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FACULTY OF ENGINEERING
COMPUTER ENGINEERING DEPARTMENT**

Project Report
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CENG 408
Innovative System Design and Development II

**System Resource Monitoring
and Visualization**

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Abstract

In this project Virtual Machine will be controlled and visualization of the machine data will be carried out. Windows operating system will be used to take out the virtual machines data. The data will be taken from virtual machine. Virtual machines data samples can be processor spending, ram spending, how many user are available in the operating system, what are the IP addresses of the users, how many hours has it been open..etc. Data will be visualized by using website. In this website authentication will be carried out. If enough time is available in the project plan, Stationary virtual machine can be started by using a website by sending a message or command to the server. **PHP** or **Python** programming languages will be worked in the project implementation. Moreover, **Bootstrap** framework can be used to implementation.

ÖZ

Bu projede Sanal Makine kontrol edilecek ve makine verilerinin görselleştirilmesi gerçekleştirilecektir. Sanal makine verilerini çıkarmak için Windows işletim sistemi kullanılacaktır. Veriler sanal makineden alınacaktır. Sanal makine veri örnekleri işlemci harcaması, ram harcaması, işletim sisteminde kaç kullanıcı bulunduğu, kullanıcıların IP adresleri nelerdir, kaç saat açık kaldığı vb. olabilir. Veriler web sitesi kullanılarak görselleştirilecektir. Bu web sitesinde kimlik doğrulaması yapılacaktır. Proje planında yeterli zaman varsa, sunucuya bir mesaj veya komut gönderilerek bir web sitesi kullanılarak Sabit sanal makine başlatılabilir. Proje uygulamasında PHP veya Python programlama dilleri üzerinde çalışılacaktır. Ayrıca, Bootstrap çerçevesi uygulama için kullanılabilir.

1.Introduction

1.1 Problem Statement

As technology developed, physical computers turned into virtual machines. Afterwards, these virtual machines were moved to servers and their numbers increased. But as the number of virtual machines increased, it became harder to control them. It has become difficult to control who is logged into the virtual machines and the number of these people, the competence of the virtual machine at that time, how long the machine has been on, and its communication with other machines. This project aims for instant control of virtual machines.

1.2 Related Work

As a result of our research, we found the Virt-Manager applet. The Virt-Manager applet is a desktop user interface for managing virtual machines with libvirt. Virt-Manager provides a summary view of worker domains, their live performance, and resource usage statistics [1]. Even if the project we are working on has similar features to the Virt-Manager application, our project will run on a website and only relevant people will be allowed to access this website. Our project is not the same as this application.

1.3 Solution Statement

As a solution to this problem, we aimed to design a website and connect to the virtual machine through the website, to capture the current system data of the virtual machine and to show it with charts and graphics on the website. We also aimed to put a virtual machine start button on the website, because if the virtual machine has not been opened for some reasons, opening that machine through the website will be shorter than connecting to the server where the machine is located. In addition, we have put an authentication screen at the website login so that a team that only deals with virtual machines can access this website. People other than this team will not be able to control the virtual machine part. This solution will be implemented on virtual machines with windows operating system.

2.Literature Search

2.1 Introduction

2.1.1 Background Definition of Terms

As technology improved, the management of businesses also changed and improved. We are now able to manage a large part of the work from the phone and the computer. We can keep more data for the company and use this data as well.

2.1.2 Context

Companies use virtual machines to save energy [2]. Managers use admin panels developed for their own companies. The Admin Panel (or admin panel for short) is the primary tool for working with the online company [3]. Admin panels are prepared, implemented and used with the Bootstrap framework [4]. Ready-made admin panel templates can also be purchased [5].

2.1.3 Purpose of the Report

This report explores the visualization of data from a virtual machine on a website. Virtual machine technology applies the virtualization concept to the whole machine. It eliminates real machine compatibility constraints and hardware constraints. Virtual machine technologies are generally designed to solve problems in combining and using components in a computer system. It plays an important role in many parts of the computer system [6]. Data visualization is one of the effective tools to reveal hidden patterns in data [7]. Data visualization displays abstract and non-physical data with computer-based visuals for better understanding. The main goal here is to make statistical and complex data understandable using graphical interfaces [8]. It aims to show the data obtained from the previous times of the virtual machine on the website with graphics and graphics to this time. The data will be visualized on the bootstrap based website using Python or php [9].

2.2 Website Threads

2.2.1 Discussion – Identifying the Problems

Since the admin page works online, it is not possible to contact the company in a place without internet access. Since the admin page will be open on a server, its connections must be allowed, otherwise the company cannot be contacted. If it is not allowed by the virtual machine, the Admin panel cannot pull data, cannot visualize it.

2.2.2 Sentences Introducing Bullet Points

Below are four key items for the admin page:

1. Profile pages of company executives.
2. Chat mechanism for managers to talk to each other.
3. Button to start the virtual machine.
4. Visualization of the company's data from the past to this time.

2.3 Website Implementation

2.3.1 Website Design

The bootstrap framework will be implemented when making the admin panel. **Vuexy Admin Template** will be modified with Bootstrap framework [10]. Administrators will login to the admin panel with their username and password. Admins will be in communication with each other and will be able to view and change their profile pages if they wish. Admins will be able to see graphs and charts showing the company's data. The virtual machine can be started with the help of a button on the website.

2.3.2 Website Database

While preparing the website, a database will be developed that will work dynamically with the admin panel. The following four items explain why the database should be developed:

1. Records of usernames and passwords of admins.
2. Records of virtual machine connection times.
3. Records of admins' information on profile pages.
4. Records of data captured from the virtual machine.

2.4 Conclusion

While preparing this report, bootstrap, virtual machine and data visualization technologies were researched and information was obtained about them. Data visualization with PHP or Python languages has been researched and necessary information has been obtained. Admin panel templates were researched and information about the design was taken.

3. Software Requirements Specification

3.1 Introduction

The following subsections are an overview of the entire "Software Requirements Specification" (SRS) document.

3.1.1 Purpose

This document provides information about "System Resource Monitoring and Visualization".

3.1.2 Scope

This software is based on showing the data of a virtual machine with the help of graphs and charts in a website. Virtual machines data samples can be processor spending, ram spending, how many user are available in the operating system, what are the IP addresses of the users, how many hours has it been open..etc. In this website authentication will be carried out. After logging in to the website, users can see the status of the virtual machine on the website and start it if they wish. Users can edit their own profiles on the website.

The purpose of this software:

It is see the status of a virtual machine or machines and to control them (the virtual machine can be launched through the website).

3.1.3 Definitions, Abbreviations, Acronyms

TERM	DEFINITIONS
User	Right to login to the website.
SRS	Software Requirements Specifications
IEEE	Institute of Electrical and Electronics Engineers
VMI	Virtual Machine Introspection

3.1.4 Overview

This document is prepared to give details, technical information, and required specifications for this software aim.

3.2 Overall Description

3.2.1 Product Perspective

This software is software that aims to view the data of a virtual machine through a website. Virtual machine data will be captured by Virtual Machine Introspection (VMI) technique and displayed on the website via bootstrap-based graphics and charts [11]. The data captured from the virtual machine will be kept in the database and this database will work dynamically with the website. Virtual machine can be started with the help of a button on the website.

3.2.2 User Interfaces

There are 2 interfaces for the user to use. The user can choose one of these interfaces according to his/her wishes. Light colors are used in one of the interfaces, and dark colors are used in the other. There are graphics displaying virtual machine data in the interface and a button to start the virtual machine.

3.2.3 Software Interfaces

3.2.3.1 For Website Software

FRONT-END	BACK-END
HTML5	PHP
CSS3	Redis Cache
Javascript	Laravel
jQuery	Laravel Telescope
Vue.js	Laravel Horizon
ApexCharts Addition	Laravel Livewire
Vuexy Template	

3.2.3.2 Server-Side

- Windows 2016 DataCenter
- Nginx (Web Server)
- MySQL (For database)
- Redis (For cache database)
- Supervisor (For background operations)

3.2.3.3 For Visual Machine

- Windows Operating System (Version 10-11).

3.2.4 Hardware Interfaces

Users must have at least one tablet, phone or computer to use the software. The systems of the phone, tablet or computer to be used must be up to date. They do not have to be the latest model. For A virtual machine requires a device that can run the virtual machine.

3.2.5 Assumptions and Dependencies

- A new user record can be created.
- If the user has forgotten his/her password, he/she can get the new a password.
- If the user wishes, he/she can press the button to start the virtual machine.

3.3 Requirements Specification

3.3.1 External Interface Requirements

Mysql will be used for the database. There will be two or more different tables in the database, virtual machine data and user data. Virtual machine must have windows operating system. At certain times, the data of the virtual machine (processor spending, ram spending, how many users are available in the operating system, what are the IP addresses of the users, how many hours has it been open..etc.) Will be pulled into the database's virtual machine table will be recorded. The data of the virtual machine will be pull with the Virtual Machine Introspection (VMI) technique [11]. The table containing the data of the virtual machine in the database has to work dynamically with the website.

3.3.2 Functional Requirements

3.3.2.1 Login Function

- Introduction: Users can login with their email and password.
- Input: User's email and password.
- Output: Invalid or login.
- Process: All users will enter the login page and enter their email and password. The system logs in or displays an error message depending on whether the email and password match.
 -

3.3.2.2 Register Function

- Introduction: A new user can be created.
- Input: User's email, password, user's name.
- Output: Error (passwords are not the same) or create.
- Process: Enter user's name and email. The system checks whether the user is in the database and adds it to the database if it is not present in the database.

3.3.2.3 Forgot Password

- Introduction: A new one can be created instead of the forgotten password.
- Input: User's email.
- Output: Error (User's email is invalid) or link to create new password was sent to email.
- Process: Enter user email. The system checks whether the user's mail is in the database. If there is no match, it gives an error message.

3.3.2.4 Reset Password

- Login: Password can be changed to a new one.
- Login: User's new password.
- Output: If there is a space, the empty part is replaced with the old one and the filled part with the new one in the database.
- Action: New password.

3.4 Software System Attributes

3.4.1 Portability

- This website can be run on local host or on a server.
- Php libraries required for the operation of the website must be installed.
- Mysql must be installed to communicate with the database.
- If the server will be operated, the following should be checked:
 - Having Windows 2016 DataCenter operating system.
 - Since the servers will be connected remotely, they must be open to the internet and their firewall settings must allow this.
 - Establishing a connection with the root user for full control of the server.

3.4.2 Usability

- After logging into the website, the current status of the data can be viewed from the charts and graphs on the home page.
- After logging into the website, the profile can be changed from the login screen if desired.
- After logging into the website, a virtual machine can be started with the help of a button.

3.4.3 Adaptability

- Since the data are received from the moment the website is run, the data will be adaptable.

3.4.4 Scalability

- There is no scalability requirement as users will see the same data graphics when they log in.

4. Software Design Description

4.1 Introduction

Software Design Descriptions (SDD) provides documentation to use to assist. This document is a document that explains and graphically illustrates the software design. This document has been prepared to better explain what to do to System Resource Monitoring and Visualization(SRMV) developers. SDD is prepared according to the application of design methods and design documentation recommended in IEEE Std 1016-1987 is described [12].

4.1.1 Purpose

The purpose of System Resource Monitoring and Visualization (SRMV) is to show the system data of a virtual machine by using graphics and charts in a website interface. In this website authentication will be carried out.

4.1.2 Scope

This software is based on displaying the data of a virtual machine on a website with the help of graphs and charts. Examples of virtual machine data are processor consumption, ram consumption, how many users are in the operating system, what are the IP addresses of the users, how many hours they are open, etc. it could be. Authentication will be done on this website. Users can see the status of the virtual machine on the website after logging in to the website.

4.1.3 Definitions, Abbreviations, Acronyms

TERM	DEFINITIONS
User	Right to login to the website.
SDD	Software Design Description
IEEE	Institute of Electrical and Electronics Engineers
SRMV	System Resource Monitoring and Visualization

4.1.4 Overview

- Chapter1 Introduction
- Chapter2 Design Considerations
- Chapter3 Architecture
- Chapter4 System Interfaces
- Chapter5 User Interface Design
- Chapter6 Process Design
- Chapter7 Database Design

4.2 Design Considerations

4.2.1 Approach

Controlling virtual machines connected to a server is related to the number of virtual machines connected to that server. In other words, the more virtual machines there are, the more difficult it will be to control them. The SRMV project is about controlling these virtual machines and aims to present the system data of each one in a more readable way.

4.2.2 Tools Used

4.2.2.1 For Website Software

FRONT-END	BACK-END
HTML5	PHP(To be determined)
CSS3	Redis Cache
Javascript	Laravel
jQuery	Laravel Telescope
Vue.js	Laravel Horizon
ApexCharts Addition	Laravel Livewire
Vuexy Template	

4.2.2.2 Server-Side

- Windows 2016 DataCenter
- Nginx (Web Server)
- MySQL (For database)
- Redis (For cache database)
- Supervisor (For background operations)

4.2.2.3 For Visual Machine

- Windows Operating System(Version 10-11).

4.2.3 Constrains

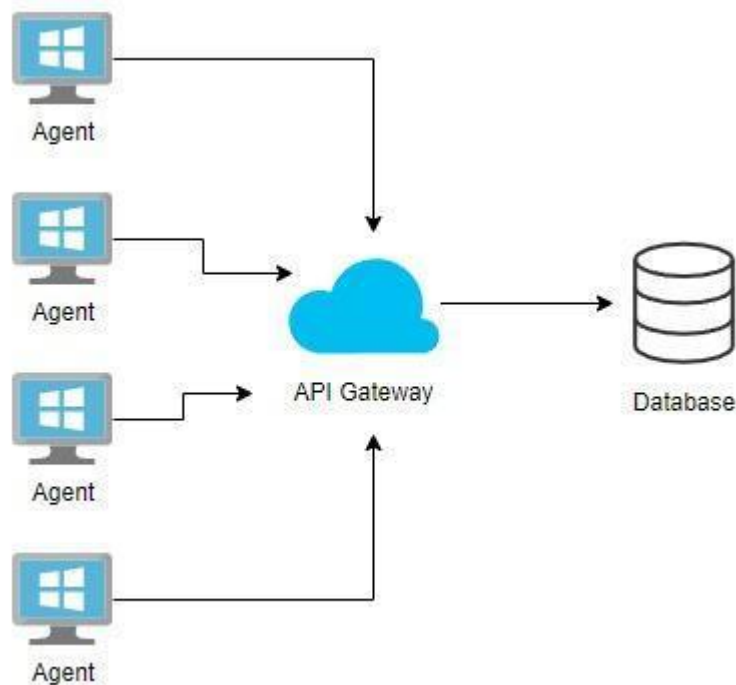
- User information must be known in order to enter the web interface.
- Virtual machines for which system data will be retrieved must use the windows operating system.
- User can switch between dark mode and light mode according to his/her wishes.

4.2.4 Assumptions and Dependencies

- The systems in the tools used section must be up to date.
- Virtual machines whose data will be read must have a windows operating system.
- If only the data will be displayed (no installation will be made on the system), it is important that the systems of the ipad, mobile phone or computer to be used are up-to-date.
- Internet must be active for communication.

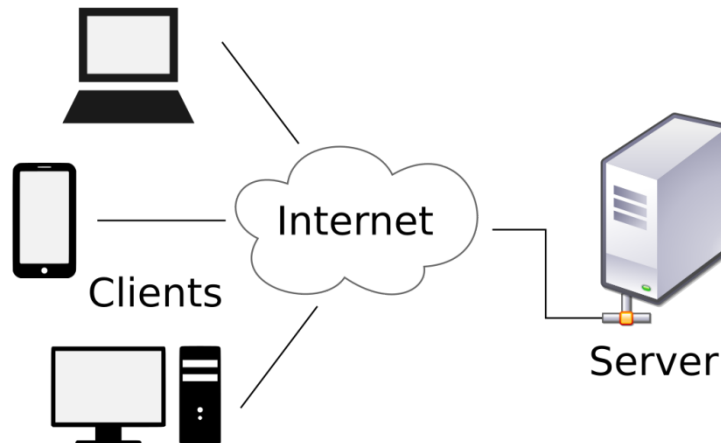
4.3 Architecture

4.3.1 Software Architecture



4.3.2 Hardware Architecture

SRMV project will use client-server architecture. Client-server architecture describes how a server provides services to its clients. Clients can be one or more. TCP / IP protocol will be used to establish a client connection with the server.



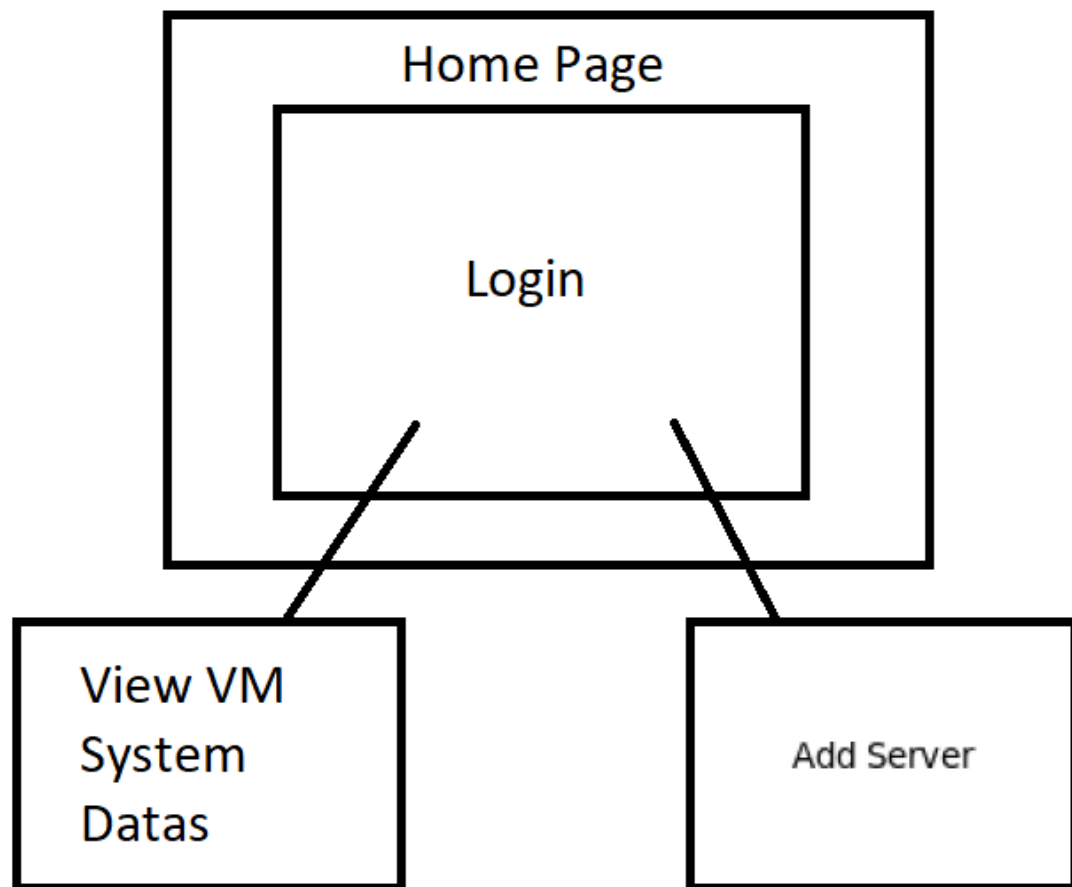
4.4 System Interfaces

4.4.1 External System Interfaces

Mysql will be used for the database. There will be two or more different tables in the database, virtual machine data and user data. Virtual machine must have windows operating system. At certain times, the data of the virtual machine (processor spending, ram spending, how many users are available in the operating system, what are the IP addresses of the users, how many hours has it been open..etc.) Will be pulled into the database's virtual machine table will be recorded. The data of the virtual machine will be pull with the Virtual Machine Introspection (VMI) technique [11]. The table containing the data of the virtual machine in the database has to work dynamically with the website.

4.5 User Interface Design

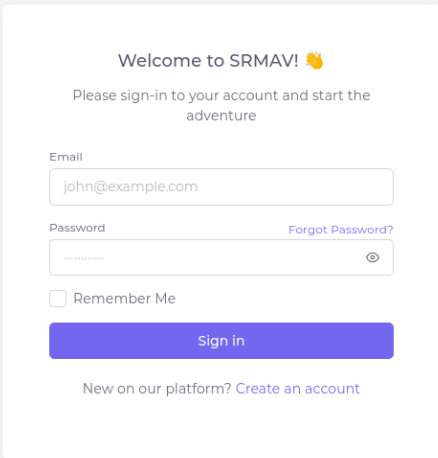
4.5.1 Navigation



- When users connect to the site, they are directed to the "Home page" page and have to login.
- After logging in, they can both see the virtual machine data on their servers and, if they wish, add the virtual machine from the "Add Server" button and start it later.

4.5.2 Screen Definitions

4.5.2.1 Home Page



Welcome to SRMAV! 🌟

Please sign-in to your account and start the adventure

Email

john@example.com

Password [Forgot Password?](#)

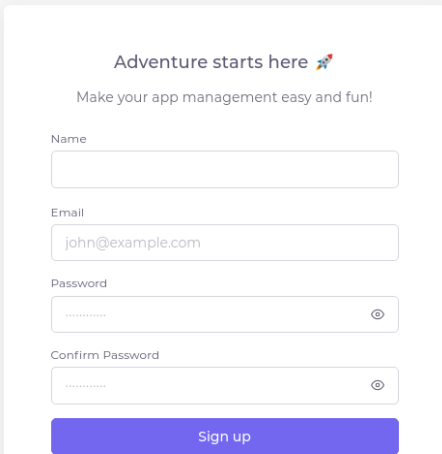
Remember Me ☐

Sign in

New on our platform? [Create an account](#)

- Input: User's email and password.
- Output: Error (The user's username or password are incorrect) or login.

4.5.2.2 Register Page



Adventure starts here 🚀

Make your app management easy and fun!

Name

Email

john@example.com

Password

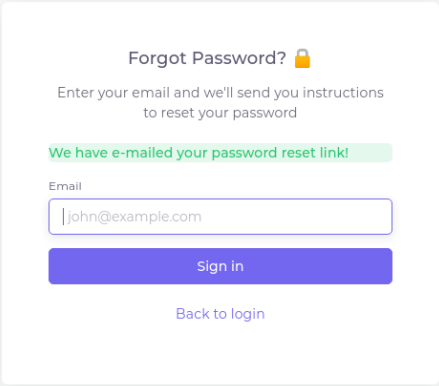
Confirm Password

Sign up

Already have an account? [Sign in instead](#)

- Input: User's email, password and user's name.
- Output: Error (Under filled / passwords are not the same) or create.

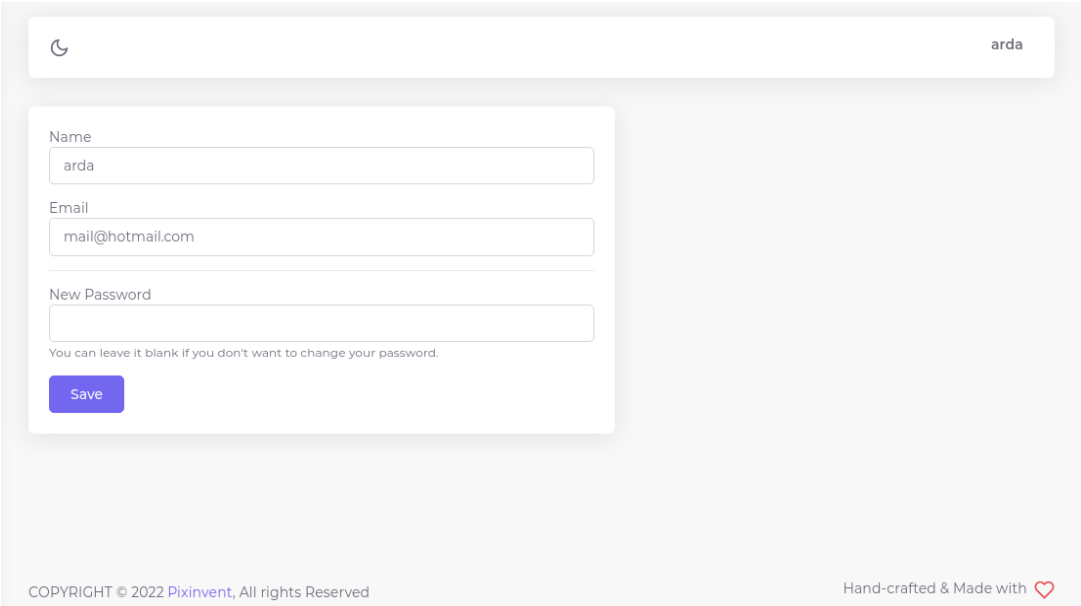
4.5.2.3 Forgot Password



A centered white card on a light gray background. The card has a title 'Forgot Password?' with a lock icon. Below it is a subtitle 'Enter your email and we'll send you instructions to reset your password'. A green success message 'We have e-mailed your password reset link!' is displayed. There is an 'Email' label above a text input field containing 'john@example.com'. Below the input is a blue 'Sign in' button and a 'Back to login' link.

- Input: User's email(If it valid).
- Output: We have e-mailed your password reset link!

4.5.2.4 Reset Password



A web application interface. On the left is a sidebar with the 'Vuexy' logo and a menu with 'Servers' and 'Users' (selected). The main content area has a top bar with a moon icon and the name 'arda'. The 'Reset Password' form contains three input fields: 'Name' (with 'arda'), 'Email' (with 'mail@hotmail.com'), and 'New Password' (empty). A note below the last field says 'You can leave it blank if you don't want to change your password.' and there is a blue 'Save' button. The footer contains copyright information and a 'Hand-crafted & Made with' message with a heart icon.

- Input: Name,Email, User's new password.
- Output: New regulations are updated. The blanks remain the same.

4.5.2.5 Dark Reset Password

Vuexy

Servers

Users

arda

Name

arda

Email

mail@hotmail.com

New Password

You can leave it blank if you don't want to change your password.

Save

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Hand-crafted & Made with

- Input: Name, Email, User's new password.
- Output: New regulations are updated. The blanks remain the same.

4.5.2.6 After Login Home Page

Vuexy

Servers

Users

arda

Servers | Home > Servers

Add Server

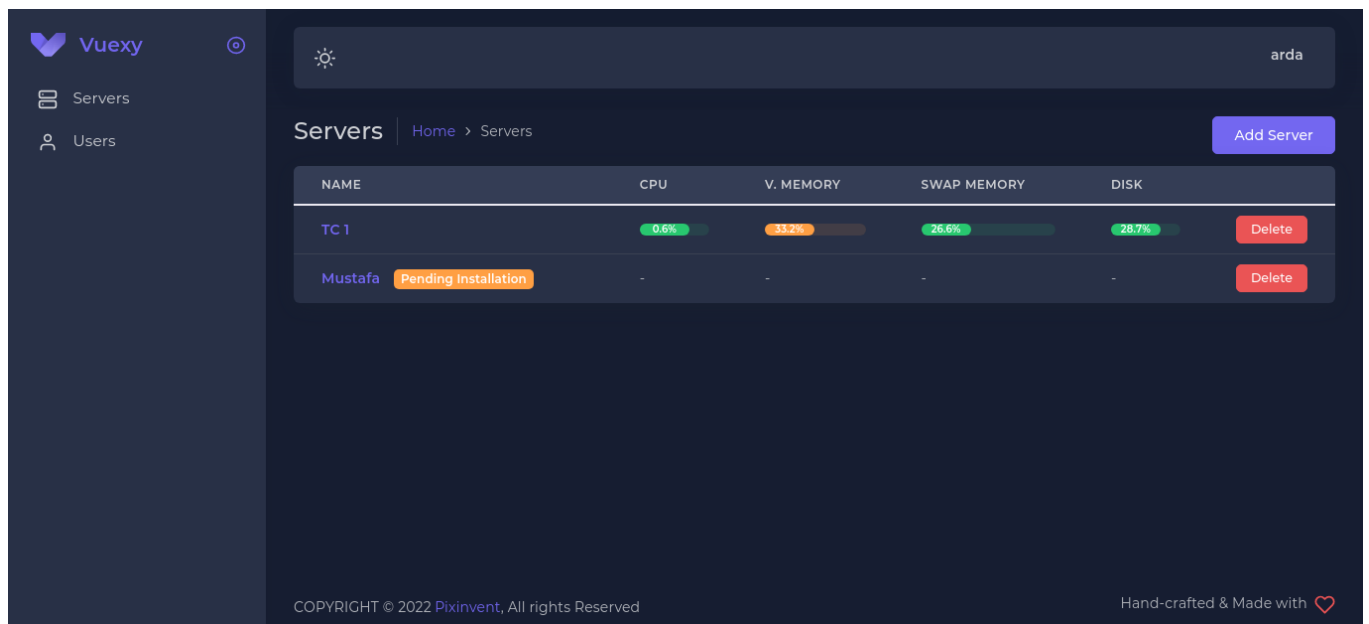
NAME	CPU	V. MEMORY	SWAP MEMORY	DISK	
TC 1	0.6%	31.2%	25.6%	28.7%	Delete
Mustafa	Pending Installation	-	-	-	Delete

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Hand-crafted & Made with

- VMs can be viewed.
- The virtual machine can be created using the "Add Server" button.
- The application will display yours as "Pending Installation" on the listed virtual machines until you set the agent.

4.5.2.7 Dark After Login Home Page



- VM data can be viewed.
- The virtual machine can be created using the "Add Server" button.
- The application will display yours as "Pending Installation" on the listed virtual machines until you set the agent.

4.5.2.8 Add Server

The screenshot shows the Vuexy dashboard in light mode. The left sidebar contains the Vuexy logo and navigation links for 'Servers' and 'Users'. The main content area is titled 'Add Server' and includes a breadcrumb 'Servers > Add Server'. A form is displayed with the following fields:

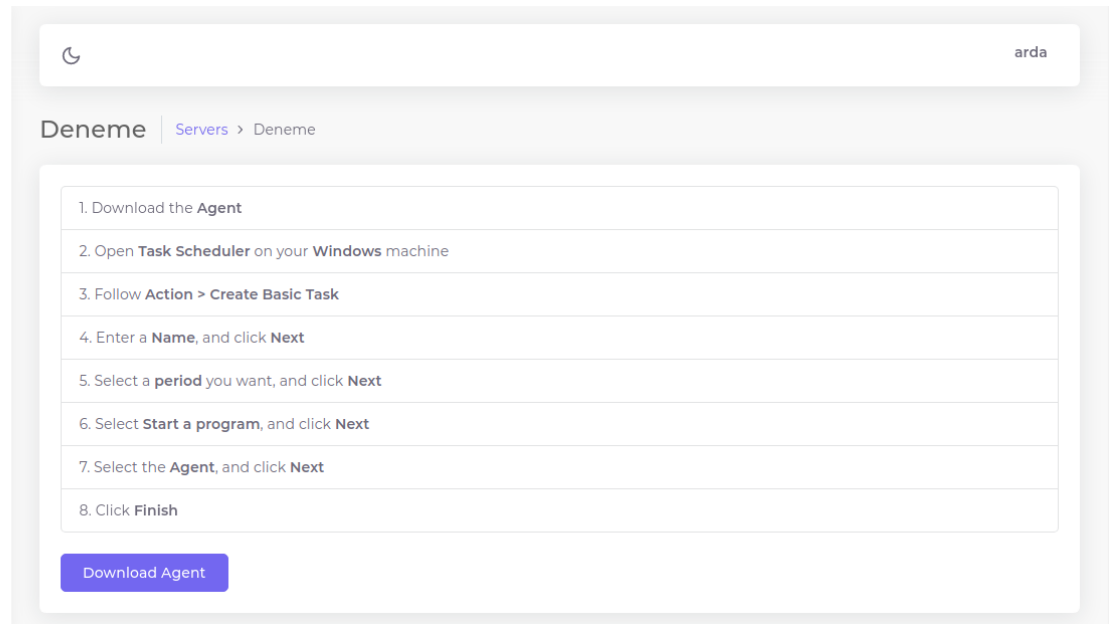
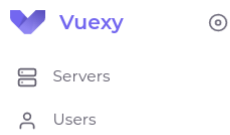
Name

Save

At the bottom of the dashboard, there is a copyright notice: 'COPYRIGHT © 2022 Pixinvent, All rights Reserved' and a note: 'Hand-crafted & Made with ❤️'.

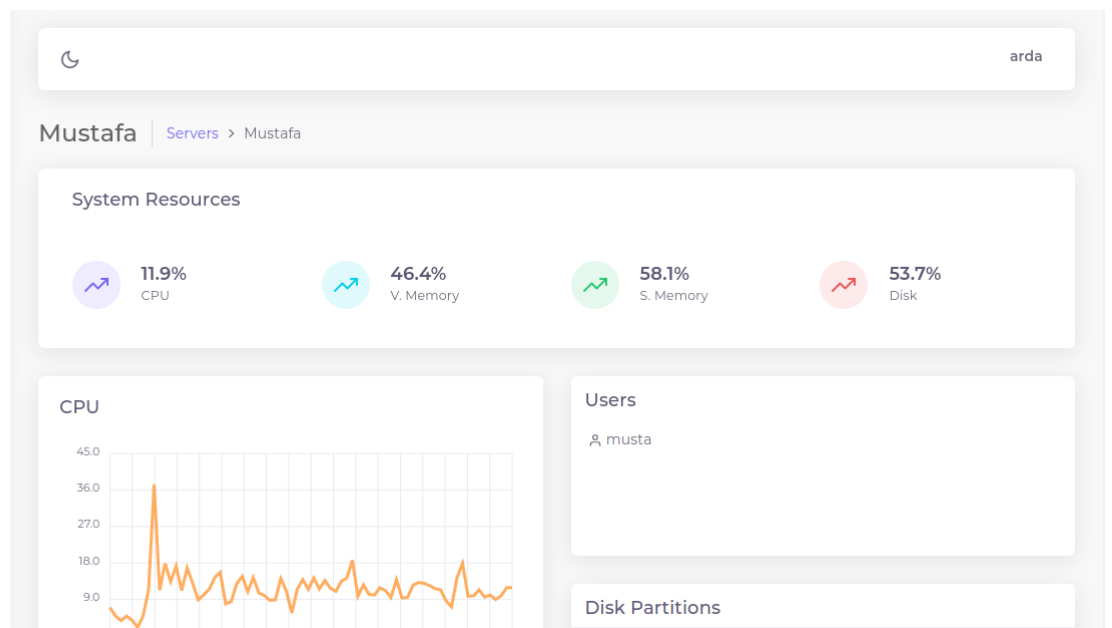
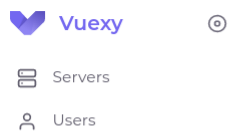
- Input: Enter name of the new VM.
- Output: Required processes for VM monitoring.

4.5.2.9 Add Server



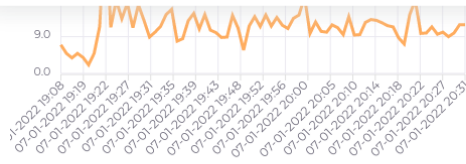
- These steps must be applied to the machine to be monitored.
- When the machine will transmit information to the site can be set from the downloaded agent program.

4.5.2.10 VM Datas





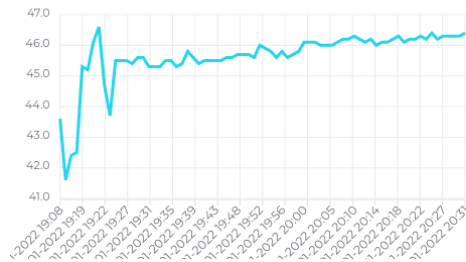
arda



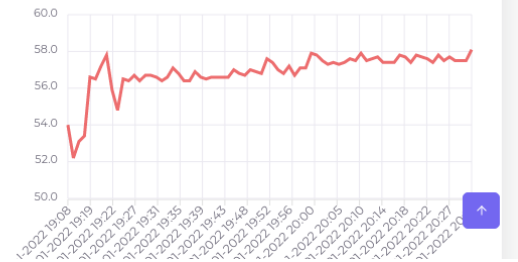
Disk Partitions

DEVICE	FILESYSTEM	OPTS	MAXFILE	MOUNTED
C:\	NTFS	rw,fixd	255	2

Virtual Memory



Swap Memory



arda

Running Tasks

PID	NAME	USER
0	System Idle Process	NT AUTHORITY\SYSTEM
4	System	NT AUTHORITY\SYSTEM
8	svchost.exe	
152	Registry	
172	svchost.exe	MUSTAFAAYDEMIR\musta
304	svchost.exe	
496	smss.exe	
736	csrss.exe	
884	wininit.exe	
956	services.exe	
976	lsass.exe	

4.5.2.11 Users Page

 Vuexy



 Servers

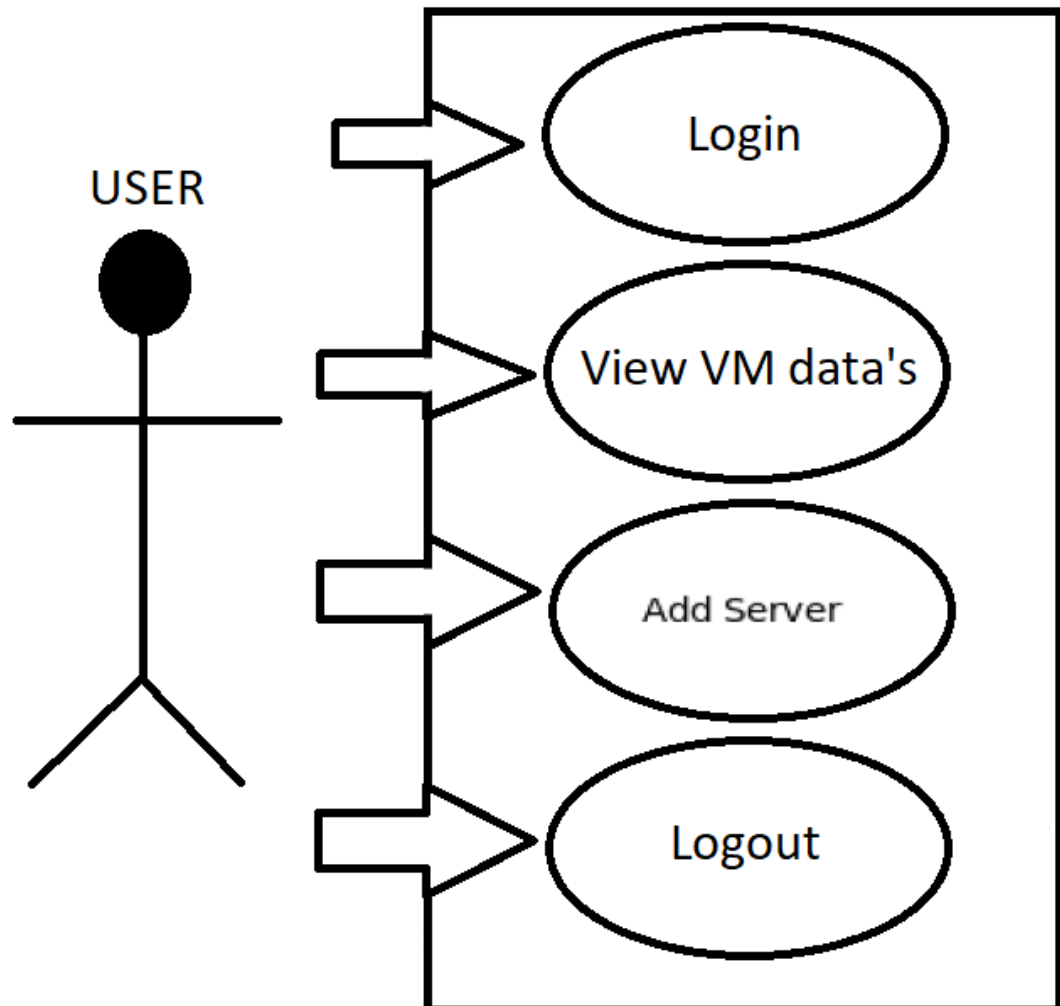
 Users

#	NAME	ROLE	EMAIL	SERVICES	
1	Mustafa Aydemir	Admin	mustafa@aydemir.im	2	<button>Make User</button> <button>Delete</button>
2	Test 1	Admin	test1@aydemir.im	0	<button>Make User</button> <button>Delete</button>
4	Test 3	User	test3@aydemir.im	0	<button>Make Admin</button> <button>Delete</button>
5	Test 4	User	test4@aydemir.im	0	<button>Make Admin</button> <button>Delete</button>
6	Test 5	User	test5@aydemir.im	0	<button>Make Admin</button> <button>Delete</button>
7	arda	Admin	mail@hotmail.com	0	<button>Delete</button>
8	jglkhl	User	asdads@aydemir.im	0	<button>Make Admin</button> <button>Delete</button>
9	arda	User	arda_acar_1996@hotmail.com	0	<button>Make Admin</button> <button>Delete</button>
10	Fusun Funda	User	fundaky.ffa@gmail.com	0	<button>Make Admin</button> <button>Delete</button>

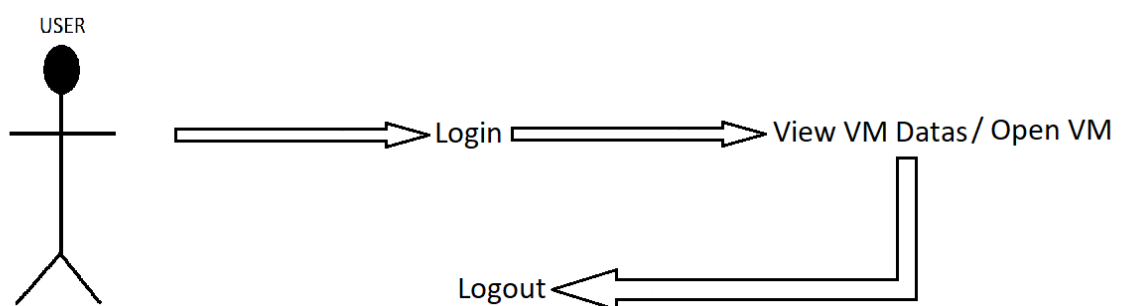
- Users who have the Admin role on this page can play with the roles of other users, and if they want, they can kick them out of the application.

4.6 Process Design

4.6.1 Use Case



4.6.2 Sequence Diagram



4.7 Database Design

4.7.1 User Database

#	column_name	data_type	character_set	collation	is_nullable	column_default	extra	foreign_key	comment
1	id	bigint unsigned	✓ NULL	NULL	NO	NULL	auto_increment	EMPTY	→ EMPTY
2	name	varchar(255)	✓ utf8mb4	utf8mb4_unicode_ci	NO	NULL	EMPTY	EMPTY	→ EMPTY
3	email	varchar(255)	✓ utf8mb4	utf8mb4_unicode_ci	NO	NULL	EMPTY	EMPTY	→ EMPTY
4	email_verified_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
5	password	varchar(255)	✓ utf8mb4	utf8mb4_unicode_ci	NO	NULL	EMPTY	EMPTY	→ EMPTY
6	remember_token	varchar(100)	✓ utf8mb4	utf8mb4_unicode_ci	YES	NULL	EMPTY	EMPTY	→ EMPTY
7	created_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
8	updated_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
9	role	varchar(255)	✓ utf8mb4	utf8mb4_unicode_ci	YES	user	EMPTY	EMPTY	→ EMPTY

4.7.2 Virtual Machine Database

#	column_name	data_type	character_set	collation	is_nullable	column_default	extra	foreign_key	comment
1	id	bigint unsigned	✓ NULL	NULL	NO	NULL	auto_increment	EMPTY	→ EMPTY
2	created_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
3	updated_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
4	user_id	bigint unsigned	✓ NULL	NULL	NO	NULL	EMPTY	users(id)	→ EMPTY
5	key	char(36)	✓ utf8mb4	utf8mb4_unicode_ci	NO	NULL	EMPTY	EMPTY	→ EMPTY
6	name	varchar(255)	✓ utf8mb4	utf8mb4_unicode_ci	NO	NULL	EMPTY	EMPTY	→ EMPTY
7	last_update	timestamp	✓ NULL	NULL	NO	NULL	EMPTY	EMPTY	→ EMPTY

4.7.3 Virtual Machine Resources

#	column_name	data_type	character_set	collation	is_nullable	column_default	extra	foreign_key	comment
1	id	bigint unsigned	✓ NULL	NULL	NO	NULL	auto_increment	EMPTY	→ EMPTY
2	created_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
3	updated_at	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
4	server_id	bigint unsigned	✓ NULL	NULL	YES	NULL	EMPTY	servers(id)	→ EMPTY
5	cpu	double(8,2)	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
6	cpu_count	int	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
7	load_avg	double(8,2)	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
8	vmem	double(8,2)	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
9	vmem_total	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
10	vmem_available	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
11	vmem_used	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
12	vmem_free	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
13	vmem_active	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
14	vmem_inactive	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
15	vmem_buffers	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
16	vmem_cached	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
17	vmem_shared	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
18	swap_mem	double(8,2)	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
19	swap_mem_total	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
20	swap_mem_used	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
21	swap_mem_free	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
22	swap_mem_sin	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
23	swap_mem_sout	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
24	disk	double(8,2)	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
25	disk_total	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
26	disk_used	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
27	disk_free	bigint	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY
28	boot_time	timestamp	✓ NULL	NULL	YES	NULL	EMPTY	EMPTY	→ EMPTY

5. Test Plan & Results

5.1 INTRODUCTION

This test plan creates the test processes to be applied for the System Resource Monitoring and Visualization system. This document contains details about features and test scenarios that will and will not be tested.

5.1.1 Version Control

Version No	Description of Changes	Date
1.0	First Version	Jan 05, 2022

5.1.2 Overview

This document is intended to test the functionality of the website pages and check whether the project fulfills the requirements specified in the SRS and SDD phases.

5.1.3 Scope

This document covers all login, registration, forgot user password, after login home, add server, installation, settings and users pages . Each page and its functions will be examined in detail. This document describes test cases as pass/fail design. The purpose of the document explains what to test and how to test it.

5.1.4 Terminology

Acronym	Definition
HP	Home page(Login Page)
RP	Register Page
FP	Forgot Password Page
ALHP	After Login Home Page
ASP	Add Server Page
IP	Installation Page
SP	Settings Page
UP	Users Page

5.2 FEATURES TO BE TESTED

5.2.1 Home Page (HP)

Users enter an email and password. Then clicking the Sign in button. After clicking the Sign in button, you will be redirected to the home page if the email and password are valid.

5.2.2 Register Page (RP)

Users enter an his/her names, emails and passwords. Then clicking the Sign up button, and the account successfully created.

5.2.3 Forgot Password (FP)

Users enter the e-mail address they use in the application. Then, when the Sign in button is clicked, the Password Reset link will be sent to the e-mail address they entered.

5.2.4 After Login Home Page (ALHP)

On this page, users can list virtual machines. If they want, they can add a new virtual machine with the Add Server button. If they press the name they entered while registering in the upper right, they can see the manage profile menu. If they click the users button from the left navigation, they can see other users if their role is Admin. They can switch to dark mode by pressing the moon icon at the top. They can also switch to full screen mode by pressing the circle to the left of the moon icon.

5.2.5 Add Server Page (ASP)

The name of the virtual machine to be monitored must be entered. Then the Save button should be pressed. In addition, this page includes features from the ALHP page (You can go to dark mode, full screen, profile management menu, servers and users pages from the Navigation section).

5.2.6 Installation Page (IP)

The agent should be downloaded to the virtual machine to be added by clicking the Download agent button on this page. In addition, this page includes features from the ALHP page (You can go to dark mode, full screen, profile management menu, servers and users pages from the Navigation section).

5.2.7 Settings Page (SP)

On this page, necessary changes for the profile (name, e-mail, password) can be made. The ones that do not want to be changed should be left blank or not changed. Also, this page includes features from the ALHP page (You can navigate to dark mode, full screen, profile management menu, servers and users pages from the Navigation section).

5.2.8 Users Page (UP)

Users can be modified on this page (playing their roles or kicking them out of application). In addition, this page includes features from the ALHP page (You can go to dark mode, full screen, profile management menu, servers and users pages from the Navigation section).

5.3 FEATURES NOT TO BE TESTED

Technical studies on the hardware of the device to be connected will not be tested.

5.4 ITEM PASS/FAIL CRITERIA

Describe the general rule to use to decide when a test case passes and when it fails.

5.4.1 Exit Criteria

Describe under what conditions the testing of the product is considered successful. Some examples are:

100% of the test cases are executed

900% of the test cases passed

All High and Low Priority test cases passed

5.5 REFERENCES

SRS SDD

5.6 TEST DESIGN SPECIFICATIONS

5.6.1 Home Page (HP)

5.6.1.1 Subfeatures to be tested

5.6.1.1 Login (HP.Sign in_BTN)

If enter a invalid email and password, display an error message.

5.6.1.2 Register (HP.Create an Account)

This button direct to the registration page.

5.6.1.3 Forgot Password (HP.Forgot Password)

This button directs to the forgot password page.

5.6.1.4 Test Cases

TC ID	Re qu ire me nts	Pri ori ty	Scenario Description	Pass/ Fail
HP.Sign in_BTN	-	H	If enter a invalid email and password, display an error message.	Pass
HP.Create an Account	-	H	Direct to the registration page.	Pass
HP.Forgot Password	-	H	Direct to the forgot password page.	Pass

5.6.2 Register Page (RP)

5.6.2.1 Subfeatures to be tested

5.6.2.1.1 Register (RP.Sign up_BTN)

This button create new user.

5.6.2.1.2 Sign in instead (RP.Sign in instead_BTN)

This button directs to the Home Page.

5.6.2.2 Test Cases

TC ID	Requ ireme nts	Priority	Scenario Description	Pass/F ail
RP.Sign up_BTN	-	H	Click the Sign up Button, show an error message if there is an empty space.	Pass
RP.Sign in instead_BTN	-	H	Direct to the Home Page.	Pass

5.6.3 Forgot Password (FP)

5.6.3.1 Subfeatures to be tested

5.6.3.1.1 Sign in (FP.Sign in_BTN)

This button send password reset link to the entered email.

5.6.3.1.2 Back to Login (FP.BL_BTN)

This button directs to the Home Page.

5.6.3.2 Test Cases

TC ID	Requi reme nts	Priority	Scenario Description	Pass/F ail
FP.Sign in_BTN	-	H	Give a message that the reset mail has been sent and send the reset mail.	Pass
FP.Back to login_BTN	-	H	Direct to the Home Page.	Pass

5.6.4 After Login Home Page (ALHP)

5.6.4.1 Subfeatures to be tested

5.6.4.1.1 Add VM (ALHP.Add Server_BTN)

This button direct to the Add Server Page.

5.6.4.1.2 Dark (ALHP.Moon_BTN)

The Dark button turns off After Login Home Page to dark.

5.6.4.1.3 User Name (ALHP.UName_BTN)

This button open the Manage Profile menu

5.6.4.1.4 UName/Settings (ALHP.Settings_BTN)

This button direct to the Settings Page.

5.6.4.1.5 UName/Logout (ALHP.Logout_BTN)

This button log out user and redirect to Home Page.

5.6.4.1.6 Servers (ALHP.Servers_BTN)

This button direct to the Servers Page.

5.6.4.1.7 Users (ALHP.Users_BTN)

If the user is not admin, give an error message, if it is admin, direct it to the admin page.

5.6.4.1.6 Sphere (ALHP.Sphere_BTN)

This button take to full screen.

5.6.4.2 Test Cases

TC ID	Requi remen ts	Prior ity	Scenario Description	Pass/F ail
ALHP.Add Server_BTN	-	H	Direct to the Add Server Page	Pass
ALHP.Moon_BTN	-	L	Turn the Page to Dark.	Pass
ALHP.UName_BTN	-	H	Open the Manage Profile menu	Pass
ALHP.Settings_BTN	-	H	Direct to the Settings Page.	Pass
ALHP.Logout_BTN	-	H	Log out user and redirect to Home Page.	Pass
ALHP.Servers_BTN	-	H	Direct to the Servers Page.	Pass
ALHP.Users_BTN	-	H	If the user is not admin, give an error message, if it is admin, direct it to the admin page.	Pass
ALHP.Sphere_BTN	-	L	Take to full screen.	Pass

5.6.5 Add Server Page (ASP)

5.6.5.1 Subfeatures to be tested

5.6.5.1.1 Add to vm list this machine (ASP.Save_BTN)

If the Name field is empty give an error, otherwise go to the installation page.

5.6.5.1.2 Dark (ASP.Moon_BTN)

The Dark button turns off After Login Home Page to dark.

5.6.5.1.3 User Name (ASP.UName_BTN)

This button open the Manage Profile menu

5.6.5.1.4 UName/Settings (ASP.Settings_BTN)

This button direct to the Settings Page.

5.6.5.1.5 UName/Logout (ASP.Logout_BTN)

This button log out user and redirect to Home Page.

5.6.5.1.6 Servers (ASP.Servers_BTN)

This button direct to the Servers Page.

5.6.5.1.7 Users (ASP.Users_BTN)

If the user is not admin, give an error message, if it is admin, direct it to the admin page.

5.6.5.1.6 Sphere (ASP.Sphere_BTN)

This button take to full screen.

5.6.5.2 Test Cases

TC ID	Requirements	Priority	Scenario Description	Pass/Fail
ASP.Save_BTN	-	H	If the Name field is empty give an error, otherwise go to the installation page.	Pass
ASP.Moon_BTN	-	L	Turn the Page to Dark.	Pass
ASP.UName_BTN	-	H	Open the Manage Profile menu	Pass
ASP.Settings_BTN	-	H	Direct to the Settings Page.	Pass
ASP.Logout_BTN	-	H	Log out user and redirect to Home Page.	Pass
ASP.Servers_BTN	-	H	Direct to the Servers Page.	Pass
ASP.Users_BTN	-	H	If the user is not admin, give an error message, if it is admin, direct it to the admin page.	Pass
ASP.Sphere_BTN	-	L	Take to full screen.	Pass

5.6.6 Installation Page (IP)

5.6.6.1 Subfeatures to be tested

5.6.6.1.1 Download Agent (IP.Download Agent_BTN)

This button download agent on the virtual machine.

5.6.6.1.2 Dark (IP.Moon_BTN)

The Dark button turns off After Login Home Page to dark.

5.6.6.1.3 User Name (IP.UName_BTN)

This button open the Manage Profile menu

5.6.6.1.4 UName/Settings (IP.Settings_BTN)

This button direct to the Settings Page.

5.6.6.1.5 UName/Logout (IP.Logout_BTN)

This button log out user and redirect to Home Page.

5.6.6.1.6 Servers (IP.Servers_BTN)

This button direct to the Servers Page.

5.6.6.1.7 Users (IP.Users_BTN)

If the user is not admin, give an error message, if it is admin, direct it to the admin page.

5.6.6.1.6 Sphere (IP.Sphere_BTN)

This button take to full screen.

5.6.6.2 Test Cases

TC ID	Requirements	Priority	Scenario Description	Pass/Fail
IP.Download Agent_BTN	-	H	Download agent on the virtual machine.	Pass
IP.Moon_BTN	-	L	Turn the Page to Dark.	Pass
IP.UName_BTN	-	H	Open the Manage Profile menu.	Pass
IP.Settings_BTN	-	H	Direct to the Settings Page.	Pass
IP.Logout_BTN	-	H	Log out user and redirect to Home Page.	Pass
IP.Servers_BTN	-	H	Direct to the Servers Page.	Pass
IP.Users_BTN	-	H	If the user is not admin, give an error message, if it is admin, direct it to the admin page.	Pass
IP.Sphere_BTN	-	L	Take to full screen.	Pass

5.6.7 Settings Page (SP)

5.6.7.1 Subfeatures to be tested

5.6.7.1.1 Change profile features (SP.Save_BTN)

If there is a space, do not change it, change the changed ones in the database.

5.6.7.1.2 Dark (SP.Moon_BTN)

The Dark button turns off After Login Home Page to dark.

5.6.7.1.3 User Name (SP.UName_BTN)

This button open the Manage Profile menu

5.6.7.1.4 UName/Settings (SP.Settings_BTN)

This button direct to the Settings Page.

5.6.7.1.5 UName/Logout (SP.Logout_BTN)

This button log out user and redirect to Home Page.

5.6.7.1.6 Servers (SP.Servers_BTN)

This button direct to the Servers Page.

5.6.7.1.7 Users (SP.Users_BTN)

If the user is not admin, give an error message, if it is admin, direct it to the admin page.

5.6.7.1.6 Sphere (SP.Sphere_BTN)

This button take to full screen.

5.6.7.2 Test Cases

TC ID	Requirements	Priority	Scenario Description	Pass /Fail
SP.Save_BTN	-	H	If there is a space, do not change it, change the changed ones in the database.	Pass
SP.Moon_BTN	-	L	Turn the Page to Dark.	Pass
SP.UName_BTN	-	H	Open the Manage Profile menu.	Pass
SP.Settings_BTN	-	H	Direct to the Settings Page.	Pass
SP.Logout_BTN	-	H	Log out user and redirect to Home Page.	Pass
SP.Servers_BTN	-	H	Direct to the Servers Page.	Pass
SP.Users_BTN	-	H	If the user is not admin, give an error message, if it is admin, direct it to the admin page.	Pass
SP.Sphere_BTN	-	L	Take to full screen.	Pass

5.6.8 Settings Page (UP)

5.6.8.1 Subfeatures to be tested

5.6.8.1.1 Change profile features (UP.Make Admin_BTN)

This button Set the user's role to Admin.

5.6.8.1.1 Change profile features (UP.Make User_BTN)

This button set the user's role to User.

5.6.8.1.1 Change profile features (UP.Delete_BTN)

This button delete the user.

5.6.8.1.2 Dark (UP.Moon_BTN)

The Dark button turns off After Login Home Page to dark.

5.6.8.1.3 User Name (UP.UName_BTN)

This button open the Manage Profile menu

5.6.8.1.4 UName/Settings (UP.Settings_BTN)

This button direct to the Settings Page.

5.6.8.1.5 UName/Logout (UP.Logout_BTN)

This button log out user and redirect to Home Page.

5.6.8.1.6 Servers (UP.Servers_BTN)

This button direct to the Servers Page.

5.6.8.1.7 Users (UP.Users_BTN)

If the user is not admin, give an error message, if it is admin, direct it to the admin page.

5.6.8.1.6 Sphere (UP.Sphere_BTN)

This button take to full screen.

5.6.8.2 Test Cases

TC ID	Requirements	Priority	Scenario Description	Pass /Fail
UP.Make Admin_BTN	-	H	Set the user's role to Admin.	Pass
UP.Make User_BTN	-	H	Set the user's role to User.	Pass
UP.Delete_BTN	-	H	Delete the user.	Pass
UP.Moon_BTN	-	L	Turn the Page to Dark.	Pass
UP.UName_BTN	-	H	Open the Manage Profile menu.	Pass
UP.Settings_BTN	-	H	Direct to the Settings Page.	Pass
UP.Logout_BTN	-	H	Log out user and redirect to Home Page.	Pass
UP.Servers_BTN	-	H	Direct to the Servers Page.	Pass
UP.Users_BTN	-	H	If the user is not admin, give an error message, if it is admin, direct it to the admin page.	Pass
UP.Sphere_BTN	-	L	Take to full screen.	Pass

5.7. Detailed Test Cases

5.7.1 HP

5.7.1.1 HP.Sign in_BTN

TC_ID	HP.Sign in_BTN
Purpose	Sign in to the system.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	A valid user account.
Setup	Sign in to system.
Procedure	[A01] Go to Home page.
	[A02] Enter a valid user id.
	[A03] Enter the valid password for this user
	[A04] Click on the “Sign in” button.
	[V01] It will be observed that the user has logged in successfully or received an error.
Cleanup	Logout

5.7.1.2 HP.Create an Account

TC_ID	HP.Create an Account
Purpose	Direct to the Register Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Register Page
Procedure	[A01] Go to Home page.
	[A02] Click on the “Create an account”.
	[V01] It will be observed whether the Register Page page is visited or not.
Cleanup	Logout

5.7.1.3 HP.Forgot Password

TC_ID	HP.Forgot Password
Purpose	Direct to the Forgot Password Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Forgot Password Page
Procedure	[A01] Go to Home page.
	[A02] Click on the “Forgot Password?”.
	[V01] It will be observed whether the Forgot Password Page page is visited or not.
Cleanup	Logout

5.7.2 RP

5.7.2.1 RP.Sign up_BTN

TC_ID	RP.Sign up_BTN
Purpose	Create a user account
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Create a user account
Procedure	[A01] Go to Register page.
	[A02] Enter a name.
	[A03] Enter email.
	[A04] Enter password
	[A05] Enter password
	[V01] Observe if the user has created successfully or throws an error.
Cleanup	Logout

5.7.2.2 RP.Sign in instead_BTN

TC_ID	RP.Sign in instead_BTN
Purpose	Direct to the Home Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Home Page
Procedure	[A01] Go to Register page.
	[A02] Click on the “Sign in instead”.
	[V01] It will be observed whether the Home Page page is visited or not.
Cleanup	Logout

5.7.3 FP

5.7.3.1 FP.Sign in_BTN

TC_ID	FP.Sign in_BTN
Purpose	Send reset link.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	A valid user mail.
Setup	Send reset link.
Procedure	[A01] Go to Forgot Password page.
	[A02] Enter a valid user mail.
	[A03] Click on the “Sign in” button.
	[V01] Observe if it fails and the reset mail goes.
Cleanup	Logout

5.7.3.2 FP.Back to login_BTN

TC_ID	FP.Back to Login_BTN
Purpose	Direct to the Home Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Home Page
Procedure	[A01] Go to Forgot Password page.
	[A02] Click on the “Back to login”.
	[V01] It will be observed whether the Home Page page is visited or not.
Cleanup	Logout

5.7.4 ALHP

5.7.4.1 ALHP.Add Server_BTN

TC_ID	ALHP.Add Server_BTN
Purpose	Direct to the Add Server Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Add Server Page
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “Add Server”.
	[V01] It will be observed whether the Add Server Page page is visited or not.
Cleanup	Logout

5.7.4.2 ALHP.Moon_BTN

TC ID	ALHP.Moon_BTN
Purpose	Turn to Page to Dark.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Turn to Page to Dark.
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “Moon shape”.
	[V01] Observe if the page darkens.
Cleanup	Logout

5.7.4.3 ALHP.UName_BTN

TC ID	ALHP.UName_BTN
Purpose	Open manage profile menu
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Open manage profile menu
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “User name”.
	[V01] Observe if the manage user menu opens.
Cleanup	Logout

5.7.4.4 ALHP.Settings_BTN

TC ID	ALHP.Settings_BTN
Purpose	Direct to the Settings Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Settings Page
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Settings_BTN”.
	[V01] It will be observed whether the Settings Page page is visited or not.
Cleanup	Logout

5.7.4.5 ALHP.Login_BTN

TC ID	ALHP.Login_BTN
Purpose	Login user
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Home Page
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Logout_BTN”.
	[V01] Check if the user was able to log out of the application or not.
Cleanup	Login

5.7.4.6 ALHP.Servers_BTN

TC ID	ALHP.Servers_BTN
Purpose	Direct to the Servers Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Servers Page
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “Servers_BTN”.
	[V01] It will be observed whether the Server Page page is visited or not.
Cleanup	Login

5.7.4.7 ALHP.Users_BTN

TC ID	ALHP.Users_BTN
Purpose	Direct to the Users Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	User has an admin role.
Setup	Direct to the Users Page
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “Users_BTN”.
	[V01] It will be observed whether the Users Page page is visited or not.
Cleanup	Logout

5.7.4.8 ALHP.Sphere_BTN

TC ID	ALHP.Sphere_BTN
Purpose	Take to full screen.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Take to full screen.
Procedure	[A01] Go to After Login Home Page page.
	[A02] Click on the “Sphere shape”.
	[V01] Check if it goes to full screen.
Cleanup	Logout

5.7.5 ASP

5.7.5.1 ASP.Save_BTN

TC_ID	ASP.Save_BTN
Purpose	Direct to the Installation Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	Enter a valid name
Setup	Direct to the Installation Page
Procedure	[A01] Go to After Add Server Page page.
	[A02] Enter server name.
	[A03] Click on the “Save_BTN”.
	[V01] Give error or redirect to installation page.
Cleanup	Logout

5.7.5.2 ASP.Moon_BTN

TC_ID	ASP.Moon_BTN
Purpose	Turn to Page to Dark.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Turn to Page to Dark.
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “Moon shape”.
	[V01] Observe if the page darkens.
Cleanup	Logout

5.7.5.3 ASP.UName_BTN

TC_ID	ASP.UName_BTN
Purpose	Open manage profile menu
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Open manage profile menu
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “User name”.
	[V01] Observe if the manage user menu opens.
Cleanup	Logout

5.7.5.4 ASP.Settings_BTN

TC_ID	ASP.Settings_BTN
Purpose	Direct to the Settings Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Settings Page
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Settings_BTN”.
	[V01] It will be observed whether the Settings Page page is visited or not.
Cleanup	Logout

5.7.5.5 ASP.Logout_BTN

TC ID	ASP.Logout_BTN
Purpose	Logout user
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Home Page
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Logout_BTN”.
	[V01] Check if the user was able to log out of the application or not.
Cleanup	Logout

5.7.5.6 ASP.Servers_BTN

TC ID	ASP.Servers_BTN
Purpose	Direct to the Servers Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Servers Page
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “Servers_BTN”.
	[V01] It will be observed whether the Server Page page is visited or not.
Cleanup	Logout

5.7.5.7 ASP.Users_BTN

TC ID	ASP.Users_BTN
Purpose	Direct to the Users Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	User has an admin role.
Setup	Direct to the Users Page
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “Users_BTN”.
	[V01] It will be observed whether the Users Page page is visited or not.
Cleanup	Logout

5.7.5.8 ASP.Sphere_BTN

TC ID	ASP.Sphere_BTN
Purpose	Take to full screen.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Take to full screen.
Procedure	[A01] Go to Add Server Page page.
	[A02] Click on the “Sphere shape”.
	[V01] Check if it goes to full screen.
Cleanup	Logout

5.7.6 IP

5.7.6.1 IP.Download Agent_BTN

TC_ID	IP.Download Agent_BTN
Purpose	Download agent on VM
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Download agent on VM
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “Download Agent_BTN”.
	[V01] Observe if the download of the Agent starts.
Cleanup	Logout

5.7.6.1 IP.Moon_BTN

TC_ID	IP.Moon_BTN
Purpose	Turn to Page to Dark.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Turn to Page to Dark.
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “Moon shape”.
	[V01] Observe if the page darkens.
Cleanup	Logout

5.7.6.1 IP.UName_BTN

TC ID	IP.UName_BTN
Purpose	Open manage profile menu
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Open manage profile menu
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “User name”.
	[V01] Observe if the manage user menu opens.
Cleanup	Logout

5.7.6.1 IP.Settings_BTN

TC ID	IP.Settings_BTN
Purpose	Direct to the Settings Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Settings Page
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Settings_BTN”.
	[V01] It will be observed whether the Settings Page page is visited or not.
Cleanup	Logout

5.7.6.1 IPLogout_BTN

TC ID	IP.Logout_BTN
Purpose	Logout user
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Home Page
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Logout_BTN”.
	[V01] Check if the user was able to log out of the application or not.
Cleanup	Logout

5.7.6.1 IPServers_BTN

TC ID	IP.Servers_BTN
Purpose	Direct to the Servers Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Servers Page
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “Servers_BTN”.
	[V01] It will be observed whether the Server Page page is visited or not.
Cleanup	Logout

5.7.6.1 IP.Users_BTN

TC_ID	IP.Users_BTN
Purpose	Direct to the Users Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	User has an admin role.
Setup	Direct to the Users Page
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “Users_BTN”.
	[V01] It will be observed whether the Users Page page is visited or not.
Cleanup	Logout

5.7.6.1 IP.Sphere_BTN

TC_ID	IP.Sphere_BTN
Purpose	Take to full screen.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Take to full screen.
Procedure	[A01] Go to Installation Page page.
	[A02] Click on the “Sphere shape”.
	[V01] Check if it goes to full screen.
Cleanup	Logout

5.7.7 SP

5.7.7.1 SP.Save_BTN

TC_ID	SP.Save_BTN
Purpose	Change the changed ones in database
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Change the changed ones in database
Procedure	[A01] Go to Settings Page page.
	[A02] Enter new name
	[A03] Enter new email
	[A04] Enter new password
	[V01] Observe if the changes are updated in the database.
Cleanup	Logout

5.7.7.1 SP.Moon_BTN

TC_ID	SP.Moon_BTN
Purpose	Turn to Page to Dark.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Turn to Page to Dark.
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “Moon shape”.
	[V01] Observe if the page darkens.
Cleanup	Logout

5.7.7.2 SP.UName_BTN

TC ID	SP.UName_BTN
Purpose	Open manage profile menu
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Open manage profile menu
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “User name”.
	[V01] Observe if the manage user menu opens.
Cleanup	Logout

5.7.7.3 SP.Setings_BTN

TC ID	SP.Setings_BTN
Purpose	Direct to the Settings Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Settings Page
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Settings_BTN”.
	[V01] It will be observed whether the Settings Page page is visited or not.
Cleanup	Logout

5.7.7.4 SP.Logout_BTN

TC ID	SP.Logout_BTN
Purpose	Logout user
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Home Page
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Logout_BTN”.
	[V01] Check if the user was able to log out of the application or not.
Cleanup	Logout

5.7.7.5 SP.Servers_BTN

TC ID	SP.Servers_BTN
Purpose	Direct to the Servers Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Servers Page
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “Servers_BTN”.
	[V01] It will be observed whether the Server Page page is visited or not.
Cleanup	Logout

5.7.7.6 SP.Users_BTN

TC ID	SP.Users_BTN
Purpose	Direct to the Users Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	User has an admin role.
Setup	Direct to the Users Page
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “Users_BTN”.
	[V01] It will be observed whether the Users Page page is visited or not.
Cleanup	Logout

5.7.7.7 SP.Sphere_BTN

TC_ID	SP.Sphere_BTN
Purpose	Take to full screen.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Take to full screen.
Procedure	[A01] Go to Settings Page page.
	[A02] Click on the “Sphere shape”.
	[V01] Check if it goes to full screen.
Cleanup	Logout

5.7.8 UP

5.7.8.1 UP.Make Admin_BTN

TC_ID	UP.Make Admin_BTN
Purpose	Make Admin
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Make Admin
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Make Admin_BTN”.
	[V01] Observe if the user gets the admin role.
Cleanup	Logout

5.7.8.2 UP.Make User_BTN

TC_ID	UP.Make User_BTN
Purpose	Make User
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Make User
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Make User_BTN”.
	[V01] Observe if the user gets the user role.
Cleanup	Logout

5.7.8.3 UP.Delete_BTN

TC ID	UP.Delete_BTN
Purpose	Delete User
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Make User
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Delete_BTN”.
	[V01] Observe if the user is deleted from the application.
Cleanup	Logout

5.7.8.4 UPMoon_BTN

TC_ID	UP.Moon_BTN
Purpose	Turn to Page to Dark.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Turn to Page to Dark.
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Moon shape”.
	[V01] Observe if the page darkens.
Cleanup	Logout

5.7.8.5 UP.UName_BTN

TC ID	UP.UName_BTN
Purpose	Open manage profile menu
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Open manage profile menu
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “User name”.
	[V01] Observe if the manage user menu opens.
Cleanup	Logout

5.7.8.6 UP.Settings_BTN

TC_ID	UP.Settings_BTN
Purpose	Direct to the Settings Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Settings Page
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Settings_BTN”.
	[V01] It will be observed whether the Settings Page page is visited or not.
Cleanup	Logout

5.7.8.7. UP.Login_BTN

TC ID	UP.Login_BTN
Purpose	Direct to the Settings Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Settings Page
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “UName_BTN”.
	[A03] Click on the “Logout_BTN”.
	[V01] It will be observed whether the Settings Page page is visited or not.
Cleanup	Login

5.7.8.8 UP.Servers_BTN

TC_ID	UP.Servers_BTN
Purpose	Direct to the Servers Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Direct to the Servers Page
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Servers_BTN”.
	[V01] It will be observed whether the Server Page page is visited or not.
Cleanup	Login

5.7.8.9 UP.Users_BTN

TC ID	UP.Users_BTN
Purpose	Direct to the Users Page
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	User has an admin role.
Setup	Direct to the Users Page
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Users_BTN”.
	[V01] It will be observed whether the Users Page page is visited or not.
Cleanup	Logout

5.7.8.10 UP.Sphere_BTN

TC_ID	UP.Sphere_BTN
Purpose	Take to full screen.
Requirements	-
Priority	H
Estimated Time Needed	1 Minutes
Dependency	-
Setup	Take to full screen.
Procedure	[A01] Go to Users Page page.
	[A02] Click on the “Sphere shape”.
	[V01] Check if it goes to full screen.
Cleanup	Logout

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