

# Chapter 2

## Complete Routing and Routing Protocol Configuration Statements

This chapter shows the complete configuration statement hierarchy for the portions of the configuration discussed in this manual, listing all possible configuration statements and showing their level in the configuration hierarchy. When you are configuring the JUNOS software, your current hierarchy level is shown in the banner on the line preceding the `user@host#` prompt.

For a list of the complete configuration statement hierarchy, see the *JUNOS Internet Software Configuration Guide: Installation and System Management*.

This chapter is organized as follows:

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[edit policy-options] Hierarchy Level

```
policy-options {
  as-path name regular-expression;
  community name members [community-ids];
  damping name {
    disable;
    half-life minutes;
    max-suppress minutes;
    reuse number;
    suppress number;
  }
  policy-statement policy-name {
    term term-name {
      from {
        match-conditions;
        route-filter destination-prefix match-type <actions>;
        prefix-list name;
      }
      to {
        match-conditions;
      }
      then actions;
    }
  }
  prefix-list name {
    ip-addresses;
  }
}
```

[edit protocols] Hierarchy Level

```
protocols {
  BGP  bgp {
    advertise-inactive;
    authentication-key key;
    cluster cluster-identifier;
    damping;
    description text-description;
    disable;
    export [policy-names];
    family inet {
      (any | multicast | unicast) {
        prefix-limit {
          maximum number;
          teardown <percentage>;
        }
        rib-group routing-table-name;
      }
    }
  }
}
```

```

hold-time seconds;
import [policy-names];
keep (all | none);
local-address address;
local-as autonomous-system <private>;
local-preference local-preference;
log-updown;
metric-out metric;
multihop <ttl-value>;
no-aggregator-id;
no-client-reflect;
out-delay seconds;
passive;
path-selection (cisco-non-deterministic | always-compare-med);
peer-as autonomous-system;
preference preference;
remove-private;
traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}
group group-name {
  advertise-inactive;
  allow [network/masklength];
  authentication-key key;
  cluster cluster-identifier;
  damping;
  description text-description;
  export [policy-names];
  family inet {
    (any | multicast | unicast) {
      prefix-limit {
        maximum number;
        teardown <percentage>;
      }
      rib-group routing-table-name;
    }
  }
  hold-time seconds;
  import [policy-names];
  keep (all | none);
  local-address address;
  local-as autonomous-system <private>;
  local-preference local-preference;
  log-updown;
  metric-out metric;
  multihop <ttl-value>;
  multipath;
  no-aggregator-id;
  no-client-reflect;
  out-delay seconds;
  passive;
  peer-as autonomous-system;
  preference preference;
  protocol protocol;
  remove-private;
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}

```



```

        <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    query-interval seconds;
    query-last-member-interval seconds;
    query-response-interval seconds;
    robust-count number;
    interface interface-name {
        disable;
        version version;
    }
}

IS-IS isis {
    disable;
    authentication-key key;
    authentication-type authentication;
    export [policy-names];
    label-switched-path name level level metric metric;
    level level-number {
        authentication-key key;
        authentication-type authentication;
        external-preference preference;
        preference preference;
        wide-metrics-only;
    }
    lsp-lifetime seconds;
    no-authentication-check;
    overload <timeout seconds>;
    reference-bandwidth reference-bandwidth;
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    traffic-engineering {
        disable;
        shortcuts;
    }
    interface interface-name {
        disable;
        csnp-interval (seconds | disable);
        hello-authentication-key key;
        hello-authentication-type authentication;
        lsp-interval milliseconds;
        mesh-group (value | blocked);
        passive;
        level level-number {
            disable;
            hello-authentication-key key;
            hello-authentication-type authentication;
            hello-interval seconds;
            hold-time seconds;
            metric metric;
            passive;
            priority number;
            te-metric metric;
        }
    }
}

```

```

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

```

```

OSPF  ospf {
        disable;
        export [policy-names];
        external-preference preference;
        preference preference;
        reference-bandwidth reference-bandwidth;
        rib-group routing-table-group;
        traffic-engineering {
            no-topology;
            shortcuts;
        }
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
        area area-id {
            area-range network/mask-length <restrict>;
            authentication-type authentication;
            interface interface-name {
                disable;
                authentication-key key <key-id identifier>;
                dead-interval seconds;
                hello-interval seconds;
                interface-type type;
                metric metric;
                neighbor address <eligible>;
                passive;
                poll-interval seconds;
                priority number;
                retransmit-interval seconds;
                transit-delay seconds;
                transmit-interval seconds;
            }
            nssa {
                area-range network/mask-length <restrict>;
                default-metric metric;
                (no-summaries | summaries);
            }
            stub <default-metric metric> <(no-summaries | summaries)>;
            virtual-link neighbor-id router-id transit-area area-id {
                disable;
                authentication-key key <key-id identifier>;
                dead-interval seconds;
                hello-interval seconds;
                retransmit-interval seconds;
                transit-delay seconds;
            }
        }
    }
}

```



```

RIP    rip {
        authentication-key password;
        authentication-type type;
        (check-zero | no-check-zero);
        import [policy-names];
        message-size number;
        metric-in metric;
        receive receive-options;
        send send-options;
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
        group group-name {
            export [policy-names];
            metric-out metric;
            preference preference;
            neighbor neighbor-name {
                authentication-key password;
                authentication-type type;
                (check-zero | no-check-zero);
                import [policy-names];
                message-size number;
                metric-in metric;
                receive receive-options;
                send send-options;
            }
        }
    }

Router Discovery  router-discovery {
                    disable;
                    traceoptions {
                        file name <replace> <size size> <files number> <no-stamp>
                          <(world-readable | no-world-readable)>;
                        flag flag <detail> <disable>;
                    }
                    interface interface-name {
                        min-advertisement-interval seconds;
                        max-advertisement-interval seconds;
                        lifetime seconds;
                    }
                    address address {
                        (advertise | ignore);
                        (broadcast | multicast);
                        (priority number | ineligible);
                    }
                }

SDP/SAP  sap {
            disable;
            listen <address> <port port>
        }

```

[edit routing-instances] Hierarchy Level

```
[edit]
routing-instances routing-instance-name {
  interface interface-name;
  protocols {
    ospf {
      ospf-configuration;
    }
  }
  routing-options {
    aggregate {
      defaults {
        (active | passive);
        as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
          <aggregator as-number in-address>;
        community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
        (full | brief);
        (metric | metric2 | metric3 | metric4) value;
        (preference | preference2 | color | color2) preference;
        (tag | tag2) string;
      }
    }
    autonomous-system autonomous-system <loops number>;
    confederation confederation-autonomous-system members autonomous-system;
    fate-sharing {
      group group-name;
      cost value;
      from address [to address];
    }
    forwarding-table {
      export [policy-names];
    }
    generate {
      defaults {
        (active | passive);
        as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
          <aggregator as-number in-address>;
        community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
        (full | brief);
        (metric | metric2 | metric3 | metric4) value;
        (preference | preference2 | color | color2) preference;
        (tag | tag2) string;
      }
    }
    interface-routes {
      rib-group routing-table-name;
    }
    martians {
      destination-prefix match-type <allow>;
    }
    multicast {
      scope scope-name {
        interface interface-name;
        prefix destination-prefix;
      }
    }
    options {
      syslog (level level | upto level);
    }
  }
}
```

```

rib routing-table {
  aggregate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
    route destination-prefix {
      policy policy-name;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  generate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  martians {
    destination-prefix match-type <allow>;
  }
  static {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (install | no-install);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (readvertise | no-readvertise);
      (no-retain | retain);
      (tag | tag2) string;
    }
    route destination-prefix {
      policy policy-name;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
}

```

```

rib-groups {
  group-name {
    import-rib [ group-name];
    export-rib group-name;
  }
}
route-record;
router-id address;
static {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}

```

## [edit routing-options] Hierarchy Level

```

routing-options {
  aggregate {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
    route destination-prefix {
      policy policy-name;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (full | brief);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (tag | tag2) string;
    }
  }
  autonomous-system autonomous-system <loops number>;
  confederation confederation-autonomous-system members autonomous-system;
  fate-sharing {
    group group-name;
    cost value;
    from address [to address];
  }
}

```

```

forwarding-table {
  export [policy-names];
}
generate {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
  route destination-prefix {
    policy policy-name;
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
    (full | brief);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (tag | tag2) string;
  }
}
interface-routes {
  rib-group routing-table-name;
}
martians {
  destination-prefix match-type <allow>;
}
multicast {
  scope scope-name {
    interface interface-name;
    prefix destination-prefix;
  }
}
options {
  syslog (level level | upto level);
}
rib routing-table {
  static {
    defaults {
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (install | no-install);
      (metric | metric2 | metric3 | metric4) value;
      (preference | preference2 | color | color2) preference;
      (readvertise | no-readvertise);
      (no-retain | retain);
      (tag | tag2) string;
    }
    route destination-prefix {
      next-hop;
      (active | passive);
      as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
        <aggregator as-number in-address>;
      community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
      (install | no-install);
      (metric | metric2 | metric3 | metric4) value;
    }
  }
}

```

```

        (preference | preference2 | color | color2) preference;
        (readvertise | no-readvertise);
        (no-retain | retain);
        (tag | tag2) string;
    }
    aggregate {
        defaults {
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
        route destination-prefix {
            policy policy-name;
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
    }
    generate {
        defaults {
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
        route destination-prefix {
            policy policy-name;
            (active | passive);
            as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
                <aggregator as-number in-address>;
            community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
            (full | brief);
            (metric | metric2 | metric3 | metric4) value;
            (preference | preference2 | color | color2) preference;
            (tag | tag2) string;
        }
    }
    }
    martians {
        destination-prefix match-type <allow>;
    }
}
rib-groups {
    group-name {
        import-rib [ group-name ];
        export-rib group-name;
    }
}
route-record;

```

```

router-id address;
static {
  defaults {
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
  route destination-prefix {
    next-hop;
    (active | passive);
    as-path <as-path> <origin (egp | igp | incomplete | none)> <atomic-aggregate>
      <aggregator as-number in-address>;
    community ([community-ids] | no-advertise | no-export | no-export-subconfed | none);
    (install | no-install);
    (metric | metric2 | metric3 | metric4) value;
    (preference | preference2 | color | color2) preference;
    (readvertise | no-readvertise);
    (no-retain | retain);
    (tag | tag2) string;
  }
}
traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}
}

```

