



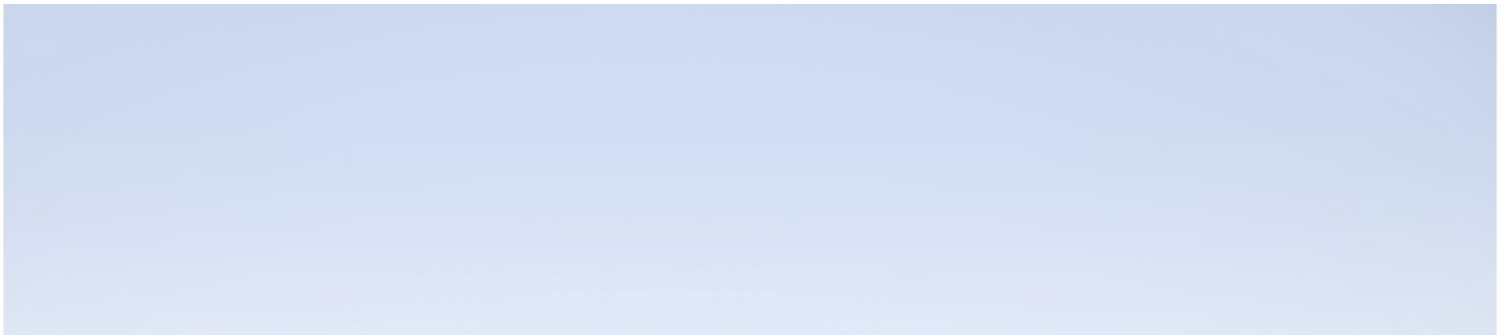
**Hewlett Packard**  
Enterprise

# Real User Monitor

Version 9.40, Released August 2017

## RUM Multi Instance Probe Deployment

Published August 2017



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# Chapter 1: Overview

RUM multi instance probe deployment provides you with the ability to install more than one RUM sniffer probe for each server.

The deployment helps reduce the total cost of ownership (TCO) in monitoring applications and increases the capacity of the monitored network traffic for deployed hardware.

By installing multiple instances of the probe on the same hardware machine, fewer servers are required. This lowers the cost of monitoring and reduces the hardware, data center footprint, maintenance overhead, infrastructure management, and support costs.

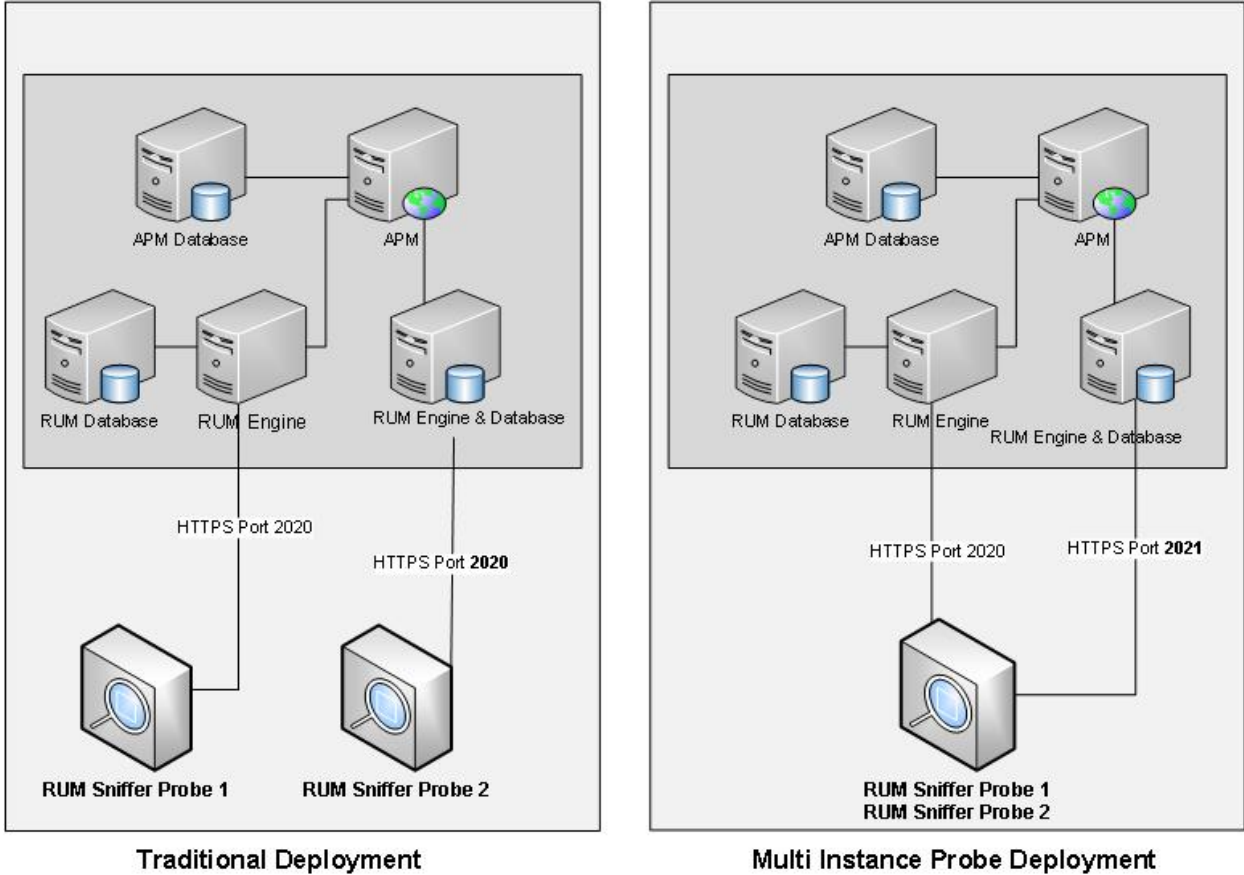
The following sections outline the deployment attributes and best practices in multi instance probe deployment.

The intended audience of this document includes IT application owners, line of business owners, DevOps leads, infrastructure managers, professional services, and support executives.

# Chapter 2: Deployment Architecture

In a traditional deployment, each RUM sniffer probe is hosted on a different server. In a multi instance probe deployment, multiple instances of the sniffer probe are deployed on the same host.

The following figure shows the difference between a traditional deployment and multi instance probe deployment. The upper section of the figure includes APM and the Engine which remain unchanged. The change is in the number and type of hardware used for the multi instance probe. The TCP port used by the additional probes to talk to the RUM Engine also changes.



# Chapter 3: System Requirements

This section describes the system requirements for a multi instance probe deployment.

	Minimum	Recommended
Operating System	RHEL 7.x	RHEL 7.2 or higher
Processor	Intel Xeon E5-2620 v2 @ 2.10GHz, 12 Threads with Hyper Threading enabled	Intel® Xeon® CPU E5-2630 V3 @ 2.40GHz 32 Threads with Hyper Threading enabled or stronger
Hard Drive	280 GB	Separate physical hard disk for each probe. Recommended 500 GB hard drive or bigger.
Memory	64 GB 16 GB per RUM Probe	128 GB or higher 20 GB per RUM Probe
Network	2 NICs, one for management, one for sniffing	1 NIC for management, 1 NIC per probe instance
RUM Probe Version	9.40	9.40

# Chapter 4: Configuration and Deployment

This section details how to configure, deploy, and manage the multi instance probe deployment.

## Configuring a Multi Instance Probe

1. Install a RUM probe.

**Note:** A standard RUM probe installation is a pre-requisite for installing additional probes.

2. Connect only one RUM probe to a RUM Engine. The Engine should not have any other RUM probes connected.
3. The application configuration should be as specific as possible. It is recommended to specify the server IP and server port of an application, along with the URL, if possible. This allows each of the monitoring probes to filter out data it does not need to monitor.
4. For optimal solution performance, it is recommended to divide the monitored traffic as equally as possible among all the probes.
5. The following settings can help to obtain good performance. On the RUM Engine machine in the **HPRUM\conf\configurationmanager\Beatbox\_Default\_Const\_Configuration.xml** file or probe specific Beatbox file:
  - Set **processor\_threads** to **12**
  - Set **maximum\_queue\_size** to **4000000**
  - Set **global\_skip\_checksum** to **true**

## Deploying a Multi Instance Probe

1. Install a RUM Sniffer Probe. For RUM probe installation instructions, see the [RUM Install Guide](https://softwaresupport.hpe.com/km/KM02505679) (<https://softwaresupport.hpe.com/km/KM02505679>).
2. Deploy additional probes using the "add" on page 10 command in the Multi Instance Probe Deployment script. We recommend having a total of four probe instances on the probe machine. Therefore, run the "add" on page 10 command a total of three times.

The following example starts the RUM probe listening on port 2021.

```
/etc/init.d/rum_probe-capture-2021 start
```



## Managing Multi Instance Probe

- The "[list](#)" on [page 11](#) command in the Multi Instance Probe Deployment script can be used to display a list of the additional deployed probes.
- The "[remove](#)" on [page 11](#) command in the Multi Instance Probe Deployment script can be used to remove a specific or all instances of the additional deployed RUM probes.
- Use the *stop/restart/status* commands in the RUM Probe Service to stop/restart/get the status of the additional RUM probes. The following example stops/restarts/gets the RUM probe listening on port 2021.

```
/etc/init.d/rum_probe-capture-2021 start  
/etc/init.d/rum_probe-capture-2021 stop  
/etc/init.d/rum_probe-capture-2021 status
```

# Chapter 5: Multi Instance Probe Deployment Script

Use the `rp_dup.sh` script to add, list, or remove additional probes for multi instance probe deployment. The script can be found in the `/usr/bin/` folder on the RUM probe machine.

## help

Use the `help` parameter in a script to access additional details.

```
[root@btpvm0060 ~]# ./rp_dup.sh --help
usage: rp_dup.sh [--command] [arguments]
Add/remove/list additional probes for Multi Probe Deployment
  --help                : Display the help
  --list                : Lists the additional sniffer probes with names
  --add <target_dir> <port> : Create an additional instance of the sniffer probe
  target_dir            : Absolute path to the directory to which the sniffer
probe will be added
  port                  : The tcp port the additional sniffer probe will
listen to
  --remove <name>      : Removes the sniffer probe referred by the name shown
in the list option.
  name                  : To remove a single instance, use the name shown in
the list option. To remove all additional instances, use all.
```

## add

Use the following duplication script to duplicate instances of an already installed probe. Each invocation of the command adds a single instance of an additional probe.

```
[root@btpvm0060 bin]# ./rp_dup.sh --add /home/hemant/AdditionalProbe1 2021
A copy of sniffer probe installation will be made.
The content of destination probe's base directory will be wiped off before
proceeding!
```

```
Review the installation paths with care before confirming to proceed!  
Source probe's base directory:/  
Destination probe's base directory:/home/hemant/AdditionalProbe1/  
Destination probe's web console port:2021  
Do you wish to continue? [y/n]...y  
Proceeding.....  
Created symlink from /etc/systemd/system/multi-user.target.wants/rum_probe-capture-  
2021.service to /usr/lib/systemd/system/rum_probe-capture-2021.service.
```

## list

Use the `list` command to list the additional installed probes. It displays the name of the probe and the installation path.

```
[root@btpvm0060 user]# rp_dup.sh -list  
rum_probe-capture-2021 /home/user/AdditionalProbe1/  
rum_probe-capture-2022 /home/user/AdditionalProbe2/  
rum_probe-capture-2023 /home/user/AdditionalProbe3/  
rum_probe-capture-2024 /home/user/AdditionalProbe4/
```

## remove

Use the `remove` command to remove a specific probe by providing its name. The name of the probe can be found in the first column of the `list` command output. The successful removal of a probe can be verified by using the `list` command.

```
[root@btpvm0060 user]# rp_dup.sh --remove rum_probe-capture-2025  
Stopping rum_probe-capture-2025 (via systemctl): [ OK ]  
Removed symlink /etc/systemd/system/multi-user.target.wants/rum_probe-capture-  
2025.service.  
Stopping rum_probe-capture-2026 (via systemctl): [ OK ]  
You can also remove all the additional probes by specifying "all" as the name. The following examples  
shows a failure in shutting down the probes since the processes were not running.  
[root@btpvm0060 user]# rp_dup.sh --remove all  
Stopping rum_probe-capture-2021 (via systemctl): [ OK ]
```

```
Removed symlink /etc/systemd/system/multi-user.target.wants/rum_probe-capture-2021.service.  
Stopping rum_probe-capture-2021 (via systemctl):          [ OK ]  
Stopping rum_probe-capture-2022 (via systemctl):          [ OK ]  
Removed symlink /etc/systemd/system/multi-user.target.wants/rum_probe-capture-2022.service.  
Stopping rum_probe-capture-2022 (via systemctl):          [ OK ]  
Stopping rum_probe-capture-2023 (via systemctl):          [ OK ]  
Removed symlink /etc/systemd/system/multi-user.target.wants/rum_probe-capture-2023.service.  
Stopping rum_probe-capture-2023 (via systemctl):          [ OK ]  
]
```

You can verify that a probe was removed successfully by listing the additional probes.

```
[root@btpvm0060 user]# rp_dup.sh --list  
[root@btpvm0060 user]#
```

# Chapter 6: Troubleshooting

Problem	Solution
Failure to add an additional probe	<ul style="list-style-type: none"><li>• Verify that an existing RUM probe installation exists</li><li>• Verify that the folder where the additional probe is being installed exists</li></ul>
Failure to remove an existing additional probe	<ul style="list-style-type: none"><li>• Use the <code>List</code> command to list all the additional probes</li><li>• Use the value in the first column to delete the additional probe</li></ul>
Status of addition/removal of additional probe is unclear	<ul style="list-style-type: none"><li>• Use the <code>List</code> command to display the list of additional probes installed.</li><li>• Use the <code>add</code> command to add a new entry to the list.</li><li>• Use the <code>remove</code> command to remove the relevant probe from the list.</li></ul>

To detect if the RUM Probe is working beyond its monitoring capacity, view the values in the Probe Queue Overflow Count and the Probe Queue Overflow Last Occurrence time. See the [RUM Administration Guide](https://softwaresupport.hpe.com/km/KM02505668) (<https://softwaresupport.hpe.com/km/KM02505668>) for details.

# Appendix: Performance Benchmarking

This section details the setup used for the tests that measured the performance of the multi instance probe deployment as well as the performance results.

Performance tests were conducted for HTTP and HTTPS protocols. The number of configured Text Pattern Events (TPE) and the number of configured Snapshots (SS) affect the overall performance. The number of TPEs and SSs were varied and the performance values with the variations were measured.

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.

## Test Setup and Environment

The setup and environment used in the performance measurements is detailed in this section. This includes the hardware, operating system, and applications used for the measurements, as well as the network settings.

Attribute	Value
RUM Probe	HP DL380 Gen9, 32 Threads Intel® Xeon® CPU E5-2630 V3 @ 2.40GHz. Hyper-threading enabled. 837 GB HDD. 128 GB RAM. Linux 7.2, latest NIC drivers
Load Generators	4 Load Generators running on HP DL380 Gen9. Windows Server 2012 R2. HPE LoadRunner Controllers running on each machine. Think time, pacing time in LoadRunner script were given reasonable values for a web application.
Web Servers	2 HP DL380 Gen9 machines with Windows Server 2012 R2. IIS Webserver.
Network	Port mirroring configured on switch to provide packets to RUM Probe. Jumbo frames enabled in the network.
Multi Instance Probe Configuration	4 RUM Probes running on the RUM Probe hardware. Network traffic equally distributed amongst the 4 RUM Probes

## Performance Measurements

This section details the numbers obtained for the scenarios tested. The total throughput mentioned is with respect to the 4 probe instances hosted on the reference server and on reference load environments (see ["Test Setup and Environment" above](#)). The number of text pattern events is abbreviated as TPE, and the number of snapshots is abbreviated as SS in the following table. The numbers mentioned below apply for both the HTTP as well as the HTTPS protocol.

Traffic Profile	Scenario	Total Throughput (Mbps)
HTTP/HTTPS Traffic	0 TPE	1757
	0 SS	
	10 TPE	1505
	10 SS	

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