Chapter 4

MPLS Configuration Statements

To configure Multiprotocol Label Switching (MPLS), you can include the following statements in the configuration:

```
protocols {
    mpls {
        disable;
        admin-groups {
            group-name group-value;
        }
        advertise-hold-time seconds;
        auto-policing {
            class all (drop | loss-priority-high | loss-priority-low);
            class ctnumber (drop | loss-priority-high | loss-priority-low);
        }
        bandwidth bps {
            ct0 bps;
            ct1 bps;
            ct2 bps;
            ct3 bps;
        }
        class-of-service cos-value;
        diffserv-te {
            bandwidth-model {
                extended-mam;
                mam;
                rdm;
            }
            te-class-matrix {
                tenumber {
                    priority priority;
                    traffic-class ctnumber priority priority;
                }
            }
        }
        explicit-null;
        hop-limit number;
        icmp-tunneling;
```

```
interface (interface-name | all) {
    disable;
    admin-group {
        [ group-name ];
    }
    label-map {
        in-label {
            class-of-service cos-value;
            (next-hop (address | interface-name | address/interface-name) |
                (reject | discard);
            (pop | swap <out-label>);
            preference preference;
            type type;
        }
        default-route {
            class-of-service cos-value;
            (next-hop (address | interface-name | address/interface-name) |
                (reject | discard);
            (pop | swap <out-label>);
            preference preference;
            type type;
        }
    }
}
ipv6-tunneling;
label-switched-path lsp-path-name {
    disable;
    adaptive;
    admin-group {
        exclude [ group-names ];
        include [ group-names ];
    }
    auto-bandwidth {
        adjust-interval seconds;
        adjust-threshold percent;
        maximum-bandwidth bps;
        minimum-bandwidth bps;
        monitor-bandwidth;
    }
    bandwidth bps {
        ct0 bps;
        ct1 bps;
        ct2 bps;
        ct3 bps;
    }
    class-of-service cos-value;
    description text;
    fast-reroute {
        bandwidth bps;
        bandwidth-percent percent;
        (exclude [ group-names ] | no-exclude);
        hop-limit number;
        (include [ group-names ] | no-include);
    }
    from address;
    hop-limit number;
```

```
install {
   destination-prefix/prefix-length <active>;
}
ldp-tunneling;
link-protection;
lsp-attributes {
   gpid (ethernet | hdlc | ipv4 | ppp);
   signal-bandwidth type;
   switching-type type;
}
metric metric;
no-cspf;
no-decrement-ttl;
node-link-protection;
optimize-timer seconds;
p2mp path-name;
policing {
   filter filter-name;
   no-automatic-policing;
}
preference preference;
priority setup-priority hold-priority;
primary path-name {
   adaptive;
   admin-group {
      exclude [ group-names ];
      include [ group-names ];
   }
   bandwidth bps {
      ct0 bps;
      ct1 bps;
      ct2 bps;
      ct3 bps;
   }
   class-of-service cos-value;
   hop-limit number;
   no-cspf;
   no-decrement-ttl;
   optimize-timer seconds;
   preference preference;
   priority setup-priority hold-priority;
   (record | no-record);
   retry-limit number;
   retry-timer seconds;
   select {
      manual;
      unconditional;
   }
   standby;
}
(random | least-fill | most-fill);
(record | no-record);
retry-limit number;
retry-timer seconds;
revert-timer seconds;
```

```
    secondary path-name {
        adaptive;
        admin-group {
            exclude [ group-names ];
            include [ group-names ];
        }
        bandwidth bps {
            ct0 bps;
            ct1 bps;
            ct2 bps;
            ct3 bps;
        }
        class-of-service value;
        hop-limit number;
        no-cspf;
        no-decrement-ttl;
        optimize-timer seconds;
        preference preference;
        priority setup-priority hold-priority;
        (record | no-record);
        select {
            manual;
            unconditional;
        }
        standby;
    }
    soft-preemption {
        cleanup-timer seconds;
    }
    standby;
    to address;
    traceoptions {
        file filename <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
}
log-updown {
    (syslog | no-syslog);
    (trap | no-trap);
    trap-path-down;
    trap-path-up;
}
mtu-signaling;
no-cspf;
no-decrement-ttl;
no-propagate-ttl;
optimize-aggressive;
optimize-timer;
path path-name {
    address <strict | loose>;
}
```

```
            path-mtu {
               allow-fragmentation;
               rsvp {
                  mtu-signaling;
               }
            }
            preference preference;
            priority setup-priority hold-priority;
            (record | no-record);
            revert-timer seconds;
            rsvp-error-hold-time seconds;
            soft-preemption {
               cleanup-timer seconds;
            }
            standby;
            static-path inet {
               prefix {
                  class-of-service value;
                  next-hop (address | interface-name | address/interface-name);
                  preference preference;
                  push out-label;
               }
            }
            statistics {
               auto-bandwidth;
               file filename <size size> <files number> <no-stamp>;
               interval seconds;
            }
            traceoptions {
               file filename <replace> <size size> <files number> <no-stamp>
                  <(world-readable | no-world-readable)>;
               flag flag <flag-modifier> <disable>;
            }
            traffic-engineering (bgp | bgp-igp | bgp-igp-both-ribs | mpls-forwarding);
         }
      }
```

You can configure these statements at the following hierarchy levels:

[edit logical-routers *logical-router-name* protocols mpls]

[edit protocols mpls]

Minimum MPLS Configuration

To enable MPLS on the router, you must include at least the following statements. This minimum configuration enables MPLS on a logical interface. All other MPLS configuration statements are optional. Note that this configuration does nothing more than enable MPLS on the router and on the specified interface.

Include the family mpls statement:

```
family mpls;
```

You can include this statement at the following hierarchy levels:

[edit interfaces *interface-name* unit *logical-unit-number*]

[edit logical-routers *logical-router-name* interfaces *interface-name* unit *logical-unit-number*]

Include the interface in the MPLS and Resource Reservation Protocol (RSVP) protocol configuration:

```
mpls {
    interface (interface-name | all);   # Required to enable MPLS on the interface
}
rsvp {                                  # Required for RSVP-signaled MPLS only
    interface interface-name;
}
```

You can configure these statements at the following hierarchy levels:

[edit protocols]

[edit logical-routers *logical-router-name* protocols]

For every interface you enable, two special routes are installed automatically in the MPLS forwarding table. One route has a label value of 0, and the second has a label value of 1. (For information about these labels, see “Special Labels” on page 27.)