Chapter 34

Real-Time Performance Monitoring Configuration Guidelines

To configure Real-Time Performance Monitoring (RPM) services, you include statements at the [edit services] hierarchy level of the configuration:

```
[edit services]
rpm {
    probe owner {
        test test-name {
            data-fill data;
            data-size size;
            destination-port port;
            dscp-code-point DSCP bits;
            history-size size;
            probe-count count;
            probe-interval seconds;
            probe-type type;
            routing-instance instance-name;
            source-address address;
            target-url (url | address);
            test-interval interval;
            thresholds thresholds;
            traps traps;
        }
    }
    probe-server {
        tcp port;
        udp port;
    }
    probe-limit limit {
    }
}
```

This chapter includes the following sections:

Configuring Real-Time Performance Monitoring Properties

This section describes the following tasks for configuring Real-Time Performance Monitoring properties:

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NOTE: RPM does not require an Adaptive Services (AS) PIC. RPM support requires JUNOS Software Release 7.1 or later .

Configuring the Probe

The probe statement defines the owner name and test name used as identifiers for the probe. Together, they represent a single RPM configuration instance. When you specify the test name, you also can configure the test parameters. To configure the probe owner, test name, and test parameters, include the probe statement at the [edit services rpm] hierarchy level:

```
[edit services rpm]
    probe owner {
        test test-name {
            data-fill data;
            data-size size;
            destination-port port;
            dscp-code-point DSCP bits;
            history-size size;
            probe-count count;
            probe-interval seconds;
            probe-type type;
            routing-instance instance-name;
            source-address address;
            target-url url | address;
            test-interval interval;
            thresholds thresholds;
            traps traps;
        }
    }
}
```

To specify a probe owner, include the probe *owner* statement at the [edit services rpm] hierarchy level. The probe owner identifier can be up to 32 characters in length.

To specify a test name, include the test *test-name* statement at the [edit services rpm probe] hierarchy level. The test name identifier can be up to 32 characters in length. A test represents the range of probes over which the standard deviation, average, and jitter are calculated.

To specify the contents of the data portion of ICMP probes, include the data-fill *data* statement at the [edit services rpm probe *owner*] hierarchy level. The value can be a hexadecimal value.

To specify the size of the data portion of ICMP probes, include the data-size *size* statement at the [edit services rpm probe] hierarchy level. The size can be from 0 through 65507.

To specify the UDP port or TCP port to which the probe is sent, include the destination-port *port* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. The destination-port statement is used only for the UDP and TCP probe types.The value can be 7 or from 49152 through 65535.

To specify the value of the Differentiated Services (DiffServ) field within the IP header, include the dscp-code-point *DSCP bits* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. The DiffServ code point (DSCP) bits value can be set to a valid six-bit pattern; for example, 001111. It also can be set using an alias configured at the [edit class-of-service code-point-aliases dscp] hierarchy level. The default is 000000.

To specify the number of stored history entries, include the history-size *size* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. Specify a value from 0 to 255. The default is 50.

To specify the number of probes within a test, include the probe-count *count* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. Specify a value from 1 through 15.

To specify the time to wait between sending packets, include the probe-interval *interval* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. Specify a value from 0 through 255 seconds.

To specify the packet and protocol contents of the probe, include the probe-type *type* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. The following probe types are supported:

http-get—Sends an HTTP GET request to a target URL.

http-metadata-get—Sends an HTTP GET request for metadata to a target URL.

icmp-ping—Sends ICMP echo requests to a target address.

icmp-ping-timestamp—Sends ICMP timestamp requests to a target address.

tcp-ping—Sends TCP packets to a target.

udp-ping—Sends UDP packets to a target.

NOTE: Some probe types require additional parameters to be configured. For example, when you specify the tcp-ping or udp-ping options, you must configure the destination port using the destination-port *port* statement.

To specify the routing instance used by ICMP probes, include the routing-instance *instance-name* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. The default is Internet routing table inet.0.

To specify the source IP address used for ICMP probes, include the source-address *address* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. If the source IP address is not one of the router's assigned addresses, the packet will use the outgoing interface's address as its source.

To specify the destination address used for the probes, include the target-url (*url* | *address*) statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level.

For HTTP probe types, specify a fully formed URL that includes http:// in the URL address.

For all other probe types, specify an IPv4 address for the target host.

To specify the time to wait between tests, include the test-interval *interval* statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. Specify a value from 0 through 86400 seconds.

To specify thresholds used for the probes, include the thresholds statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. A system log message is generated when the configured threshold is exceeded. Likewise, an SNMP trap (if configured) is generated when a threshold is exceeded. The following options are supported:

egress-time—Measures maximum source-to-destination time per probe.

ingress-time—Measures maximum destination-to-source time per probe.

jitter-egress—Measures maximum source-to-destination jitter per test.

jitter-ingress—Measures maximum destination-to-source jitter per test.

jitter-rtt—Measures maximum jitter per test, from 0 through 60000000 microseconds.

rtt—Measures maximum round-trip time per probe, in microseconds.

std-dev-egress—Measures maximum source-to-destination standard deviation per test.

std-dev-ingress—Measures maximum destination-to-source standard deviation per test.

std-dev-rtt—Measures maximum standard deviation per test, in microseconds.

successive-loss—Measures successive probe loss count, indicating probe failure.

total-loss—Measures total probe loss count indicating test failure, from 0 through 15.

Traps are sent if the configured threshold is met or exceeded. To set the trap bit to generate traps, include the traps statement at the [edit services rpm probe *owner* test *test-name*] hierarchy level. The following options are supported:

egress-jitter-exceeded—Generates traps when the jitter in egress time threshold is met or exceeded.

egress-std-dev-exceeded—Generates traps when the egress time standard deviation threshold is met or exceeded.

egress-time-exceeded—Generates traps when the maximum egress time threshold is met or exceeded.

ingress-jitter-exceeded—Generates traps when the jitter in ingress time threshold is met or exceeded.

ingress-std-dev-exceeded—Generates traps when the ingress time standard deviation threshold is met or exceeded.

ingress-time-exceeded—Generates traps when the maximum ingress time threshold is met or exceeded.

jitter-exceeded—Generates traps when the jitter in round-trip time threshold is met or exceeded.

probe-failure—Generates traps for successive probe loss thresholds crossed.

rtt-exceeded—Generates traps when the maximum round-trip time threshold is met or exceeded.

std-dev-exceeded—Generates traps when the round-trip time standard deviation threshold is met or exceeded.

test-completion—Generates traps when a test is completed.

test-failure—Generates traps when the total probe loss threshold is met or exceeded.

Configuring the Server

The TCP and UDP probes are proprietary to Juniper Networks and require a receiver to receive the probes. To configure the server to receive the probes, include the probe-server statement at the [edit services rpm] hierarchy level:

```
[edit services rpm]
    probe-server {
        tcp port;
        udp port;
}
```

The port number specified for the UDP and TCP server can be 7 or from 49152 through 65535.

Configuring the Maximum Number of Probes

To configure the maximum number of concurrent probes allowed, include the probe-limit *limit* statement at the [edit services rpm] hierarchy level:

```
[edit services rpm]
probe-limit limit;
```

Specify a limit from 1 through 500.The default maximum number is 100.

Example: Configuring an RPM Instance

The following example configures an RPM instance identified by the probe name probe1 and the test name test1:

```
[edit services rpm]
probe probe1{
      test test1 {
         target address 172.17.20.182;
         dscp-code-points 001111;
         traps rtt-exceeded;
         thresholds
         probe-interval 1;
         probe-type icmp-ping;
         test-interval 20;
      {
      rtt 10;
      }
}
probe-server {
    tcp {
        port 50000;
    }
    udp {
        port 50001;
    }
}
probe-limit 200;
}
```