BLEKINGE TEKNISKA HÖGSKOLA

Monitoring the Performance of Virtual Machines

TEAM: 'SHIELD'

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Document Type: **Acceptance Test Plan**

Version 1.3

Publication date: 2015/06/15

CONTENTS

1. Preface

This document gives description of the tests to satisfy the user functional and non-functional requirements mentioned in the Software Requirement Specification document. It is intended for the customer, CEO and the development team. The document has to be accepted by the customer.

The remainder of the document is organised as follows. Section 2 defines the technical terms and abbreviations used in the document. Section 3 is the acceptance test plan where the user requirements are tested. References are included in the Section 4.

Customer: Patrik Arlos

CEO: Dragos Ilie

Revised history v1.3 on 2015-06-15

-Added test for importing data via RESTful API.

Revision history v1.2 on 2015-05-29

-Tests added for checking data retrieval from entities.

Revision history v1.1 on 2015-05-19

-MOD3-TST_1 and MOD3-TST_2 modified according to the feedback from CEO

Initial version v1.0 on 2015-05-05

-Initial release.

2. Glossary and abbreviations

API: Application Program Interface

FNL: Functional

NFL: Non-functional

HTTP: Hyper Text Transfer Protocol

MOD: Module

REQ: Requirement

RRD: Round Robin Database

SYS: System

TST: Test

USR: User

VM: Virtual Machine

3. Acceptance Test Plan:

This section tests the user functional and non-functional requirements. The tests are performed and the result is filled in by the testers.

Test: MOD1-TST_1

Purpose: To test if the login details are valid.

Requirements: REQ-USR_FNL3, REQ-USR_FNL4, REQ-USR_FNL5, REQ-USR_FNL6, REQ-USR_FNL7, REQ-USR_NFL1

Environment: Web browser.

Operation:

- Open the web browser
- Enter URL to access the login page
- Provide username ‘admin’ and password ‘shield’

Expected Result: The user will be redirected to the dashboard

Result: Success

Test: MOD1-TST_2

Purpose: Test for adding device to the monitoring list.

Requirements: REQ-USR_FNL3

Environment: Dashboard.

Operation:

- Enter login details to access the dashboard.
- Click on devices and select ‘Add device to the monitoring list’
- Enter the IP address of the device and click ‘Add’ to add the device.

Expected Result: Device will be added to monitoring list on dashboard.

Result: Success

Test: MOD1-TST_3

Purpose: Test for removing device from the monitoring list

Requirements: REQ-USR_FNL4

Environment: Dashboard.

Operation:

- Enter login details to access the dashboard.
- Click on the device which has to be removed.
- Click 'Delete' to remove the device from the monitoring list.

Expected Result: Device will be removed from the dashboard.

Result: Success

Test: MOD1-TST_4

Purpose: Test for displaying graphs on the dashboard

Requirements: REQ-USR_FNL5, REQ-USR_FNL6

Environment: Dashboard.

Operation:

- Enter login details to access the dashboard.
- Click on the device for which the graphs are required.
- Select the resource (CPU load and utilization, memory usage, network I/O usage or disk usage) for which the graphs are to be displayed.

Expected Result: The graphs for the resources of the required device will be displayed.

Result: Success

Test: MOD1-TST_5

Purpose: Test for displaying alerts.

Requirements: REQ-USR_FNL7

Environment: Dashboard.

Operation:

- Enter login details to access the dashboard.
- Change the threshold values in the view statistics/graphs page
- Whenever the devices exceed thresholds, the colour of the device should change to red.

Expected Result: When any resource consumption exceed threshold, device colour changes.

Result: Success

Test: MOD1-TST_6

Purpose: Test for notifying the user via email when devices exceed thresholds.

Environment: Dashboard.

Operation:

- Enter login details to access the dashboard.
- Whenever any device exceeds threshold, an email should be sent to the user indicating the device status.

Expected Result: Notification as an email is sent to the user.

Result: Success

Test: MOD1-TST_7

Purpose: To check the scalability of the software

Requirements: REQ-USR_NFL1.

Environment: Dashboard

Operation:

- Enter login details to access the dashboard.
- Click on ‘Add device’ and add a number of devices.
- Select any resource and view the utilization graphs and statistics for all the devices.
- If graphs are produced for the newly added devices, scalability test is successful.

Expected Result: Utilization graphs and statistics should be obtained for newly added devices.

Result: Success

Test: MOD1-TST_8

Purpose: RESTful API to export data shown to the user

Requirements: REQ-USR_FNL8.

Environment: Web browser

Operation:

- Enter the URL provided for the third party access with the required parameter
- The requested information is displayed in JSON format

Expected Result: Data exported successfully.

Result: Success

Test: MOD1-TST_9

Purpose: RESTful API to import data given by the user

Requirements: REQ-USR_FNL9.

Environment: Web browser

Operation:

- Enter the URL provided for the third party access.
- Enter the device credentials and click submit.
- Move on to the view data page by clicking the link.
- The data is printed on the front end page.

Expected Result: Data imported successfully.

Result: Success

Test: MOD2-TST_1

Purpose: To verify credibility of the software.

Requirements: REQ-USR_FNL5, REQ-USR_FNL6

Environment: Login to the dashboard and select a device.

Operation:

- Enter login details to access the dashboard.
- Select a device and click 'View statistics and graphs'.
- Obtain the resource utilization metrics in the terminal using the respective commands.

Expected Result: The values obtained on the dashboard and on the terminal should be similar.

Result: Success

Test: MOD2-TST_2

Purpose: Test to check whether the resource utilization metrics are stored into RRD file.

Requirements: REQ-USR_FNL1, REQ-USR_FNL2

Environment: Dashboard.

Operation:

- Open the terminal on Ubuntu
- Enter "rrdtool info filename.rrd"
- The utilization data of the device will be displayed

Expected Result: Resource utilization metrics will be stored into the database.

Result: Success

Test: MOD2-TST_3:

Purpose: Test to check whether the device data and login credential data are stored into MySQL database

Environment: MySQL database

Operation:

- Enter localhost/phpmyadmin in the browser and enter the login details
- Click on the DEVICES table under project database to view devices data, and click on the USERS table under project database to view login credentials.

Expected result: Data should be added into the database.

Result: Success

Test: MOD3-TST_1

Purpose: Test to check if the required hypervisors are installed

Environment: Ubuntu terminal.

Operation:

- Open the terminal in Ubuntu and enter the command “sudo virt-what” (for xen), “sudo virsh –c qemu:///system list” (for KVM)
- The hypervisor installed on the system will be displayed on the terminal.

Expected Result: The command will be executed and the installed hypervisors are shown.

Result: Success

Test: MOD3-TST_2

Purpose: Test for communication with the hypervisors (Xen/KVM)

Environment: Xen and KVM

Prerequisite: SSH should be run once at least with the command “ssh <username>@<IP address of the system>” and enter the password of that system.

Operation:

- Open the terminal in Ubuntu and enter any command (for example: “ sudo ifconfig ”) to retrieve information about the required system

Expected Result: The requested information will be displayed on the terminal (IP address if “ sudo ifconfig ” is used).

Result: Success

Test: MOD3-TST_3

Purpose: Test to check if the data is retrieved for a single host.

Requirements: REQ-USR_FNL1

Environment: Ubuntu terminal.

Operation:

- Open the front end GUI

- Go to add devices
- Add single VM
- Run ./time.sh
- Go to phpmyadmin, and see the database 'project' under which go to DEVICES to see the data for the host.

Expected Result: The script is executed and respective values will be displayed on the terminal.

Result: Success

Test: MOD3-TST_4

Purpose: Test to check if the data is retrieved for single VM

Requirements: REQ-USR_FNL2

Environment: Ubuntu terminal.

Operation:

- Open the front end GUI
- Go to add devices
- Add single VM
- Run ./time.sh
- Go to phpmyadmin, and see the database 'project' under which go to DEVICES to see the data for the host.

Expected Result: The script will be executed and respective values will be displayed on the terminal.

Result: Success