

Chapter 21

MSDP Configuration Guidelines

To configure MSDP, include statements at the [edit protocols msdp] hierarchy level of the configuration:

```
protocols {
  msdp {
    disable;
    export [ policy-names ];
    import [ policy-names ];
    local-address address;
    rib-group group-name;
    traceoptions {
      file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
      flag flag <flag-modifier> <disable>;
    }
    peer address {
      disable;
      export [ policy-names ];
      import [ policy-names ];
      local-address address;
      traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
          <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
      }
    }
  }
  group group-name {
    disable;
    export [ policy-names ];
    import [ policy-names ];
    local-address address;
    mode <(mesh-group | standard)>;
    traceoptions {
      file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
      flag flag <flag-modifier> <disable>;
    }
  }
  peer address; {
    disable;
    export [ policy-names ];
    import [ policy-names ];
    local-address address;
  }
}
```

```

        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
    }
}
}
}

```

By default, MSDP is disabled.

This chapter describes the following tasks for configuring MSDP:

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For a configuration example, see “Example: Configure MSDP” on page 199.

Minimum MSDP Configuration

To enable MSDP on the router, include at least the following statements at the [edit protocols] hierarchy level:

```

[edit protocols]
msdp {
    local-address address;
    peer address;
}

```

You must configure at least one peer. The peer and the local-address statements are required. You should also configure the router to be a PIM sparse-mode rendezvous point (RP). For more information about configuring PIM, see “PIM Configuration Guidelines” on page 135.

Enable MSDP

To enable MSDP peering on the router, include the `msdp` statement at the [edit protocols] hierarchy level:

```
[edit protocols]
msdp {
  local-address address;
  peer address;
  rib-group group-name;
}
```

To associate with MSDP a routing table group that imports and exports routes into the specified routing table group, include the `rib-group` statement. The routing table group is a group that you defined with the `rib-groups` statement at the [edit routing-options] hierarchy level. For more information, see the *JUNOS Internet Software Configuration Guide: Routing and Routing Protocols*.

Configure MSDP Peers

An MSDP router must know which routers are its peers. You define the peer relationships explicitly by configuring the neighboring routers that are the MSDP peers of the local router. After peer relationships are established, the MSDP peers exchange messages to advertise active multicast sources. You must configure at least one peer for MSDP to function.

To configure MSDP peers, include the `peer` statement:

```
peer address {
  export [ policy-names ];
  import [ policy-names ];
  local-address address;
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}
```

The `peer` and the `local-address` statements are required. You can configure MSDP peers globally (at the [edit protocols msdp] hierarchy level) or in a group (at the [edit protocols msdp group group-name] level). If you configure them in a group, each individual peer inherits all group-level options.

Configure MSDP Groups

You can arrange MSDP peers into groups. Each group must contain at least one peer. Arranging peers into groups is useful if you want to block sources from some peers and accept them from others, or set tracing options on one group and not others.

To configure MSDP groups, include one or more of the following statements at the [edit protocols msdp group group-name] hierarchy level:

```
[edit protocols msdp]
group group-name {
  disable;
```

```

export [ policy-names ];
import [ policy-names ];
local-address address;
mode <(mesh-group | standard)>;
traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}
peer address: {
  disable;
  export [ policy-names ];
  import [ policy-names ];
  local-address address;
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}

```

The individual statements are discussed in separate sections.

Configure MSDP Mesh Groups

MSDP mesh groups are groups of peers configured in a full-mesh topology that limits the flooding of source-active messages to neighboring peers. Every mesh group member must have a peer connection with every other mesh group member. When a source-active message is received from a mesh group member, the source-active message is always accepted but is not flooded to other members of the same mesh group. However, the source-active message is flooded to non-mesh group peers or members of other mesh groups. By default, standard flooding rules apply if mesh-group is not specified.

To configure an MSDP mesh group, define a peer group and include the mode mesh-group statement:

```

[edit protocols msdp]
group group-name {
  local-address address;
  mode mesh-group;
  peer address;
}

```

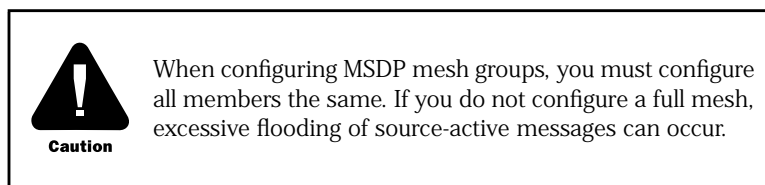


Figure 33 illustrates source-active message flooding between different mesh groups and peers within the same mesh group. Table 5 explains how flooding is handled by peers in this configuration.

Figure 33: Source-Active Message Flooding

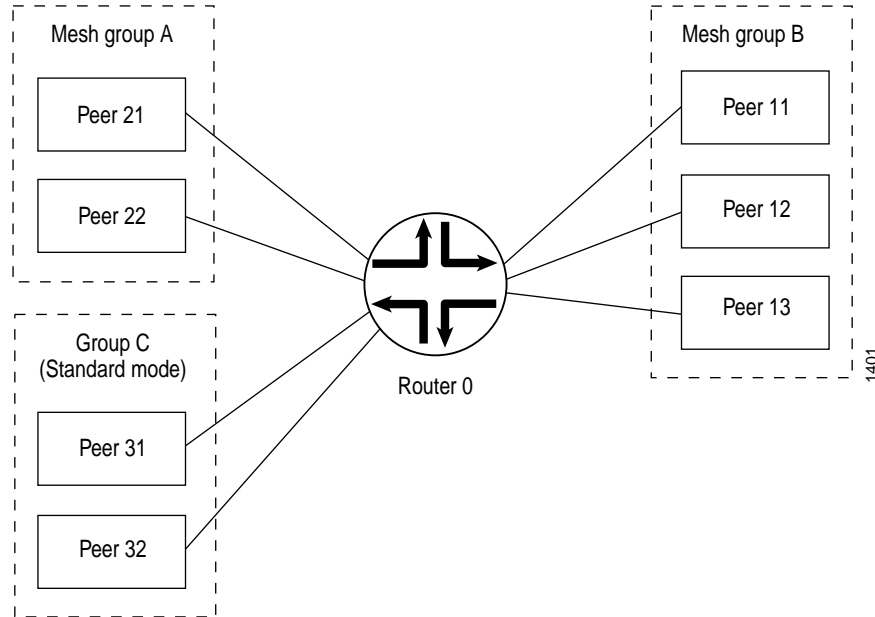


Table 5: Source-Active Message Flooding Explanation

Source-Active Message Received from	Source-Active Message Flooded to	Source-Active Message NOT Flooded to
Peer 21	Peer 11, Peer 12, Peer 13, Peer 31, Peer 32	Peer 22
Peer 11	Peer 21, Peer 22, Peer 31, Peer 32	Peer 12, Peer 13
Peer 31	Peer 21, Peer 22, Peer 11, Peer 12, Peer 13, Peer 32	

Configure MSDP Routing Policy

All routing protocols use the routing table to store the routes that they learn and to determine which routes they should advertise in their protocol packets. Routing policy allows you to control which routes the routing protocols store in, and retrieve from, the routing table. For information about routing policy, see the *JUNOS Internet Software Configuration Guide: Routing and Routing Protocols*.

You can configure routing policy:

- Globally for all MSDP peers at the [edit protocols msdp] hierarchy level.

- For all peers in a group at the [edit protocols msdp group *group-name*] level

- For an individual peer at the [edit protocols msdp peer *address*] or the [edit protocols msdp group *group-name* peer *address*] level.

If you configure routing policy at the group level, each individual peer in a group inherits the group's routing policy.

To apply policies to source-active messages being imported into the source-active cache from MSDP, include the import statement, listing the names of one or more policy filters to be evaluated. See Table 6 for a list of match conditions.

Table 6: MSDP Source-Active Message Filter Match Conditions

Match Condition	Matches On
interface	Router interface or interfaces specified by name or IP address
neighbor	Neighbor address (the source address in the IP header of the source-active message)
route-filter	Multicast group address embedded in the source-active message
source-address-filter	Multicast source address embedded in the source-active message

If you specify more than one policy, they are evaluated in the order specified, from first to last, and the first matching policy is applied to the route. If no match is found, MSDP shares with the routing table only those routes that were learned from MSDP routers.

```
import [ policy-names ];
```

To apply policies to source-active messages being exported from the source-active cache into MSDP, include the export statement, listing the names of one or more policies to be evaluated. If you specify more than one policy, they are evaluated in the order specified, from first to last, and the first matching policy is applied to the source-active cache entry. If no match is found, the default MSDP export policy is applied to entries in the source-active cache.

```
export [ policy-names ];
```

Configure Multiple Rendezvous Points in a Domain

You can configure multiple rendezvous points (RPs) in a shared-tree PIM sparse-mode domain. You need to configure an MSDP local address to enable the RPs in the domain to maintain a consistent view of the active sources.

To configure a router to act as an RP in a domain with other RPs, do the following for each router in the domain that will act as an RP:

Create the router ID by configuring a unique IP address on the loopback interface and setting the primary address flag.

Configure a non-unique unicast address on the loopback interface.

Use the non-unique unicast address to configure the PIM to be the local rendezvous point.

Configure MSDP with the unique address (router ID) as the local address of the peer.

For a sample configuration of multiple RPs, see “Example: Configure a Router to Use Anycast RP” on page 197. For more information about configuring interfaces, see the *JUNOS Internet Software Configuration Guide: Network Interfaces and Class of Service* .

Example: Configure a Router to Use Anycast RP

```
[edit]
interfaces {
  ...

  lo0 {
    unit 0 {
      family inet {
        unique address [and] router-id;
        address 10.1.1.1/32 {
          primary;
        }
        non-unique anycast RP address;
        address 10.10.10.10/32;
        address 127.0.0.1/32;
      }
    }
  }
}

[edit]
routing-options {
  interface-routes {
    rib-group ifrg;
  }
  rib-groups {
    ifrg {
      import-rib [inet.0 inet.2];
    }
    mcrg {
      export-rib inet.2;
      import-rib inet.2;
    }
  }
  autonomous-system 1234;
}

[edit]
protocols {
  bgp {
    group red {
      type internal;
      family inet any;
      neighbor 10.1.1.2 {
        local-address 10.1.1.1;
      }
    }
  }
}
msdp {
  rib-group mcrg;
  group red {
    peer 10.1.1.2 {
      local-address 10.1.1.1;
    }
  }
}
```

```

    }
  }
}
pim {
  dense-groups {
    224.0.1.39/32;
    224.0.1.40/32;
  }
  rib-group mcrg;
  rp {
    local {
      address 10.10.10.10;
    }
  }
  interface all {
    mode sparse-dense;
    version 2;
  }
  interface fxp0.0 {
    disable;
  }
}
}

```

Disable MSDP

To disable MSDP on the router, include the `disable` statement:

```
disable;
```

You can disable MSDP globally for all MSDP peers (at the [edit protocols msdp] hierarchy level), for all peers in a group (at the [edit protocols msdp group *group-name*] level), or for an individual peer (at the [edit protocols msdp peer *address*] or the [edit protocols msdp group *group-name* peer *address*] level). If you disable MSDP at the group level, each peer in the group is disabled.

Trace MSDP Protocol Traffic

To trace MSDP protocol traffic, you can specify options in the global `traceoptions` statement at the [edit routing-options] hierarchy level, and you can specify MSDP-specific options by including the `traceoptions` statement:

```

traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}

```

You can configure tracing options globally for all MSDP peers (at the [edit protocols msdp] hierarchy level), for all peers in a group (at the [edit protocols msdp group *group-name*] level), or for an individual peer (at the [edit protocols msdp peer *address*] or the [edit protocols msdp group *group-name* peer *address*] level). If you configure tracing options at the group level, each peer in the group inherits the group's tracing options.

You can specify the following MSDP-specific options in the `flag` statement:

keepalive—Trace keepalive messages.

packets—Trace all MSDP packets.

route—Trace MSDP changes to the routing table.

sa—Trace source-active packets.

sa-request—Trace source-active request packets.

sa-response—Trace source-active response packets.

For general information about tracing, see the *JUNOS Internet Software Configuration Guide: Getting Started*.

Example: Trace MSDP Protocol Traffic

Trace only unusual or abnormal operations to routing-log, and trace detailed information about all MSDP messages to msdp-log:

```
[edit]
routing-options {
  traceoptions {
    file routing-log;
    flag errors;
  }
}
protocols {
  msdp {
    peer 192.68.2.120; {
      local-address 192.68.1.200;
    }
    traceoptions {
      file msdp-log;
      flag packets;
    }
  }
}
```

Example: Configure MSDP

Configure a router to act as a PIM sparse-mode rendezvous point and an MSDP peer:

```
[edit]
routing-options {
  interface-routes {
    rib-group ifrg;
  }
}
rib-groups {
  ifrg {
    import-rib [inet.0 inet.2];
  }
  mcrg {
    export-rib inet.2;
    import-rib inet.2;
  }
}
```

```
    }  
  }  
  protocols {  
    bgp {  
      group lab {  
        type internal;  
        family any;  
        neighbor 192.168.6.18 {  
          local-address 192.168.6.17;  
        }  
      }  
    }  
    pim {  
      dense-groups {  
        224.0.1.39/32;  
        224.0.1.40/32;  
      }  
      rib-group mcrg;  
      rp {  
        local {  
          address 192.168.1.1;  
        }  
      }  
      interface all {  
        mode sparse-dense;  
        version 1;  
      }  
    }  
    msdp {  
      rib-group mcrg;  
      group lab {  
        peer 192.168.6.18 {  
          local-address 192.168.6.17;  
        }  
      }  
    }  
  }  
}
```