

LAMPIRAN

Lampiran 1 : Konfigurasi *MPLS-L3VPN* Menggunakan *OSPF* dan *BGP*

<p>1. Router Provider</p> <pre>Provider#sh run Building configuration... Current configuration : 1194 bytes ! version 15.2 service timestamps debug datetime msec service timestamps log datetime msec ! hostname Provider ! boot-start-marker boot-end-marker ! no aaa new-model no ip icmp rate-limit unreachable ip cef ! no ip domain lookup no ipv6 cef ! multilink bundle-name authenticated ! ip tcp synwait-time 5 ! interface Loopback0 ip address 10.1.1.2 255.255.255.255 ! interface Ethernet0/0 no ip address shutdown duplex auto ! interface GigabitEthernet0/0 description Link to Provider Edge 1 ip address 10.0.0.10 255.255.255.252 media-type gbic speed 1000 duplex full negotiation auto mpls ip ! interface GigabitEthernet1/0 description Link to Provider Edge 2 ip address 10.0.0.14 255.255.255.252</pre>	<pre>address-family vpnv4 neighbor 10.1.1.3 activate neighbor 10.1.1.3 send-community extended exit-address-family ! address-family ipv4 vrf Customer neighbor 10.0.0.6 remote-as 64301 neighbor 10.0.0.6 activate exit-address-family ! ip forward-protocol nd ! no ip http server no ip http secure-server ! control-plane ! line con 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line aux 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line vty 0 4 login ! end ProviderEdge-1#</pre> <p>3. Router ProviderEdge-2</p> <pre>ProviderEdge-2#sh run Building configuration... Current configuration : 1634 bytes ! version 15.2 service timestamps debug datetime msec service timestamps log datetime msec ! hostname ProviderEdge-2 !</pre>
---	---

```

negotiation auto
mpls ip
!
router ospf 1
network 10.0.0.8 0.0.0.3 area 0
network 10.0.0.12 0.0.0.3 area 0
network 10.1.1.2 0.0.0.0 area 0
!
ip forward-protocol nd
!
no ip http server
no ip http secure-server
!
control-plane
!
line con 0
exec-timeout 0 0
privilege level 15
logging synchronous
stopbits 1
line aux 0
exec-timeout 0 0
privilege level 15
logging synchronous
stopbits 1
line vty 0 4
login
!
!
end
Provider#

```

2. Router ProviderEdge-1

```

ProviderEdge-1#sh run
Building configuration...

```

```

Current configuration : 1747 bytes
!
version 15.2
service timestamps debug datetime msec
service timestamps log datetime msec
!
hostname ProviderEdge-1
!
boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
ip cef
!
ip vrf Customer
rd 64501:1

```

```

boot-start-marker
boot-end-marker
!
no aaa new-model
no ip icmp rate-limit unreachable
ip cef
!
ip vrf Customer
rd 64501:1
route-target export 64501:1
route-target import 64501:1
!
no ip domain lookup
no ipv6 cef
!
multilink bundle-name authenticated
!
ip tcp synwait-time 5
!
interface Loopback0
ip address 10.1.1.3 255.255.255.255
!
interface Ethernet0/0
no ip address
shutdown
duplex auto
!
interface GigabitEthernet0/0
description Link to Provider
ip address 10.0.0.13 255.255.255.252
media-type gbic
speed 1000
duplex full
negotiation auto
mpls ip
!
interface GigabitEthernet1/0
description Link to Customer Edge 2
ip vrf forwarding Customer
ip address 10.0.0.21 255.255.255.252
negotiation auto
!
router ospf 1
network 10.0.0.12 0.0.0.3 area 0
network 10.1.1.3 0.0.0.0 area 0
!
router bgp 64501
bgp log-neighbor-changes
neighbor 10.1.1.1 remote-as 64501
neighbor 10.1.1.1 update-source
Loopback0
!
address-family vpnv4
neighbor 10.1.1.1 activate

```

<pre> route-target export 64501:1 route-target import 64501:1 ! no ip domain lookup no ipv6 cef ! multilink bundle-name authenticated ! ip tcp synwait-time 5 ! interface Loopback0 ip address 10.1.1.1 255.255.255.255 ! interface Ethernet0/0 no ip address shutdown duplex auto ! interface GigabitEthernet0/0 description Link to Provider ip address 10.0.0.9 255.255.255.252 media-type gbic speed 1000 duplex full negotiation auto mpls ip ! interface GigabitEthernet1/0 description Link to Customer Edge 1 ip vrf forwarding Customer ip address 10.0.0.5 255.255.255.252 negotiation auto ! router ospf 1 network 10.0.0.8 0.0.0.3 area 0 network 10.1.1.1 0.0.0.0 area 0 ! router bgp 64501 bgp log-neighbor-changes neighbor 10.1.1.3 remote-as 64501 neighbor 10.1.1.3 update-source Loopback0 ! address-family ipv4 neighbor 10.1.1.3 activate neighbor 10.1.1.3 send-community extended exit-address-family ! </pre>	<pre> neighbor 10.1.1.1 send-community extended exit-address-family ! address-family ipv4 vrf Customer neighbor 10.0.0.22 remote-as 64302 neighbor 10.0.0.22 activate exit-address-family ! ip forward-protocol nd ! no ip http server no ip http secure-server ! control-plane ! line con 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line aux 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line vty 0 4 login ! end ProviderEdge-2# </pre>
---	--

Lampiran 2 : Konfigurasi DMVPN dengan IPSEC Model Tunnel Menggunakan EIGRP

<p>1. Router HeadOffice</p> <pre> HeadOffice#sh run Building configuration... Current configuration : 2219 bytes ! version 15.2 service timestamps debug datetime msec service timestamps log datetime msec ! hostname HeadOffice ! boot-start-marker boot-end-marker ! no aaa new-model no ip icmp rate-limit unreachable ip cef ! no ip domain lookup no ipv6 cef ! multilink bundle-name authenticated ! ip tcp synwait-time 5 ! crypto isakmp policy 1 encr aes hash sha512 authentication pre-share group 2 crypto isakmp key KEY-NETWORK address 0.0.0.0 ! ! crypto ipsec transform-set Trans-IPSec esp-aes esp-sha512-hmac mode tunnel ! crypto ipsec profile MGRE-for-DMVPN set security-association lifetime seconds 86400 set transform-set Trans-IPSec ! interface Loopback0 no ip address ! interface Tunnel0 </pre>	<p>2. Router BranchOffice</p> <pre> BranchOffice#sh run Building configuration... Current configuration : 2093 bytes ! version 15.2 service timestamps debug datetime msec service timestamps log datetime msec ! hostname BranchOffice ! boot-start-marker boot-end-marker ! no aaa new-model no ip icmp rate-limit unreachable ip cef ! no ip domain lookup no ipv6 cef ! multilink bundle-name authenticated ! ip tcp synwait-time 5 ! crypto isakmp policy 1 encr aes hash sha512 authentication pre-share group 2 crypto isakmp key KEY-NETWORK address 0.0.0.0 ! ! crypto ipsec transform-set Trans-IPSec esp-aes esp-sha512-hmac mode tunnel ! crypto ipsec profile MGRE-for-DMVPN set security-association lifetime seconds 86400 set transform-set Trans-IPSec ! interface Loopback0 no ip address ! interface Tunnel0 </pre>
--	--

<pre> description MULTI-POINT GRE TUNNEL for BRACNHES ip address 10.10.10.1 255.255.255.0 no ip redirects ip nhrp authentication Pa\$\$w0rd ip nhrp map multicast dynamic ip nhrp network-id 1 ip ospf network point-to-multipoint tunnel source GigabitEthernet0/0 tunnel mode gre multipoint tunnel protection ipsec profile MGRE-for-DMVPN ! interface Ethernet0/0 no ip address shutdown duplex auto ! interface GigabitEthernet0/0 description Link to DMVPN Public ip address 172.16.90.1 255.255.255.0 media-type gbic speed 1000 duplex full negotiation auto ! interface GigabitEthernet1/0 description Link to Host-1 ip address 192.168.1.1 255.255.255.0 negotiation auto ! interface GigabitEthernet2/0 description Link to Provider Edge 1 ip address 10.0.0.6 255.255.255.252 negotiation auto ! interface GigabitEthernet3/0 description Link to VoIP Server ip address 192.168.43.1 255.255.255.0 negotiation auto ! router eigrp 100 network 10.10.10.1 0.0.0.0 network 172.16.90.1 0.0.0.0 network 192.168.1.1 0.0.0.0 network 192.168.43.1 0.0.0.0 ! router bgp 64301 bgp log-neighbor-changes network 192.168.1.0 timers bgp 10 30 neighbor 10.0.0.5 remote-as 64501 ! ip forward-protocol nd </pre>	<pre> description MULTI-POINT GRE TUNNEL for HO ip address 10.10.10.2 255.255.255.0 no ip redirects ip nhrp authentication Pa\$\$w0rd ip nhrp map 10.10.10.1 172.16.90.1 ip nhrp map multicast 172.16.90.1 ip nhrp network-id 1 ip nhrp nhs 10.10.10.1 tunnel source GigabitEthernet0/0 tunnel mode gre multipoint tunnel protection ipsec profile MGRE-for-DMVPN ! interface Ethernet0/0 no ip address shutdown duplex auto ! interface GigabitEthernet0/0 description Link to DMPVN Public ip address 172.16.90.2 255.255.255.0 media-type gbic speed 1000 duplex full negotiation auto ! interface GigabitEthernet1/0 description Link to Host-2 ip address 192.168.2.1 255.255.255.0 negotiation auto ! interface GigabitEthernet2/0 description Link to Provider Edge 2 ip address 10.0.0.22 255.255.255.252 negotiation auto ! router eigrp 100 network 10.10.10.2 0.0.0.0 network 172.17.90.2 0.0.0.0 network 192.168.2.1 0.0.0.0 ! router bgp 64302 bgp log-neighbor-changes network 192.168.2.0 timers bgp 10 30 neighbor 10.0.0.21 remote-as 64501 ! ip forward-protocol nd ! no ip http server no ip http secure-server ! control-plane </pre>
---	---

<pre>! no ip http <i>server</i> no ip http <i>secure-server</i> ! control-plane ! line con 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line aux 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line vty 0 4 login ! end HeadOffice#</pre>	<pre>! line con 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line aux 0 exec-timeout 0 0 privilege level 15 logging synchronous stopbits 1 line vty 0 4 login ! end BranchOffice#</pre>
--	---