

# Chapter 3

## Complete Configuration Mode Commands and Statements

This chapter shows the complete configuration mode commands and the complete configuration statement hierarchy. Using these commands and statements is described in other chapters.

Complete Configuration Mode Commands on page 35

Complete Configuration Statement Hierarchy on page 36

For information about CLI operational mode commands, see the *JUNOS Internet Software Operational Mode Command Reference*. For information about IPv6 configuration statements, see the *JUNOS Internet Software Configuration Guide: IPv6*.

### Complete Configuration Mode Commands

The following is the complete list of configuration mode commands, listing all possible commands in the hierarchy.

```
user@host# ?
Possible completions:
<[Enter]>      Execute this command
activate       Remove the inactive tag from a statement
annotate      Annotate the statement with a comment
commit        Commit current set of changes
copy          Copy a statement
deactivate    Add the inactive tag to a statement
delete        Delete a data element
edit          Edit a sub-element
exit          Exit from this level
help          Provide help information
insert        Insert a new ordered data element
load          Load configuration from an ASCII file
quit          Quit from this level
rename        Rename a statement
rollback      Roll back database to last committed version
run           Run an operational-mode command
save          Save configuration to an ASCII file
set           Set a parameter
show          Show a parameter
status        Display database user status
top           Exit to top level of configuration
up            Exit one level of configuration
```

## Complete Configuration Statement Hierarchy

This section shows the complete configuration statement hierarchy, 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.

This section is organized as follows:

[edit access] Hierarchy Level on page 37

[edit accounting-options] Hierarchy Level on page 37

[edit chassis] Hierarchy Level on page 38

[edit class-of-service] Hierarchy Level on page 39

[edit firewall] Hierarchy Level on page 40

[edit forwarding-options] Hierarchy Level on page 40

[edit groups] Hierarchy Level on page 42

[edit interfaces] Hierarchy Level on page 43

[edit policy-options] Hierarchy Level on page 48

[edit protocols] Hierarchy Level on page 49

[edit routing-instances] Hierarchy Level on page 64

[edit routing-options] Hierarchy Level on page 67

[edit security] Hierarchy Level on page 70

[edit snmp] Hierarchy Level on page 71

[edit system] Hierarchy Level on page 73

**[edit access] Hierarchy Level**

```

profile profile-name {
  authentication-order [ authentication-methods ];
  client name chap-secret data;
  client name chap-secret data;
}
traceoptions {
  flag all;
  flag authentication;
  flag chap;
  flag configuration;
  flag radius;
}
# End of [edit access] hierarchy level

```

**[edit accounting-options] Hierarchy Level**

```

accounting-options {
  class-usage-profile profile-name {
    file filename;
    interval minutes;
    source-classes {
      source-class-name;
    }
  }
  destination-class-profile profile-name {
    destination-class {
      destination-class-name;
    }
    file filename;
    interval minutes;
  }
  file filename {
    archive-sites {
      site-name;
    }
    file filename;
    size bytes;
    transfer-interval minutes;
  }
  filter-profile profile-name {
    counters {
      counter name;
    }
    file filename;
    interval minutes;
  }
  interface-profile profile-name {
    fields {
      field-name;
    }
    file filename;
    interval minutes;
  }
}

```

```

routing-engine-profile profile-name {
  fields {
    field-name;
  }
  file filename;
  interval minutes;
}
} # End of [edit accounting-options] hierarchy level

```

### **[edit chassis] Hierarchy Level**

```

chassis {
  aggregated-devices {
    ethernet {
      device-count number;
    }
    sonet {
      device-count number;
    }
  }
  alarm {
    interface-type {
      alarm-name (red | yellow | ignore);
    }
  }
  fpcslot-number {
    pic pic-number {
      atm-cell-relay-accumulation;
      ce1 {
        e1 port-number {
          channel-group group-number timeslots slot-number;
        }
      }
      ct3 {
        port port-number {
          t1 link-number {
            channel-group group-number timeslots slot-number;
          }
        }
      }
    }
    framing (sdh | sonet);
    sparse-dlcis;
    no-concatenate;
    vtmapping (km | itu-t);
  }
}
(packet-scheduling | no-packet-scheduling);
(source-route | no-source-route);
redundancy {
  failover on-loss-of-keepalives;
  keepalive-timesecods;
  routing-engine slot-number (master | backup | disabled);
  sfm slot-number (always | preferred);
  ssb slot-number (always | preferred);
}
} # End of [edit chassis] hierarchy level

```

**[edit class-of-service] Hierarchy Level**

```

class-of-service {
  classifiers {
    (dscp | exp | ieee-802.1 | inet-precedence) classifier-name {
      import (classifier-name | default);
      forwarding-class class-name {
        loss-priority (low | high) code-points [ alias | bits ];
      }
    }
  }
  code-point-aliases {
    (dscp | exp | ieee-802.1 | inet-precedence) {
      alias-name bits;
    }
  }
  drop-profiles {
    profile-name {
      fill-level percentage drop-probability percentage;
      interpolate {
        drop-probability value;
        fill-level value;
      }
    }
  }
  fabric {
    scheduler-map {
      priority (low | high) scheduler scheduler-name;
    }
  }
  forwarding-classes {
    queue queue-number class-name priority (low | high);
  }
  forwarding-policy {
    next-hop-map map-name {
      forwarding-class class-name {
        next-hop [ next-hop-name ];
        lsp-next-hop [ lsp-regular-expression ];
      }
    }
    class class-name {
      classification-override {
        forwarding-class class-name;
      }
    }
  }
  interfaces
    interface-name {
      scheduler-map map-name;
      unit logical-unit-number {
        classifiers {
          (dscp | exp | ieee-802.1 | inet-precedence) (classifier-name | default) {
            protocol protocol-types;
          }
          forwarding-class class-name;
          rewrite-rules {
            (dscp | exp | ieee-802.1 | inet-precedence) (rewrite-name | default);
            exp (rewrite-name | default) protocol rewrite-rules;
          }
        }
      }
    }
  }
}

```

```

rewrite-rules {
  (dscp | exp | ieee-802.1 | inet-precedence) rewrite-name {
    import (rewrite-name | default);
    forwarding-class class-name {
      loss-priority (low | high) code-point (alias | bits);
    }
  }
}
scheduler-maps {
  map-name {
    forwarding-class class-name scheduler scheduler-name;
  }
}
schedulers
  scheduler-name {
    buffer-size (percent percentage | remainder);
    drop-profile-map loss-priority (low | high) protocol (non-tcp | tcp | any) drop-profile profile-name;
    priority (low | high | strict);
    transmit-rate (rate | percent percentage | remainder) <exact>;
  }
} # End of [edit class-of-service] hierarchy level

```

### **[edit firewall] Hierarchy Level**

```

firewall {
  family family-name {
    filter filter-name;
    term term-name {
      from {
        match-conditions;
      }
      then {
        action;
        action-modifiers;
      }
    }
  }
} # End of [edit firewall] hierarchy level

```

### **[edit forwarding-options] Hierarchy Level**

```

forwarding-options {
  family (inet | inet6 | mpls)
  filter {
    input filter-name;
  }
}
hash-key {
  family inet {
    layer-3;
    layer-4;
  }
  family mpls {
    label-1;
    label-2;
  }
}
}

```

```

helpers {
  bootp {
    description description-of-service;
    interface interface-group {
      description description-of-interface;
      maximum-hop-count number;
      minimum-wait-time seconds;
      no-listen;
      server [ address ]
    }
    maximum-hop-count number;
    minimum-wait-time seconds;
    server address < [ routing-instance routing-instance-name ] >;
  }
  domain {
    description description-of-service;
    server address;
    interface interface-name {
      description description-of-interface;
      no-listen;
      server address < [ routing-instance routing-instance-name ] >;
    }
  }
}
tftp {
  description description-of-service;
  server address < [ routing-instance routing-instance-name ] >;
  interface interface-name {
    description description-of-interface;
    no-listen;
    server address;
  }
}
traceoptions {
  file filename;
  files number;
  size bytes;
}
flag flag;
level level;
}
}
sampling {
  disable;
  input {
    family inet {
      max-packets-per-second number;
      rate number;
      run-length number;
    }
  }
}
}

```

```

output {
  cflowd host-name {
    aggregation {
      autonomous-system;
      destination-prefix;
      protocol-port;
      source-destination-prefix {
        caida-compliant;
      }
      source-prefix;
    }
    autonomous-system-type (origin | peer);
    (local-dump | no-local-dump);
    port portnumber;
    version format;
  }
  file {
    filename filename;
    files number;
    size bytes;
    (stamp | no-stamp);
    (world-readable | no-world-readable);
  }
  port-mirroring {
    interface interface-name;
    next-hop address;
  }
}
tftp {
  server address;
  interface int0 {
    no-listen;
    server address;
  }
}
traceoptions {
  file filename {
    files number;
    size bytes;
    (world-readable | no-world-readable);
  }
}
} # End of [edit forwarding-options] hierarchy level

```

### **[edit groups] Hierarchy Level**

```

groups {
  group-name {
    configuration-data;
  }
} # End of [edit groups] hierarchy level

```

**[edit interfaces] Hierarchy Level**

```

interfaces {
  interface-name {
    disable;
    accounting-profile name;
    description text;
    aggregated-ether-options {
      (flow-control | no-flow-control);
      link-speed speed;
      (loopback | no-loopback);
      minimum-links number;
      source-address-filter {
        mac-address;
      }
      (source-filtering | no-source-filtering);
    }
    aggregated-sonet options {
      link-speed speed;
      minimum-links number;
    }
    atm-options {
      e3-options {
        atm-encapsulation (direct | PLCP);
        buildout distance (ft | m);
        framing (g751 | g832);
        loopback (local | remote);
        (payload-scrambler | no-payload-scrambler);
      }
      ilmi;
      pic-type (atm1 | atm2)
      promiscuous-mode {
        [ vpi-identifier ];
      }
      t3-options {
        atm-encapsulation (direct | PLCP);
        buildout distance (ft | m);
        (cbit-parity | no-cbit-parity);
        loopback (local | remote);
        (payload-scrambler | no-payload-scrambler);
      }
      vpi vpi-identifier {
        maximum-vc maximum-vc;
        oam-liveness {
          up-count cells;
          down-count cells;
        }
        oam-period (disable | seconds);
        shaping {
          (cbr rate | vbr peak rate sustained rate burst length);
          queue-length number;
        }
      }
    }
  }
  clocking clock-source;
  dce;

```



```

ppp-options {
  chap {
    access-profile name;
    local-name name;
    passive;
  }
}
receive-bucket {
  overflow (tag | discard);
  rate percentage;
  threshold number;
}
sonet-options {
  aggregate asx;
  aps {
    advertise-interval milliseconds;
    authentication-key key;
    force;
    hold-time milliseconds;
    lockout;
    neighbor address;
    paired-group group-name;
    protect-circuit group-name;
    request;
    revert-time seconds;
    working-circuit group-name;
  }
  bytes {
    e1-quiet value;
    f1 value;
    f2 value;
    s1 value;
    z3 value;
    z4 value;
  }
  fcs (32 | 16);
  loopback (local | remote);
  path-trace trace-string;
  (payload-scrambler | no-payload-scrambler);
  rfc-2615;
  (z0-increment | no-z0-increment);
}
speed (10m | 100m);
t1-options {
  bert-algorithm algorithm;
  bert-error-rate rate;
  bert-period seconds;
  buildout (0-133 | 133-266 | 266-399 | 399-532 | 532-655);
  byte-encoding (nx64 | nx56);
  fcs (32 | 16);
  framing (sf | esf);
  idle-cycle-flags (flags | ones);
  invert-data;
  line-encoding (ami | b8zs);
  loopback (local | remote);
  start-end-flag (shared | filler);
  timeslots slot-number;
}

```

```

t3-options {
  bert-algorithm algorithm;
  bert-error-rate rate;
  bert-period seconds;
  (cbit-parity | no-cbit-parity);
  compatibility-mode (digital-link | kentrox | larscom) <subrate value>;
  fcs (32 | 16);
  (feac-loop-respond | no-feac-loop-respond);
  idle-cycle-flag value;
  (long-buildout | no-long-buildout);
  loopback (local | remote);
  (payload-scrambler | no-payload-scrambler);
  start-end-flag value;
}
tracoptions {
  flag flag <flag-modifier> <disable>;
}
transmit-bucket {
  overflow (discard);
  rate percentage;
  threshold number;
}
vlan-tagging;
unit logical-unit-number {
  access-profile-name;
  accounting-profile name;
  allow_any_vci;
  bandwidth;
  description text;
  disable;
  dlcidlcid-identifier;
  drop-timeout milliseconds;
  epd-threshold cells;
  encapsulation type;
  fragment-threshold bytes;
  inverse-arp;
  minimum-links number;
  mrru bytes;
  multicast-dlcidlcid-identifier;
  multicast-vcivpi-identifier.vci-identifier;
  multipoint;
  no-traps;
  oam-liveness {
    up-count cells;
    down-count cells;
  }
  oam-period (disable | seconds);
  passive monitor mode;
  point-to-point;
  shaping {
    (cbr rate | vbr peak rate sustained rate burst length);
    queue-length number;
  }
}
short-sequence;
tunnel {
  source source-address;
  destination destination-address;
  routing-instance destination routing-instance-name;
  ttl number;
}

```

```

vci vpi-identifier.vci-identifier;
vlan-id number;
family family {
  accounting {
    destination-class-usage;
    source-class-usage {
      (input | output | [input output]);
    }
  }
  bundle ml-fpc/pic/port;
  filter {
    input filter-name;
    output filter-name;
    group filter-group-number;
  }
  ipsec-sa sa-name;
  mtu bytes;
  multicasts-only;
  no-redirects;
  policer {
    input policer-template-name;
    output policer-template-name;
  }
  primary;
  remote mac-address address;
  rpf-check <fail-filter filter-name>;
  address address {
    remote mac-address address;
    rpf-check fail-filter filter-name;
    address address {
      arp ip-address (mac | multicast-mac) mac-address <publish>;
      destination destination-address;
      eui-64;
      broadcast address;
      multipoint-destination destination-address (dcli dcli-identifier | vci vci-identifier);
      multipoint-destination destination-address {
        epd-threshold cells;
        inverse-arp;
        oam-liveness {
          up-count cells;
          down-count cells;
        }
        oam-period seconds;
        shaping {
          (cbr rate | vbr peak rate sustained rate burst length);
          queue-length number;
        }
      }
    }
  }
  vci vpi-identifier.vci-identifier;
}

```

```

    preferred;
    primary;
    vrrp-group group-number {
        virtual-address [ addresses ];
        priority number;
        (accept-data | no-accept-data);
        advertise-interval seconds;
        authentication-type authentication;
        authentication-key key;
        (preempt | no-preempt);
        track {
            interface interface-name priority-cost cost;
        }
    }
}
}
}
} # End of [edit interfaces] hierarchy level

```

## **[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 {
                family family-name;
                match-conditions;
                policy subroutine-policy-name;
                prefix-list name;
                route-filter destination-prefix match-type <actions>;
                source-address-filter destination-prefix match-type <actions>;
            }
            to {
                match-conditions;
                policy subroutine-policy-name;
            }
            then actions;
            default-action (accept | reject);
        }
    }
    prefix-list name {
        ip-addresses;
    }
} # End of [edit policy-options] hierarchy level

```

**[edit protocols] Hierarchy Level**

```

protocols {
  BGP    bgp {
    advertise-inactive;
    authentication-key key;
    cluster cluster-identifier;
    damping;
    description text-description;
    disable;
    export [policy-name];
    family inet (inet | inet6 | inet-vpn | l2-vpn) {
      (any | unicast | multicast) {
        prefix-limit {
          maximum number;
          teardown <percentage> <idle-timeout (forever | time-in-minutes)>;
        }
        rib-group group-name;
      }
      labeled-unicast {
        prefix-limit {
          maximum number;
          teardown <percentage> <idle-timeout (forever | time-in-minutes)>;
        }
        resolve-vpn;
        rib-group group-name;
      }
    }
  }
  graceful-restart (
    disable;
    restart-time seconds;
    stale-routes-time seconds;
  )
  hold-time seconds;
  import [policy-name];
  keep (all | none);
  local-address address;
  local-as autonomous-system <private>;
  local-interface interface-name;
  local-preference local-preference;
  log-updown;
  metric-out (metric | minimum-igp <offset> | igp <offset>;
  multihop <tvl-value>;
  no-agggregator-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/mask-length];
  as-override;
  authentication-key key;
  cluster cluster-identifier;
  damping;
  description text-description;
  export [policy-name];
  family inet (inet | inet6 | inet-vpn | l2-vpn) {
    (any | unicast | multicast) {
      prefix-limit {
        maximum number;
        teardown <percentage> <idle-timeout (forever | time-in-minutes)>;
      }
      rib-group group-name;
    }
    labeled-unicast {
      prefix-limit {
        maximum number;
        teardown <percentage> <idle-timeout (forever | time-in-minutes)>;
      }
      resolve-vpn;
      rib-group group-name;
    }
  }
}
graceful-restart (
  disable;
  restart-time seconds;
  stale-routes-time seconds;
)
hold-time seconds;
import [policy-name];
ipsec-sa ipsec-sa;
keep (all | none);
local-address address;
local-as autonomous-system <private>;
local-preference local-preference;
log-updown;
metric-out (metric | minimum-igp <offset> | igp <offset>);
multihop <tth-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>;
}
type type;
neighbor address {
  advertise-inactive;
  as-override;
  authentication-key key;
  cluster cluster-identifier;
  damping;
  description text-description;
}

```

```

export [policy-name];
family inet (inet | inet6 | inet-vpn | l2-vpn) {
  (any | unicast | multicast) {
    prefix-limit {
      maximum number;
      teardown <percentage> <idle-timeout (forever | time-in-minutes)>;
    }
    rib-group group-name;
  }
}
graceful-restart (
  disable;
  restart-time seconds;
  stale-routes-time seconds;
)
hold-time seconds;
import [ policy-name ];
ipsec-sa ipsec-sa;

keep (all | none);
local-address address;
local-as autonomous-system <private>;
local-preference local-preference;
log-updown;
metric-out (metric | minimum-igp <offset> | igp <offset>);
multihop <ttl-value>;
multipath;
no-agggregator-id;
no-client-reflect;
out-delay seconds;
passive;
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>;
}
}
} # End of [edit protocols bgp] hierarchy level

```

**Connections**

```

connections {
  interface-switch connection-name {
    interface interface-name.unit-number;
    interface interface-name.unit-number;
  }
  lsp-switch connection-name {
    transmit-lsp label-switched-path;
    receive-lsp label-switched-path;
  }
  remote-interface-switch connection-name {
    interface interface-name.unit-number;
    transmit-lsp label-switched-path;
    receive-lsp label-switched-path;
  }
} # End of [edit protocols connections] hierarchy level

```

```

DVMRP    dvmrp {
          disable;
          export [ policy-names ];
          import [ policy-names ];
          interface interface-name {
            disable;
            hello-interval seconds;
            hold-time seconds;
            metric metric;
            mode (forwarding | unicast-routing);
          }
          rib-group group-name;
          inet;
        }
        traceoptions {
          file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
          flag flag <flag-modifier> <disable>;
        }
      } # End of [edit protocols dvmrp] hierarchy level

IGMP     igmp {
          interface interface-name {
            disable;
            static {
              group group {
                source source;
              }
            }
            version version;
          }
          query-interval seconds;
          query-last-member-interval seconds;
          query-response-interval seconds;
          robust-count number;
          traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
          }
        }
      } # End of [edit protocols igmp] hierarchy level

IS-IS    isis {
          disable;
          export [ policy-names ];
          ignore-attached-bit;
          graceful-restart {
            disable;
            helper-disable;
          }
          label-switched-path name level level metric metric;
          level level-number {
            authentication-key key;
            authentication-type authentication;
            external-preference preference;
            no-csnp-authentication;
            no-hello-authentication;
            no-psnp-authentication;
            preference preference;
            wide-metrics-only;
          }
        }
      }

```

```

lsp-lifetime seconds;
multicast-topology;
no-authentication-check;
no-ipv4-routing;
no-ipv6-routing;
overload <timeout seconds>;
reference-bandwidth reference-bandwidth;
rib-group group name;
spf-delay milliseconds;

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 {
  checksum;
  csnp-interval (seconds | disable);
  disable;
  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;
  }
}
} # End of [edit protocols isis] hierarchy level

L2vpn    l2vpn {
  encapsulation-type <type>
  traceoptions {
    file filename <replace> <size size> <files number> <nostamp>;
    flag flag <flag-modifier> <disable>;
  }
  site site-name {
    site-identifier identifier;
    interface interface-name {
      site-offset offset;
    }
  }
} # End of [edit protocols l2vpn] hierarchy level

L2circuit  l2circuit {
  neighbor address {
    interface interface-name {
      virtual-circuit-id identifier;
    }
  }
}

```

```

    traceoptions {
        file file-name [replace] [size number] [files file-names] [nostamp];
        flag (connections | error | FEC | topology) [detail];
    }
} # End of [edit protocols l2circuit] hierarchy level

LDP ldp {
    import policy-name;
    deaggregate | no-deaggregate;
    egress-policy policy-name;
    export policy-name;
    graceful-restart {
        disable;
        helper-disable;
    }
    keepalive-interval seconds;
    keepalive-timeout seconds;
    preference preference;
    transport-address (interface | loopback);
    interface interface-name {
        disable;
        hello-interval seconds;
        hold-time seconds;
        deaggregate | no-deaggregate;
        transport-address (interface | loopback);
    }
    session address {
        authentication-key authentication-key;
    }
    traceoptions {
        file filename <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
    traffic-statistics {
        file filename <replace> <size size> <files number> <(world-readable | no-world-readable)>;
        interval interval;
    }
} # End of [edit protocols ldp] hierarchy level

Link management link-management {
    te-link te-link-name {
        local-address ipv4_address;
        remote-address ipv4_address;
        remote-id number;
        interface interface-name {
            remote-id number;
            local-address ipv4_address;
            remote-address ipv4_address;
        }
    }
} # End of [edit protocols link-management] hierarchy level

MPLS mpls {
    admin-groups {
        group-name group-value;
    }
    bandwidth bandwidth;
    class-of-service cos-value;
    disable;
    hop-limit number;
}

```

```

log-updown {
  (syslog | no-syslog);
  (trap | no-trap);
}
no-cspf;
no-decrement-ttl;
no-propagate-ttl;
no-record;
optimize-aggressive;
path path-name {
  address <strict | loose>;
}
preference preference;
priority setup-priority hold-priority;
record;
rvsp-error-hold-time seconds;
standby;
statistics {
  auto-bandwidth;
  file filename <size size> <files number> <no-stamp>;
  interval seconds;
}
traceoptions {
  file name <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);
label-switched-path lsp-path-name {
  disable;
  to address;
  from address;
  adaptive;
  admin-group {
    exclude [ group-names ];
    include [ group-names ];
  }
  autobandwidth {
    adjust-interval seconds;
    maximum-bandwidth bps;
    minimum-bandwidth bps;
    monitor-bandwidth;
  }
  bandwidth bps;
  class-of-service cos-value;
  description;
  disable;
  fast-reroute {
    bandwidth bps;
    (exclude group-names | no-exclude);
    hop-limit number;
    (include group-names | no-include);
  }
  from address;
  hop-limit number;
  install {
    destination-prefix/prefix-length <active>;
  }
}

```



```

interface (interface-name | all) {
  disable;
  admin-group {
    group-name;
  }
  label-map in-label {
    (next-hop (address | interface-name | address/interface-name)) | (reject | discard);
    (pop | (swap <out-label>));
    class-of-service class-of-service;
    preference preference;
    type type;
  }
}
static-path inet {
  prefix {
    next-hop (address | interface-name | address/interface-name);
    push out-label;
    class-of-service class-of-service;
    preference preference;
  }
}
} # End of [edit protocols mpls] hierarchy level

```

**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;
  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>;
  }
}
} # End of [edit protocols msdp] hierarchy level

Neighbor Discovery router-advertisement {
  interface interface-name {
    current-hop-limit number;
    default-lifetime seconds;
    (managed-configuration | no-managed-configuration);
    max-advertisement-interval seconds;
    min-advertisement-interval seconds;
    (other-stateful-configuration | no-other-stateful-configuration);
    prefix prefix {
      (autonomous | no-autonomous);
      (on-link | no-on-link);
      preferred-lifetime seconds;
      valid-lifetime seconds;
    }
    reachable-time milliseconds;
    retransmit-timer milliseconds;
    traceoptions {
      file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
      flag flag <detail> <disable>;
    }
  }
} # End of [edit protocols router-advertisement] hierarchy level

OSPF ospf {
  disable;
  domain-id domain-id;
  export [ policy-name ];
  external-preference preference;
  graceful-restart {
    disable;
    helper-disable;
    notify-duration seconds;
    rest-duration seconds;
  }
  overload {
    <timeout seconds>;
  }
  preference preference;
  reference-bandwidth reference-bandwidth;
  rib-group group-name;
  route-type-community (vendor | iana);
  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/masklen <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;
  }
  label-switched-path name metric metric;
  nssa {
    area-range network/masklen <restrict>;
    default-isa {
      default-metric metric;
      metric-type type;
      type-7;
    }
    (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;
  }
}
} # End of [edit protocols ospf] hierarchy level

OSPFv3 ospfv3 {
  disable;
  export [ policy-names ];
  external-preference preference;
  overload {
    <timeout seconds>;
  }
  preference preference;
  reference-bandwidth reference-bandwidth;
  rib-group group-name;
  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>;
  interface interface-name {
    disable;
    dead-interval seconds;
    hello-interval seconds;
    interface-type type;
    metric metric;
    neighbor address <eligible>;
    passive;
    priority number;
    retransmit-interval seconds;
    transit-delay seconds;
  }
  nssa {
    area-range network/mask-length <restrict>;
    default-lsa {
      default-metric metric;
      metric-type type;
      type-7;
    }
    (no-summaries | summaries)
  }
  stub <default-metric metric> <(no-summaries | summaries)>;
  virtual-link neighbor-id router-id transit-area area-id {
    disable;
    dead-interval seconds;
    hello-interval seconds;
    retransmit-interval seconds;
    transit-delay seconds;
  }
}
} # End of [edit protocols ospfv3] hierarchy level

```

```

PIM pim {
  disable;
  dense-groups {
    addresses;
  }
  import [ policy-names ];
  interface interface-name {
    disable;
    mode (dense | sparse | sparse-dense);
    priority number;
    version version;
  }
  rib-group group-name;
  rp {
    disable;
    address address;
    group-ranges {
      destination-mask;
    }
    hold-time seconds;
    priority number;
  }
  auto-rp (announce | discovery | mapping);
  bootstrap-priority number;
  bootstrap-import pim-import;
  bootstrap-export pim-export;
}

```

```

static {
  address address {
    version version;
    group-ranges {
      destination-mask;
    }
    traceoptions {
      file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
      flag flag <flag-modifier> <disable>;
    }
  }
} # End of [edit protocols pim] hierarchy level

RIP rip {
  authentication-key password;
  authentication-type type;
  (check-zero | no-check-zero);
  graceful-restart {
    disable;
    restart-time seconds;
  }
  import [ policy-names ];
  message-size number;
  metric-in metric;
  receive receive-options;
  rib-group group-name;
  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;
    }
  }
} # End of [edit protocols rip] hierarchy level

RIPng ripng {
  graceful-restart {
    disable;
    restart-time seconds;
  }
}

```

```

import [ policy-names ];
metric-in metric;
receive <none>;
send <none>;
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 number;
  neighbor interface-name {
    import [ policy-names ];
    metric-in metric;
    receive <none>;
    send <none>;
  }
}
} # End of [edit protocols ripng] hierarchy level

Router Advertisement router-advertisement {
  interface interface-name {
    current-hop-limit number;
    default-lifetime seconds;
    (managed-configuration | no-managed-configuration);
    max-advertisement-interval seconds;
    min-advertisement-interval seconds;
    (other-stateful-configuration | no-other-stateful-configuration);
    prefix prefix {
      (autonomous | no-autonomous);
      (on-link | no-on-link);
      preferred-lifetime seconds;
      valid-lifetime seconds;
    }
    reachable-time milliseconds;
    retransmit-timer milliseconds;
    traceoptions {
      file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
      flag flag <detail> <disable>;
    }
  }
}

Router Discovery router-discovery {
  disable;
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
  interface interface-name {
    min-advertisement-interval seconds;
    max-advertisement-interval seconds;
    lifetime seconds;
  }
}

```

```

        address address {
            (advertise | ignore);
            (broadcast | multicast);
            (priority number | ineligible);
        }
    } # End of [edit protocols router-discovery] hierarchy level

RSVP    rsvp {
        disable;
        graceful-restart {
            disable;
            helper-disable;
        }
        keep-multiplier number;
        preemption (aggressive | disabled | normal);
        refresh-time seconds;
        traceoptions {
            file name <replace> <size size> <files number> <no-stamp>
              <(world-readable | no-world-readable)>;
            flag flag <flag-modifier> <disable>;
        }
        interface interface-name {
            disable;
            (aggregate | no-aggregate);
            authentication-key key;
            bandwidth bps;
            hello-interval seconds;
            link-protection {
                bandwidth bandwidth;
                class-of-service class-of-service-value;
                disable;
            }
            subscription percentage;
        }
    } # End of [edit protocols rsvp] hierarchy level

SDP/SAP  sap {
        disable;
        listen <address> <port port>;
    } # End of [edit protocols sap] hierarchy level

VRRP    traceoptions {
        file {
            filename filename;
            files number;
            size size;
            (world-readable | no-world-readable);
        }
        flag flag;
    }

```

**[edit routing-instances] Hierarchy Level**

```

routing-instances {
  routing-instance-name {
    description text;
    interface interface-name;
    instance-type (forwarding | l2vpn | no-forwarding | vrf);
    route-distinguisher (as-number:number | ip-address:number);
    vrf-import [ policy-names ];
    vrf-export [ policy-names ];
    vrf-table-label;
    vrf-target {
      export community name;
      import community name;
    }
  }
  protocols {
    bgp {
      bgp-configuration;
    }
    isis {
      isis-configuration;
    }
    l2vpn {
      l2vpn-configuration;
    }
    ldp {
      ldp-configuration;
    }
    ospf {
      ospf-configuration;
    }
    pim {
      pim-configuration;
    }
    rip {
      rip-configuration;
    }
  }
  routing-options {
    aggregate {
      defaults {
        aggregate-options;
      }
      route destination-prefix {
        policy policy-name;
        aggregate-options;
      }
    }
  }
  auto-export {
    (disable | enable);
    family {
      inet {
        multicast {
          (disable | enable);
          rib-group rib-group;
        }
        unicast {
          (disable | enable);
          rib-group rib-group;
        }
      }
    }
  }
}

```

```

traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}
}
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-name ];
}
generate {
  defaults {
    generate-options;
  }
  route destination-prefix {
    policy policy-name;
    generate-options;
  }
}
instance-export [ policy-names ];
instance-import [ policy-names ];
interface-routes {
  rib-group group-name;
}
martians {
  destination-prefix match-type <allow>;
}
maximum-routes route-limit <log-only | threshold value>;
multicast {
  scope scope-name {
    interface interface-name;
    prefix destination-prefix;
  }
  ssm-groups {
    addresses;
  }
}
options {
  syslog (level level | upto level);
}
resolution {
  tracefilter [filter-policy];
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
      <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}
}

```

```

rib routing-table-name {
  aggregate {
    defaults {
      aggregate-options;
    }
    route destination-prefix {
      policy policy-name;
      aggregate-options;
    }
  }
  filter {
    input filter-name;
  }
  generate {
    defaults {
      generate-options;
    }
    route destination-prefix {
      policy policy-name;
      generate-options;
    }
  }
  martians {
    destination-prefix match-type <allow>;
  }
  static {
    defaults {
      static-options;
    }
    rib-group group-name;
    route destination-prefix {
      lsp-next-hop {
        metric metric;
        preference preference;
      }
      next-hop;
      qualified-next-hop address {
        metric metric;
        preference preference;
      }
      static-options;
    }
  }
}
rib-groups {
  group-name {
    import-policy [policy-name];
    import-rib [ group-name ];
    export-rib [ group-name ];
  }
}
route-record;
router-id address;
static {
  defaults {
    static-options;
  }
}

```

```

    rib-group group-name;
    route destination-prefix {
        lsp-next-hop {
            metric metric;
            preference preference;
        }
        next-hop;
        qualified-next-hop address {
            metric metric;
            preference preference;
        }
        static-options;
    }
}
traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
        <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
}
}
} # End of [edit routing-instances] hierarchy level

```

### **[edit routing-options] Hierarchy Level**

```

routing-options {
    aggregate {
        defaults {
            aggregate-options;
        }
        route destination-prefix {
            policy policy-name;
            aggregate-options;
        }
    }
    auto-export {
        (disable | enable);
        family {
            inet {
                multicast {
                    (disable | enable);
                    rib-group rib-group;
                }
                unicast {
                    (disable | enable);
                    rib-group rib-group;
                }
            }
        }
    }
    traceoptions {
        file name <replace> <size size> <files number> <no-stamp>
            <(world-readable | no-world-readable)>;
        flag flag <flag-modifier> <disable>;
    }
}

```

```

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-name ];
  unicast-reverse-paths (active-paths | feasible-paths);
}
generate {
  defaults {
    generate-options;
  }
  route destination-prefix {
    policy policy-name;
    generate-options;
  }
}
graceful-restart {
  disable;
  path-selection-defer-time-limit time limit;
}
instance-export [ policy-names ];
instance-import [ policy-names ];
interface-routes {
  rib-group group-name;
}
martians {
  destination-prefix match-type <allow>;
}
maximum-routes route-limit <log-only | threshold value>;
multicast {
  scope scope-name {
    interface interface-name;
    prefix destination-prefix;
  }
  ssm-groups {
    address;
  }
}
options {
  syslog (level level | upto level);
}
resolution {
  tracefilter [filter-policy];
  traceoptions {
    file name <replace> <size size> <files number> <no-stamp>
    <(world-readable | no-world-readable)>;
    flag flag <flag-modifier> <disable>;
  }
}

```

```

rib routing-table-name {
  aggregate {
    defaults {
      aggregate-options;
    }
    rib-group group-name;
    route destination-prefix {
      policy policy-name;
      aggregate-options;
    }
  }
  filter {
    input filter-name;
  }
  generate {
    defaults {
      generate-options;
    }
    route destination-prefix {
      policy policy-name;
      generate-options;
    }
  }
  martians {
    destination-prefix match-type <allow>;
  }
  static {
    defaults {
      static-options;
    }
    rib-group group-name;
    route destination-prefix {
      lsp-next-hop {
        metric metric;
        preference preference;
      }
      next-hop;
      qualified-next-hop address {
        metric metric;
        preference preference;
      }
      static-options;
    }
  }
}
rib-groups {
  group-name {
    import-policy [ policy-name ];
    import-rib [ group-name ];
    export-rib [ group-name ];
  }
}
route-distinguisher-id address;
route record;
router-id address;

```

```

static {
  defaults {
    static-options;
  }
  rib-group group-name;
  route destination-prefix {
    lsp-next-hop {
      metric metric;
      preference preference;
    }
    next-hop;
    qualified-next-hop address {
      metric metric;
      preference preference;
    }
    static-options;
  }
}
}
traceoptions {
  file name <replace> <size size> <files number> <no-stamp>
  <(world-readable | no-world-readable)>;
  flag flag <flag-modifier> <disable>;
}
} # End of [edit routing-options] hierarchy level

```

## **[edit security] Hierarchy Level**

```

security
  certificates local certificate-name;
  ike {
    proposal ike-proposal-name {
      authentication-algorithm (md5 | sha1);
      authentication-method pre-shared-keys;
      dh-group (group1 | group2);
      encryption-algorithm (3des-cbc | des-cbc);
      lifetime-seconds seconds;
    }
    policy ike-peer-address {
      mode (aggressive | main);
      proposal [ike-proposal-names];
      pre-shared-key (ascii-text key | hexadecimal key);
    }
  }
  ipsec {
    proposal ipsec-proposal-name {
      authentication-algorithm (hmac-md5-96 | hmac-sha1-96);
      encryption-algorithm (3des-cbc | des-cbc);
      lifetime-seconds seconds;
      protocol (ah | esp | bundle);
    }
    policy ipsec-policy-name {
      perfect-forward-secrecy {
        keys (group1 | group2);
      }
      proposal [ipsec-proposal-names];
    }
  }
}

```

```

security-association name {
  mode (tunnel | transport);
  manual {
  direction (inbound | outbound | bi-directional) {
    auxiliary-spi auxiliary-spi-value;
    spi spi-value;
    protocol (ah | esp | bundle);
    authentication {
      algorithm (hmac-md5-96 | hmac-sha1-96);
      key (ascii-text key | hexadecimal key);
    }
    encryption {
      algorithm (des-cbc | 3des-cbc);
      key (ascii-text key | hexadecimal key);
    }
  }
  dynamic {
    <security-association (32 | 64)>;
    ipsec-policy policy-name;
  }
  traceoptions {
    file <files number> <size size>;
    flag all;
    flag database;
    flag general;
    flag ike;
    flag parse;
    flag policy-manager;
    flag routing-socket;
    flag timer;
  }
}
} # End of [edit security] hierarchy level

```

### **[edit snmp] Hierarchy Level**

```

snmp {
  access {
    context context-name {
      description description;
      group group-name {
        model usm;
        read-view view-name;
        security-level (none | authentication | privacy);
        write-view view-name;
      }
    }
  }
  group group-name {
    model usm;
    user [ user-names ];
  }
  user [ user-names ] {
    authentication-password authentication-password;
    authentication-type (none | md5 | sha);
    privacy-password privacy-password;
    privacy-type (none | des);
    clients {
      address restrict;
    }
  }
}

```

```

community community-name {
  authorization authorization;
  clients {
    address restrict;
  }
  view view-name;
}
contact contact;
description description;
interface [ interface-name ];
location location;
name name;
tracoptions {
  file size size files number;
  flag flag;
}
engine-id {
  local engine-id;
}
rmon {
  alarm index {
    description text-description;
    falling-event-index index;
    falling-threshold integer;
    interval seconds;
    rising-event-index index;
    rising-threshold integer;
    sample-type (absolute-value | delta-value);
    startup-alarm (falling-alarm | rising-alarm | rising-or-falling-alarm);
    variable oid-variable;
  }
  event index {
    community community-name;
    description text-description;
    type type;
  }
}
tracoptions {
  file size size files number;
  flag flag;
}
trap-group group-name {
  categories category;
  destination-port <port-number>;
  targets {
    address;
  }
  version version;
}
trap-options {
  agent-address outgoing-interface;
  source-address address;
}
view view-name;
oid object-identifier (include | exclude)
}
} # End of [edit snmp] hierarchy level

```

**[edit system] Hierarchy Level**

```

system {
  authentication-order [ authentication-methods ];
  backup-router address <destination destination-address>;
  compress-configuration-files;
  default-address-selection;
  diag-port-authentication (encrypted-password "password" | plain-text-password);
  domain-name domain-name;
  domain-search [ domain-list ];
  host-name host-name;
  location {
    altitude feet;
    country-code code;
    hcoord horizontal-coordinate;
    lata service-area;
    latitude degrees;
    longitude degrees;
    npa-nxx number;
    postal-code postal-code;
    vcoord vertical-coordinate;
  }
  login {
    message text;
    class class-name {
      allow-commands "regular-expression";
      allow-configuration "regular-expression";
      deny-commands "regular-expression";
      deny-configuration "regular-expression";
      idle-timeout minutes;
      permissions [ permissions ];
    }
    user user-name {
      full-name complete-name;
      uid uid-value;
      class class-name;
      authentication {
        (encrypted-password "password" | plain-text-password);
        ssh-rsa "public-key";
        ssh-dsa "public-key";
      }
    }
  }
}
mirror-flash-on-disk;
name-server {
  address;
}
no-redirects;
no-saved-core-context;
ntp {
  authentication-key key-number type type value password;
  boot-server address;
  broadcast <address> <key key-number> <version value> <tll value>;
  broadcast-client;
  multicast-client <address>;
  peer address <key key-number> <version value> <prefer>;
  server address <key key-number> <version value> <prefer>;
  trusted-key [ key-numbers ];
}

```

```

ports {
  auxiliary {
    type terminal-type;
  }
  console {
    type terminal-type;
  }
}
processes {
  disk-monitoring (enable | disable);
  inet-process (enable | disable) failover (alternate-media | other-routing-engine);
  interface-control (enable | disable) failover (alternate-media | other-routing-engine);
  mib-process (enable | disable) failover (alternate-media | other-routing-engine);
  ntp (enable | disable) failover (alternate-media | other-routing-engine);
  routing (enable | disable) failover (alternate-media | other-routing-engine);
  snmp (enable | disable) failover (alternate-media | other-routing-engine);
  watchdog (enable | disable) failover (alternate-media | other-routing-engine) timeout seconds;
}
radius-server server-address {
  port number;
  retry number;
  secret password;
  timeout seconds;
}
root-authentication {
  (encrypted-password "password" | plain-text-password);
  ssh-rsa "public-key";
  ssh-dsa "public-key";
}
services {
  finger {
    <connection-limit limit>;
    <rate-limit limit>;
  }
  ftp {
    <connection-limit limit>;
    <rate-limit limit>;
  }
  rlogin {
    <connection-limit limit>;
    <rate-limit limit>;
  }
  ssh {
    root-login (allow | deny | deny-password);
    protocol-version [v1 v2];
    <connection-limit limit>;
    <rate-limit limit>;
  }
  telnet {
    <connection-limit limit>;
    <rate-limit limit>;
  }
}
static-host-mapping {
  host-name {
    inet [ address ];
    sysid system-identifier;
    alias [ alias ];
  }
}

```

```

syslog {
  file filename {
    facility level;
    archive {
      files number;
      size size;
      (world-readable | no-world-readable);
    }
  }
  host hostname {
    facility level;
    facility-override facility;
    log-prefix string;
  }
  user (username | *) {
    facility level;
  }
  console {
    facility level;
  }
  archive {
    files number;
    size size;
    (world-readable | no-world-readable);
  }
}
tacplus-server server-address {
  secret password;
  single-connection;
  timeout seconds;
}
time-zone time-zone;
} # End of [edit system] hierarchy level

```

