

HP Real User Monitor

Software Version: 9.26

Real User Monitor Sizing Guide

Document Release Date: September 2015
Software Release Date: September 2015



Legal Notices

Warranty

The only warranties for HP products and services are set forth in the express warranty statements accompanying such products and services. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

The information contained herein is subject to change without notice.

Restricted Rights Legend

Confidential computer software. Valid license from HP required for possession, use or copying. Consistent with FAR 12.211 and 12.212, Commercial Computer Software, Computer Software Documentation, and Technical Data for Commercial Items are licensed to the U.S. Government under vendor's standard commercial license.

Copyright Notice

© Copyright 2005-2016 Hewlett-Packard Development Company, L.P.

Trademark Notices

Adobe® and Acrobat® are trademarks of Adobe Systems Incorporated.

AMD and the AMD Arrow symbol are trademarks of Advanced Micro Devices, Inc.

Google™ and Google Maps™ are trademarks of Google Inc.

Intel®, Itanium®, Pentium®, and Intel® Xeon® are trademarks of Intel Corporation in the U.S. and other countries.

iPod is a trademark of Apple Computer, Inc.

Java is a registered trademark of Oracle and/or its affiliates.

Microsoft®, Windows®, Windows NT®, Windows XP, and Windows Vista® are U.S. registered trademarks of Microsoft Corporation.

Oracle is a registered trademark of Oracle Corporation and/or its affiliates.

UNIX® is a registered trademark of The Open Group.

Documentation Updates

The title page of this document contains the following identifying information:

- Software Version number, which indicates the software version.
- Document Release Date, which changes each time the document is updated.
- Software Release Date, which indicates the release date of this version of the software.

To check for recent updates or to verify that you are using the most recent edition of a document, go to: <https://softwaresupport.hp.com/group/softwaresupport/search-result?keyword=>.

This site requires an HP Passport account. If you do not have one, click the **Create an account** button on the HP Passport Sign in page.

Support

Visit the HP Software Support web site at: <https://softwaresupport.hp.com>

This web site provides contact information and details about the products, services, and support that HP Software offers.

HP Software Support provides customer self-solve capabilities. It provides a fast and efficient way to access interactive technical support tools needed to manage your business. As a valued support customer, you can benefit by using the support web site to:

- Search for knowledge documents of interest
- Submit and track support cases and enhancement requests
- Download software patches
- Manage support contracts
- Look up HP support contacts
- Review information about available services
- Enter into discussions with other software customers
- Research and register for software training

Most of the support areas require that you register as an HP Passport user and sign in. Many also require a support contract. To register for an HP Passport ID, go to <https://softwaresupport.hp.com> and click **Register**.

To find more information about access levels, go to: <https://softwaresupport.hp.com/web/softwaresupport/access-levels>

HP Software Integrations, Solutions and Best Practices

Visit the Integrations and Solutions Catalog at <https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM01702710> to explore how the products in the HP Software catalog work together, exchange information, and solve business needs.

Visit the Cross Portfolio Best Practices Library at <https://hpln.hp.com/group/best-practices-hpsw> to access a wide variety of best practice documents and materials.

Contents

Chapter 1: Introduction	5
General Description	5
General Deployment Considerations	5
Chapter 2: RUM Probe Sizing	7
RUM Sniffer Probe Sizing Parameters	7
RUM Client Monitor Probe Sizing Parameters	7
How to Use the Sizing Calculator	8
Chapter 3: RUM Engine Sizing	10
Hardware Deployment	10
Sizing Parameters	10
Chapter 4: RUM Repository	12
Chapter 5: BSM Sizing	13
Metric Calculation	13
Appendix A: How to Obtain Required Sizing Information	14
Appendix B: How to Stop Sending Session Samples to BSM	16
Send Documentation Feedback	18

Chapter 1: Introduction

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

- ["RUM Probe Sizing" on page 7](#)
- ["RUM Engine Sizing" on page 10](#)
- ["RUM Repository" on page 12](#)
- ["BSM Sizing" on page 13](#)

General Description

Real User Monitor (RUM) sizing depends on three components—the RUM Probe, the RUM Engine, and Business Service Management (BSM).

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.
BSM	Total number of samples per second (EPS) for all the RUM Engines connected to BSM.

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 BSM Admin for each RUM Engine.

Chapter 2: RUM Probe Sizing

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

- ["RUM Sniffer Probe Sizing Parameters" below](#)
- ["RUM Client Monitor Probe Sizing Parameters" below](#)
- ["How to Use the Sizing Calculator" on the next page](#)

RUM Sniffer Probe Sizing Parameters

The upper limit of traffic for a single RUM Sniffer Probe varies between 40 megabits/sec (for HTTP with a loaded configuration) to 900 megabits/sec (TCP-level only). 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 14.)

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 RUM Probe 9.10 Sizing Calculator (which is also applicable for RUM 9.2x) from the HP Software Support Online web site, using the following URL:

<https://softwaresupport.hp.com/group/softwaresupport/search-result/-/facetsearch/document/KM1328643>

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

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

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.

In SOAP applications, there are five predefined text searches on the content, by default.

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.
- Other protocols can handle about 300 Mbps (although formal numbers are not yet available).

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
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: BSM Sizing

BSM 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 BSM version 9.x.

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

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

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

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 BSM" on page 16](#).

Metric Calculation

Sessions

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

Business Service Management - Real User Monitor Engine

Health Configuration Tools Help

User: Administrator Logout

Probe Traffic Discovery for Probe 15.224.199.115

Server Type: Both

Discovery Start Time: (GMT-8:00)GMT-08:00 9/6/11 01:33:46 AM

Summary View Domain View Server View

Peak total traffic: 253 Mb/s
Peak pages/sec (HTTP traffic only): 173
Sample period: 9/6/2011 1:33 AM-1:39 AM

	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	198.96					
Ms-ds, SMB directly over IP	12.42	21.72	82.95					
HTTP	2.41	4.21	73.6	173	✓	✓		
ucmdbqaehc.saas.hp.com	0.78	1.37			✓	✓		
pem-ahold.saas.hp.com						✓		
pem-rmc.saas.hp.com						✓		
ascstamp01n-01	0.01	0.02				✓		
gcqvwl.saas.hp.com	0	0				✓		
qchfs.saas.hp.com	0.01	0.01				✓		
pem-asttr01.saas.hp.com						✓		
almwalgreens.saas.hp.com	0.01	0.01				✓		
qcmex10.saas.hp.com	0.02	0.04				✓		
almast05e-pcs.saas.hp.com	0.17	0.29				✓		
qcmex.saas.hp.com	0.17	0.29				✓		
qcmex.saas.hp.com	0.2	0.35				✓		
saarc-prod-ucmdb.saas.hp.com						✓		
coral.saas.hp.com	0.16	0.27				✓		
pem-quicksilver.saas.hp.com	0.18	0.32				✓		
gcct10.saas.hp.com	0.01	0.02				✓		
qcktblaw.saas.hp.com	0.01	0.01				✓		
smaehc.saas.hp.com	0.01	0.01				✓		
smasahc.saas.hp.com	0.19	0.34				✓		
pem-freescale.saas.hp.com						✓		
qcuvm.saas.hp.com	0.07	0.12				✓		
pem-usaire.saas.hp.com						✓		
Default domain	0.14	0.24			✓			
infstrku-01.infra.mms	0.01	0.01				✓		
pem-westpac.saas.hp.com						✓		
pem-shurtape.saas.hp.com						✓		
qcmotorola.saas.hp.com	0.06	0.1				✓		

Start Discovery Stop Discovery

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 (Mb/s)** 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 Mb/s 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 BSM 9.X, you can obtain this value by selecting **Application > End User Management > Status reports > Application Health > Sessions Over Time** pane.

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

Appendix B: How to Stop Sending Session Samples to BSM

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

1. Stop the engine
2. Comment out the following lines in the **HPRUM\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.objectprocessor.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.objectprocessor.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>
```

Send Documentation Feedback

If you have comments about this document, you can [contact the documentation team](#) by email. If an email client is configured on this system, click the link above and an email window opens with the following information in the subject line:

Feedback on Real User Monitor Sizing Guide (Real User Monitor 9.26)

Just add your feedback to the email and click send.

If no email client is available, copy the information above to a new message in a web mail client, and send your feedback to SW-doc@hp.com.

We appreciate your feedback!