Real User Monitor

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Real User Monitor Sizing Guide

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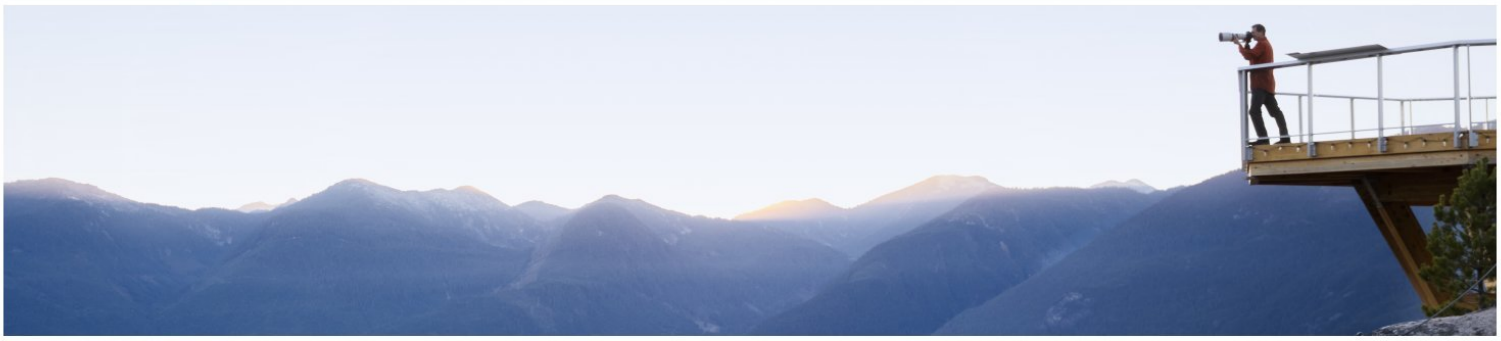

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Contents

Chapter 1: Introduction

This document provides guidelines for sizing Real User Monitor (RUM) and includes the following topics:

General Description

Real User Monitor (RUM) sizing depends on three components—the RUM Probe, the RUM Engine, and Application Performance Management (APM).

Each of these components is affected by one major parameter:

Component	Parameter
RUM Probe	Megabits/sec of monitored traffic.
RUM Engine	Total number of page hits per second for all probes connected to the RUM Engine.
APM	Total number of samples per second (EPS) for all the RUM Engines connected to APM.

General Deployment Considerations

Multiple components (engines and probes) must be deployed regardless of capacity considerations in the following instances:

- The monitored environment includes several geographical locations. When dealing with several geographical locations, more than one probe must be used, even if network traffic is low. For example, if two data centers are located in different cities, a separate probe should be used for each data center, with both probes reporting to the same RUM Engine.
- There is no possibility of port mirroring or a TAP to one probe, due to network topology constraints (even though RUM is monitoring one data center). In this case, multiple probes are required.
- IP ranges of different subnets intersect. For example, two subnets both use the 192.168.X.1-192.168.X.255 IP range. In this case, a RUM Engine will need to be installed for each subnet and a routing domain will need to be defined in APM Admin for each RUM Engine.

Note: The numbers obtained from the sizing calculator are based on an end to end stack where there is a 1 probe is configured to 1 engine.

Chapter 2: RUM Probe Sizing

This chapter includes the following topics relating to the RUM Probe:

Note: Probe capacity may vary among different protocols based on their nature, configurations, and deployment. To obtain additional data on probe capacity in regards to specific protocols, contact Support.

RUM Sniffer Probe Sizing Parameters

The upper limit of traffic for a single RUM Sniffer Probe is up to 700 Mbps (for HTTP with a loaded configuration). The following are the most significant parameters that affect the number of RUM Sniffer Probe machines needed for a deployment:

- Amount of traffic in megabits/sec of monitored (**not** total) traffic
- Application type (HTTP, TCP, DB, and so forth)
- Traffic type (HTTP/HTTPS)
- Number of text searches
- Snapshot on Error configuration
- Operating system

Tip: You can significantly reduce the performance overhead of text pattern events by defining them on specific actions, rather than globally.

RUM Client Monitor Probe Sizing Parameters

The RUM Client Monitor Probe supports up to:

- 2000 pages a second.
- 150k concurrent mobile devices.

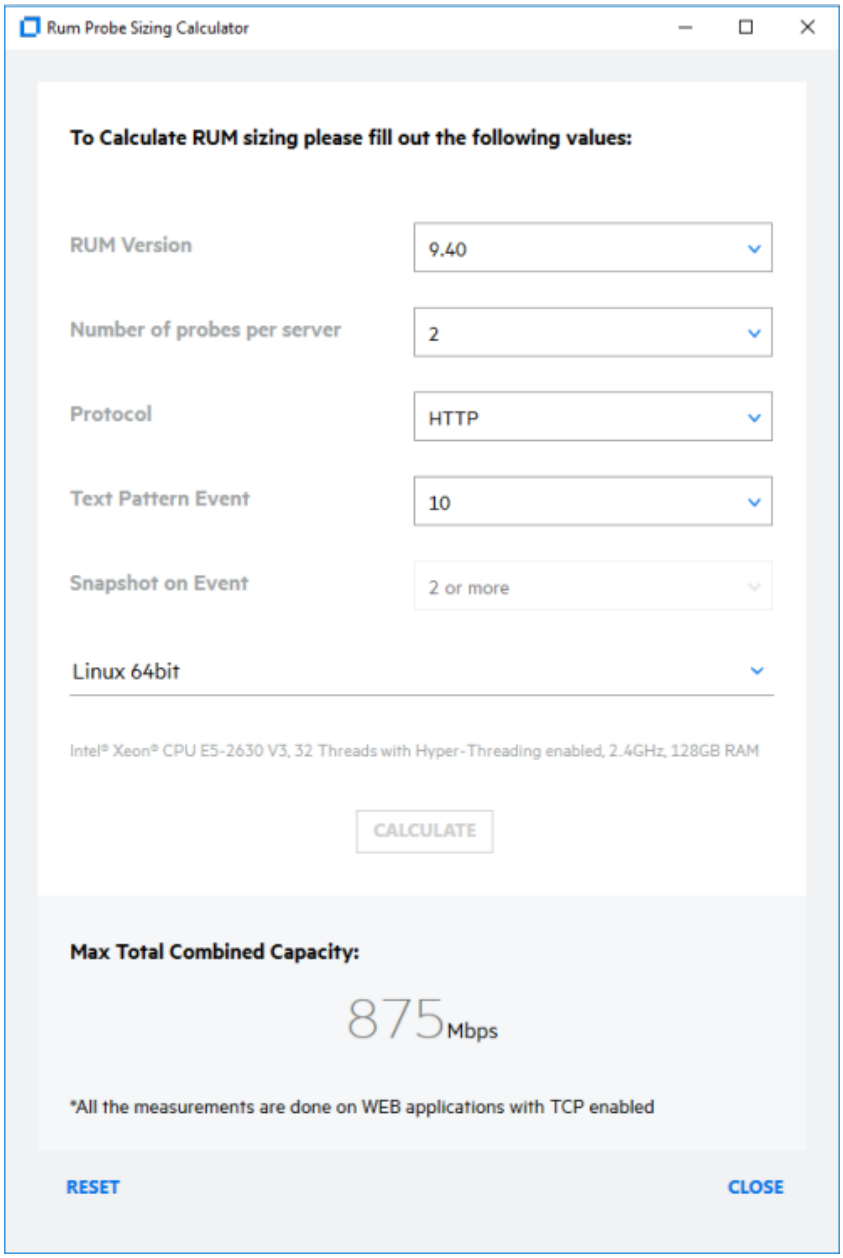
How to Use the Sizing Calculator

You use the RUM Probe sizing calculator to help you calculate the recommended maximum traffic capacity (in megabits/sec) for RUM Sniffer Probes. (For additional information on manually calculating this measurement in an existing environment, see "Appendix A: How to Obtain Required Sizing Information" on page 12.)

Note: The sizing calculator recommendations are based on the recommended (and not the minimum) system hardware requirements. For RUM system requirements, refer to the Real User Monitor Installation and Upgrade Guide.

You can download the 9.50 RUM Probe Sizing Calculator from the Software Support web site.

A valid Passport login is required to access the Software Support site.



Since each customer or test environment is unique, the performance numbers vary significantly. Note that the objective of the details and the benchmarking numbers mentioned in this section is only for a high level reference guideline and may vary from observations in customer environment.

In the sizing calculator, enter the following parameters and then click **Calculate** to obtain the result:

Rum Version

From the drop down menu, select the relevant RUM version.

Number of Probes

Select the number of required probes. You can select multiple probes according to your needs and your server configuration.

Protocol

The sizing calculator includes an option to indicate if the monitored traffic is HTTP or HTTPS.

Text Pattern Events

In general, the number of searches in the request or response content reduces probe performance. Searches can be configured on different field types.

Searches on the request-response content can also be part of the following configurations:

- Extracted parameters
- User name detection
- Session properties

The number of searches on the content can be configured in the calculator in the Text Pattern Event field. You cannot configure more than 10 active text pattern events for a single application tier.

Note: You can configure searches by using custom regular expressions. These searches may include very inefficient patterns which are not taken into account by the sizing calculator.

Snapshot on Event

The following Snapshot on Error parameters affect probe performance:

- Number of snapshots on event
- Snapshot on event mode (number of pages back). If this is set to more than one, performance is lower.

Operating system

In the calculator, select your operating system. The most efficient operating system is Linux 64-bit.

Notes on Application types

- A SOAP application automatically defines five content searches on a probe.
- A Siebel application may decrease RUM Probe performance by about 20% from the calculated size on machines with less than 8 GB.

Chapter 3: RUM Engine Sizing

The upper limit of one RUM Engine can vary from 100 to 2000 pages/sec. The following parameters are the most significant parameters that affect the number of RUM Engine machines required for a deployment:

- Hardware deployment
- RUM Deployment (for example, typical or distributed)
- Amount of traffic (measured in pages/sec or actions/sec)
- Monitoring configuration (application types and configuration)

Hardware Deployment

One Server with Two Disks

One Server with two physical disks is the most recommended deployment architecture. For this type of deployment, sizing is calculated for 64-bit machines. The upper limit for RUM can vary from 100 to 2000 pages/sec.

Two Servers Deployment

There is an option to use two separate machines, one for the engine and the other for the database. This is almost the same as using one machine with two disks.

One Server Deployment with One Disk

We do not recommend one server deployment with one disk for the engine and database. This deployment is supported for two scenarios—for customers who do not want to enable clickstream, or for a low traffic environment.

One server deployment supports up to 100 pages/sec with clickstream enabled, or up to 500 pages/sec with clickstream disabled.

Sizing Parameters

Note: The following parameters are applicable for RUM installed on 64-bit based operating systems, which is the recommended type of operating system.

Generally, HTTP and other front-end applications consume more resources than other protocols.

RUM Engine modes can influence capacity as follows:

Mode	Pages/Sec
Clickstream on, Snapshot mode - 0 pages back	2000
Clickstream on, Snapshot mode - 1 page back	450

Mode	Pages/Sec
Clickstream on, Snapshot mode - 5 pages back	300

The engine may be capable of handling higher numbers if clickstream is not enabled (formal numbers are not available).

Note: There are no sizing parameters for TCP Streaming/TCP request response protocols.

Chapter 4: RUM Repository

The RUM Repository stores the majority of data and requires 2 terabytes for each two weeks of monitored traffic. This requirement is based on the following assumptions:

- Clickstream is enabled and the engine is operating at maximum capacity
- The tables for actions and pages are the heaviest
- Each row (action or page) inserted in the database uses approximately 2.2 Kb
- An average of 2000 pages per second
- An average of 9 busy hours per day
- 14 days of data stored in the repository

The calculation is: 2.2*2000*3600*9*14 = 1904 GB.

When taking into consideration minimal saved events and snapshots, the total is adjusted to 2 terabytes of disk space.

Tip: You can significantly improve RUM Repository performance by tuning its hardware and configuration.

Chapter 5: APM Sizing

APM has its own sizing calculator. Use this calculator to decide which deployment architecture matches your needs. This section describes the effect of the configuration on the amount of traffic sent to APM version 9.x.

The calculator estimates the number of samples sent to APM by one RUM Engine according to the following parameters:

- Number of concurrent sessions
- Number of locations
- Number of defined applications configured in APM

Tip: As a rule of thumb, it is estimated that one engine sends up to 200 EPS to APM.

If the EPS is high, you can reduce the EPS by disabling the **rum_session_t** sample. The functional regression of disabling this sample is:

- The Session Summary and Session Analyzer reports will only include sessions for the last two weeks (the default saved on the RUM Engine).
- You will not be able to use this sample to build reports in the custom query builder.

For more details, refer to "Appendix B: How to Stop Sending Session Samples to APM" on page 14.

Metric Calculation

Sessions

A session is the number of concurrent users for an application. In APM, you can retrieve this value from the APM Dashboard.

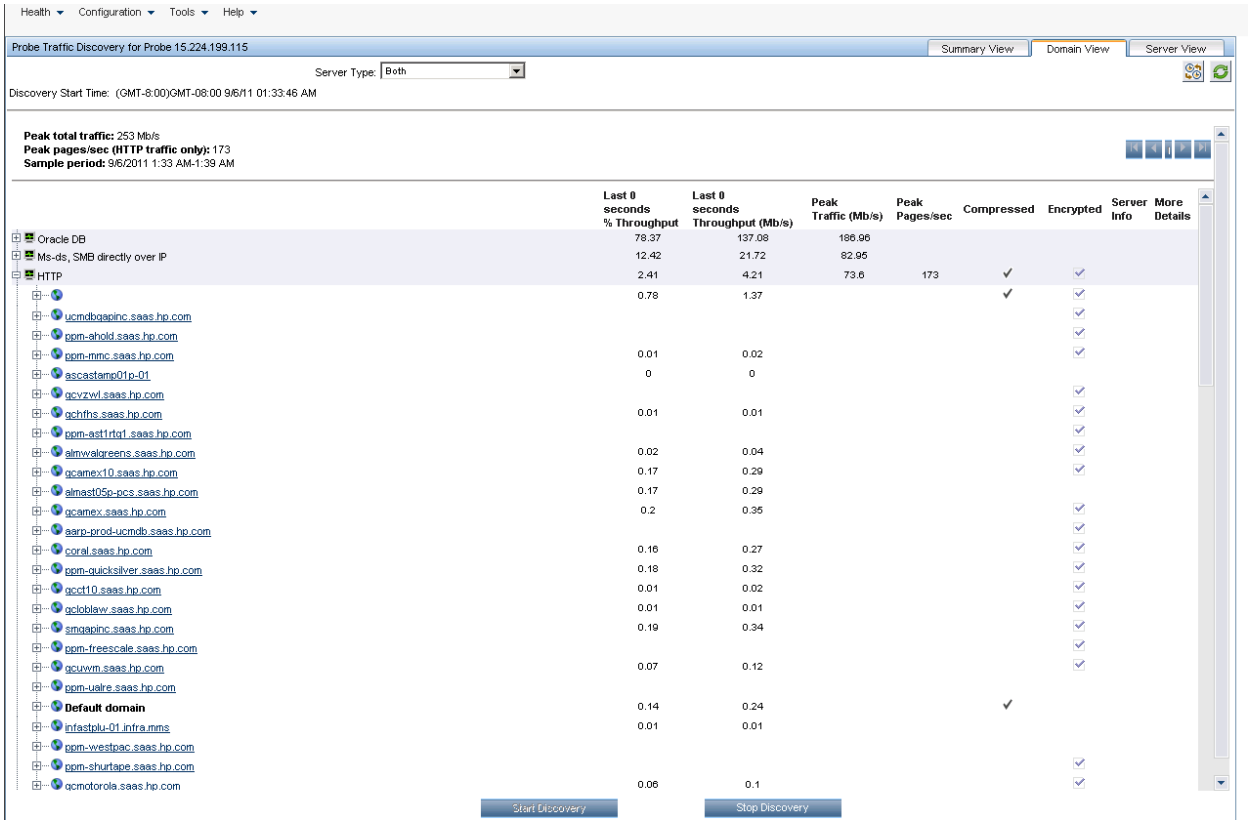
Locations

The number of different locations accessed in a 15 minute period. This metric is hard to obtain in servers exposed to the WWW. In such a case, if the number of locations cannot be determined, use 1000 as the default value for large systems.

Appendix A: How to Obtain Required Sizing Information

Megabits/Sec

When RUM is installed, you can obtain accurate traffic load data. The main source for this is the RUM Probe Traffic Discovery tool in the RUM Engine web console. You run traffic discovery for a probe. In the RUM web console, select **Configuration** > **Probe Management** > **Probe Traffic Discovery** > **Start Discovery**. When complete, use the peak traffic value for each Server/Domain/Protocol.



	Last 0 seconds % Throughput	Last 0 seconds Throughput (Mb/s)	Peak Traffic (Mb/s)	Peak Pages/sec	Compressed	Encrypted	Server Info	More Details
Oracle DB	78.37	137.08	186.96					
Ms-ds, SMB directly over IP	12.42	21.72	82.95					
HTTP	2.41	4.21	73.6	173	✓	✓		
	0.78	1.37			✓	✓		
ucmdbqapinc.saas.hp.com						✓		
ppm-ahold.saas.hp.com						✓		
ppm-mmc.saas.hp.com	0.01	0.02				✓		
ascastamp01p-01	0	0						
qcvzwl.saas.hp.com						✓		
qchfhs.saas.hp.com	0.01	0.01				✓		
ppm-ast1rtq1.saas.hp.com						✓		
almwalqreens.saas.hp.com	0.02	0.04				✓		
qcamex10.saas.hp.com	0.17	0.29				✓		
almast05p-pcs.saas.hp.com	0.17	0.29						
qcamex.saas.hp.com	0.2	0.35				✓		
aarp-prod-ucmdb.saas.hp.com						✓		
coral.saas.hp.com	0.16	0.27				✓		
ppm-quicksilver.saas.hp.com	0.18	0.32				✓		
qcct10.saas.hp.com	0.01	0.02				✓		
qcloblaw.saas.hp.com	0.01	0.01				✓		
smqapinc.saas.hp.com	0.19	0.34				✓		
ppm-freescale.saas.hp.com						✓		
qcuwm.saas.hp.com	0.07	0.12				✓		
ppm-ualre.saas.hp.com								
Default domain	0.14	0.24			✓			
infastplu-01.infra.mms	0.01	0.01						
ppm-westpac.saas.hp.com								
ppm-shurtape.saas.hp.com						✓		
qcmotorola.saas.hp.com	0.06	0.1				✓		

If RUM is not yet installed, you must obtain the information using the network statistic tools installed in your environment, or from previous history.

Pages/Sec

To obtain the correct value for pages/sec:

1. Use the **Peak Traffic (Mbps)** value that is displayed for each protocol in the RUM Probe Traffic Discovery tool in the RUM Engine web console.
2. As a rule of thumb, each 30 Mbps equates to 100 pages/sec. To calculate the pages/sec, divide the Peak Traffic value from step 1 by 30 and multiply the result by 100. This method is a little problematic as it applies to only about 60% of installation. For sites with many graphics, the rate is smaller. In most

cases, this is the only measurement available, so add 50% more pages (150 pages/sec) as a safety margin.

An alternative method for estimating pages/sec is to gather information from web server logs. This is the most accurate measurement, but in most cases it is hard to obtain.

Number of Sessions

In APM 9.X, you can obtain this value by selecting **Application** > **End User Management** > **Status reports** > **Application Health** > **Sessions Over Time** pane.

If APM 8.X is installed, you can view current open sessions in the APM Dashboard. Check this number during peak hours.

Appendix B: How to Stop Sending Session Samples to APM

To reduce EPS (event per second) to APM by more than 60%, stop sending session samples to APM. To stop sending session samples:

1. Stop the engine
2. Comment out the following lines in the **RUM\conf\publisher\publisher.xml** file using xml comments `!--` and `--`:
   a. `<sampleDef class="com.mercury.rum.engine.publisher.samples.SessionSample" sampleName="rum_session_t"/>`
   b. `<sampleDef class="com.mercury.rum.engine.publisher.samples.SessionIdSample" sampleName="rum_session_id_t"/>`
   c.
```
<messageDef messageType="Session"
objectProcessorFactory="com.mercury.rum.engine.publisher.samplebuilder.objectproc
essor.MultiSampleObjectProcessorFactory">
          <objectProcessor sampleName="rum_session_t"/>
            <objectProcessor sampleName="rum_session_id_t"/>
        </messageDef>
```
3. Start the engine.

The following example shows the file with the relevant lines commented out:

```
<publisher>

    <samples>
        <sampleDef sampleName="rum_trans_t"/>
        <sampleDef sampleName="rum_event_t"/>
        <sampleDef sampleName="rum_session_stats_t"/>
        <!--sampleDef sampleName="rum_session_t"/-->
        <sampleDef sampleName="rum_application_stats_t"/>
        <sampleDef sampleName="rum_tcp_application_stats_t"/>
        <sampleDef sampleName="rum_top_action_t"/>
        <sampleDef sampleName="rum_most_error_action_t"/>
        <sampleDef sampleName="rum_slow_action_t"/>
        <sampleDef sampleName="rum_slow_location_t"/>
        <sampleDef sampleName="rum_top_location_t"/>
        <sampleDef sampleName="rum_slow_eu_t"/>
        <sampleDef sampleName="rum_active_eu_t"/>
        <sampleDef sampleName="rum_bro_links_t"/>
        <!--sampleDef sampleName="rum_session_id_t"/-->
        <sampleDef sampleName="rum_tcp_app_status_t"/>
        <sampleDef sampleName="rum_action_t"/>
    </samples>
    <messages>
        <messageDef messageType="AggTransaction" sampleName="rum_trans_t"/>
        <messageDef messageType="Transaction" sampleName="rum_trans_t"/>
        <messageDef messageType="TopPage" sampleName="rum_top_action_t"/>
        <messageDef messageType="SlowPage" sampleName="rum_slow_action_t"/>
```

```
        <messageDef messageType="SlowDomain" sampleName="rum_slow_eu_t"/>
        <messageDef messageType="TopDomain" sampleName="rum_active_eu_t"/>
        <messageDef messageType="MissingComponent" sampleName="rum_bro_links_t"/>
        <messageDef messageType="Event" sampleName="rum_event_t"/>
        <messageDef messageType="AggActionEvent" sampleName="rum_most_error_action_t"/>
        <messageDef messageType="SessionStats" sampleName="rum_session_stats_t"/>
        <!--messageDef messageType="Session"
objectProcessorFactory="com.mercury.rum.engine.publisher.samplebuilder.objectprocesso
r.MultiSampleObjectProcessorFactory">
            <objectProcessor sampleName="rum_session_t"/>
            <objectProcessor sampleName="rum_session_id_t"/>
          </messageDef-->
        <messageDef messageType="TCPApplicationStatus" sampleName="rum_tcp_app_status_t"/>
        <messageDef messageType="ApplicationStatistics" sampleName="rum_application_stats_t"/>
        <messageDef messageType="TCPApplicationStatistics" sampleName="rum_tcp_application_stats_t"/>
        <messageDef messageType="SlowLocation" sampleName="rum_slow_location_t"/>
        <messageDef messageType="TopLocation" sampleName="rum_top_location_t"/>
        <messageDef messageType="AggAction" sampleName="rum_action_t"/>
    </messages>
</publisher>
```

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