the hub will dynamically learn the spokes VPN and NBMA (non-broadcast multiple access) address.

Spoke-to-spoke traffic works by first learning the route from the hub and then using NHRP to learn the IP to tunnel source of the spoke. Some data plane traffic may flow through the hub at first before the spoke tunnel is up. After that the hub is only used for control plane traffic in the spoke-to-spoke tunnel. If no traffic pass through the tunnel it will be torn down after an amount of time.

Configuration (HUB)

```
!  
Interface tunnel 0  
  ip address 1.1.1.1 255.255.255.0  
  ip mtu 1400  
  ip tcp adjust-mss 1360  
  ip nhrp authentication [string]  
  ip nhrp map multicast dynamic  
  ip nhrp network-id [number]  
  ip nhrp holdtime [300-600 recommended]  
  Tunnel source [interface name]  
  Tunnel key [number]  
  Tunnel mode gre multipoint  
  Tunnel protection ipsec profile [profile name]  
!  
Crypto isakmp policy 1  
  Encryption aes 256  
  Authentication pre-share  
  Group 24  
  Crypto isakmp key cisco address 0.0.0.0  
!  
Crypto ipsec transform-set [transform set name] esp-256-aes esp-sha512-hmac  
  Mode transport  
!  
Crypto ipsec profile [Profile name]  
  Set transform-set [transform set name]  
!
```

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Configuration (Spoke)

```
!  
Interface tunnel 0  
ip address 1.1.1.2 255.255.255.0  
ip mtu 1400  
ip tcp adjust-mss 1360  
ip nhrp authentication [string]  
ip nhrp map 1.1.1.1 100.64.1.1  
ip nhrp map multicast 100.64.1.1  
ip nhrp network-id  
ip nhrp holdtime 300  
ip nhrp nhs 1.1.1.1  
Tunnel source [interface name]  
Tunnel key [number]  
Tunnel mode gre multipoint  
Tunnel protection ipsec profile [profile name]  
!
```

Show Commands

```
Show crypto engine connections active  
Show ip nhrp  
Show dmvpn
```

Notes

Useful [reddit](#) thread.