VISHNU D1.0 - General specifications

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Chapter 1

Document presentation

1.1 Document objectives

This document presents the external specifications of the Vishnu system at a general level. At this level, we describe the interaction of a user with the system without providing implementation details. The different steps that constitute the scenario are detailed as well as the content of the messages exchanged. The main objective is to describe the system from the user point of view.

These general specifications are a prerequisite for the detailed specifications step in the software development process.

1.2 Document structure

The document is divided into 4 parts corresponding to the 4 modules that compose the Vishnu system:

- UMS: Users Management System
- TMS: Tasks Management System
- FMS: Files Management System
- IMS: Information Management System

Each module corresponds to a chapter in the document, and each chapter contains two sections:

- A first section containing "Use case descriptions" that follow the standard UML description of a use case
- A second section containing the "Use case diagrams" that describe the organization of the different use cases. These diagrams follow the UML2.0 standard.

1.3 References

1.4 Glossary

Chapter 2

Use cases for Users Management System (UMS)

2.1 Use case descriptions

2.1.1 U1 - Session with manual closure

Title	U1 - Session with manual closure
Summary	User opens a new session and closes it manually
Actors	User
Precondition	- the user is authenticated - VISHNU is installed and running on the client system
Postcondition	- the session state is closed - a session log has been created - all user requests submitted within the session are completed
Base sequence	1. include::U1.1 Open session 2. System is ready to process user commands 3. include::U1.2 Close session (before the maximum inactivity delay if option CLOSE_POLICY is equal to CLOSE_ON_TIMEOUT)
Branch sequence	2a. U1.3 Execute user command
Exception sequence	1a. include::U1.1 exceptions 3a. if session cannot be closed due to running commands, user must wait until all commands are completed before trying step 3 again
Extensions	U1.4 - Execute synchronous user request U1.6 - Reconnect to session U1.5 - Execute asynchronous user request

2.1.2 U1.1 - Open session

Title	U1.1 - Open session
Summary	User opens a session
Actors	User
Precondition	- User is connected on a client host on which vishnu is installed and that can be connected to the vishnu infrastructure

Postcondition	- a session is active - the user's environment contains a session certificate
Base sequence	1. User provides login and password to the "connect" command 2. System validates login and password (User is authenticated) 3. System creates the session and activates it 4. System provides the session certificate to the user
Branch sequence	2a. If the password is a temporary password (after reset by the Admin) the System asks the User to enter a new password, then ask for a confirmation, and registers the new password if both steps are ok. If non-interactive request then this is an exception (a change password request is required).
Exception sequence	2a. user login is unknown 2a1. the System returns an error message 2b. user password is invalid 2b1. the System returns an error message 2b2. if nb of login failures < max nb, the system increments the login failures counter for the user 2b3. if nb of login failures = max nb, the system sets the user account as blocked 2c. user account is blocked 2c1. the System returns an error message 2d. vishnu infrastructure is unreachable or unavailable 2d1. the System returns an error message 2e. user password is temporary and request is non-interactive: the System returns an error message

2.1.3 U1.2 - Close session

Title	U1.2 - Close session
Summary	User closes the session manually
Actors	User
Precondition	- the User is connected on the client system - the User has an open session on the client system
Postcondition	- the session is closed - a session log has been created - all user requests submitted during the session are completed
Base sequence	1. the System checks that there are no running commands within the session 2. the System closes the session 3. the System informs the user that the session has been closed
Branch sequence	
Exception sequence	1a. If there are running commands within the session, the system informs the user that the session can not be closed

2.1.4 U1.4 - Execute synchronous user request

Title	U1.4 - Execute synchronous user request
Summary	User submits a synchronous request to the System
Actors	User

Precondition	- a session (for the current user and client host) is active
Postcondition	- the request is completed - a request log is created
Base sequence	1. User sends the request to the System 2. System returns the results to the user
Branch sequence	
Exception sequence	Invalid session (bad session certificate or unavailable session) Invalid request Permission denied (admin request issued by normal user) Ressource not available VISHNU System crashed
Extension of	U1 - Session with manual closure U3 - Session with automatic closure on disconnect U2 - Session with automatic closure on timeout

2.2 Use case diagrams

2.2.1 UC UMS User Manual

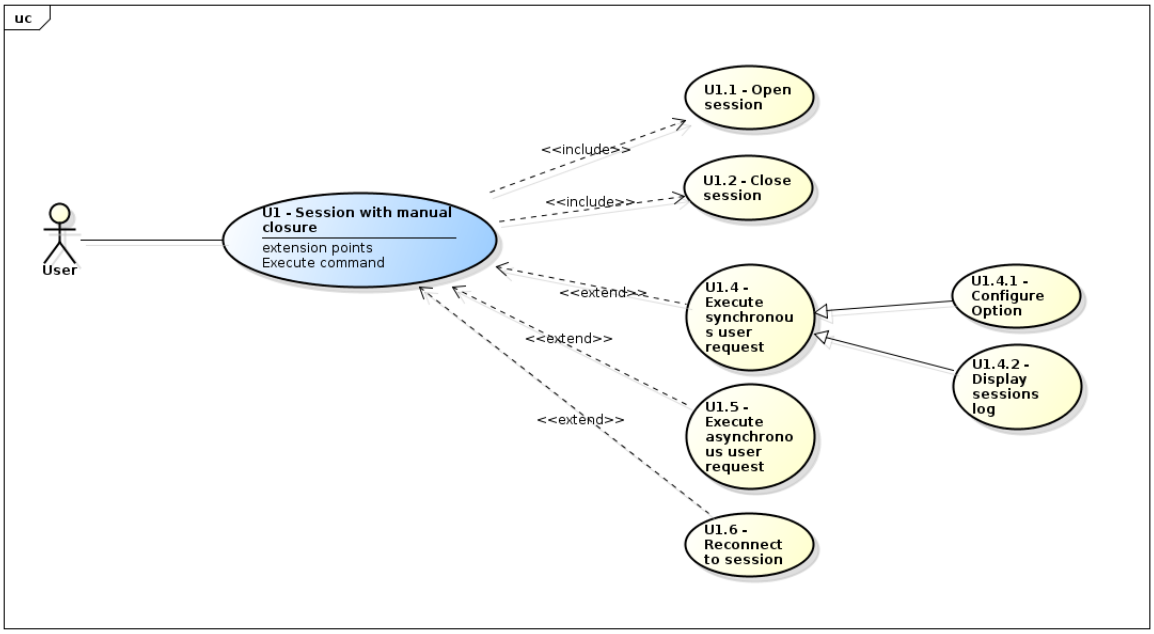

Figure 2.1: UC UMS User Manual

2.2.2 UC UMS Admin

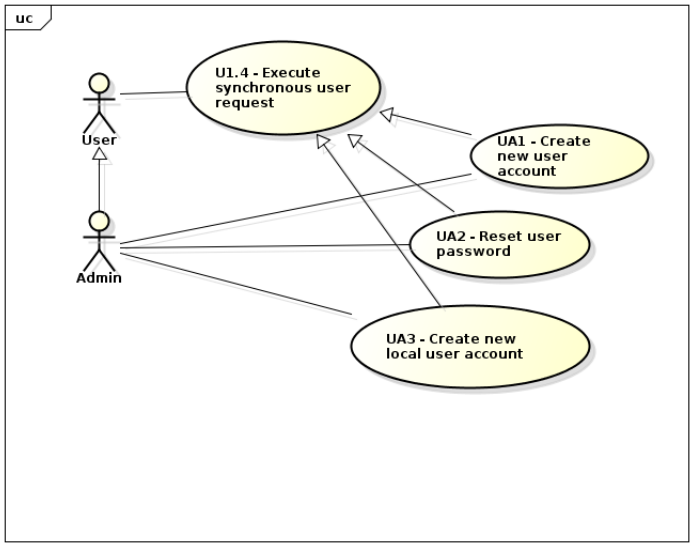

Figure 2.2: UC UMS Admin

Chapter 3

Use cases for Tasks Management System (TMS)

3.1 Use case descriptions

3.1.1 U2.1-SubmitJob

Title	U2.1-SubmitJob
Summary	User submits a job
Actors	User
Precondition	- User has an active open session
Postcondition	- The job is submitted on the specified machine. - The job state and id are recorded on the system's log. - The job id is sent to the user
Base sequence	1. The path contatining the characteristics of the job is verified 2. The TMS server on the given machine is contacted 3. The session id is ckecked by the TMS server 4. The job is submited by the TMS server to the batch scheduler 5. The id of the submitted job is returned to the user.
Branch sequence	
Exception sequence	1a. The path containing the characteristics of the job is not found - The system prints an error message that informs user - The user revises the path - The UseCase goes to the action 1 2a. The name of the given machine is unknown -The system prints an error message that informs the user -The UseCase goes to the action 2 of the base sequence. 3a. The session id is not valid - The system prints an error message that informs the user. - The user revises the id. - The UseCase goes to the action 3 of the base sequence. 4a. The TMS server is unavailable - The system returns an error message

3.1.2 U2.2-GetJob

Title	U2.2-GetJob
Summary	User requests the TMS server for getting some information of a specific job
Actors	User
Precondition	- User has an active open session
Postcondition	- The user receives all features of a specific job - The system registers all job information in the system's log
Base sequence	1. The system checks the session id 2. The systems checks the job id 3. The user receives all features of a specific job
Branch sequence	
Exception sequence	1a. The session id is not a valid id - The system prints an error message that informs the user. - The user revises the id. - The UseCase goes to the action 1 of the base sequence. 2a. The job id is not a valid id - The system prints an error message that informs the user. - The user revises the id. - The UseCase goes to the action 1 of the base sequence. 3a. The name of the given machine is unknown -The system prints an error message that informs the user -User gives a correct name. -The UseCase goes to the action 5 of the base sequence. 4a. The TMS server is unavailable - The system returns an error message
Extension of	U5.1-CheckSessionId

3.1.3 U2.3-ListJobs

Title	U2.3-ListJobs
Summary	User lists all jobs submitted
Actors	User
Precondition	-User has an active open session
Postcondition	- The System sends information on all jobs to the user - The System registers information on all jobs in the system's log
Base sequence	1. The TMS server on the given machine is contacted 2. The session id is ckecked by the TMS server 3. The System sends full information on all jobs to the user
Branch sequence	

Exception sequence	1a. The name of the given machine is unknown -The system prints an error message that informs the user -The UseCase goes to the action 2 of the base sequence. 2a. The session id is not valid - The system prints an error message that informs the user. - The user revises the id. - The UseCase goes to the action 2 of the base sequence. 3a. The TMS server is unavailable - The system returns an error message

3.1.4 U2.5-ListQueue

Title	U2.5-ListQueue
Summary	User lists all queues or classes of a specific batch scheduler
Actors	User
Precondition	-User has an active open session
Postcondition	-The system collects the informations on each queue or classes. -The system send the list contained the information on all queues to the user.
Base sequence	1. The TMS server on the given machine is contacted 2. The session id is ckecked by the TMS server 3. The System sends full information on all queues or classes to the user
Branch sequence	
Exception sequence	1a. The name of the given machine is unknown -The system prints an error message that informs the user -The UseCase goes to the action 2 of the base sequence. 2a. The session id is not valid - The system prints an error message that informs the user. - The user revises the id. - The UseCase goes to the action 2 of the base sequence. 3a. The TMS server is unavailable - The system returns an error message

3.2 Use case diagrams

3.2.1 GetJob

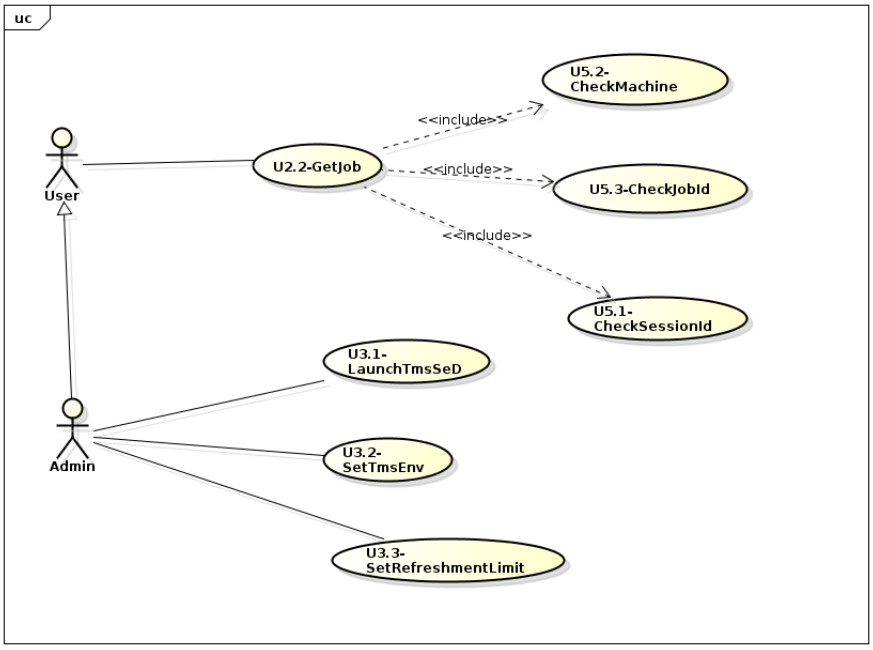

Figure 3.1: GetJob

3.2.2 ListJobs

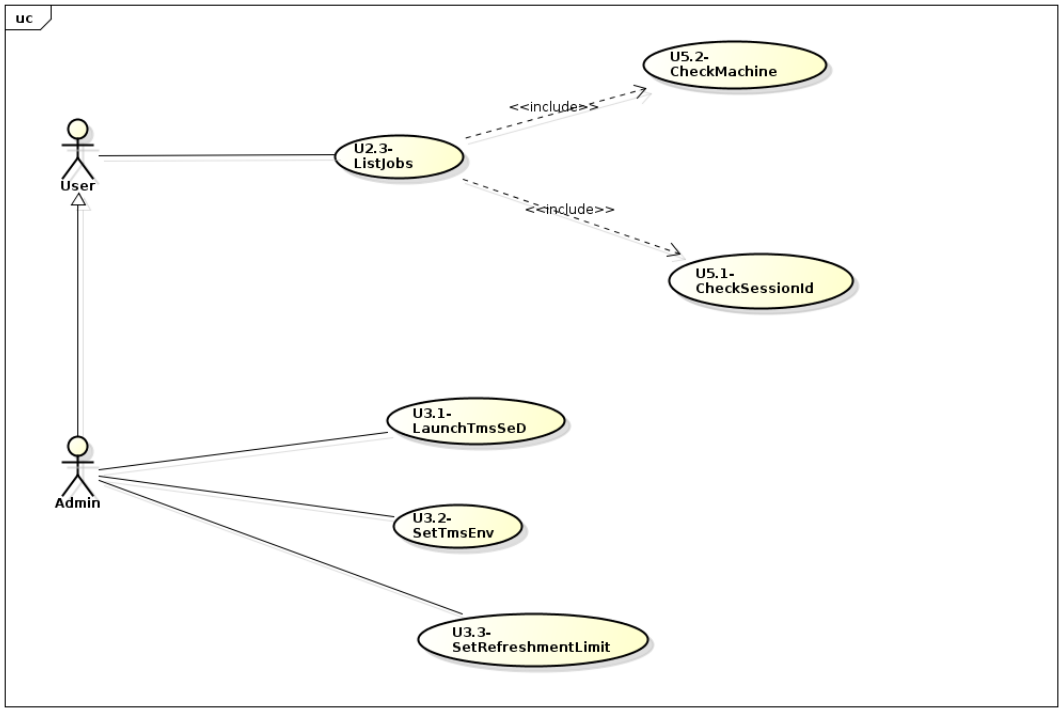

Figure 3.2: ListJobs

3.2.3 ListQueue

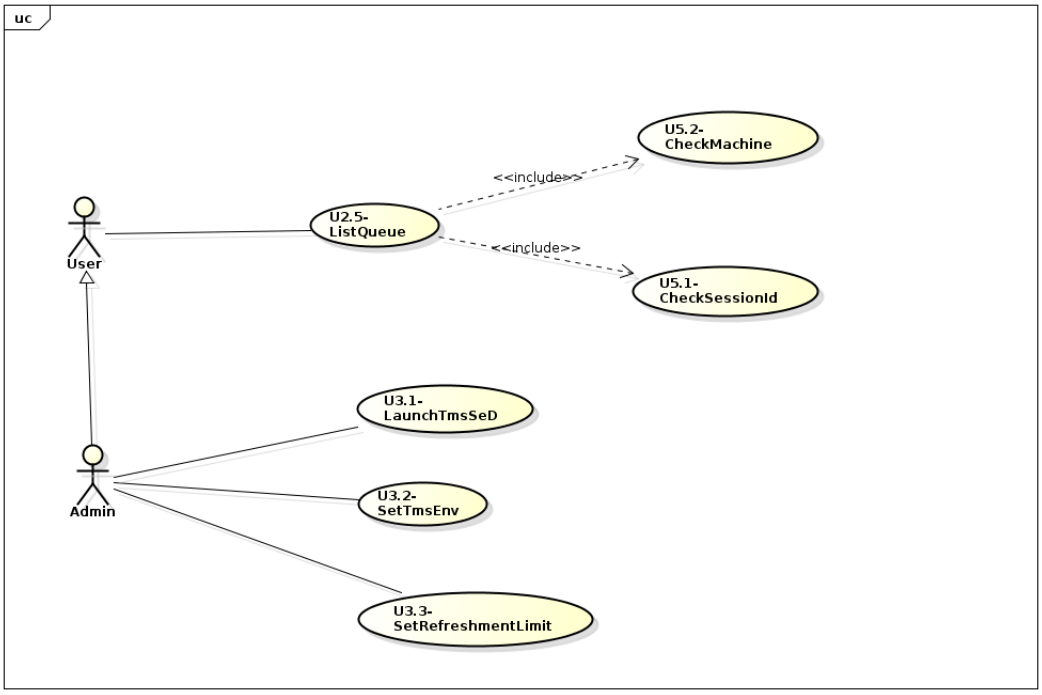

Figure 3.3: ListQueue

3.2.4 SubmitJob

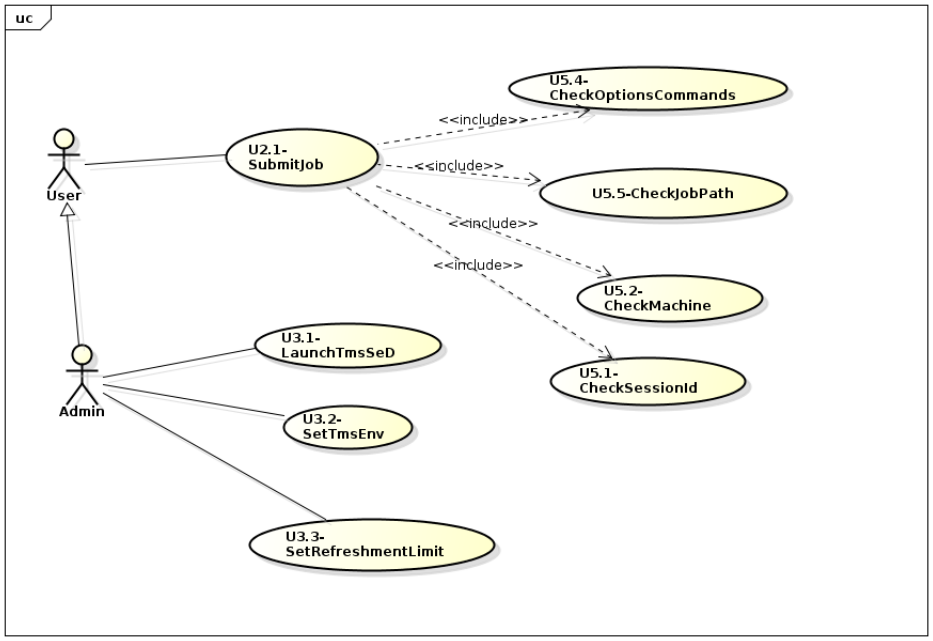

Figure 3.4: SubmitJob