# VISHNU D1.1 (TODO) - Users Management System Design

**COLLABORATORS**

| | *TITLE* :<br><br>VISHNU D1.1 (TODO) - Users Management System Design | |
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# Chapter 1

# Document presentation

## 1.1 Document objectives

This document presents the detailed internal design of the Users Management System (UMS) module. The purpose of this module is to organize the managment of the VISHNU users.

## 1.2 Document structure

This document is divided into 4 parts corresponding to the main elements to described the internal design:

- UMS architecture
- Database model
- Data types description
- Internal services design

# Chapter 2

# UMS Design

## 2.1 UMS architecture

The UMS architecture is very simple because its main activities is to write or to read information on a database. In this way, it is a simple client/server architecture where several clients can be connected to a server which makew requests to the database. In this architecture, the clients can not directly request to the database because the only way to request a database is by sending a request to the server.

The communication between clients and the server in VISHNU is possible by using the middleware called Distributed Interactive Engineering Toolbox (DIET). DIET consists of a set of elements that can be used together to build applications using the Grid-RPC paradigm.

## 2.2 Database model

## 2.3 Data types definitions

**Class UMS::Command Content**

| Name | Type | Description |
|---|---|---|
| commandId | string | is the identifier of a command |
| sessionId | string | The sessionId is the identifier of the session define in the database |
| machineId | string | The machineId is the identifier of the machine used by the command |
| cmdDescription | string | cmdDescription is the description of the command |
| cmdStartTime | long | cmdStartTime is the date of the command beginning (the UNIX timestamps is used) |
| cmdEndTime | long | cmdEndTime is the date of the command end (the UNIX timestamps is used) |

**Class UMS::Configuration Content**

| Name | Type | Description |
|---|---|---|
| filePath | string | The filePath is the path of the VISHNU configuration file |
| listConfUsers | List of User | is the list of users objects |
| listConfMachines | List of Machine | is a list of machines objects |
| listConfLocalAccounts | List of LocalAccount | is the list of LocalAccount objects |

**Class UMS::ConnectOptions Content**

| Name | Type | Description |
|---|---|---|
| closePolicy | SessionCloseType | is an option for closing session automatically |
| sessionInactivityDelay | int | The sessionInactivityDelay is the maximum delay in seconds between two API commands when the CLOSE_ON_TIMEOUT option is set |
| substituteUserId | string | is an option which allows an admin to open a session as he/she was a specific user identified by his/her userId |

**Class UMS::ListCmdOptions Content**

| Name | Type | Description |
|---|---|---|
| AdminListOption | boolean | is an admin option for listing all commands of all users |
| userId | string | is an admin option for listing commands launched by a specific user identified by his/her userId |
| sessionId | string | lists all commands launched within a specific session |
| startDateOption | long | allows the user to organize the commands listed by providing the start date (the UNIX timestamp of the start date is used) |
| endDateOption | long | allows the user to organize the commands listed by providing the end date (the timestamp of the end date is used). By default, the end date is the current day |

**Class UMS::ListCommands Content**

| Name | Type | Description |
|---|---|---|
| Commands | List of Command | is the list of commands objects |

**Class UMS::ListLocalAccOptions Content**

| Name | Type | Description |
|---|---|---|
| AdminListOption | boolean | is an admin option for listing all local configurations of all users |
| userId | string | is an admin option for listing the local configurations of a specific user |
| machineId | string | is an option for listing local user configurations on a specific machine |

**Class UMS::ListLocalAccounts Content**

| Name | Type | Description |
|---|---|---|
| accounts | List of LocalAccount | is a list of LocalAccount objects which encapsulates local user configurations |

**Class UMS::ListMachineOptions Content**

| Name | Type | Description |
|---|---|---|
| userId | string | is an admin option for listing machines in which a specific user has a local configuration |
| listAllmachine | boolean | is an option for listing all VISHNU machines |
| machineId | string | is an option for listing information about a specific machine |

**Class UMS::ListMachines Content**

| Name | Type | Description |
|---|---|---|
| machines | List of Machine | is a list of machines objects which encapsulates the machines information |

**Class UMS::ListOptOptions Content**

| Name | Type | Description |
|---|---|---|
| AdminListOption | boolean | is an admin option for listing all user options defined in VISHNU |
| userId | string | is an admin option for listing the options of a specific user |
| optionName | string | allows the user to get the value of a specific option identified by its name |

**Class UMS::ListOptionsValues Content**

| Name | Type | Description |
|---|---|---|
| optionValues | List of OptionValue | is a list of optionValue objects which encapsulates the optionValue information |

**Class UMS::ListSessionOptions Content**

| Name | Type | Description |
|---|---|---|
| sessionListOption | SessionStateType | specifies the type of the sessions which will be listed (INACTIVE or ACTIVE) |
| sessionClosePolicy | SessionCloseType | specifies the closure mode of the sessions which will be listed (CLOSE_ON_TIMEOUT or CLOSE_ON_DISCONNECT) |
| sessionInactivityDelay | int | specifies the inactivity delay in seconds of the sessions which will be listed |
| machineId | string | allows the user to list sessions opened on a specific machine |
| AdminListOption | boolean | is an admin option for listing all sessions of all users |
| userId | string | is an admin option for listing sessions opened by a specific user |
| sessionId | string | allows the user to list all commands launched within a specific session |
| startDateOption | long | allows the user to organize the commands listed by providing the start date (the UNIX timestamp of the start date is used) |
| endDateOption | long | allows the user to organize the commands listed by providing the end date (the timestamp of the end date is used). By default, the end date is the current day |

**Class UMS::ListSessions Content**

| Name | Type | Description |
|---|---|---|
| sessions | List of Session | is the list of session objects |

**Class UMS::ListUsers Content**

| Name | Type | Description |
|---|---|---|
| users | List of User | is the list of users objects |

**Class UMS::LocalAccount Content**

| Name | Type | Description |
|---|---|---|
| userId | string | The userId represents the VISHNU user identifier of the user of the local user configuration |
| machineId | string | The MachineId represents the identifier of the machine associated to the local user configuration |
| acLogin | string | accLogin represents the login of the user on the associated machine |
| sshKeyPath | string | sshKeyPath is the path of the ssh key of the user on the associated machine |
| HomeDirectory | string | HomeDirectory is the path of the home directory of the user on the associated machine |

**Class UMS::Machine Content**

| Name | Type | Description |
|---|---|---|
| machineId | string | represents the identifier of the machine |
| name | string | represents the name of the machine |
| site | string | represents the location of the machine |
| machineDescription | string | represents the description of the machine |
| language | string | represents the language in which the description of the machine has been done |

**Class UMS::OptionValue Content**

| Name | Type | Description |
|---|---|---|
| optionName | string | represents the name of an option |
| value | string | represents the value of an option |

**Class UMS::Session Content**

| Name | Type | Description |
|---|---|---|
| sessionId | string | represents the VISHNU session identifier of the session |
| userId | string | represents the VISHNU user identifier of the user who has opened the session |
| sessionKey | string | is the key of the session generated by VISHNU |
| dateLastConnect | long | is the date of the last connection to the session (the UNIX timestamps is used) |
| dateCreation | long | is the date of the first connection to the session (the UNIX timestamps is used) |
| dateClosure | long | is the date of the closure of the session (the UNIX timestamps is used) |
| state | SessionStateType | is the state of the session (ACTIVE OR INACTIVE) |
| closePolicy | SessionCloseType | is the way to close the session |
| timeout | long | is the inactivity delay in seconds associated to the CLOSE_ON_TIMEOUT option |

**Class UMS::UpdateUserOptions Content**

| Name | Type | Description |
|---|---|---|
| firstname | string | represents the updated firstname of the user |
| lastname | string | represents the updated lastname of the user |
| privilege | string | represents the updated privilege of the user |
| email | string | represents the updated email adress of the user |

**Class UMS::User Content**

| Name | Type | Description |
|---|---|---|
| userId | string | represents the VISHNU user identifier |
| password | string | is the password of the user. At the beginning, an admin can give a temporary password or it is automatically generated by the System. |
| firstname | string | is the firstname of the user |
| lastname | string | is the lastname of the user |
| privilege | int | is the privilege of the user (admin or simple user) |
| email | string | is the email of the user |

**Enumeration UMS::SessionCloseType Type**

| Name | Value |
|---|---|
| CLOSE_ON_TIMEOUT | 0 |
| CLOSE_ON_DISCONNECT | 1 |

**Enumeration UMS::SessionStateType Type**

| Name | Value |
|---|---|
| INACTIVE | 0 |
| ACTIVE | 1 |

## 2.4 Internal services design

The description of the internal service description is organized as follows:

For each service the emphasis laid on the client and the server parts. This is an example:

**UMS::service name**

| Client | Server Daemon |
|---|---|
| Client actions description | Server actions description |

The following paragraphs show the internal design of all services:

**UMS::connect**

The connect service allows the user to open a session by providing:

**Required parameters:**

- Login and password,

**Optional parameters:**

- The way for closing the session (CLOSE_ON_DISCONNECT or CLOSE_ON_TIMEOUT),

- he maximum delay in seconds when the CLOSE_ON_TIMEOUT option is set,

- For administrators, it is possible to open a session as he/she was a specific user.

**Internal client and server design:**

| Client | Server Daemon |
|---|---|
| - The password is crypted by using the Secure Hash Algorithm SHA-512 of the Linux library libcrypt,<br>- If the close policy option is set (CLOSE_ON_DISCONNECT or CLOSE_ON_TIMEOUT), for command line it can be set on an environment variable VISHNU_CLOSE_POLICY and used by default,<br>- If the close policy option is set to CLOSE_ON_TIMEOUT, the inactivity delay in seconds can be defined,<br>- The programs checks the ssk key path of the user's machine define on an environment variable and get its containing as a string,<br>- All optional parameters are encapsulates on the ConnectOptions object | Server actions description |

**UMS::reconnect**

| Client | Server Daemon |
|---|---|
| The connect service allows the user to open a session | Server actions description |