

# **VISHNU User Manual**



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# Chapter 1

## Document presentation

### 1.1 Document objectives

This documents is a quick start guide of VISHNU software for users. The main objective of this document is to describe the VISHNU installation procedure and the way to use it.

### 1.2 Document structure

- Chapter 1 presents the document structure.
- Chapter 2 describes the VISHNU software (installation procedure, usage description and troubleshooting).
- Chapter 3 is a quick start guide for the different VISHNU interfaces.
- Chapter 4 and Chapter 5 contain the VISHNU commands reference respectively for UMS and TMS package.
- Chapter 6 and Chapter 7 contain the C++ API reference respectively for UMS and TMS package.
- Chapter 8 and Chapter 9 contain the Python API reference respectively for UMS and TMS package.

### 1.3 References

- [D1.1b]: VISHNU "Spécifications techniques des besoins"
  - [DIETMAN]: DIET User's Manual v2.6 (available with the DIET distribution at <http://graal.ens-lyon.fr/~diet>)
-

## Chapter 2

# Installation and usage

The VISHNU software is based on SysFera-DS which is an open-source middleware developed by SysFera. VISHNU is primarily designed to facilitate the access to high-performance computing resources by providing the following services:

- User management services (UMS): authentication and session management.
- Information management services (IMS): monitoring and control services.
- Tasks management services (TMS): submission of tasks (jobs) on computing resources.
- File management services (FMS): display and transfer of files between storage resources.

### 2.1 Installation procedure

This section details the main steps of the installation process, including the installation requirements [D1.1b]. VISHNU is based on SysFera-DS software which must be installed before.

#### Installation requirements:

- GCC V4.4.3
- CMAKE V2.6
- OMNIORB 4.1.4
- SYSFERA-DS V2.7 (available at: <http://graal.ens-lyon.fr/DIET/> )
- BOOST V1.45
- PYTHON V2.5
- JAVA V1.6
- SWIG V1.3
- LIBCRYPT

#### Installation procedure:

### 2.1.1 From sources

- Download the VISHNU install sources
- Decompress it and go to the vishnu directory
- Create a build directory and run CMake as follows:
  - > mkdir build
  - > cd buildIf your install directory is for example: /opt/vishnu
  - > cmake -DCLIENT\_ONLY=ON -DCMAKE\_INSTALL\_PREFIX=/opt/vishnu ..
  - > make && make install
- **To compile the UMS package :**
  - > cmake -DCOMPILER\_UMS=ON -DCMAKE\_INSTALL\_PREFIX=/opt/vishnu ..
- **To compile the TMS package :**
  - > cmake -DCOMPILER\_UMS=ON -DCOMPILER\_TMS=ON -DCMAKE\_INSTALL\_PREFIX=/opt/vishnu ..
- **To compile the FMS package :**
  - > cmake -DCOMPILER\_UMS=ON -DCOMPILER\_FMS=ON -DCMAKE\_INSTALL\_PREFIX=/opt/vishnu ..
- **To compile the IMS package :**
  - > cmake -DCOMPILER\_UMS=ON -DCOMPILER\_TMS=ON -DCOMPILER\_FMS=ON -DCOMPILER\_IMS=ON -DCMAKE\_INSTALL\_PREFIX=/opt/vishnu ..

### 2.1.2 From binaries package

## 2.2 Software usage description

### 2.2.1 UMS package

#### 2.2.1.1 User account creation

The first step to access VISHNU is to request a new account to a VISHNU administrator. The only information required to create a new account is your full name and email address. You will automatically receive an email containing your userId and password.

#### 2.2.1.2 Connection to VISHNU

To connect, use the **vishnu\_connect** command in the shell terminal (all bourne shell are supported). The password received by email is temporary and must be changed at the first connection by using the **vishnu\_change\_password** command.

#### 2.2.1.3 Reconnection to VISHNU

Reconnection is done using the **vishnu\_reconnect** command. This command allows using an existing session that was previously opened but not closed. It makes it possible to simultaneously use the same session in different shell terminals.

#### 2.2.1.4 Session management in VISHNU

After a successful call to the **vishnu\_connect** command, a session is created. The session is required for calling any other commands. It avoids systematic authentication by userId and password. Only commands **vishnu\_connect**, **vishnu\_reconnect** and **vishnu\_change\_password** can be used outside a session by using userId and password. The **vishnu\_list\_history\_cmd** command lists all the commands launched within a session.

To prevent unclosed sessions when the **vishnu\_close** command is not used, the session is automatically closed on timeout or on disconnect (from the terminal).

#### 2.2.1.4.1 Session close on timeout

In this mode, the session is automatically closed after an inactivity delay specified by the system or configured by the user using the **vishnu\_configure\_option** command.

#### 2.2.1.4.2 Session close on disconnect

In this mode, the session is automatically closed when the shell terminal is closed. It is important to note that the system makes it impossible to close a session while commands are running. In this case, a session with automatic close on disconnect changes the close mode to automatic close on timeout.

### 2.2.1.5 Local user configuration management

#### 2.2.1.5.1 Local user configuration creation

To access a UNIX account on a specific machine defined on VISHNU, the user must create a local user configuration by using the **vishnu\_add\_local\_account** command. The **vishnu\_list\_machines** command gives information about the machines in which a local user configuration can be created or where a local user configuration has already been created. The information required to create a new local user configuration is: the `userId`, the `machineId`, the login of the UNIX account on the specified machine, the absolute path to the user's private SSH key (used for file transfers) and the home directory path.

The ssh public key of the machine named "*userId-machineId*" is returned and stored in the `$HOME/.vishnu/localAccountPublicKey/` directory and must be added by the user in the ssh authorized key directory of the UNIX account. Doing this allows VISHNU to be directly connected on this UNIX account, running tasks as if it was the owner of the UNIX account.

#### 2.2.1.5.2 Local user configuration update

All previous parameters used to create a local user configuration can be updated by using the **vishnu\_update\_local\_account** command except for `userId` and `machineId`.

#### 2.2.1.5.3 Local user configuration remove

A local user configuration can be removed by using the **vishnu\_delete\_local\_account** command.

It is possible to display the local user configurations with the **vishnu\_list\_local\_account** command. Other commands which are not cited above can be used to display information, such as the **vishnu\_list\_options** command, which displays all the options configured by the user, or the **vishnu\_list\_sessions** command, which displays information about the sessions.

## 2.2.2 TMS package

### 2.2.2.1 Job submission

To submit a job, via VISHNU, to the batch scheduler of a specific machine, the user needs: an active VISHNU session, a local user configuration registered on VISHNU that corresponds to an existing UNIX account on the specified machine and a script that describes the job to submit. In the current implementation of VISHNU, it is possible to use the directives for two batch schedulers: TORQUE and LoadLeveler. In order to use the same script on different batch schedulers, a generic script with generic VISHNU directives is used. The **vishnu\_submit\_job** command allows a user to submit a job in the shell terminal. To obtain information on a job, the user can use the **vishnu\_get\_job\_info** or **vishnu\_list\_jobs**, and for a job's progression status, the **vishnu\_get\_job\_progression** command is used. The job's progression status is calculated according to the wall-clock time specified by the user during the job's submission.

### 2.2.2.1.1 VISHNU generic script

The key words of a VISHNU generic script start with the special character `%`. For example, to specify a job's name, users have to use the following directive in their scripts: `%vishnuJob_name`. The possible generic directives are:

- `%vishnugroup`: specifies the group's name,
- `%vishnujob_name`: specifies the job's name,
- `%vishnuoutput`: specifies the path of the job's output file,
- `%vishnuerror`: specifies the path of the file containing the problems that occurred during the job's execution,
- `%vishnuwallclocklimit`: specifies the estimated time for the job's execution,
- `%vishnunotify_user`: specifies the mail address of the job's owner in order to receive a notification when the job is completed,
- `%vishnuqueue`: specifies the queue where the job will be submitted. It is possible to obtain a list of the batch scheduler's queues by using the `vishnu_list_queues` command.

It is important to note that the user can also add directives specific to a batch scheduler (TORQUE or LoadLeveler). Such specific directives must be added directly after the generic directives.

### 2.2.2.2 Job Cancellation

To cancel a job, the `vishnu_cancel_job` command is used with the VISHNU identifier of the job to cancel. When the identifier of the job is *all*, all of the user's jobs are cancelled. An admin can also cancel all the jobs of all the users of VISHNU.

### 2.2.2.3 Job output files

VISHNU offers two commands, to be used in a shell terminal, to get the result output files for a job:

- `vishnu_get_job_output` or,
- `vishnu_get_completed_jobs_output`

The former gives the output files for a specific job while the latter gives the output files for all the completed jobs. It is important to note that all submitted jobs have two output files: one with the job's results, one (possibly empty) with the errors that occurred during the job's execution. The path of the job's output files is specified during the job's submission.

## 2.2.3 FMS package

### 2.2.3.1 Create and remove file or directories

The user can create (or remove) a regular file located in a remote host by using the command `vishnu_create_file` (or `vishnu_remove_file`). He can also create (or remove) directory located in a remote host by using the command `vishnu_create_dir` (or `vishnu_remove_dir`).

### 2.2.3.2 Get file information

Several services are available to get file information. The user can get the first (or last lines) of a given remote file by using the command `vishnu_head_of_file` (or `vishnu_tail_of_file`). He can also get the entire content of a remote file (or remote directory) with the command `vishnu_content_of_file` (or `vishnu_list_dir`).

### 2.2.3.3 Modify files properties

The commands `vishnu_ch_grp` and `vishnu_ch_mod` allow the user to change respectively the group and the access permissions of remote file.

#### 2.2.3.4 Perform file transfer

The user can submit a file transfer in many ways:

- copy (or move) file between two hosts by the commands **vishnu\_copy\_file** (or **vishnu\_move\_file**)
- copy (or move) file between two hosts in asynchronous way by the commands **vishnu\_copy\_async\_file** (or **vishnu\_move\_async\_file**)
- list or (cancel) file transfers by the commands **vishnu\_list\_file\_transfers** (**vishnu\_stop\_file\_transfers**)

#### 2.2.3.5 IMS package

##### 2.2.3.5.1 Export of commands

The user can export the commands made during a session in shell format. The file must have been created before the call, the file will contain a shell script that can be executed. For safety reasons, the connect and change password cannot be in the file. Thus, to execute the shell script, the connect command must be added after the first line of the file that declares the shell format.

##### 2.2.3.5.2 Get system information

The get system information is to get information about a machine of the system. It can give information about the memory and/or diskspace available on the machine.

##### 2.2.3.5.3 Get the metric

The user can get the current metrics on a machine or the history of the metrics on a machine to know the evolution of the metric. The user can choose to get the metrics of a specific type (parameters are 1, 2, 3 respectively free CPUload, free diskspace and free memory). Note, when getting the history of metrics, by default, only the first 1000 results are gotten. This is to avoid having too much results with a single command (the metric table may be filled very fastly).

#### 2.2.4 Troubleshooting functions

The *"There is no session in this terminal"* error can be solved by connecting to VISHNU using the **vishnu\_connect** command.

## Chapter 3

# UMS Command reference

### 3.1 vishnu\_connect

vishnu\_connect — opens a session

#### Synopsis

```
vishnu_connect [-h] [-p closePolicy] [-d sessionInactivityDelay] [-s substituteUserId] userId
```

#### DESCRIPTION

Opening a VISHNU session is the first step before using any other VISHNU command. This command authenticates you. You must have been registered in the VISHNU system by an administrator. It also creates a session that remains open after the command is completed and until the session is either manually or automatically closed.

#### OPTIONS

**-h** *help* help about the command.

**-p** *closePolicy* is an option for closing session automatically. The value must be an integer. Predefined values are: 0 (UNDEFINED), 1 (CLOSE\_ON\_TIMEOUT), 2 (CLOSE\_ON\_DISCONNECT).

**-d** *sessionInactivityDelay* is the maximum delay in seconds between two user requests when the CLOSE\_ON\_TIMEOUT policy is set.

**-s** *substituteUserId* is an admin option which allows an admin to open a session as if she was another user identified by her *userId*.

#### ENVIRONMENT

**VISHNU\_CLOSE\_POLICY** The value of this environment variable represents the session close policy. Overridden by the **-p** option.

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"The user is unknown or the password is wrong" [20]

"The userId is unknown" [21]

"The user is locked" [23]

"The user is not an administrator" [25]

"The closure policy is unknown" [42]

"The value of the timeout is incorrect" [43]

## 3.2 vishnu\_reconnect

`vishnu_reconnect` — reconnects to a session that is still active

### Synopsis

```
vishnu_reconnect [-h] userId sessionId
```

### DESCRIPTION

This command allows you to resume a session that has been opened previously and that has not yet been closed. You can disconnect from a session without closing it (for example if there are running commands in that session) by setting the session's close policy (at connection time) to `CLOSE_ON_TIMEOUT`. As sessions are linked to a specific client system, you cannot reconnect to a session that was opened on another client system.

### OPTIONS

`-h help` help about the command.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"The user is unknown or the password is wrong" [20]

"The user is locked" [23]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The session Id is unknown" [30]

"The machine does not exist or it is locked" [36]



### 3.3 vishnu\_close

vishnu\_close — closes the session

#### Synopsis

```
vishnu_close [-h]
```

#### DESCRIPTION

This command closes the session that is currently active in the terminal. It will return an error if there are still some active requests that were been submitted by the user during the session (e.g., job submission or file transfers). After the session is closed, it cannot be re-opened.

#### OPTIONS

**-h** *help* help about the command.

#### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

#### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"Commands are running" [31]

### 3.4 vishnu\_change\_password

vishnu\_change\_password — changes the password

#### Synopsis

```
vishnu_change_password [-h] userId
```

#### DESCRIPTION

This command is used to change the password. It can be done voluntarily or when the password is only temporary: for your first connection to VISHNU or after your password is reset by an administrator .

## OPTIONS

**-h** *help* help about the command.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"The user is unknown or the password is wrong" [20]

"The user is locked" [23]

## 3.5 vishnu\_add\_local\_account

`vishnu_add_local_account` — adds a new local user configuration

### Synopsis

`vishnu_add_local_account [-h] userId machineId acLogin sshKeyPath homeDirectory`

## DESCRIPTION

A local user configuration must be added to allow you (identified by `userId`) to connect to machine (identified by `machineId`). This configuration must match an existing system account on that machine with a login that matches `acLogin`. The parameters `sshKeyPath` parameter (the absolute path to your private SSH key, used for file transfers) must be provided as well as the `homeDirectory` path .

## OPTIONS

**-h** *help* help about the command.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The machine is locked" [34]

"The machine does not exist or it is locked" [36]

"The local account already exists" [37]

"The system account login is already used by another vishnu user" [45]

## 3.6 vishnu\_update\_local\_account

vishnu\_update\_local\_account — updates a local user configuration

### Synopsis

```
vishnu_update_local_account [-h] [-l acLogin] [-s sshKeyPath] [-d homeDirectory] userId machineId
```

### DESCRIPTION

The local user configuration can be updated. You can modify information of its local configuration such as *acLogin*, *sshKeyPath* or *homeDirectory*.

### OPTIONS

**-h** *help* help about the command.

**-l** *acLogin* *acLogin* represents the login of the user on the associated machine.

**-s** *sshKeyPath* *sshKeyPath* is the path of the ssh key of the user on the associated machine.

**-d** *homeDirectory* *HomeDirectory* is the path of the home directory of the user on the associated machine.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The local is unknown" [38]

"The system account login is already used by another vishnu user" [45]

### 3.7 vishnu\_delete\_local\_account

`vishnu_delete_local_account` — removes a local user configuration (for a given user on a given machine) from VISHNU

#### Synopsis

```
vishnu_delete_local_account [-h] userId machineId
```

#### DESCRIPTION

The local user configuration can be deleted from VISHNU. When a local user configuration is deleted, all the information about it is deleted from VISHNU.

#### OPTIONS

`-h help` help about the command.

#### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

#### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The local is unknown" [38]

### 3.8 vishnu\_list\_local\_account

`vishnu_list_local_account` — lists the local user configurations

#### Synopsis

```
vishnu_list_local_account [-h] [-a] [-u userId] [-i machineId]
```

#### DESCRIPTION

A local configuration is used to configure the access to a given system for a given user through VISHNU. It is related to an account on that system that is identified using its login. This command allows you to check all the local configurations related to your VISHNU account.

## OPTIONS

- h** *help* help about the command.
- a** *adminListOption* is an admin option for listing all local configurations of all users .
- u** *userId* is an admin option for listing the local configurations of a specific user .
- i** *machineId* is an option for listing local user configurations on a specific machine.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

- "There is no open session in this terminal" [10]
- "The userId is unknown" [21]
- "The session key is unrecognized" [28]
- "The sessionKey is expired. The session is closed." [29]

## 3.9 vishnu\_list\_machine

**vishnu\_list\_machine** — lists the machines that are accessible through VISHNU

### Synopsis

```
vishnu_list_machine [-h] [-u userId] [-a] [-m machineId]
```

### DESCRIPTION

This command is used to display the machines that you can use for VISHNU services. The machines you can access through VISHNU are those that are configured in VISHNU by the VISHNU administrator, and that have been added to your personal VISHNU configuration using the **vishnu\_add\_local\_account** command. The results contain, for each machine, a machine identifier that you can use as a parameter for other VISHNU commands.

## OPTIONS

- h** *help* help about the command.
  - u** *userId* is an admin option for listing machines in which a specific user has a local configuration.
  - a** *listAllmachine* is an option for listing all VISHNU machines.
  - m** *machineId* is an option for listing information about a specific machine.
-

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

## 3.10 vishnu\_list\_history\_cmd

`vishnu_list_history_cmd` — lists the commands

### Synopsis

```
vishnu_list_history_cmd [-h] [-a] [-u userId] [-i sessionId] [-s startDateOption] [-e endDateOption]
```

### DESCRIPTION

This command displays a history of the commands you ran. Several options can be used to specify which commands to list.

### OPTIONS

**-h** *help* help about the command.

**-a** *adminListOption* is an admin option for listing all commands of all users.

**-u** *userId* is an admin option for listing commands launched by a specific user identified by his/her *userId*.

**-i** *sessionId* lists all commands launched within a specific session.

**-s** *startDateOption* allows the user to organize the commands listed by providing the start date (the UNIX timestamp of the start date is used).

**-e** *endDateOption* 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.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

---

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

## 3.11 vishnu\_list\_options

vishnu\_list\_options — lists the options of the user

### Synopsis

```
vishnu_list_options [-h] [-a] [-u userId] [-n optionName]
```

### DESCRIPTION

This command displays the options you configured.

### OPTIONS

**-h** *help* help about the command.

**-a** *listAllDefValue* is an option for listing all default option values defined by VISHNU administrator.

**-u** *userId* is an admin option for listing the options of a specific user.

**-n** *optionName* allows the user to get the value of a specific option identified by its name .

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The userId is unknown" [21]

"The user is not an administrator" [25]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The name of the user option is unknown" [41]

## 3.12 vishnu\_list\_sessions

vishnu\_list\_sessions — lists all sessions of the user

### Synopsis

```
vishnu_list_sessions [-h] [-t status] [-p sessionClosePolicy] [-d sessionInactivityDelay] [-m machineId] [-a] [-u userId] [-i sessionId] [-s startDateOption] [-e endDateOption]
```

### DESCRIPTION

This command is used to display and filter the list of all your sessions. For each session, a session identifier is provided which you can use to reconnect to a given session using the vishnu\_reconnect command. The session's status is either 0 (inactive) or 1 (active).

### OPTIONS

- h help** help about the command.
- t status** specifies the status of the sessions which will be listed. The value must be an integer. Predefined values are: 0 (INACTIVE), 1 (ACTIVE).
- p sessionClosePolicy** specifies the closure mode of the sessions which will be listed (CLOSE\_ON\_TIMEOUT or CLOSE\_ON\_DISCONNECT). The value must be an integer. Predefined values are: 0 (UNDEFINED), 1 (CLOSE\_ON\_TIMEOUT), 2 (CLOSE\_ON\_DISCONNECT).
- d sessionInactivityDelay** specifies the inactivity delay in seconds of the sessions which will be listed.
- m machineId** allows the user to list sessions opened on a specific machine.
- a adminListOption** is an admin option for listing all sessions of all users.
- u userId** is an admin option for listing sessions opened by a specific user.
- i sessionId** allows the user to list all commands launched within a specific session.
- s startDateOption** allows the user to organize the commands listed by providing the start date (the UNIX timestamp of the start date is used).
- e endDateOption** 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.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The closure policy is unknown" [42]



### 3.13 vishnu\_configure\_option

vishnu\_configure\_option — configures an option of the user

#### Synopsis

```
vishnu_configure_option [-h] optionName value
```

#### DESCRIPTION

Options in VISHNU corresponds to the parameters of some VISHNU commands (e.g., the close policy for vishnu\_connect) that can be preset in the user configuration stored by the VISHNU system. This command is used to set the value of an option for the current user (the user who opened the session).

#### OPTIONS

**-h** *help* help about the command.

#### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

#### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"There is no open session in this terminal" [10]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The name of the user option is unknown" [41]

"The closure policy is unknown" [42]

"The value of the timeout is incorrect" [43]

## Chapter 4

# TMS Command reference

### 4.1 vishnu\_submit\_job

`vishnu_submit_job` — submits a job on a machine through the use of a script (`scriptFilePath`)

#### Synopsis

```
vishnu_submit_job [-h] [-n name] [-q queue] [-t wallTime] [-m memory] [-P nbCpu] [-N nbNodesAndCpuPerNode] [-o outputPath] [-e errorPath] machineId scriptFilePath
```

#### DESCRIPTION

This command is used to submit a job to the specific batch scheduler associated to a machine. It allows describing a job in a script, using either the batch scheduler's directives or VISHNU's generic directives for all batch schedulers.

#### OPTIONS

- `-h help` help about the command.
- `-n name` Assigns a job name. The default is the path of job.
- `-q queue` Assigns the queue or class of the job.
- `-t wallTime` The maximum wall-clock time during which the job can run.
- `-m memory` Is the memory size that the job requires.
- `-P nbCpu` The number of cpu that the job requires.
- `-N nbNodesAndCpuPerNode` The number of nodes and processors per node.
- `-o outputPath` Assigns the path and file for job output.
- `-e errorPath` Assigns the path and file for job error.

#### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

**"Vishnu not available (SSH error)" [9]**

**"Error invalid parameters" [10]**

**"The sessionKey is expired. The session is closed." [29]**

**"The machine id is unknown" [32]**

**"The batch scheduler type is unknown" [101]**

**"The batch scheduler indicates an error" [102]**

**"Permission denied" [104]**

## 4.2 vishnu\_get\_job\_info

`vishnu_get_job_info` — gets information on a job from its id

### Synopsis

`vishnu_get_job_info [-h] machineId jobId`

### DESCRIPTION

This command allows getting information about a specific job. It can return the job's status, for example.

### OPTIONS

**-h** *help* help about the command.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

**"The sessionKey is expired. The session is closed." [29]**

**"The machine id is unknown" [32]**

**"The batch scheduler type is unknown" [101]**

**"The batch scheduler indicates an error" [102]**

**"Permission denied" [104]**

## 4.3 vishnu\_get\_job\_progress

vishnu\_get\_job\_progress — gets the progression status of jobs

### Synopsis

```
vishnu_get_job_progress [-h] [-i jobId] [-u jobOwner] machineId
```

### DESCRIPTION

This command allows getting the progression status of a job based on the wall-clock time specified.

### OPTIONS

- h** *help* help about the command.
- i** *jobId* Specifies the id of the job whose progression the user wants to see..
- u** *jobOwner* Specifies the owner of the job..

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

## 4.4 vishnu\_list\_queues

vishnu\_list\_queues — gets queues information

### Synopsis

```
vishnu_list_queues [-h] [-q queueName] machineId
```

### DESCRIPTION

This command displays the status of the queues of a specific machine's batch scheduler.

### OPTIONS

- h** *help* help about the command.
  - q** *queueName* if it is given, listQueues gives information only of this queue.
-

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

## 4.5 vishnu\_list\_jobs

vishnu\_list\_jobs — gets a list of all submitted jobs

### Synopsis

```
vishnu_list_jobs [-h] [-i jobId] [-P nbCpu] [-d fromSubmitDate] [-D toSubmitDate] [-u owner] [-s status] [-p priority] [-q queue] machineId
```

### DESCRIPTION

This command allows displaying the jobs submitted on a specific machine's batch scheduler.

### OPTIONS

**-h help** help about the command.

**-i jobId** lists the job with the specified id.

**-P nbCpu** lists the jobs with the specified number of CPUs.

**-d fromSubmitDate** lists the jobs submitted after the specified date (UNIX timestamp).

**-D toSubmitDate** lists jobs submitted before the specified date (UNIX timestamp).

**-u owner** lists the jobs submitted by the specified owner.

**-s status** lists the jobs with the specified status. The value must be an integer. Predefined values are: -1 (UNDEFINED), 1 (SUBMITTED), 2 (QUEUED), 3 (WAITING), 4 (RUNNING), 5 (TERMINATED), 6 (CANCELLED), 7 (ALREADY\_DOWNLOADED).

**-p priority** lists the jobs with the specified priority. The value must be an integer. Predefined values are: -1 (UNDEFINED), 1 (VERY\_LOW), 2 (LOW), 3 (NORMAL), 4 (HIGH), 5 (VERY\_HIGH).

**-q queue** the jobs with the specified queue name.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

## 4.6 vishnu\_get\_job\_output

`vishnu_get_job_output` — gets standard output and error output files of a job given its id

### Synopsis

```
vishnu_get_job_output [-h] [-o outDir] machineId jobId
```

## DESCRIPTION

This command allows getting a job's output files.

## OPTIONS

**-h** *help* help about the command.

**-o** *outDir* The output directory where the files will be stored (default is current directory).

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"Vishnu not available (SSH error)" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

"The job is not terminated" [107]

"The job is already downloaded" [108]

## 4.7 vishnu\_get\_completed\_jobs\_output

`vishnu_get_completed_jobs_output` — gets standard output and error output files of completed jobs (applies only once for each job)

### Synopsis

```
vishnu_get_completed_jobs_output [-h] [-o outDir] machineId
```

### DESCRIPTION

This command allows getting the output files of all the completed jobs.

### OPTIONS

**-h** *help* help about the command.

**-o** *outDir* Specifies the output directory where the files will be stored (by default, the current directory)..

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"Vishnu not available (SSH error)" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

## 4.8 vishnu\_cancel\_job

`vishnu_cancel_job` — cancels a job from its id

## Synopsis

```
vishnu_cancel_job [-h] machineId jobId
```

## DESCRIPTION

This command allows canceling a job submitted on a specific machine's batch scheduler.

## OPTIONS

**-h** *help* help about the command.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"Vishnu not available (SSH error)" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

"The job is already terminated" [105]

"The job is already canceled" [106]



## Chapter 5

# FMS Command reference

### 5.1 vishnu\_create\_file

vishnu\_create\_file — creates files on remote machines.

#### Synopsis

```
vishnu_create_file [-h] path
```

#### DESCRIPTION

Creates an empty file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

#### OPTIONS

**-h** *help* help about the command.

#### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

#### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.2 vishnu\_create\_dir

vishnu\_create\_dir — creates directories on remote machines.

### Synopsis

```
vishnu_create_dir [-h] path
```

### DESCRIPTION

Creates an new directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

### OPTIONS

**-h** *help* help about the command.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.3 vishnu\_remove\_file

vishnu\_remove\_file — removes files from remote hosts.

### Synopsis

```
vishnu_remove_file [-h] [-r] path
```

## DESCRIPTION

Deletes a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

## OPTIONS

**-h help** help about the command.

**-r isRecursive** It specifies when the remove command is recursive (case of directory) or not..

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.4 vishnu\_remove\_dir

vishnu\_remove\_dir — removes directories (and subdirectories) from remote machines.

### Synopsis

```
vishnu_remove_dir [-h] path
```

## DESCRIPTION

Deletes a directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

## OPTIONS

**-h help** help about the command.

---

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.5 vishnu\_ch\_grp

vishnu\_ch\_grp — changes group owner of remote files/directories.

### Synopsis

`vishnu_ch_grp [-h] group path`

### DESCRIPTION

Changes the group attribute of a file or directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

### OPTIONS

`-h help` help about the command.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

---

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.6 vishnu\_ch\_mod

vishnu\_ch\_mod — changes access rights of remote files/directories.

### Synopsis

`vishnu_ch_mod [-h] mode path`

### DESCRIPTION

Changes the permissions of a file or directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command). The mode parameter is the same value as for the unix chmod command.

### OPTIONS

`-h help` help about the command.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.7 vishnu\_head\_of\_file

vishnu\_head\_of\_file — displays a few first lines of files located on remote machines.

### Synopsis

```
vishnu_head_of_file [-h] [-n nline] path
```

### DESCRIPTION

Displays the first lines of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### OPTIONS

**-h** *help* help about the command.

**-n** *nline* the number of line to get.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.8 vishnu\_tail\_of\_file

`vishnu_tail_of_file` — displays a few last lines of files located on remote machines

### Synopsis

```
vishnu_tail_of_file [-h] [-n nline] path
```

### DESCRIPTION

Displays the last lines of a file at the location given by the `path` parameter. The path must be provided in the form '`machine_id:path`' (the `machine_id` values can be obtained using the `vishnu_list_machine` command).

### OPTIONS

`-h help` help about the command.

`-n nline` the number of line to get.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on `stderr` and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.9 vishnu\_content\_of\_file

`vishnu_content_of_file` — displays content of files located on remote machines

### Synopsis

```
vishnu_content_of_file [-h] path
```

## DESCRIPTION

Displays the content of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

## OPTIONS

**-h** *help* help about the command.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.10 vishnu\_list\_dir

vishnu\_list\_dir — displays the content of a remote directory.

### Synopsis

vishnu\_list\_dir [-h] [-l] [-a] *path*

## DESCRIPTION

Displays the content of a directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

## OPTIONS

**-h** *help* help about the command.

**-l** *longFormat* It specifies the long display format (all available file informations).

**-a** *allFiles* Allows to display all files including hidden files.



## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

### 5.11 vishnu\_copy\_file

`vishnu_copy_file` — executes a synchronous copy of file.

#### Synopsis

```
vishnu_copy_file [-h] [-r] [-c trCommand] src dest
```

#### DESCRIPTION

Copy a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form `'machine_id:path'` (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or `'path'` only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local copy cannot be handled by this command.

#### OPTIONS

**-h** *help* help about the command.

**-r** *isRecursive* It specifies when the copy is recursive (case of directory) or not..

**-c** *trCommand* the command to use to perform file transfer.. The value must be an integer. Predefined values are: 0 (SCP), 1 (RSYNC), 2 (UNDEFINED).

## ENVIRONMENT

**VISHNU\_TRANSFER\_CMD** It specifies the command to use for all file transfers by default. It takes its values in the set {SCP,RSYNC}.. Overriden by the `-c` option.

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.12 vishnu\_copy\_async\_file

`vishnu_copy_async_file` — executes an asynchronous copy of file.

### Synopsis

```
vishnu_copy_async_file [-h] [-r] [-c trCommand] src dest
```

### DESCRIPTION

Initiates a copy of a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form '`machine_id:path`' (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or '`path`' only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local copy cannot be handled by this command. The command `listFileTransfers` can be used to check the status of the transfer after it is initiated, using the transfer id as the identifier.

### OPTIONS

**-h** *help* help about the command.

**-r** *isRecursive* It specifies when the copy is recursive (case of directory) or not..

**-c** *trCommand* the command to use to perform file transfer.. The value must be an integer. Predefined values are: 0 (SCP), 1 (RSYNC), 2 (UNDEFINED).

### ENVIRONMENT

**VISHNU\_TRANSFER\_CMD** It specifies the command to use for all file transfers by default. It takes its values in the set {SCP,RSYNC}.. Overriden by the `-c` option.

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.13 vishnu\_move\_file

`vishnu_move_file` — executes a synchronous move of file.

### Synopsis

```
vishnu_move_file [-h] [-r] [-c trCommand] src dest
```

### DESCRIPTION

Move a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form '`machine_id:path`' (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or '`path`' only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local move cannot be handled by this command.

### OPTIONS

**-h** *help* help about the command.

**-r** *isRecursive* It specifies when the copy is recursive (case of directory) or not..

**-c** *trCommand* the command to use to perform file transfer.. The value must be an integer. Predefined values are: 0 (SCP), 1 (RSYNC), 2 (UNDEFINED).

### ENVIRONMENT

**VISHNU\_TRANSFER\_CMD** It specifies the command to use for all file transfers by default. It takes its values in the set {SCP,RSYNC}.. Overriden by the `-c` option.

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.14 vishnu\_move\_async\_file

`vishnu_move_async_file` — executes an asynchronous move of file.

### Synopsis

```
vishnu_move_async_file [-h] [-r] [-c trCommand] src dest
```

### DESCRIPTION

Initiates a move of a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form '`machine_id:path`' (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or '`path`' only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local move cannot be handled by this command. The command `listFileTransfers` can be used to check the status of the transfer after it is initiated, using the transfer id as the identifier.

### OPTIONS

**-h** *help* help about the command.

**-r** *isRecursive* It specifies when the copy is recursive (case of directory) or not..

**-c** *trCommand* the command to use to perform file transfer.. The value must be an integer. Predefined values are: 0 (SCP), 1 (RSYNC), 2 (UNDEFINED).

### ENVIRONMENT

**VISHNU\_TRANSFER\_CMD** It specifies the command to use for all file transfers by default. It takes its values in the set {SCP,RSYNC}.. Overriden by the `-c` option.

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.15 vishnu\_stop\_file\_transfer

`vishnu_stop_file_transfer` — stops an execution of a set of file transfers.

### Synopsis

```
vishnu_stop_file_transfer [-h] [-i transferId] [-m fromMachineId] [-u userId]
```

### DESCRIPTION

Cancels a file or directory transfer that has been initiated using a vishnu asynchronous copy or move file command. The command `listFileTransfers` can be used to check the status of the transfer after it has been cancelled, using the transfer id as the identifier.

### OPTIONS

**-h** *help* help about the command.

**-i** *transferId* a given transfer id.

**-m** *fromMachineId* the machine that is the source or destination of the file transfer.

**-u** *userId* allows an admin to stop file transfers of a specific user.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 5.16 vishnu\_list\_file\_transfers

`vishnu_list_file_transfers` — displays the history of all file transfers submitted by User.

### Synopsis

```
vishnu_list_file_transfers [-h] [-t transferId] [-m fromMachineId] [-u userId] [-s status]
```

### DESCRIPTION

Get the list of all file or directory transfers that have been initiated using a vishnu synchronous or asynchronous copy or move file command.

### OPTIONS

**-h** *help* help about the command.

**-t** *transferId* a given transfer id.

**-m** *fromMachineId* the machine that is the source of the file transfer.

**-u** *userId* allows the admin to list file transfers initiated by a specific user.

**-s** *status* the file transfer status. The value must be an integer. Predefined values are: 0 (INPROGRESS), 1 (COMPLETED), 2 (CANCELLED), 3 (FAILED), 4 (UNDEFINED).

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

**"A problem occurs with the database." [-9]**

**"User does not have permission access." [-8]**

**"Option unknown in the config file." [-7]**

**"The path provided is invalid." [-6]**

**"an option or a parameter provided is invalid for this service." [-5]**

**"The FMS server is unavailable." [-4]**

**"Invalid provided machine identifier." [-3]**

**"The session key is unrecognized." [-2]**

## Chapter 6

# IMS Command reference

### 6.1 vishnu\_export\_commands

`vishnu_export_commands` — exports all the commands made by a user during a session

#### Synopsis

```
vishnu_export_commands [-h] [-t exportType] oldSessionId
```

#### DESCRIPTION

Exports all the VISHNU commands submitted during a completed session. This session must be in closed state. The output of this command is a file containing a shell script. For safety reasons, the commands having a password for parameter are not exported (for example the `vishnu_connect` and `vishnu_change_password` commands). This means the shell script must be run after opening a session manually or by adding the `vishnu_connect` command to the script. The access to other user's sessions is only permitted to administrators.

#### OPTIONS

`-h help` help about the command.

`-t exportType` The type to export. The value must be an integer. Predefined values are: 0 (UNDEFINED), 1 (SHELL).

#### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

#### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"If a parameter is invalid" [1]

"The database generated an error" [2]



## 6.2 vishnu\_get\_metric\_current\_value

`vishnu_get_metric_current_value` — displays the current values of system metrics

### Synopsis

```
vishnu_get_metric_current_value [-h] [-t metricType] machineId
```

### DESCRIPTION

Displays the current values of the monitored metrics on the system identified by the `machineId` argument : cpuload, free disk space and free memory. The units of displayed values are percentages for cpuload and Megabytes (Mb) for disk space and memory. The provided values are always standard integers (no float values). Please note that retrieving these values uses some valuable system resources and should not occur too frequently to avoid an impact on system performance.

### OPTIONS

**-h** *help* help about the command.

**-t** *metricType* The type of the metric. The value must be an integer. Predefined values are: 0 (UNDEFINED), 1 (CPUUSE), 2 (FREEDISKSPACE), 3 (FREEMEMORY).

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 6.3 vishnu\_get\_metric\_history

`vishnu_get_metric_history` — displays the history of values of a system metric

### Synopsis

```
vishnu_get_metric_history [-h] [-s startTime] [-e endTime] [-t type] machineId
```

### DESCRIPTION

Displays the chronological list of values of the metrics on the system identified by the `machineId` argument. Using the options it is possible to specify a type of metric and the starting and ending dates of the desired monitoring period. Note that some data will be available only if the required VISHNU agent (IMS server) has been running locally on the machine during the specified period.

## OPTIONS

- h *help*** help about the command.
- s *startTime*** The start time to get the history.
- e *endTime*** The end time to get the history.
- t *type*** The type of metric searched. The value must be an integer. Predefined values are: 0 (UNDEFINED), 1 (CPUUSE), 2 (FREEDISKSPACE), 3 (FREEMEMORY).

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 6.4 vishnu\_get\_update\_frequency

`vishnu_get_update_frequency` — gets the update frequency of the IMS database

### Synopsis

`vishnu_get_update_frequency [-h]`

## DESCRIPTION

This function allows a user to get the update frequency, to know how often the state of the machines is automatically polled to get historical data.

## OPTIONS

- h *help*** help about the command.

## ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

## DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 6.5 vishnu\_get\_system\_info

vishnu\_get\_system\_info — To get the system info on a machine

### Synopsis

```
vishnu_get_system_info [-h] [-m machineId]
```

### DESCRIPTION

This function allows a user to get system information about a machine. A system information describes a machine. The option is the machine id (if no machine id, the information for all the machines are given)

### OPTIONS

**-h** *help* help about the command.

**-m** *machineId* The machine id.

### ENVIRONMENT

**VISHNU\_CONFIG\_FILE** Contains the path to the local configuration file for VISHNU.

### DIAGNOSTICS

The following diagnostics may be issued on stderr and the command will return the code provided within brackets:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## Chapter 7

# UMS C++ API Reference

### 7.1 connect

connect — opens a session

#### Synopsis

```
int vishnu::connect(const string& userId, const string& password, Session& session, const ConnectOptions& options = ConnectOptions());
```

#### DESCRIPTION

Opening a VISHNU session is the first step before using any other VISHNU command. This command authenticates you. You must have been registered in the VISHNU system by an administrator. It also creates a session that remains open after the command is completed and until the session is either manually or automatically closed.

#### ARGUMENTS

**userId** Input argument. UserId represents the VISHNU user identifier.

**password** Input argument. Password represents the password of the user.

**session** Output argument. The session object that contains the created session details.

**options** Input argument. Options is an object which encapsulates the options available for the connect method. It allows the user to choose the way for closing the session automatically on TIMEOUT or on DISCONNECT and the possibility for an admin to open a session as he/she was a specific user.

#### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The user is unknown or the password is wrong" [20]

"The userId is unknown" [21]

"The user is locked" [23]

"The user is not an administrator" [25]

"The closure policy is unknown" [42]

"The value of the timeout is incorrect" [43]

## 7.2 reconnect

reconnect — reconnects to a session that is still active

### Synopsis

```
int vishnu::reconnect(const string& userId, const string& password, const string& sessionId, Session& session);
```

### DESCRIPTION

This command allows you to resume a session that has been opened previously and that has not yet been closed. You can disconnect from a session without closing it (for example if there are running commands in that session) by setting the session's close policy (at connection time) to `CLOSE_ON_TIMEOUT`. As sessions are linked to a specific client system, you cannot reconnect to a session that was opened on another client system.

### ARGUMENTS

*userId* Input argument. UserId represents the VISHNU user identifier.

*password* Input argument. Password represents the password of the user.

*sessionId* Input argument. SessionId is the identifier of the session defined in the database.

*session* Output argument. The session object containing session information.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The user is unknown or the password is wrong" [20]

"The user is locked" [23]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The session Id is unknown" [30]

"The machine does not exist or it is locked" [36]

## 7.3 close

close — closes the session

### Synopsis

```
int vishnu::close(const string& sessionKey);
```

### DESCRIPTION

This command closes the session that is currently active in the terminal. It will return an error if there are still some active requests that were been submitted by the user during the session (e.g., job submission or file transfers). After the session is closed, it cannot be re-opened.

### ARGUMENTS

*sessionKey* Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"Commands are running" [31]

## 7.4 changePassword

changePassword — changes the password

## Synopsis

```
int vishnu::changePassword(const string& userId, const string& password, const string& passwordNew);
```

## DESCRIPTION

This command is used to change the password. It can be done voluntarily or when the password is only temporary: for your first connection to VISHNU or after your password is reset by an administrator .

## ARGUMENTS

*userId* Input argument. UserId represents the VISHNU user identifier.

*password* Input argument. Password represents the password of the user.

*passwordNew* Input argument. PasswordNew represents the new password of the user.

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The user is unknown or the password is wrong" [20]

"The user is locked" [23]

## 7.5 addLocalAccount

addLocalAccount — adds a new local user configuration

## Synopsis

```
int vishnu::addLocalAccount(const string& sessionKey, const LocalAccount& newAccount, string& sshPublicKey);
```

## DESCRIPTION

A local user configuration must be added to allow you (identified by userId) to connect to machine (identified by machineId). This configuration must match an existing system account on that machine with a login that matches acLogin. The parameters sshKeyPath parameter (the absolute path to your private SSH key, used for file transfers) must be provided as well as the homeDirectory path .

## ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**newAccount** Input argument. NewAccount is the object which encapsulates the new local user configuration.

**sshPublicKey** Output argument. The SSH public key generated by VISHNU for accessing a local account.

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The machine is locked" [34]

"The machine does not exist or it is locked" [36]

"The local account already exists" [37]

"The system account login is already used by another vishnu user" [45]

## 7.6 updateLocalAccount

updateLocalAccount — updates a local user configuration

### Synopsis

```
int vishnu::updateLocalAccount(const string& sessionKey, const LocalAccount& LocalAccUpd);
```

### DESCRIPTION

The local user configuration can be updated. You can modify information of its local configuration such as acLogin, sshKeypath or homeDirectory.

## ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**LocalAccUpd** Input argument. Is an object which encapsulates the local user configuration changes except the machineId and the userId.



## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The local is unknown" [38]

"The system account login is already used by another vishnu user" [45]

## 7.7 deleteLocalAccount

`deleteLocalAccount` — removes a local user configuration (for a given user on a given machine) from VISHNU

### Synopsis

```
int vishnu::deleteLocalAccount(const string& sessionKey, const string& userId, const string& machineId);
```

### DESCRIPTION

The local user configuration can be deleted from VISHNU. When a local user configuration is deleted, all the information about it is deleted from VISHNU.

### ARGUMENTS

***sessionKey*** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

***userId*** Input argument. UserId represents the VISHNU user identifier of the user whose local configuration will be deleted for the given machine .

***machineId*** Input argument. MachineId represents the identifier of the machine whose local configuration will be deleted for the given user .

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The local is unknown" [38]

## 7.8 listLocalAccount

listLocalAccount — lists the local user configurations

### Synopsis

```
int vishnu::listLocalAccount(const string& sessionKey, ListLocalAccounts& listLocalAcct, const ListLocalAccOptions& options = ListLocalAccOptions());
```

### DESCRIPTION

A local configuration is used to configure the access to a given system for a given user through VISHNU. It is related to an account on that system that is identified using its login. This command allows you to check all the local configurations related to your VISHNU account.

### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**listLocalAcct** Output argument. ListLocalAccount is the list of the local user configurations .

**options** Input argument. Allows an admin to list all local configurations of all users or a simple user to list his/her local user configurations on a specific machine.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

## 7.9 listMachine

listMachine — lists the machines that are accessible through VISHNU

### Synopsis

```
int vishnu::listMachine(const string& sessionKey, ListMachines& listMachine, const ListMachineOptions& options = ListMachineOptions());
```

### DESCRIPTION

This command is used to display the machines that you can use for VISHNU services. The machines you can access through VISHNU are those that are configured in VISHNU by the VISHNU administrator, and that have been added to your personal VISHNU configuration using the `vishnu_add_local_account` command. The results contain, for each machine, a machine identifier that you can use as a parameter for other VISHNU commands.

### ARGUMENTS

*sessionKey* Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

*listMachine* Output argument. ListLocalAccount is the list of the local configs .

*options* Input argument. Allows a user to list all VISHNU machines or information about a specific machine and an admin to list machines used by a specific user.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

## 7.10 listHistoryCmd

listHistoryCmd — lists the commands

### Synopsis

```
int vishnu::listHistoryCmd(const string& sessionKey, ListCommands& listCommands, const ListCmdOptions& options = ListCmdOptions());
```

### DESCRIPTION

This command displays a history of the commands you ran. Several options can be used to specify which commands to list.

### ARGUMENTS

*sessionKey* Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

*listCommands* Output argument. ListCommands is the list of commands.

*options* Input argument. Allows the user to list commands by using several optional criteria: a period, specific session and for admin to list all commands of all VISHNU users or commands from a specific user.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

## 7.11 listOptions

listOptions — lists the options of the user

### Synopsis

```
int vishnu::listOptions(const string& sessionKey, ListOptionsValues& listOptValues, const ListOptOptions& options = ListOptOptions());
```

## DESCRIPTION

This command displays the options you configured.

## ARGUMENTS

**sessionKey** Input argument. The sessionKey is the identifier of the session generated by VISHNU.

**listOptValues** Output argument. ListOptValues is an object which encapsulates the list of options.

**options** Input argument. Allows to list a specific option or all default options values or for an admin to list options of a specific user.

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The user is not an administrator" [25]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The name of the user option is unknown" [41]

## 7.12 listSessions

listSessions — lists all sessions of the user

### Synopsis

```
int vishnu::listSessions(const string& sessionKey, ListSessions& listsession, const ListSessionOptions& options = ListSessionOptions());
```

## DESCRIPTION

This command is used to display and filter the list of all your sessions. For each session, a session identifier is provided which you can use to reconnect to a given session using the vishnu\_reconnect command. The session's status is either 0 (inactive) or 1 (active).

## ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**listsession** Output argument. Listsession is the list of sessions .

**options** Input argument. Allows the user to list sessions using several optional criteria such as: the state of sessions (actives or inactives, by default, all sessions are listed), a period, a specific session or for admin to list all sessions of all users or sessions of a specific user..

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The userId is unknown" [21]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The closure policy is unknown" [42]

## 7.13 configureOption

configureOption — configures an option of the user

### Synopsis

```
int vishnu::configureOption(const string& sessionKey, const OptionValue& optionValue);
```

### DESCRIPTION

Options in VISHNU corresponds to the parameters of some VISHNU commands (e.g., the close policy for vishnu\_connect) that can be preset in the user configuration stored by the VISHNU system. This command is used to set the value of an option for the current user (the user who opened the session).

## ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**optionValue** Input argument. The optionValue is an object which encapsulates the option information.

---

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The session key is unrecognized" [28]

"The sessionKey is expired. The session is closed." [29]

"The name of the user option is unknown" [41]

"The closure policy is unknown" [42]

"The value of the timeout is incorrect" [43]

## 7.14 vishnuInitialize

vishnuInitialize — initializes VISHNU

### Synopsis

```
int vishnu::vishnuInitialize(const string& configPath);
```

### DESCRIPTION

Calling this function is required before calling any function of the VISHNU API. It initializes the connection to the VISHNU infrastructure.

### ARGUMENTS

*configPath* Input argument. ConfigPath is the path of VISHNU configuration file.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Internal Error: Undefined exception" [9]

## 7.15 vishnuFinalize

vishnuFinalize — allows a user to go out properly from VISHNU

## Synopsis

```
int vishnu::vishnuFinalize();
```

## DESCRIPTION

Calling this function is necessary to free ressources consumed due to the VISHNU API

## EXCEPTIONS

The following exceptions may be thrown:

**"Vishnu not available (Service bus failure)" [1]**

**"Internal Error: Undefined exception" [9]**



## Chapter 8

# TMS C++ API Reference

### 8.1 submitJob

`submitJob` — submits a job on a machine through the use of a script (`scriptFilePath`)

#### Synopsis

```
int vishnu::submitJob(const string& sessionKey, const string& machineId, const string& scriptFilePath, Job& jobInfo, const SubmitOptions& options = SubmitOptions());
```

#### DESCRIPTION

This command is used to submit a job to the specific batch scheduler associated to a machine. It allows describing a job in a script, using either the batch scheduler's directives or VISHNU's generic directives for all batch schedulers.

#### ARGUMENTS

***sessionKey*** Input argument. The session key.

***machineId*** Input argument. Is the id of the machine on which the job must be submitted.

***scriptFilePath*** Input argument. The path to the file containing the characteristics (job command, and batch scheduler directive required or optional) of the job to submit..

***jobInfo*** Output argument. The Job object containing the output information (ex: `jobId` and `jobPath`) of the job to submit.

***options*** Input argument. Is an instance of the class `SubmitOptions`. Each optionnal value is associated to a set operation (e.g: `setNbCpu(...)`) in the class `SubmitOptions`. If no set operation is not called on the instance object `options`, the job is submitted with the options defined in the `scriptFilePath`. Otherwise the job is submitted with the optionnal values set by the `options` object and optionnal values defined in the `scriptFilePath`, but optionnal values set by `SubmitOptions` object take precedence over those in `scriptFilePath`. With in the object `options` or within the `scriptFilePath`, the last occurrence of an optionnal value takes precedence over earlier occurrence..

#### EXCEPTIONS

The following exceptions may be thrown:

**"Vishnu not available (Service bus failure)" [1]**

"Vishnu not available (Database error)" [2]  
"Vishnu not available (Database connection)" [3]  
"Vishnu not available (System)" [4]  
"Vishnu not available (SSH error)" [9]  
"Error invalid parameters" [10]  
"The sessionKey is expired. The session is closed." [29]  
"The machine id is unknown" [32]  
"The batch scheduler type is unknown" [101]  
"The batch scheduler indicates an error" [102]  
"Permission denied" [104]

## 8.2 getJobInfo

getJobInfo — gets information on a job from its id

### Synopsis

```
int vishnu::getJobInfo(const string& sessionKey, const string& machineId, const string& jobId, Job& jobInfos);
```

### DESCRIPTION

This command allows getting information about a specific job. It can return the job's status, for example.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the job is running.

*jobId* Input argument. The id of the job .

*jobInfos* Output argument. The resulting information on the job.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]  
"Vishnu not available (Database error)" [2]  
"Vishnu not available (Database connection)" [3]  
"Vishnu not available (System)" [4]  
"Internal Error: Undefined exception" [9]  
"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

## 8.3 getJobProgress

getJobProgress — gets the progression status of jobs

### Synopsis

```
int vishnu::getJobProgress(const string& sessionKey, const string& machineId, ListProgression& listProgress, const ProgressOptions& options = ProgressOptions());
```

### DESCRIPTION

This command allows getting the progression status of a job based on the wall-clock time specified.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine to get the jobs progression.

*listProgress* Output argument. Is the object containing jobs progression information.

*options* Input argument. Is an object containing the available options jobs for progression ..

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

## 8.4 listQueues

listQueues — gets queues information

## Synopsis

```
int vishnu::listQueues(const string& sessionKey, const string& machineId, ListQueues& listofQueues, const string& queue-  
Name = string());
```

## DESCRIPTION

This command displays the status of the queues of a specific machine's batch scheduler.

## ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine that the user wants to list queues.

*listofQueues* Output argument. The list of queues.

*queueName* Input argument. If it is given, listQueues gives information only of this queue.

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

## 8.5 listJobs

listJobs — gets a list of all submitted jobs

### Synopsis

```
int vishnu::listJobs(const string& sessionKey, const string& machineId, ListJobs& listOfJobs, const ListJobsOptions& options  
= ListJobsOptions());
```

### DESCRIPTION

This command allows displaying the jobs submitted on a specific machine's batch scheduler.

---

## ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the jobs are running.

*listOfJobs* Output argument. The constructed object list of jobs.

*options* Input argument. Additional options for jobs listing.

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Internal Error: Undefined exception" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

## 8.6 getJobOutput

getJobOutput — gets standard output and error output files of a job given its id

### Synopsis

```
int vishnu::getJobOutput(const string& sessionKey, const string& machineId, const string& jobId, JobResult& outputInfo,  
const string& outDir = string());
```

### DESCRIPTION

This command allows getting a job's output files.

## ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Gets outputPath and errorPath of a job from its id.

*jobId* Input argument. The Id of the job.

*outputInfo* Output argument. The Job object containing the job output information (ex: outputPath and errorPath) of the job to submit.

*outDir* Input argument. The output directory where the files will be stored (default is current directory).

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]

"Vishnu not available (Database error)" [2]

"Vishnu not available (Database connection)" [3]

"Vishnu not available (System)" [4]

"Vishnu not available (SSH error)" [9]

"The sessionKey is expired. The session is closed." [29]

"The machine id is unknown" [32]

"The batch scheduler type is unknown" [101]

"The batch scheduler indicates an error" [102]

"Permission denied" [104]

"The job is not terminated" [107]

"The job is already downloaded" [108]

## 8.7 getCompletedJobsOutput

getCompletedJobsOutput — gets standard output and error output files of completed jobs (applies only once for each job)

### Synopsis

```
int vishnu::getCompletedJobsOutput(const string& sessionKey, const string& machineId, ListJobResults& listOfResults, const string& outDir = string());
```

### DESCRIPTION

This command allows getting the output files of all the completed jobs.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the jobs are been submitted.

*listOfResults* Output argument. Is the list of jobs results.

*outDir* Input argument. Specifies the output directory where the files will be stored (by default, the current directory)..

## EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]  
"Vishnu not available (Database error)" [2]  
"Vishnu not available (Database connection)" [3]  
"Vishnu not available (System)" [4]  
"Vishnu not available (SSH error)" [9]  
"The sessionKey is expired. The session is closed." [29]  
"The machine id is unknown" [32]  
"The batch scheduler type is unknown" [101]  
"The batch scheduler indicates an error" [102]  
"Permission denied" [104]

## 8.8 cancelJob

cancelJob — cancels a job from its id

### Synopsis

```
int vishnu::cancelJob(const string& sessionKey, const string& machineId, const string& jobId);
```

### DESCRIPTION

This command allows canceling a job submitted on a specific machine's batch scheduler.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the job is running.

*jobId* Input argument. The Id of the job.

### EXCEPTIONS

The following exceptions may be thrown:

"Vishnu not available (Service bus failure)" [1]  
"Vishnu not available (Database error)" [2]  
"Vishnu not available (Database connection)" [3]  
"Vishnu not available (System)" [4]

---

**"Vishnu not available (SSH error)" [9]**

**"The sessionKey is expired. The session is closed." [29]**

**"The machine id is unknown" [32]**

**"The batch scheduler type is unknown" [101]**

**"The batch scheduler indicates an error" [102]**

**"Permission denied" [104]**

**"The job is already terminated" [105]**

**"The job is already canceled" [106]**



## Chapter 9

# FMS C++ API Reference

### 9.1 createFile

createFile — creates files on remote machines.

#### Synopsis

```
int vishnu::createFile(const string& sessionKey, const string& path);
```

#### DESCRIPTION

Creates an empty file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

#### ARGUMENTS

*sessionKey* Input argument. The session key..

*path* Input argument. The file to create following the pattern [host:]file path..

#### EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.2 createDir

createDir — creates directories on remote machines.

### Synopsis

```
int vishnu::createDir(const string& sessionKey, const string& path);
```

### DESCRIPTION

Creates an new directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The directory to create following the pattern [host:]directory path..

### EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.3 removeFile

removeFile — removes files from remote hosts.

### Synopsis

```
int vishnu::removeFile(const string& sessionKey, const string& path, const RmFileOptions& options = RmFileOptions());
```

### DESCRIPTION

Deletes a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

## ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file to remove following the pattern [host:]file path.

*options* Input argument. The remove command options.

## EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.4 removeDir

removeDir — removes directories (and subdirectories) from remote machines.

### Synopsis

```
int vishnu::removeDir(const string& sessionKey, const string& path);
```

### DESCRIPTION

Deletes a directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

## ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The directory to remove following the pattern [host:]directory path.

## EXCEPTIONS

The following exceptions may be thrown:

- "A problem occurs with the database." [-9]
- "User does not have permission access." [-8]
- "Option unknown in the config file." [-7]
- "The path provided is invalid." [-6]
- "an option or a parameter provided is invalid for this service." [-5]
- "The FMS server is unavailable." [-4]
- "Invalid provided machine identifier." [-3]
- "The session key is unrecognized." [-2]

## 9.5 chGrp

chGrp — changes group owner of remote files/directories.

### Synopsis

```
int vishnu::chGrp(const string& sessionKey, const string& group, const string& path);
```

### DESCRIPTION

Changes the group attribute of a file or directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

### ARGUMENTS

- sessionKey* Input argument. The session key.
- group* Input argument. The new group owner of file/directory.
- path* Input argument. The file/directory following the pattern [host:]file path.

### EXCEPTIONS

The following exceptions may be thrown:

- "A problem occurs with the database." [-9]
  - "User does not have permission access." [-8]
  - "Option unknown in the config file." [-7]
  - "The path provided is invalid." [-6]
  - "an option or a parameter provided is invalid for this service." [-5]
  - "The FMS server is unavailable." [-4]
  - "Invalid provided machine identifier." [-3]
  - "The session key is unrecognized." [-2]
-

## 9.6 chMod

chMod — changes access rights of remote files/directories.

### Synopsis

```
int vishnu::chMod(const string& sessionKey, const mode_t& mode, const string& path);
```

### DESCRIPTION

Changes the permissions of a file or directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command). The mode parameter is the same value as for the unix chmod command.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*mode* Input argument. the access rights of file/directory in octal system..

*path* Input argument. The file/directory following the pattern [host:]file path.

### EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.7 headOfFile

headOfFile — displays a few first lines of files located on remote machines.

### Synopsis

```
int vishnu::headOfFile(const string& sessionKey, const string& path, string& fileContent, const HeadOfFileOptions& options = HeadOfFileOptions());
```

## DESCRIPTION

Displays the first lines of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

## ARGUMENTS

*sessionKey* Input argument. The session key.  
*path* Input argument. The file following the pattern [host:]file path.  
*fileContent* Output argument. The first "nLine" lines of the file.  
*options* Input argument. The head command options.

## EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]  
"User does not have permission access." [-8]  
"Option unknown in the config file." [-7]  
"The path provided is invalid." [-6]  
"an option or a parameter provided is invalid for this service." [-5]  
"The FMS server is unavailable." [-4]  
"Invalid provided machine identifier." [-3]  
"The session key is unrecognized." [-2]

## 9.8 tailOfFile

tailOfFile — displays a few last lines of files located on remote machines

### Synopsis

```
int vishnu::tailOfFile(const string& sessionKey, const string& path, string& fileContent, const TailOfFileOptions& options = TailOfFileOptions());
```

## DESCRIPTION

Displays the last lines of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

## ARGUMENTS

*sessionKey* Input argument. The session key.  
*path* Input argument. The file following the pattern [host:]file path.  
*fileContent* Output argument. The last "nLine" lines of the file.  
*options* Input argument. The tail command options.

---

## EXCEPTIONS

The following exceptions may be thrown:

- "A problem occurs with the database." [-9]
- "User does not have permission access." [-8]
- "Option unknown in the config file." [-7]
- "The path provided is invalid." [-6]
- "an option or a parameter provided is invalid for this service." [-5]
- "The FMS server is unavailable." [-4]
- "Invalid provided machine identifier." [-3]
- "The session key is unrecognized." [-2]

## 9.9 contentOfFile

contentOfFile — displays content of files located on remote machines

### Synopsis

```
int vishnu::contentOfFile(const string& sessionKey, const string& path, string& fileContent);
```

### DESCRIPTION

Displays the content of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file to display following the pattern [host:]file path.

*fileContent* Output argument. The content of the file.

### EXCEPTIONS

The following exceptions may be thrown:

- "A problem occurs with the database." [-9]
- "User does not have permission access." [-8]
- "Option unknown in the config file." [-7]
- "The path provided is invalid." [-6]
- "an option or a parameter provided is invalid for this service." [-5]
- "The FMS server is unavailable." [-4]
- "Invalid provided machine identifier." [-3]
- "The session key is unrecognized." [-2]

## 9.10 listDir

listDir — displays the content of a remote directory.

### Synopsis

```
int vishnu::listDir(const string& sessionKey, const string& path, StringList& dirContent, const LsDirOptions& options);
```

### DESCRIPTION

Displays the content of a directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The directory to list following the pattern [host:]directory path.

*dirContent* Output argument. The content of the directory (only files names with short format, all files informations with long format)..

*options* Input argument. List of options for the listDir command.

### EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.11 copyFile

copyFile — executes a synchronous copy of file.

### Synopsis

```
int vishnu::copyFile(const string& sessionKey, const string& src, const string& dest, const CpFileOptions& options = CpFileOptions());
```



## DESCRIPTION

Copy a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form `'machine_id:path'` (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or `'path'` only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local copy cannot be handled by this command.

## ARGUMENTS

***sessionKey*** Input argument. The session key.

***src*** Input argument. The source file to copy following the pattern `[host:]file path`.

***dest*** Input argument. The path of the destination file.

***options*** Input argument. The copy options.

## EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.12 copyAsyncFile

`copyAsyncFile` — executes an asynchronous copy of file.

### Synopsis

```
int vishnu::copyAsyncFile(const string& sessionKey, const string& src, const string& dest, FileTransfer& transferInfo, const CpFileOptions& options);
```

## DESCRIPTION

Initiates a copy of a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form `'machine_id:path'` (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or `'path'` only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local copy cannot be handled by this command. The command `listFileTransfers` can be used to check the status of the transfer after it is initiated, using the transfer id as the identifier.

## ARGUMENTS

*sessionKey* Input argument. The session key.

*src* Input argument. The source file to copy following the pattern [host:]file path.

*dest* Input argument. The path of the destination file.

*transferInfo* Output argument. A file transfer identifier (allowing for instance to check the status of a file transfer, or to cancel it).

*options* Input argument. The copy options.

## EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.13 moveFile

`moveFile` — executes a synchronous move of file.

### Synopsis

```
int vishnu::moveFile(const string& sessionKey, const string& src, const string& dest, const CpFileOptions& options);
```

### DESCRIPTION

Move a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form 'machine\_id:path' (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or 'path' only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local move cannot be handled by this command.

## ARGUMENTS

*sessionKey* Input argument. The session key.

*src* Input argument. The source file to move following the pattern [host:]file path.

*dest* Input argument. The path of the destination file.

*options* Input argument. The move command options.

## EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.14 moveAsyncFile

moveAsyncFile — executes an asynchronous move of file.

### Synopsis

```
int vishnu::moveAsyncFile(const string& sessionKey, const string& src, const string& dest, FileTransfer& transferInfo, const CpFileOptions& options = CpFileOptions());
```

### DESCRIPTION

Initiates a move of a file or directory from the location given by the `src` parameter to the location given by the `dest` parameter. The `src` parameter must be provided in the form `'machine_id:path'` (the `machine_id` values can be obtained using the `vishnu_list_machine` command) or `'path'` only if the file is on the local system. The `dest` parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local move cannot be handled by this command. The command `listFileTransfers` can be used to check the status of the transfer after it is initiated, using the transfer id as the identifier.

### ARGUMENTS

**sessionKey** Input argument. The session key.

**src** Input argument. The source file to move following the pattern `[host:]file path`.

**dest** Input argument. The path of the destination file.

**transferInfo** Output argument. A file transfer identifier (allowing for instance to check the status of a file transfer, or to cancel it).

**options** Input argument. The transfer command options.

## EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.15 stopFileTransfer

stopFileTransfer — stops an execution of a set of file transfers.

### Synopsis

```
int vishnu::stopFileTransfer(const string& sessionKey, const StopTransferOptions& options = StopTransferOptions());
```

### DESCRIPTION

Cancels a file or directory transfer that has been initiated using a vishnu asynchronous copy or move file command. The command listFileTransfers can be used to check the status of the transfer after it has been cancelled, using the transfer id as the identifier.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*options* Input argument. The stop file transfer command options.

### EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.16 listFileTransfers

listFileTransfers — displays the history of all file transfers submitted by User.

### Synopsis

```
int vishnu::listFileTransfers(const string& sessionKey, FileTransferList& fileTransferList, const LsTransferOptions& options = LsTransferOptions());
```

### DESCRIPTION

Get the list of all file or directory transfers that have been initiated using a vishnu synchronous or asynchronous copy or move file command.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*fileTransferList* Output argument. The file transfer list.

*options* Input argument. The filter options .

### EXCEPTIONS

The following exceptions may be thrown:

"A problem occurs with the database." [-9]

"User does not have permission access." [-8]

"Option unknown in the config file." [-7]

"The path provided is invalid." [-6]

"an option or a parameter provided is invalid for this service." [-5]

"The FMS server is unavailable." [-4]

"Invalid provided machine identifier." [-3]

"The session key is unrecognized." [-2]

## 9.17 getFilesInfo

getFilesInfo — displays the information of files.

### Synopsis

```
int vishnu::getFilesInfo(const string& sessionKey, const string& path, FileStat& filesinfo);
```

### DESCRIPTION

Get the details of a remote file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

## ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file whose inode information will be displayed.

*filesinfo* Output argument. The inode information.

## EXCEPTIONS

The following exceptions may be thrown:

**"A problem occurs with the database." [-9]**

**"User does not have permission access." [-8]**

**"Option unknown in the config file." [-7]**

**"The path provided is invalid." [-6]**

**"an option or a parameter provided is invalid for this service." [-5]**

**"The FMS server is unavailable." [-4]**

**"Invalid provided machine identifier." [-3]**

**"The session key is unrecognized." [-2]**

## Chapter 10

# IMS C++ API Reference

### 10.1 exportCommands

exportCommands — exports all the commands made by a user during a session

#### Synopsis

```
int vishnu::exportCommands(const string& sessionKey, const string& oldSessionId, string& filename, const ExportOp& options = ExportOp());
```

#### DESCRIPTION

Exports all the VISHNU commands submitted during a completed session. This session must be in closed state. The output of this command is a file containing a shell script. For safety reasons, the commands having a password for parameter are not exported (for example the vishnu\_connect and vishnu\_change\_password commands). This means the shell script must be run after opening a session manually or by adding the vishnu\_connect command to the script. The access to other user's sessions is only permitted to administrators.

#### ARGUMENTS

*sessionKey* Input argument. The session key.

*oldSessionId* Input argument. The id of the session to export (session has ended).

*filename* Input/Output argument. The path of the output file containing the Vishnu shell commands.

*options* Input argument. Options which encapsulate the option for the export.

#### EXCEPTIONS

The following exceptions may be thrown:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 10.2 getMetricCurrentValue

getMetricCurrentValue — displays the current values of system metrics

### Synopsis

```
int vishnu::getMetricCurrentValue(const string& sessionKey, const string& machineId, ListMetric& metricValue, const CurMetricOp& options);
```

### DESCRIPTION

Displays the current values of the monitored metrics on the system identified by the machineId argument : cpuload, free disk space and free memory. The units of displayed values are percentages for cpuload and Megabytes (Mb) for disk space and memory. The provided values are always standard integers (no float values). Please note that retrieving these values uses some valuable system resources and should not occur too frequently to avoid an impact on system performance.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. The id of the machine.

*metricValue* Output argument. Value of the metric.

*options* Input argument. The options for the current metric value.

### EXCEPTIONS

The following exceptions may be thrown:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 10.3 getMetricHistory

getMetricHistory — displays the history of values of a system metric

### Synopsis

```
int vishnu::getMetricHistory(const string& sessionKey, const string& machineId, ListMetric& metricValues, const MetricHistOp& options = MetricHistOp());
```

### DESCRIPTION

Displays the chronological list of values of the metrics on the system identified by the machineId argument. Using the options it is possible to specify a type of metric and the starting and ending dates of the desired monitoring period. Note that some data will be available only if the required VISHNU agent (IMS server) has been running locally on the machine during the specified period.



## ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. The id of the machine.

*metricValues* Output argument. List of metric values.

*options* Input argument. The optional fields for the metric history.

## EXCEPTIONS

The following exceptions may be thrown:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 10.4 getUpdateFrequency

getUpdateFrequency — gets the update frequency of the IMS database

### Synopsis

```
int vishnu::getUpdateFrequency(const string& sessionKey, int& freq);
```

## DESCRIPTION

This function allows a user to get the update frequency, to know how often the state of the machines is automatically polled to get historical data.

## ARGUMENTS

*sessionKey* Input argument. The session key.

*freq* Output argument. Frequency the data are updated, in second.

## EXCEPTIONS

The following exceptions may be thrown:

"If a parameter is invalid" [1]

"The database generated an error" [2]

## 10.5 getSystemInfo

getSystemInfo — To get the system info on a machine

## Synopsis

```
int vishnu::getSystemInfo(const string& sessionKey, ListSysInfo& res, const SysInfoOp& options = SysInfoOp());
```

## DESCRIPTION

This function allows a user to get system information about a machine. A system information describes a machine. The option is the machine id (if no machine id, the information for all the machines are given)

## ARGUMENTS

*sessionKey* Input argument. The session key.

*res* Output argument. The list of the system information gotten.

*options* Input argument. Optional field for system information.

## EXCEPTIONS

The following exceptions may be thrown:

**"If a parameter is invalid" [1]**

**"The database generated an error" [2]**

## Chapter 11

# UMS Python API Reference

### 11.1 VISHNU.connect

VISHNU.connect — opens a session

#### Synopsis

```
VISHNU.connect(string userId, string password, Session session, ConnectOptions options = ConnectOptions());
```

#### DESCRIPTION

Opening a VISHNU session is the first step before using any other VISHNU command. This command authenticates you. You must have been registered in the VISHNU system by an administrator. It also creates a session that remains open after the command is completed and until the session is either manually or automatically closed.

#### ARGUMENTS

**userId** Input argument. UserId represents the VISHNU user identifier.

**password** Input argument. Password represents the password of the user.

**session** Output argument. The session object that contains the created session details.

**options** Input argument. Options is an object which encapsulates the options available for the connect method. It allows the user to choose the way for closing the session automatically on TIMEOUT or on DISCONNECT and the possibility for an admin to open a session as he/she was a specific user.

#### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

**sessionKey (string)** Output parameter. Contains the session key.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The user is unknown or the password is wrong" [20])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The user is locked" [23])**

**UMSVishnuException("The user is not an administrator" [25])**

**UMSVishnuException("The closure policy is unknown" [42])**

**UMSVishnuException("The value of the timeout is incorrect" [43])**

## 11.2 VISHNU.reconnect

VISHNU.reconnect — reconnects to a session that is still active

### Synopsis

**VISHNU.reconnect**(string userId, string password, string sessionId, Session session);

### DESCRIPTION

This command allows you to resume a session that has been opened previously and that has not yet been closed. You can disconnect from a session without closing it (for example if there are running commands in that session) by setting the session's close policy (at connection time) to `CLOSE_ON_TIMEOUT`. As sessions are linked to a specific client system, you cannot reconnect to a session that was opened on another client system.

### ARGUMENTS

**userId** Input argument. UserId represents the VISHNU user identifier.

**password** Input argument. Password represents the password of the user.

**sessionId** Input argument. SessionId is the identifier of the session defined in the database.

**session** Output argument. The session object containing session information.

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

**sessionKey (string)** Output parameter. Contains the session key.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The user is unknown or the password is wrong" [20])**

**UMSVishnuException("The user is locked" [23])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The session Id is unknown" [30])**

**UMSVishnuException("The machine does not exist or it is locked" [36])**

## 11.3 VISHNU.close

VISHNU.close — closes the session

### Synopsis

```
VISHNU.close(string sessionKey);
```

### DESCRIPTION

This command closes the session that is currently active in the terminal. It will return an error if there are still some active requests that were been submitted by the user during the session (e.g., job submission or file transfers). After the session is closed, it cannot be re-opened.

### ARGUMENTS

*sessionKey* Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("Commands are running" [31])**

## 11.4 VISHNU.changePassword

VISHNU.changePassword — changes the password

### Synopsis

**VISHNU.changePassword**(string userId, string password, string passwordNew);

### DESCRIPTION

This command is used to change the password. It can be done voluntarily or when the password is only temporary: for your first connection to VISHNU or after your password is reset by an administrator .

### ARGUMENTS

***userId*** Input argument. UserId represents the VISHNU user identifier.

***password*** Input argument. Password represents the password of the user.

***passwordNew*** Input argument. PasswordNew represents the new password of the user.

### RETURNED OBJECTS

***errorCode (integer)*** Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The user is unknown or the password is wrong" [20])**

**UMSVishnuException("The user is locked" [23])**

## 11.5 VISHNU.addLocalAccount

VISHNU.addLocalAccount — adds a new local user configuration

### Synopsis

**VISHNU.addLocalAccount**(string sessionKey, LocalAccount newAccount, string sshPublicKey);

### DESCRIPTION

A local user configuration must be added to allow you (identified by `userId`) to connect to machine (identified by `machineId`). This configuration must match an existing system account on that machine with a login that matches `acLogin`. The parameters `sshKeyPath` parameter (the absolute path to your private SSH key, used for file transfers) must be provided as well as the `homeDirectory` path .

### ARGUMENTS

***sessionKey*** Input argument. The `sessionKey` is the encrypted identifier of the session generated by VISHNU.

***newAccount*** Input argument. `NewAccount` is the object which encapsulates the new local user configuration.

***sshPublicKey*** Output argument. The SSH public key generated by VISHNU for accessing a local account.

### RETURNED OBJECTS

***errorCode (integer)*** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**UMSVishnuException("The machine is locked" [34])**

**UMSVishnuException("The machine does not exist or it is locked" [36])**

**UMSVishnuException("The local account already exists" [37])**

**UMSVishnuException("The system account login is already used by another vishnu user" [45])**

## 11.6 VISHNU.updateLocalAccount

VISHNU.updateLocalAccount — updates a local user configuration

### Synopsis

**VISHNU.updateLocalAccount**(string sessionKey, LocalAccount LocalAccUpd);

### DESCRIPTION

The local user configuration can be updated. You can modify information of its local configuration such as acLogin, sshKeypath or homeDirectory.

### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**LocalAccUpd** Input argument. Is an object which encapsulates the local user configuration changes except the machineId and the userId.

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.



## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**UMSVishnuException("The local is unknown" [38])**

**UMSVishnuException("The system account login is already used by another vishnu user" [45])**

## 11.7 VISHNU.deleteLocalAccount

VISHNU.deleteLocalAccount — removes a local user configuration (for a given user on a given machine) from VISHNU

### Synopsis

**VISHNU.deleteLocalAccount**(string sessionKey, string userId, string machineId);

### DESCRIPTION

The local user configuration can be deleted from VISHNU. When a local user configuration is deleted, all the information about it is deleted from VISHNU.

### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**userId** Input argument. UserId represents the VISHNU user identifier of the user whose local configuration will be deleted for the given machine .

**machineId** Input argument. MachineId represents the identifier of the machine whose local configuration will be deleted for the given user .

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The local is unknown" [38])**

## 11.8 VISHNU.listLocalAccount

VISHNU.listLocalAccount — lists the local user configurations

### Synopsis

**VISHNU.listLocalAccount**(string sessionKey, ListLocalAccounts listLocalAcct, ListLocalAccOptions options = ListLocalAccOptions());

### DESCRIPTION

A local configuration is used to configure the access to a given system for a given user through VISHNU. It is related to an account on that system that is identified using its login. This command allows you to check all the local configurations related to your VISHNU account.

### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**listLocalAcct** Output argument. ListLocalAccount is the list of the local user configurations .

**options** Input argument. Allows an admin to list all local configurations of all users or a simple user to list his/her local user configurations on a specific machine.

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

## 11.9 VISHNU.listMachine

VISHNU.listMachine — lists the machines that are accessible through VISHNU

### Synopsis

**VISHNU.listMachine**(string sessionKey, ListMachines listMachine, ListMachineOptions options = ListMachineOptions());

### DESCRIPTION

This command is used to display the machines that you can use for VISHNU services. The machines you can access through VISHNU are those that are configured in VISHNU by the VISHNU administrator, and that have been added to your personal VISHNU configuration using the `vishnu_add_local_account` command. The results contain, for each machine, a machine identifier that you can use as a parameter for other VISHNU commands.

### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**listMachine** Output argument. ListLocalAccount is the list of the local configs .

**options** Input argument. Allows a user to list all VISHNU machines or information about a specific machine and an admin to list machines used by a specific user.

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

### 11.10 VISHNU.listHistoryCmd

VISHNU.listHistoryCmd — lists the commands

#### Synopsis

**VISHNU.listHistoryCmd**(string sessionKey, ListCommands listCommands, ListCmdOptions options = ListCmdOptions());

#### DESCRIPTION

This command displays a history of the commands you ran. Several options can be used to specify which commands to list.

#### ARGUMENTS

***sessionKey*** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

***listCommands*** Output argument. ListCommands is the list of commands.

***options*** Input argument. Allows the user to list commands by using several optional criteria: a period, specific session and for admin to list all commands of all VISHNU users or commands from a specific user.

#### RETURNED OBJECTS

***errorCode (integer)*** Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

### 11.11 VISHNU.listOptions

VISHNU.listOptions — lists the options of the user

#### Synopsis

**VISHNU.listOptions**(string sessionKey, ListOptionsValues listOptValues, ListOptOptions options = ListOptOptions());

#### DESCRIPTION

This command displays the options you configured.

#### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the identifier of the session generated by VISHNU.

**listOptValues** Output argument. ListOptValues is an object which encapsulates the list of options.

**options** Input argument. Allows to list a specific option or all default options values or for an admin to list options of a specific user.

#### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The user is not an administrator" [25])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The name of the user option is unknown" [41])**

## 11.12 VISHNU.listSessions

VISHNU.listSessions — lists all sessions of the user

### Synopsis

**VISHNU.listSessions**(string sessionKey, ListSessions listsession, ListSessionOptions options = ListSessionOptions());

### DESCRIPTION

This command is used to display and filter the list of all your sessions. For each session, a session identifier is provided which you can use to reconnect to a given session using the `vishnu_reconnect` command. The session's status is either 0 (inactive) or 1 (active).

### ARGUMENTS

***sessionKey*** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

***listsession*** Output argument. Listsession is the list of sessions .

***options*** Input argument. Allows the user to list sessions using several optional criteria such as: the state of sessions (actives or inactives, by default, all sessions are listed), a period, a specific session or for admin to list all sessions of all users or sessions of a specific user..

### RETURNED OBJECTS

***errorCode (integer)*** Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The userId is unknown" [21])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The closure policy is unknown" [42])**

### 11.13 VISHNU.configureOption

VISHNU.configureOption — configures an option of the user

#### Synopsis

**VISHNU.configureOption**(string sessionKey, OptionValue optionValue);

#### DESCRIPTION

Options in VISHNU corresponds to the parameters of some VISHNU commands (e.g., the close policy for vishnu\_connect) that can be preset in the user configuration stored by the VISHNU system. This command is used to set the value of an option for the current user (the user who opened the session).

#### ARGUMENTS

**sessionKey** Input argument. The sessionKey is the encrypted identifier of the session generated by VISHNU.

**optionValue** Input argument. The optionValue is an object which encapsulates the option information.

#### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The session key is unrecognized" [28])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The name of the user option is unknown" [41])**

**UMSVishnuException("The closure policy is unknown" [42])**

**UMSVishnuException("The value of the timeout is incorrect" [43])**

### 11.14 VISHNU.vishnuInitialize

VISHNU.vishnuInitialize — initializes VISHNU

#### Synopsis

**VISHNU.vishnuInitialize(string configPath);**

#### DESCRIPTION

Calling this function is required before calling any function of the VISHNU API. It initializes the connection to the VISHNU infrastructure.

#### ARGUMENTS

***configPath*** Input argument. ConfigPath is the path of VISHNU configuration file.

#### RETURNED OBJECTS

***errorCode (integer)*** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Internal Error: Undefined exception" [9])**



## 11.15 VISHNU.vishnuFinalize

VISHNU.vishnuFinalize — allows a user to go out properly from VISHNU

### Synopsis

**VISHNU.vishnuFinalize();**

### DESCRIPTION

Calling this function is necessary to free resources consumed due to the VISHNU API

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

### EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Internal Error: Undefined exception" [9])**

## Chapter 12

# TMS Python API Reference

### 12.1 VISHNU.submitJob

VISHNU.submitJob — submits a job on a machine through the use of a script (scriptFilePath)

#### Synopsis

**VISHNU.submitJob**(string sessionKey, string machineId, string scriptFilePath, Job jobInfo, SubmitOptions options = SubmitOptions());

#### DESCRIPTION

This command is used to submit a job to the specific batch scheduler associated to a machine. It allows describing a job in a script, using either the batch scheduler's directives or VISHNU's generic directives for all batch schedulers.

#### ARGUMENTS

**sessionKey** Input argument. The session key.

**machineId** Input argument. Is the id of the machine on which the job must be submitted.

**scriptFilePath** Input argument. The path to the file containing the characteristics (job command, and batch scheduler directive required or optional) of the job to submit..

**jobInfo** Output argument. The Job object containing the output information (ex: jobId and jobPath) of the job to submit.

**options** Input argument. Is an instance of the class SubmitOptions. Each optionnal value is associated to a set operation (e.g: setNbCpu(...)) in the class SubmitOptions. If no set operation is not called on the instance object options, the job is submitted with the options defined in the scriptFilePath. Otherwise the job is submitted with the optionnal values set by the options object and optionnal values defined in the scriptFilePath, but optionnal values set by SubmitOptions object take precedence over those in scriptFilePath. With in the object options or within the scriptFilePath, the last occurrence of an optionnal value takes precedence over earlier occurrence..

#### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Vishnu not available (SSH error)" [9])**

**UserException("Error invalid parameters" [10])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

## 12.2 VISHNU.getJobInfo

VISHNU.getJobInfo — gets information on a job from its id

### Synopsis

**VISHNU.getJobInfo**(string sessionKey, string machineId, string jobId, Job jobInfos);

### DESCRIPTION

This command allows getting information about a specific job. It can return the job's status, for example.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the job is running.

*jobId* Input argument. The id of the job .

*jobInfos* Output argument. The resulting information on the job.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

## 12.3 VISHNU.getJobProgress

VISHNU.getJobProgress — gets the progression status of jobs

### Synopsis

**VISHNU.getJobProgress**(string sessionKey, string machineId, ListProgression listProgress, ProgressOptions options = ProgressOptions());

### DESCRIPTION

This command allows getting the progression status of a job based on the wall-clock time specified.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine to get the jobs progression.

*listProgress* Output argument. Is the object containing jobs progression information.

*options* Input argument. Is an object containing the available options jobs for progression ..

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

## 12.4 VISHNU.listQueues

VISHNU.listQueues — gets queues information

### Synopsis

**VISHNU.listQueues**(string sessionKey, string machineId, ListQueues listofQueues, string queueName = string());

### DESCRIPTION

This command displays the status of the queues of a specific machine's batch scheduler.

### ARGUMENTS

***sessionKey*** Input argument. The session key.

***machineId*** Input argument. Is the id of the machine that the user wants to list queues.

***listofQueues*** Output argument. The list of queues.

***queueName*** Input argument. If it is given, listQueues gives information only of this queue.

### RETURNED OBJECTS

***errorCode (integer)*** Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

## 12.5 VISHNU.listJobs

VISHNU.listJobs — gets a list of all submitted jobs

### Synopsis

**VISHNU.listJobs**(string sessionKey, string machineId, ListJobs listOfJobs, ListJobsOptions options = ListJobsOptions());

### DESCRIPTION

This command allows displaying the jobs submitted on a specific machine's batch scheduler.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the jobs are running.

*listOfJobs* Output argument. The constructed object list of jobs.

*options* Input argument. Additional options for jobs listing.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Internal Error: Undefined exception" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

## 12.6 VISHNU.getJobOutput

VISHNU.getJobOutput — gets standard output and error output files of a job given its id

### Synopsis

**VISHNU.getJobOutput**(string sessionKey, string machineId, string jobId, JobResult outputInfo, string outDir = string());

### DESCRIPTION

This command allows getting a job's output files.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Gets outputPath and errorPath of a job from its id.

*jobId* Input argument. The Id of the job.

*outputInfo* Output argument. The Job object containing the job output information (ex: outputPath and errorPath) of the job to submit.

*outDir* Input argument. The output directory where the files will be stored (default is current directory).

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Vishnu not available (SSH error)" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

**TMSVishnuException("The job is not terminated" [107])**

**TMSVishnuException("The job is already downloaded" [108])**

## 12.7 VISHNU.getCompletedJobsOutput

VISHNU.getCompletedJobsOutput — gets standard output and error output files of completed jobs (applies only once for each job)

### Synopsis

**VISHNU.getCompletedJobsOutput**(string sessionKey, string machineId, ListJobResults listOfResults, string outDir = string());

### DESCRIPTION

This command allows getting the output files of all the completed jobs.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the jobs are been submitted.

*listOfResults* Output argument. Is the list of jobs results.

*outDir* Input argument. Specifies the output directory where the files will be stored (by default, the current directory)..

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.



## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Vishnu not available (SSH error)" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

## 12.8 VISHNU.cancelJob

VISHNU.cancelJob — cancels a job from its id

### Synopsis

**VISHNU.cancelJob**(string sessionKey, string machineId, string jobId);

### DESCRIPTION

This command allows canceling a job submitted on a specific machine's batch scheduler.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. Is the id of the machine on which the job is running.

*jobId* Input argument. The Id of the job.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("Vishnu not available (Service bus failure)" [1])**

**SystemException("Vishnu not available (Database error)" [2])**

**SystemException("Vishnu not available (Database connection)" [3])**

**SystemException("Vishnu not available (System)" [4])**

**SystemException("Vishnu not available (SSH error)" [9])**

**UMSVishnuException("The sessionKey is expired. The session is closed." [29])**

**UMSVishnuException("The machine id is unknown" [32])**

**TMSVishnuException("The batch scheduler type is unknown" [101])**

**TMSVishnuException("The batch scheduler indicates an error" [102])**

**TMSVishnuException("Permission denied" [104])**

**TMSVishnuException("The job is already terminated" [105])**

**TMSVishnuException("The job is already canceled" [106])**

## Chapter 13

# FMS Python API Reference

### 13.1 VISHNU.createFile

VISHNU.createFile — creates files on remote machines.

#### Synopsis

**VISHNU.createFile**(string sessionKey, string path);

#### DESCRIPTION

Creates an empty file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

#### ARGUMENTS

*sessionKey* Input argument. The session key..

*path* Input argument. The file to create following the pattern [host:]file path..

#### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

#### EXCEPTIONS

The following exceptions may be thrown:

**SystemException**("A problem occurs with the database." [-9])

**SystemException**("User does not have permission access." [-8])

**SystemException**("Option unknown in the config file." [-7])

**SystemException**("The path provided is invalid." [-6])

**SystemException**("an option or a parameter provided is invalid for this service." [-5])

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.2 VISHNU.createDir

VISHNU.createDir — creates directories on remote machines.

### Synopsis

**VISHNU.createDir**(string sessionKey, string path);

### DESCRIPTION

Creates an new directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The directory to create following the pattern [host:]directory path..

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

### EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.3 VISHNU.removeFile

VISHNU.removeFile — removes files from remote hosts.

## Synopsis

**VISHNU.removeFile**(string sessionKey, string path, RmFileOptions options = RmFileOptions());

## DESCRIPTION

Deletes a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

## ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file to remove following the pattern [host:]file path.

*options* Input argument. The remove command options.

## RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException**("A problem occurs with the database." [-9])

**SystemException**("User does not have permission access." [-8])

**SystemException**("Option unknown in the config file." [-7])

**SystemException**("The path provided is invalid." [-6])

**SystemException**("an option or a parameter provided is invalid for this service." [-5])

**SystemException**("The FMS server is unavailable." [-4])

**SystemException**("Invalid provided machine identifier." [-3])

**SystemException**("The session key is unrecognized." [-2])

## 13.4 VISHNU.removeDir

VISHNU.removeDir — removes directories (and subdirectories) from remote machines.

## Synopsis

**VISHNU.removeDir**(string sessionKey, string path);

## DESCRIPTION

Deletes a directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

---

## ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The directory to remove following the pattern [host:]directory path.

## RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.5 VISHNU.chGrp

VISHNU.chGrp — changes group owner of remote files/directories.

### Synopsis

**VISHNU.chGrp**(string sessionKey, string group, string path);

### DESCRIPTION

Changes the group attribute of a file or directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command)

## ARGUMENTS

*sessionKey* Input argument. The session key.

*group* Input argument. The new group owner of file/directory.

*path* Input argument. The file/directory following the pattern [host:]file path.

## RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.6 VISHNU.chMod

VISHNU.chMod — changes access rights of remote files/directories.

### Synopsis

**VISHNU.chMod**(string sessionKey, mode\_t mode, string path);

### DESCRIPTION

Changes the permissions of a file or directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command). The mode parameter is the same value as for the unix chmod command.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*mode* Input argument. the access rigths of file/directory in octal system..

*path* Input argument. The file/directory following the pattern [host:]file path.

## RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.7 VISHNU.headOfFile

VISHNU.headOfFile — displays a few first lines of files located on remote machines.

### Synopsis

**VISHNU.headOfFile**(string sessionKey, string path, string fileContent, HeadOfFileOptions options = HeadOfFileOptions());

### DESCRIPTION

Displays the first lines of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file following the pattern [host:]file path.

*fileContent* Output argument. The first "nLine" lines of the file.

*options* Input argument. The head commandoptions.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

---



## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.8 VISHNU.tailOfFile

VISHNU.tailOfFile — displays a few last lines of files located on remote machines

### Synopsis

**VISHNU.tailOfFile**(string sessionKey, string path, string fileContent, TailOfFileOptions options = TailOfFileOptions());

### DESCRIPTION

Displays the last lines of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file following the pattern [host:]file path.

*fileContent* Output argument. The last "nLine" lines of the file.

*options* Input argument. The tail command options.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.9 VISHNU.contentOfFile

VISHNU.contentOfFile — displays content of files located on remote machines

### Synopsis

**VISHNU.contentOfFile**(string sessionKey, string path, string fileContent);

### DESCRIPTION

Displays the content of a file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file to display following the pattern [host:]file path.

*fileContent* Output argument. The content of the file.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

---

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.10 VISHNU.listdir

VISHNU.listdir — displays the content of a remote directory.

### Synopsis

**VISHNU.listdir**(string sessionKey, string path, StringList dirContent, LsDirOptions options);

### DESCRIPTION

Displays the content of a directory at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

**sessionKey** Input argument. The session key.

**path** Input argument. The directory to list following the pattern [host:]directory path.

**dirContent** Output argument. The content of the directory (only files names with short format, all files informations with long format)..

**options** Input argument. List of options for the listDir command.

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

### 13.11 VISHNU.copyFile

VISHNU.copyFile — executes a synchronous copy of file.

#### Synopsis

**VISHNU.copyFile**(string sessionKey, string src, string dest, CpFileOptions options = CpFileOptions());

#### DESCRIPTION

Copy a file or directory from the location given by the *src* parameter to the location given by the *dest* parameter. The *src* parameter must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the `vishnu_list_machine` command) or 'path' only if the file is on the local system. The *dest* parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local copy cannot be handled by this command.

#### ARGUMENTS

*sessionKey* Input argument. The session key.

*src* Input argument. The source file to copy following the pattern [host:]file path.

*dest* Input argument. The path of the destination file.

*options* Input argument. The copy options.

#### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.12 VISHNU.copyAsyncFile

VISHNU.copyAsyncFile — executes an asynchronous copy of file.

### Synopsis

**VISHNU.copyAsyncFile**(string sessionKey, string src, string dest, FileTransfer transferInfo, CpFileOptions options);

### DESCRIPTION

Initiates a copy of a file or directory from the location given by the src parameter to the location given by the dest parameter. The src parameter must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command) or 'path' only if the file is on the local system. The dest parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local copy cannot be handled by this command. The command listFileTransfers can be used to check the status of the transfer after it is initiated, using the transfer id as the identifier.

### ARGUMENTS

**sessionKey** Input argument. The session key.

**src** Input argument. The source file to copy following the pattern [host:]file path.

**dest** Input argument. The path of the destination file.

**transferInfo** Output argument. A file transfer identifier (allowing for instance to check the status of a file transfer, or to cancel it).

**options** Input argument. The copy options.

### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.13 VISHNU.moveFile

VISHNU.moveFile — executes a synchronous move of file.

### Synopsis

**VISHNU.moveFile**(string sessionKey, string src, string dest, CpFileOptions options);

### DESCRIPTION

Move a file or directory from the location given by the src parameter to the location given by the dest parameter. The src parameter must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command) or 'path' only if the file is on the local system. The dest parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local move cannot be handled by this command.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*src* Input argument. The source file to move following the pattern [host:]file path.

*dest* Input argument. The path of the destination file.

*options* Input argument. The move command options.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

### 13.14 VISHNU.moveAsyncFile

VISHNU.moveAsyncFile — executes an asynchronous move of file.

#### Synopsis

**VISHNU.moveAsyncFile**(string sessionKey, string src, string dest, FileTransfer transferInfo, CpFileOptions options = CpFileOptions());

#### DESCRIPTION

Initiates a move of a file or directory from the location given by the src parameter to the location given by the dest parameter. The src parameter must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command) or 'path' only if the file is on the local system. The dest parameter must be provided in a similar way. Note that one of the two locations at least must be a remote location, i.e. a local move cannot be handled by this command. The command listFileTransfers can be used to check the status of the transfer after it is initiated, using the transfer id as the identifier.

#### ARGUMENTS

**sessionKey** Input argument. The session key.

**src** Input argument. The source file to move following the pattern [host:]file path.

**dest** Input argument. The path of the destination file.

**transferInfo** Output argument. A file transfer identifier (allowing for instance to check the status of a file transfer, or to cancel it).

**options** Input argument. The transfer command options.

#### RETURNED OBJECTS

**errorCode (integer)** Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.15 VISHNU.stopFileTransfer

VISHNU.stopFileTransfer — stops an execution of a set of file transfers.

### Synopsis

**VISHNU.stopFileTransfer**(string sessionKey, StopTransferOptions options = StopTransferOptions());

### DESCRIPTION

Cancels a file or directory transfer that has been initiated using a vishnu asynchronous copy or move file command. The command `listFileTransfers` can be used to check the status of the transfer after it has been cancelled, using the transfer id as the identifier.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*options* Input argument. The stop file transfer command options.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**



**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.16 VISHNU.listFilesTransfers

VISHNU.listFilesTransfers — displays the history of all file transfers submitted by User.

### Synopsis

**VISHNU.listFilesTransfers**(string *sessionKey*, FileTransferList *fileTransferList*, LsTransferOptions *options* = LsTransferOptions());

### DESCRIPTION

Get the list of all file or directory transfers that have been initiated using a vishnu synchronous or asynchronous copy or move file command.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*fileTransferList* Output argument. The file transfer list.

*options* Input argument. The filter options .

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

### EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## 13.17 VISHNU.getFilesInfo

VISHNU.getFilesInfo — displays the information of files.

### Synopsis

**VISHNU.getFilesInfo**(string sessionKey, string path, FileStat filesinfo);

### DESCRIPTION

Get the details of a remote file at the location given by the path parameter. The path must be provided in the form 'machine\_id:path' (the machine\_id values can be obtained using the vishnu\_list\_machine command).

### ARGUMENTS

*sessionKey* Input argument. The session key.

*path* Input argument. The file whose inode information will be displayed.

*filesinfo* Output argument. The inode information.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

### EXCEPTIONS

The following exceptions may be thrown:

**SystemException("A problem occurs with the database." [-9])**

**SystemException("User does not have permission access." [-8])**

**SystemException("Option unknown in the config file." [-7])**

**SystemException("The path provided is invalid." [-6])**

**SystemException("an option or a parameter provided is invalid for this service." [-5])**

**SystemException("The FMS server is unavailable." [-4])**

**SystemException("Invalid provided machine identifier." [-3])**

**SystemException("The session key is unrecognized." [-2])**

## Chapter 14

# IMS Python API Reference

### 14.1 VISHNU.exportCommands

VISHNU.exportCommands — exports all the commands made by a user during a session

#### Synopsis

**VISHNU.exportCommands**(string sessionKey, string oldSessionId, string filename, ExportOp options = ExportOp());

#### DESCRIPTION

Exports all the VISHNU commands submitted during a completed session. This session must be in closed state. The output of this command is a file containing a shell script. For safety reasons, the commands having a password for parameter are not exported (for example the vishnu\_connect and vishnu\_change\_password commands). This means the shell script must be run after opening a session manually or by adding the vishnu\_connect command to the script. The access to other user's sessions is only permitted to administrators.

#### ARGUMENTS

*sessionKey* Input argument. The session key.

*oldSessionId* Input argument. The id of the session to export (session has ended).

*filename* Input/Output argument. The path of the output file containing the Vishnu shell commands.

*options* Input argument. Options which encapsulate the option for the export.

#### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

#### EXCEPTIONS

The following exceptions may be thrown:

**SystemException**("If a parameter is invalid" [1])

**SystemException**("The database generated an error" [2])

## 14.2 VISHNU.getMetricCurrentValue

VISHNU.getMetricCurrentValue — displays the current values of system metrics

### Synopsis

**VISHNU.getMetricCurrentValue**(string sessionKey, string machineId, ListMetric metricValue, CurMetricOp options);

### DESCRIPTION

Displays the current values of the monitored metrics on the system identified by the machineId argument : cpuload, free disk space and free memory. The units of displayed values are percentages for cpuload and Megabytes (Mb) for disk space and memory. The provided values are always standard integers (no float values). Please note that retrieving these values uses some valuable system resources and should not occur too frequently to avoid an impact on system performance.

### ARGUMENTS

*sessionKey* Input argument. The session key.

*machineId* Input argument. The id of the machine.

*metricValue* Output argument. Value of the metric.

*options* Input argument. The options for the current metric value.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

### EXCEPTIONS

The following exceptions may be thrown:

**SystemException**("If a parameter is invalid" [1])

**SystemException**("The database generated an error" [2])

## 14.3 VISHNU.getMetricHistory

VISHNU.getMetricHistory — displays the history of values of a system metric

### Synopsis

**VISHNU.getMetricHistory**(string sessionKey, string machineId, ListMetric metricValues, MetricHistOp options = MetricHistOp());

### DESCRIPTION

Displays the chronological list of values of the metrics on the system identified by the machineId argument. Using the options it is possible to specify a type of metric and the starting and ending dates of the desired monitoring period. Note that some data will be available only if the required VISHNU agent (IMS server) has been running locally on the machine during the specified period.

## ARGUMENTS

*sessionKey* Input argument. The session key.  
*machineId* Input argument. The id of the machine.  
*metricValues* Output argument. List of metric values.  
*options* Input argument. The optional fields for the metric history.

## RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("If a parameter is invalid" [1])**

**SystemException("The database generated an error" [2])**

## 14.4 VISHNU.getUpdateFrequency

VISHNU.getUpdateFrequency — gets the update frequency of the IMS database

### Synopsis

**VISHNU.getUpdateFrequency(string sessionKey, int freq);**

### DESCRIPTION

This function allows a user to get the update frequency, to know how often the state of the machines is automatically polled to get historical data.

## ARGUMENTS

*sessionKey* Input argument. The session key.  
*freq* Output argument. Frequency the data are updated, in second.

## RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

## EXCEPTIONS

The following exceptions may be thrown:

**SystemException("If a parameter is invalid" [1])**

**SystemException("The database generated an error" [2])**

---

## 14.5 VISHNU.getSystemInfo

VISHNU.getSystemInfo — To get the system info on a machine

### Synopsis

**VISHNU.getSystemInfo**(string sessionKey, ListSysInfo res, SysInfoOp options = SysInfoOp());

### DESCRIPTION

This function allows a user to get system information about a machine. A system information describes a machine. The option is the machine id (if no machine id, the information for all the machines are given)

### ARGUMENTS

*sessionKey* Input argument. The session key.

*res* Output argument. The list of the system information gotten.

*options* Input argument. Optional field for system information.

### RETURNED OBJECTS

*errorCode (integer)* Output parameter. Contains 0 on success and the error code on failure.

### EXCEPTIONS

The following exceptions may be thrown:

**SystemException("If a parameter is invalid" [1])**

**SystemException("The database generated an error" [2])**