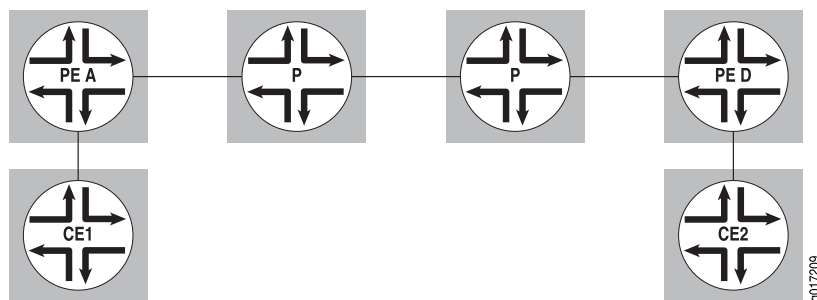


Configuring a GRE Tunnel Interface Between PE Routers

This example shows how to configure a generic routing encapsulation (GRE) tunnel interface between PE routers to provide VPN connectivity. You can use this configuration to tunnel VPN traffic across a non-MPLS core network. The network topology used in this example is shown in Figure 1. The P routers shown in this illustration do not run MPLS.

Figure 1: PE Routers A and D Connected by a GRE Tunnel Interface



For configuration information, see the following sections:

- Configuring the Routing Instance on Router A on page 1
- Configuring the Routing Instance on Router D on page 2
- Configuring MPLS, BGP, and OSPF on Router A on page 2
- Configuring MPLS, BGP, and OSPF on Router D on page 3
- Configuring the Tunnel Interface on Router A on page 3
- Configuring the Tunnel Interface on Router D on page 4
- Configuring the Routing Options on Router A on page 4
- Configuring the Routing Options on Router D on page 4
- Configuration Summary for Router A on page 5
- Configuration Summary for Router D on page 6

Configuring the Routing Instance on Router A

Configure a routing instance on Router A:

```
[edit routing-instances]
gre-config {
  instance-type vrf;
  interface fe-1/0/0.0;
  route-distinguisher 10.255.14.176:69;
  vrf-import import-config;
  vrf-export export-config;
  protocols {
    ospf {
      export import-config;
    }
  }
}
```

```

        area 0.0.0.0 {
            interface all;
        }
    }
}

```

Configuring the Routing Instance on Router D

Configure a routing instance on Router D:

```

[edit routing-instances]
gre-config {
    instance-type vrf;
    interface fe-1/0/1.0;
    route-distinguisher 10.255.14.178:69;
    vrf-import import-config;
    vrf-export export-config;
    protocols {
        ospf {
            export import-config;
            area 0.0.0.0 {
                interface all;
            }
        }
    }
}

```

Configuring MPLS, BGP, and OSPF on Router A

Although you do not need to configure MPLS on the P routers in this example, it is needed on the PE routers for the interface between the PE and CE routers and on the GRE interface (gr-1/1/0.0) linking the PE routers (Router A and Router D). Configure MPLS, BGP, and OSPF on Router A:

```

[edit protocols]
mpls {
    interface all;
}
bgp {
    group pe-to-pe {
        type internal;
        neighbor 10.255.14.178 {
            family inet-vpn {
                unicast;
            }
        }
    }
}
ospf {
    area 0.0.0.0 {
        interface all;
        interface gr-1/1/0.0 {
            disable;
        }
    }
}

```

```
}  
}  
}
```

Configuring MPLS, BGP, and OSPF on Router D

Although you do not need to configure MPLS on the P routers in this example, it is needed on the PE routers for the interface between the PE and CE routers and on the GRE interface (`gr-1/1/0.0`) linking the PE routers (Router D and Router A). Configure MPLS, BGP, and OSPF on Router D:

```
[edit protocols]  
mpls {  
  interface all;  
}  
bgp {  
  group pe-to-pe {  
    type internal;  
    neighbor 10.255.14.176 {  
      family inet-vpn {  
        unicast;  
      }  
    }  
  }  
}  
ospf {  
  traffic-engineering;  
  area 0.0.0.0 {  
    interface all;  
    interface fxp0.0 {  
      disable;  
    }  
    interface gr-1/1/0.0 {  
      disable;  
    }  
  }  
}
```

Configuring the Tunnel Interface on Router A

Configure the tunnel interface on Router A (the tunnel is unnumbered):

```
[edit interfaces interface-name]  
unit 0 {  
  tunnel {  
    source 10.255.14.176;  
    destination 10.255.14.178;  
  }  
  family inet;  
  family mpls;  
}
```

Configuring the Tunnel Interface on Router D

Configure the tunnel interface on Router D (the tunnel is unnumbered):

```
[edit interfaces interface-name]  
unit 0 {  
  tunnel {  
    source 10.255.14.178;  
    destination 10.255.14.176;  
  }  
  family inet;  
  family mpls;  
}
```

Configuring the Routing Options on Router A

As part of the routing options configuration for Router A, you need to configure routing table groups to enable VPN route resolution in the `inet.3` routing table.

Configure the routing options on Router A:

```
[edit routing-options]  
interface-routes {  
  rib-group inet if-rib;  
}  
rib inet.3 {  
  static {  
    route 10.255.14.178/32 next-hop gr-1/1/0.0;  
  }  
}  
rib-groups {  
  if-rib {  
    import-rib [ inet.0 inet.3 ];  
  }  
}
```

Configuring the Routing Options on Router D

As part of the routing options configuration for Router D, you need to configure routing table groups to enable VPN route resolution in the `inet.3` routing table.

Configure the routing options on Router D:

```
[edit routing-options]  
interface-routes {  
  rib-group inet if-rib;  
}  
rib inet.3 {  
  static {  
    route 10.255.14.176/32 next-hop gr-1/1/0.0;  
  }  
}  
rib-groups {
```

```

    if-rib {
        import-rib [ inet.0 inet.3 ];
    }
}

```

Configuration Summary for Router A

Configure the Routing Instance

```

gre-config {
    instance-type vrf;
    interface fe-1/0/0.0;
    route-distinguisher 10.255.14.176:69;
    vrf-import import-config;
    vrf-export export-config;
    protocols {
        ospf {
            export import-config;
            area 0.0.0.0 {
                interface all;
            }
        }
    }
}

```

Configure MPLS

```

mpls {
    interface all;
}

```

Configure BGP

```

bgp {
    traceoptions {
        file bgp.trace world-readable;
        flag update detail;
    }
    group pe-to-pe {
        type internal;
        neighbor 10.255.14.178 {
            family inet-vpn {
                unicast;
            }
        }
    }
}

```

Configure OSPF

```

ospf {
    area 0.0.0.0 {
        interface all;
        interface gr-1/1/0.0 {
            disable;
        }
    }
}

```

Configure the Tunnel Interface

```

interface-name {
  unit 0 {
    tunnel {
      source 10.255.14.176;
      destination 10.255.14.178;
    }
    family inet;
    family mpls;
  }
}

```

Configure Routing Options

```

interface-routes {
  rib-group inet if-rib;
}
rib inet.3 {
  static {
    route 10.255.14.178/32 next-hop gr-1/1/0.0;
  }
}
rib-groups {
  if-rib {
    import-rib [ inet.0 inet.3 ];
  }
}

```

Configuration Summary for Router D

Configure the Routing Instance

```

gre-config {
  instance-type vrf;
  interface fe-1/0/1.0;
  route-distinguisher 10.255.14.178:69;
  vrf-import import-config;
  vrf-export export-config;
  protocols {
    ospf {
      export import-config;
      area 0.0.0.0 {
        interface all;
      }
    }
  }
}

```

Configure MPLS

```

mpls {
  interface all;
}

```

Configure BGP

```

bgp {
  group pe-to-pe {
    type internal;
    neighbor 10.255.14.176 {

```

```

        family inet-vpn {
            unicast;
        }
    }
}

```

Configure OSPF

```

ospf {
    traffic-engineering;
    area 0.0.0.0 {
        interface all;
        interface fxp0.0 {
            disable;
        }
        interface gr-1/1/0.0 {
            disable;
        }
    }
}

```

Configure the Tunnel Interface

```

interface-name {
    unit 0 {
        tunnel {
            source 10.255.14.178;
            destination 10.255.14.176;
        }
        family inet;
        family mpls;
    }
}

```

Configure the Routing Options

```

interface-routes {
    rib-group inet if-rib;
}
rib inet.3 {
    static {
        route 10.255.14.176/32 next-hop gr-1/1/0.0;
    }
}
rib-groups {
    if-rib {
        import-rib [ inet.0 inet.3 ];
    }
}

```

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