D1.1c - VISHNU A.P.I. specifications

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REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
0	05/01/2011	Formatting example	SysFera
1	13/01/2011	First release	SysFera
2	10/02/2011	Removed UMS::AddUserOptions, UMS::AddMachineOptions and UMS::UpdateUserOptions classes and UMS::SessionStateType. Added function UMS::reconnect, UMS::StatusType. Modified UMS::restoreConfiguration class	SysFera
3	03/03/2011	Renamed UMS::AddVishnuUser, Modified the signature of UMS::connect, UMS::reconnect, UMS::resetPassword, UMS::addMachine, UMS::addLocalAccount, UMS::saveConfiguration and IMS::exportCommands Updated error codes.	SysFera
4	30/03/2011	Modified signature FMS::listDir and FMS::ListFileTransfers. Removed FMS::ListFileFileTransferStatus. Added data type FMS::FileTransfer, FMS::FileTransferList, FMS::FileStatList.	SysFera

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
5	15/04/2011	Updates to TMS: Modified description of machineId parameter. Modified getJobProgress output parameter. Modified submitJob description and output parameters (jobId and jobPath replaced by jobInfo). Modified name of getAllJobsOutput to getCompletedJobsOutput. Added input parameter outDir to getJobOutput and getCompletedJobsOutput. Modified output parameter of getCompletedJobsOutput. Added service getMachineRefreshPeriod. Removed function setMachineEnv. Removed JobPriority attribute in submitOptions class. Removed Not_submitted status value of Job class. Modified values of JobStatus Enum. Updated error messages and codes. Updates to IMS : Add option in exportCommand, getMetricCurrentValue, getProcesses, getMetricHistory, restart and getSystemThreshold. Add services stop and getSystemInfo. Add corresponding datatypes (option) plus list of system info and processes.	SysFera
6	21/04/2011	Updates to TMS: Removed functions getMachineRefreshPeriod and setMachineRefreshPeriod. Added UNDEFINED and ALREADY_DOWNLOADED status of JobStatus Enum. Added UNDEFINED priority of JobPriority Enum. Removed of outputPah and errorPath of ListJobsOptions. Removed scriptContent in Job class. Added ERRCODE_ALREADY_TERMINATED, ERRCODE_ALREADY_CANCELED, ERRCODE_JOB_IS_NOT_TERMINATED, ERRCODE_ALREADY_DOWNLOADED in exception list. Modified values of JobPriority Enum. Modified values of QueuePriority and QueueStatus. Added UNDEFINED priority of QueuePriority.	SysFera
7	26/04/2011	Updates of UMS: Added CommandStatusType Enum and an attribute status to the Command Class.	SysFera
8	24/05/2011	Updates of UMS: Added new error code for addLocalAccount and updateLocalAccount.	SysFera

REVISION HISTORY			
NUMBER	DATE	DESCRIPTION	NAME
9	29/06/2011	Updates of UMS: Modified API functions names listLocalAccount and listMachine to listLocalAccounts and listMachines. Updates of FMS: Modified API function name getFilesInfo to getFileInfo.	SysFera
10	15/12/2011	Updates of TMS: Modified SubmitOptions structure. Updates of FMS: Added DirEntryList and DirEntry structures. Modified API function listDir. Added CreateDirOptions structure.	SysFera
11	10/01/2012	Updates of TMS: Added new data structures LoadCriterion and LoadType. Modified decription of submitJob function (to take into account automatic submission). Modified SubmitOptions structure (added load criterion option for automatic submission, added option to select a queue automatically). Modified decription of listJobs function (to take into account listing of jobs on all machines). Modified ListJobsOptions structure (added multipleStatus option for combination of several job states, added option to list all jobs submitted by the underlying batch scheduler (VISHNU jobs and jobs submitted out of VISHNU).	SysFera

Contents

Chapter 1

Document presentation

1.1 Document objectives

This document presents the detailed specifications of the VISHNU APIs (Application Programming Interfaces). The following APIs are included in the project:

- C++ API
- Python (v2.x) API
- Web services (WSDL 1.1) API

These specifications include the definition of all methods and all data types in a format that is common to all APIs. Therefore the description is not tied to a particular implementation and all implementations will follow the same logic and will differ only when the language that is used imposes some constraints.

Specific aspects of each implementation language are described in the section 1.3.

1.2 Document structure

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

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

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

- A first section describing the definition of all the methods provided by the library
- A second section describing the definition of all the data types provided by the library

1.3 Generic definition formats presentation

This section presents the formats used in the following chapters to describe the methods and data types provided by the libraries. It also details the particular implementation constraints for each language.

1.3.1 Methods definition format

The following paragraphs show how all methods (or "operations" in the Web Services terminology) are specified in this document. First, the generic format used for each Vishnu module is explained, then the aspects that are specific to each implementation language are detailed.

1.3.1.1 Generic method definition format

Parameters

The following table contains all the input and output parameters of the method, along with their type and description, and their optional or required flag.

Parameter	Type	Description	Mode	Required
sessionKey	string	This is an example of a required input parameter	IN	yes
listOfJobs	ListJobs	This is an example of an output parameter	OUT	yes

Access

Here is detailed the access level of the method 'myMethod' (i.e. the privilege required to use this method)

Description

Here is detailed the purpose of the method 'myMethod'

Return Value

Here are detailed the different return codes provided by the method. Please note that these return codes may be implemented differently depending on the language, for example by using an exception mechanism. In all implementations the library will provide a way of mapping the code to a human-readable message that will contain detailed information about the context of the exception that happened.

Name	Description
VISHNU_OK	The service was performed successfully.
TMS_UNKNOWN_MACHINE	This is the human-readable generic message that will be available to the user of the API.

Signature

This shows the C++ signature of the method.

int **myMethod**(const string& sessionKey, ListJobs& listOfJobs);

1.3.1.2 C++ specific aspects

- The output parameters will be implemented as references in the method signature.
- The methods will always return an integer with a default value for success.
- The methods will throw exceptions for each error message specified. The exception will contain additional details provided by the server.

1.3.1.3 Python specific aspects

- The output parameters will be implemented as a Python tuple returned by the method.

1.3.1.4 Web Services specific aspects

- The input and output parameters will be implemented as Java Beans: a "Request" bean containing the input parameters and a "Response" bean containing the output parameters.
- The methods will throw exceptions for each error message specified. The exception will contain additional details provided by the server.
- The VishnuInitialize() and VishnuFinalize() methods are not applicable to the WS API.
- Methods with restricted access (administration) are not included in the WS API.

1.3.2 Data types definition format

The following paragraphs show how all data types are specified in this document. First, the generic format used for each Vishnu data type is explained, then the aspects that are specific to each implementation language are detailed.

1.3.2.1 Generic data definition format

Class Module::Class Content

Name	Type	Description
Class attribute name	Class attribute type	Description/usage of the attribute

1.3.2.2 C++ specific aspects

- All attributes of the class will be private.
- For each attribute of the class a couple of getter/setter methods will be implemented.
- The string type will be mapped to the C++ STL string type.

1.3.2.3 Python specific aspects

- For each attribute of the class a couple of getter/setter methods will be implemented.
- The string type will be mapped to standard Python strings.

1.3.2.4 Web Services specific aspects

- When a single instance of object is used as input or output parameter, the attributes of the object will be mapped respectively to attributes of the 'Request' or 'Response' Java Bean.
- When multiple instances of object are used as input or output parameters (for example list of machines or list or users) the 'Request' or 'Response' Java Bean will contain a 'data' subclass containing the instances. This follows the standard WSDL/Java mapping for Apache-CXF.

1.4 Web Services description

The Web Services are fully described by the following documents which are attached to the current document:

- **UMS.wsdl** : WSDL file for the UMS module
- **TMS.wsdl** : WSDL file for the TMS module

- **FMS.wsdl** : WSDL file for the FMS module
- **IMS.wsdl** : WSDL file for the IMS module

1.5 References

- D1.1a : VISHNU General specifications

1.6 Glossary

None

Chapter 2

API specification for User Management Service (UMS)

2.1 Definition of the functions of the package

2.1.1 Function UMS::connect

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
userId	string	userId represents the VISHNU user identifier. If userId and password are empty, vishnu connect will read them in the .netrc file located in the home of the user	IN	yes
password	string	password represents the password of the user. If userId and password are empty, vishnu connect will read them in the .netrc file located in the home of the user	IN	yes
session	Session	The session object that contains the created session details	OUT	yes
options	ConnectOptions	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	IN	no

Description

The connect() function opens a session

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USER	The user is unknown or the password is wrong
ERRCODE_UNKNOWN_CLOSURE_MODE	The closure policy is unknown
ERRCODE_INCORRECT_TIMEOUT	The value of the timeout is incorrect
ERRCODE_UNKNOWN_USERID	The userId is unknown

Name	Description
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_USER_LOCKED	The user is locked
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.2 Function UMS::reconnect

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
userId	string	userId represents the VISHNU user identifier. If userId and password are empty, vishnu reconnect will read them in the .netrc file located in the home of the user	IN	yes
password	string	password represents the password of the user. If userId and password are empty, vishnu reconnect will read them in the .netrc file located in the home of the user	IN	yes
sessionId	string	sessionId is the identifier of the session defined in the database	IN	yes
session	Session	The session object containing session information	OUT	yes

Description

The reconnect() function reconnects to a session that is still active

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USER	The user is unknown or the password is wrong
ERRCODE_USER_LOCKED	The user is locked
ERRCODE_UNUSABLE_MACHINE	The machine does not exist or it is locked
ERRCODE_UNKNOWN_SESSION_ID	The session Id is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.3 Function UMS::addUser

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
newUser	User	Object containing the new user information	INOUT	yes

Description

The addUser() function adds a new VISHNU user

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_USER_LOCKED	The user is locked
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_USERID_EXISTING	The userId already exists in the database
ERRCODE_INVALID_MAIL_ADRESS	The mail adress is invalid
ERRCODE_MACHINE_LOCKED	The machine is locked
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::addUser**(const string& sessionKey, User& newUser);

2.1.4 Function UMS::updateUser

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
user	User	Object containing user information	IN	yes

Description

The updateUser() function updates the user information except the userId and the password

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_INVALID_MAIL_ADRESS	The mail adress is invalid
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_USER_LOCKED	The user is locked
ERRCODE_USER_ALREADY_LOCKED	Trying to lock a user account that is already locked
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::updateUser**(const string& sessionKey, const User& user);

2.1.5 Function UMS::deleteUser

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
userId	string	userId represents the VISHNU user identifier of the user who will be deleted from VISHNU	IN	yes

Description

The deleteUser() function removes a user from VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_USER_LOCKED	The user is locked
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::deleteUser**(const string& sessionKey, const string& userId);

2.1.6 Function UMS::close

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes

Description

The close() function closes the session

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_COMMAND_RUNNING	Commands are running
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.7 Function UMS::changePassword

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
userId	string	userId represents the VISHNU user identifier	IN	yes
password	string	password represents the password of the user	IN	yes
passwordNew	string	passwordNew represents the new password of the user	IN	yes

Description

The changePassword() function changes the password

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USER	The user is unknown or the password is wrong
ERRCODE_USER_LOCKED	The user is locked

Name	Description
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.8 Function UMS::resetPassword

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
userId	string	userId represents the VISHNU user identifier of the user whose password will be reset	IN	yes
tmpPassword	string	The temporary password generated by VISHNU	OUT	yes

Description

The resetPassword() function resets the password of a user

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_USER_LOCKED	The user is locked
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::resetPassword**(const string& sessionKey, const string& userId, string& tmpPassword);

2.1.9 Function UMS::addLocalAccount

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
newAccount	LocalAccount	newAccount is the object which encapsulates the new local user configuration	IN	yes
sshPublicKey	string	The SSH public key generated by VISHNU for accessing a local account	OUT	yes

Description

The addLocalAccount() function adds a new local user configuration

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_LOCAL_ACCOUNT_EXIST	The local account already exists
ERRCODE_MACHINE_LOCKED	The machine is locked
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_LOGIN_ALREADY_USED	The system account login is already used by another vishnu user
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNUSABLE_MACHINE	The machine does not exist or it is locked

Signature

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

2.1.10 Function UMS::updateLocalAccount

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
LocalAccUpd	LocalAccount	is an object which encapsulates the local user configuration changes except the machineId and the userId	IN	yes

Description

The updateLocalAccount() function updates a local user configuration

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local is unknown
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_LOGIN_ALREADY_USED	The system account login is already used by another vishnu user

Signature

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

2.1.11 Function UMS::deleteLocalAccount

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
userId	string	userId represents the VISHNU user identifier of the user whose local configuration will be deleted for the given machine	IN	yes
machineId	string	machineId represents the identifier of the machine whose local configuration will be deleted for the given user	IN	yes

Description

The deleteLocalAccount() function removes a local user configuration (for a given user on a given machine) from VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local is unknown
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.12 Function UMS::saveConfiguration

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
configuration	Configuration	The configuration is an object which encapsulates the configuration description	OUT	yes

Description

The saveConfiguration() function saves the configuration of VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_SAVE_CONFIG_ERROR	A problem occurs during the configuration saving
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::saveConfiguration**(const string& sessionKey, Configuration& configuration);

2.1.13 Function UMS::restoreConfiguration

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
filePath	string	The filePath is the path of the file used to restore VISHNU configuration	IN	yes

Description

The restoreConfiguration() function restores the configuration of VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully

Name	Description
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RESTORE_CONFIG_ERROR	A problem occurs during the configuration restoring
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::restoreConfiguration**(const string& sessionKey, const string& filePath);

2.1.14 Function UMS::addMachine

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
newMachine	Machine	is an object which encapsulates the information of the machine which will be added in VISHNU except the machine id which will be created automatically by VISHNU	INOUT	yes

Description

The addMachine() function adds a new machine in VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_MACHINE_EXISTING	The machineId already exists in the database
ERRCODE_UNKNOWN_CLOSURE_MODE	The closure policy is unknown
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::addMachine**(const string& sessionKey, Machine& newMachine);

2.1.15 Function UMS::updateMachine

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
machine	Machine	existing machine information	IN	yes

Description

The updateMachine() function updates machine description

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_CLOSURE_MODE	The closure policy is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::updateMachine**(const string& sessionKey, const Machine& machine);

2.1.16 Function UMS::deleteMachine

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
machineId	string	machineId represents the identifier of the machine	IN	yes

Description

The deleteMachine() function removes a machine from VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown

Name	Description
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::deleteMachine**(const string& sessionKey, const string& machineId);

2.1.17 Function UMS::listLocalAccounts

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
listLocalAcct	ListLocalAccounts	listLocalAccount is the list of the local user configuations	OUT	yes
options	ListLocalAccOptions	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	IN	no

Description

The listLocalAccounts() function lists the local user configurations

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.18 Function UMS::listMachines

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
listMachine	ListMachines	listLocalAccount is the list of the local configs	OUT	yes
options	ListMachineOptions	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	IN	no

Description

The listMachines() function lists the machines that are accessible through VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.19 Function UMS::listHistoryCmd

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
listCommands	ListCommands	listCommands is the list of commands	OUT	yes
options	ListCmdOptions	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	IN	no

Description

The listHistoryCmd() function lists the commands

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.20 Function UMS::listOptions

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the identifier of the session generated by VISHNU	IN	yes
listOptValues	ListOptionsValues	listOptValues is an object which encapsulates the list of options	OUT	yes
options	ListOptOptions	allows the user to list a specific option or all default options values or for an admin to list options of a specific user	IN	no

Description

The listOptions() function lists the options of the user

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_UNKNOWN_OPTION	The name of the user option is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.21 Function UMS::listUsers

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the identifier of the session generated by VISHNU	IN	yes
listuser	ListUsers	listuser is the list of users	OUT	yes
userIdOption	string	allows an admin to get information about a specific user identified by his/her userId	IN	no

Description

The listUsers() function lists VISHNU users

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::listUsers**(const string& sessionKey, ListUsers& listuser, const string& userIdOption = string());

2.1.22 Function UMS::listSessions

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
listsession	ListSessions	listsession is the list of sessions	OUT	yes
options	ListSessionOptions	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.	IN	no

Description

The listSessions() function lists all sessions of the user

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_USERID	The userId is unknown
ERRCODE_UNKNOWN_CLOSURE_MODE	The closure policy is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.23 Function UMS::configureDefaultOption

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
optionValue	OptionValue	The optionValue is an object which encapsulates the option information	IN	yes

Description

The configureDefaultOption() function configures a default option value

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_UNKNOWN_OPTION	The name of the user option is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_INCORRECT_TIMEOUT	The value of the timeout is incorrect
ERRCODE_INCORRECT_TRANSFER_CMD	The value of the transfer command is incorrect
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::configureDefaultOption**(const string& sessionKey, const OptionValue& optionValue);

2.1.24 Function UMS::configureOption

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The sessionKey is the encrypted identifier of the session generated by VISHNU	IN	yes
optionValue	OptionValue	The optionValue is an object which encapsulates the option information	IN	yes

Description

The configureOption() function configures an option of the user

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_OPTION	The name of the user option is unknown
ERRCODE_UNKNOWN_CLOSURE_MODE	The closure policy is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_INCORRECT_TIMEOUT	The value of the timeout is incorrect
ERRCODE_INCORRECT_TRANSFER_CMD	The value of the transfer command is incorrect
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.25 Function UMS::vishnuInitialize

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
configPath	string	configPath is the path of VISHNU configuration file	IN	yes

Description

The vishnuInitialize() function initializes VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

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

2.1.26 Function UMS::vishnuFinalize

Access

This function can be used by any VISHNU user

Parameters

This command defines no parameters.

Description

The vishnuFinalize() function allows a user to go out properly from VISHNU

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_UNDEFINED	Internal Error: Undefined exception

Signature

int **vishnu::vishnuFinalize**();

2.2 Data types definitions

Class UMS::Command Content

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

Class UMS::Configuration Content

Name	Type	Description
listConfUsers	List of User	is the list of users objects
listConfMachines	List of Machine	is a list of machines objects
listConfLocalAccounts	List of LocalAccount	is the list of LocalAccount objects
filePath	string	the full path to the file that contains the saved configuration

Class UMS::ConnectOptions Content

Name	Type	Description
closePolicy	SessionCloseType	is an option for closing session automatically
sessionInactivityDelay	int	is the maximum delay in seconds between two user requests when the CLOSE_ON_TIMEOUT policy is set
substituteUserId	string	is an admin option which allows an admin to open a session as if she was another user identified by her userId

Class UMS::ListCmdOptions Content

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

Class UMS::ListCommands Content

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

Class UMS::ListLocalAccOptions Content

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

Class UMS::ListLocalAccounts Content

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

Class UMS::ListMachineOptions Content

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

Class UMS::ListMachines Content

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

Class UMS::ListOptOptions Content

Name	Type	Description
listAllDeftValue	boolean	is an option for listing all default option values defined by VISHNU administrator
userId	string	is an admin option for listing the options of a specific user
optionName	string	allows the user to get the value of a specific option identified by its name

Class UMS::ListOptionsValues Content

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

Class UMS::ListSessionOptions Content

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

Class UMS::ListSessions Content

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

Class UMS::ListUsers Content

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

Class UMS::LocalAccount Content

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

Class UMS::Machine Content

Name	Type	Description
machineId	string	represents the identifier of the machine
name	string	represents the name of the machine
site	string	represents the location of the machine
machineDescription	string	represents the description of the machine
language	string	represents the language used for the description of the machine
status	StatusType	represents the status of the machine
sshPublicKey	string	contains the SSH public key used by VISHNU to access local user accounts

Class UMS::OptionValue Content

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

Class UMS::Session Content

Name	Type	Description
sessionId	string	represents the VISHNU session identifier of the session
userId	string	represents the VISHNU user identifier of the user who has opened the session
sessionKey	string	is the key of the session generated by VISHNU
dateLastConnect	long	is the date of the last connection to the session (the UNIX timestamps is used)
dateCreation	long	is the date of the first connection to the session (the UNIX timestamps is used)

Name	Type	Description
dateClosure	long	is the date of the closure of the session (the UNIX timestamps is used)
status	StatusType	represents the status of the session
closePolicy	SessionCloseType	is the way to close the session
timeout	long	is the inactivity delay in seconds associated to the CLOSE_ON_TIMEOUT option

Class UMS::User Content

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

Enumeration UMS::CommandStatusType Type

Name	Value
FAILURE	0
SUCCESS	1

Enumeration UMS::PrivilegeType Type

Name	Value
USER	0
ADMIN	1

Enumeration UMS::SessionCloseType Type

Name	Value
UNDEFINED	0
CLOSE_ON_TIMEOUT	1
CLOSE_ON_DISCONNECT	2

Enumeration UMS::StatusType Type

Name	Value
INACTIVE	0
ACTIVE	1

Chapter 3

API specification for Tasks Management Service (TMS)

3.1 Definition of the functions of the package

3.1.1 Function TMS::submitJob

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine on which the job must be submitted	IN	yes
scriptFilePath	string	The path to the file containing the characteristics (job command, and batch scheduler directive required or optional) of the job to submit.	IN	yes
jobInfo	Job	The Job object containing the output information (ex: jobId and jobPath) of the job to submit	OUT	yes
options	SubmitOptions	Is an instance of the class SubmitOptions. Each optional 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. Otherewise the job is submitted with the optional values set by the options object and optional values defined in the scriptFilePath, but optional values set by SubmitOptions object take precedence over those in scriptFilePath. With in the object options or within the scriptFilePath, the last occurance of an optional value takes precedence over earlier occurance.	IN	no

Description

The submitJob() function submits a job on a machine through the use of a script (scriptFilePath). If the machine identifier is equal to autom, the job will be automatically submitted on a best machine (for now three criterions are used: minimum number of waiting jobs, minimum number of running jobs and the total number of jobs) through the use of a script (scriptFilePath) which must be generic script using VISHNU's generic directives for all batch schedulers

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error
ERRCODE_INVALID_PARAM	Error invalid parameters
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_PERMISSION_DENIED	Permission denied
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_SSH	Vishnu not available (SSH error)

Signature

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

3.1.2 Function TMS::getJobInfo

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine on which the job is running	IN	yes
jobId	string	The id of the job	IN	yes
jobInfos	Job	The resulting information on the job	OUT	yes

Description

The getJobInfo() function gets information on a job from its id

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_PERMISSION_DENIED	Permission denied
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)

Signature

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

3.1.3 Function TMS::getJobProgress

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine to get the jobs progression	IN	yes
listProgress	ListProgression	Is the object containing jobs progression information	OUT	yes
options	ProgressOptions	Is an object containing the available options jobs for progression .	IN	no

Description

The getJobProgress() function gets the progression status of jobs

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)

Signature

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

3.1.4 Function TMS::listQueues

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine that the user wants to list queues	IN	yes
listofQueues	ListQueues	The list of queues	OUT	yes
queueName	string	if it is given, listQueues gives information only of this queue	IN	no

Description

The listQueues() function gets queues information

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_PERMISSION_DENIED	Permission denied
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)

Signature

int **vishnu::listQueues**(const string& sessionKey, const string& machineId, ListQueues& listofQueues, const string& queueName = string());

3.1.5 Function TMS::listJobs

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine on which the jobs are running	IN	yes
listOfJobs	ListJobs	The constructed object list of jobs	OUT	yes
options	ListJobsOptions	Additional options for jobs listing	IN	no

Description

The listJobs() function gets a list of all submitted jobs on a machine. If machine identifier is equal to all, submitted jobs on all machines are listed

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_PERMISSION_DENIED	Permission denied
VISHNU_OK	The service was performed successfully
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)

Signature

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

3.1.6 Function TMS::getJobOutput

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	gets outputPath and errorPath of a job from its id	IN	yes
jobId	string	The Id of the job	IN	yes
outputInfo	JobResult	The Job object containing the job output information (ex: outputPath and errorPath) of the job to submit	OUT	yes
outDir	string	The output directory where the files will be stored (default is current directory)	IN	no

Description

The getJobOutput() function gets standard output and error output files of a job given its id

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
VISHNU_OK	The service was performed successfully
ERRCODE_PERMISSION_DENIED	Permission denied
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_JOB_IS_NOT_TERMINATED	The job is not terminated
ERRCODE_SSH	Vishnu not available (SSH error)
ERRCODE_ALREADY_DOWNLOADED	The job is already downloaded

Signature

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

3.1.7 Function TMS::getCompletedJobsOutput

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine on which the jobs are been submitted	IN	yes
listOfResults	ListJobResults	Is the list of jobs results	OUT	yes
outDir	string	Specifies the output directory where the files will be stored (by default, the current directory).	IN	no

Description

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

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
VISHNU_OK	The service was performed successfully
ERRCODE_PERMISSION_DENIED	Permission denied
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_SSH	Vishnu not available (SSH error)

Signature

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

3.1.8 Function TMS::cancelJob

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	Is the id of the machine on which the job is running	IN	yes
jobId	string	The Id of the job	IN	yes

Description

The cancelJob() function cancels a job from its id

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_BATCH_SCHEDULER_ERROR	The batch scheduler indicates an error

Name	Description
ERRCODE_PERMISSION_DENIED	Permission denied
VISHNU_OK	The service was performed successfully
ERRCODE_SESSIONKEY_EXPIRED	The sessionKey is expired. The session is closed.
ERRCODE_UNKNOWN_BATCH_SCHEDULER	The batch scheduler type is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DBCONN	Vishnu not available (Database connection)
ERRCODE_SYSTEM	Vishnu not available (System)
ERRCODE_ALREADY_CANCELED	The job is already canceled
ERRCODE_ALREADY_TERMINATED	The job is already terminated
ERRCODE_SSH	Vishnu not available (SSH error)

Signature

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

3.2 Data types definitions

Class TMS::Job Content

Name	Type	Description
sessionId	string	Is the id of the session that contained the job submission command
submitMachineId	string	Is the id of the machine on which the job has been submitted.
submitMachineName	string	Is the name of the machine on which the job has been submitted.
jobId	string	Represents the id to job.
jobName	string	Represents the name assigned to the job.
jobPath	string	Is the path to the file containing job characteristics.
outputPath	string	Is the path to the job output results.
errorPath	string	Is the path to the file containing errors occured during job's execution.
jobPrio	JobPriority	Represents the job priority.
nbCpus	int	Is the number of cpu per node used by the job.
jobWorkingDir	string	Indicates the directory where the job has been launched.
status	JobStatus	The current status of the job.
submitDate	long	Date and time when job was submitted (unix timestamp)
endDate	long	Represents the execution end date of the job (unix timestamp)
owner	string	Represents the job owner.
jobQueue	string	Is the name of the queue or class associated to the job.
wallClockLimit	long	Is the maximum wall-clock time during which the job can run (in seconds)
groupName	string	Represents the job owner group name.
jobDescription	string	Is the textual description of the job.
memLimit	int	Represents the memory size limit of the job ((in MegaBytes).
nbNodes	int	Is the total number of nodes used by the job.
nbNodesAndCpuPerNode	string	Is the number of nodes and processors per node used by the job (in the format nbNodes:nbCpuPerNode).

Class TMS::JobResult Content

Name	Type	Description
jobId	string	Represents the id of the job.
outputPath	string	Is the path to the job output results.
errorPath	string	Is the path to the file containing errors occured during job's execution.

Class TMS::ListJobResults Content

Name	Type	Description
nbJobs	int	Is the number of jobs.
Results	List of JobResult	Represents the list of completed jobs results.

Class TMS::ListJobs Content

Name	Type	Description
nbJobs	long	Represents the total number of jobs in the list.
nbRunningJobs	long	Represents of running jobs in the list.
nbWaitingJobs	long	Represents the total number of waiting jobs in the list.
jobs	List of Job	Is a list of job information (jobId, jobName, ...).

Class TMS::ListJobsOptions Content

Name	Type	Description
jobId	string	lists the job with the specified id
nbCpu	int	lists the jobs with the specified number of CPUs per node
fromSubmitDate	long	lists the jobs submitted after the specified date (UNIX timestamp)
toSubmitDate	long	lists jobs submitted before the specified date (UNIX timestamp)
owner	string	lists the jobs submitted by the specified owner
status	JobStatus	lists the jobs with the specified status
priority	JobPriority	lists the jobs with the specified priority
queue	string	the jobs with the specified queue name
multipleStatus	string	lists the jobs with the specified status (combination of multiple status). Its format contains the first letter or the value (interger) of each chosen status. For exemple to list the cancelled and terminated jobs, you use the format CT or 65
batchJob	boolean	allows to select all jobs submitted through the underlying batch scheduler (jobs submitted through vishnu and out of vishnu)

Class TMS::ListProgression Content

Name	Type	Description
nbJobs	int	Represents the number of jobs in progression list.
progress	List of Progression	Represents the list of jobs in progression.

Class TMS::ListQueues Content

Name	Type	Description
nbQueues	int	Represents the number of queues.
queues	List of Queue	Represents the list of queues.

Class TMS::LoadCriterion Content

Name	Type	Description
loadType	LoadType	The criterion to aumatically submit a job (for now three criterions are used: minimum number of waiting jobs, minimum number of running jobs and the total number of jobs). This option is used only if the machine identifier is equal to autom (this keyword is used to submit automatically a job)

Class TMS::ProgressOptions Content

Name	Type	Description
jobId	string	Specifies the id of the job whose progression the user wants to see.
jobOwner	string	Specifies the owner of the job.

Class TMS::Progression Content

Name	Type	Description
jobId	string	Represents the job id.
jobName	string	Represents the job name.
wallTime	int	Represents the job wall time.
startTime	long	Start date and time of the job (unix timestamp)
endTime	long	End date and time of the job (unix timestamp)
percent	int	Represent the job progression.
status	JobStatus	Represents the job status.

Class TMS::Queue Content

Name	Type	Description
name	string	Is the queue name.
maxJobCpu	int	Is the maximum number of Cups that a job can use.
maxProcCpu	int	Is the maximum number of Cpus of the queue.
memory	int	Represents the queue memory size.
wallTime	long	Is the total wallTime of the queue.
node	int	Is the maximum number of nodes of the queue.
nbRunningJobs	int	Is the total running jobs in the queue.
nbJobsInQueue	int	Is the total number of jobs in the queue.
state	QueueStatus	Is the status of the queue.
priority	QueuePriority	Represents the priority of the queue.
description	string	Is the queue description.

Class TMS::SubmitOptions Content

Name	Type	Description
name	string	Assigns a job name. The default is the path of job
queue	string	Assigns the queue or class of the job
wallTime	int	The maximum wall-clock time during which the job can run (in seconds)

Name	Type	Description
memory	int	Is the memory size that the job requires (in MegaBytes)
nbCpu	int	The number of cpu per node that the job requires
nbNodesAndCpuPerNode	string	The number of nodes and processors per node (in the format nbNodes:nbCpuPerNode). For example if you want to use 4 nodes with 3 cpus for each node, you must specify these numbers by "4:3"
outputPath	string	Assigns the path and file for job output
errorPath	string	Assigns the path and file for job error
mailNotification	string	Assigns the notification type of the job. Valid type values are BEGIN, END, ERROR, and ALL (any state change)
mailNotifyUser	string	The name of user to receive email notification of state changes as defined by the option mailNotification. The default value is the submitting user
group	string	Assigns a job group name.
workingDir	string	Assigns a job remote working dir
cpuTime	string	Assigns a job cpu limit time (in seconds or in the format [[HH:]MM:]SS)
selectQueueAutom	boolean	allows to select automatically a queue which has the number of nodes requested by the user
criterion	LoadCriterion	Represents the scheduling criterion to automatically submit a job

Enumeration TMS::JobPriority Type

Name	Value
UNDEFINED	-1
VERY_LOW	1
LOW	2
NORMAL	3
HIGH	4
VERY_HIGH	5

Enumeration TMS::JobStatus Type

Name	Value
UNDEFINED	-1
SUBMITTED	1
QUEUED	2
WAITING	3
RUNNING	4
TERMINATED	5
CANCELLED	6
ALREADY_DOWNLOADED	7

Enumeration TMS::LoadType Type

Name	Value
USE_NB_WAITING_JOBS	0
USE_NB_JOBS	1
USE_NB_RUNNING_JOBS	2

Enumeration TMS::QueuePriority Type

Name	Value
UNDEFINED	-1
VERY_LOW	1
LOW	2
NORMAL	3
HIGH	4
VERY_HIGH	5

Enumeration TMS::QueueStatus Type

Name	Value
NOT_STARTED	0
STARTED	1
RUNNING	2

Chapter 4

API specification for Information Management Service (IMS)

4.1 Definition of the functions of the package

4.1.1 Function IMS::exportCommands

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
oldSessionId	string	The id of the session to export (session has ended)	IN	yes
filename	string	The path of the output file containing the Vishnu shell commands	INOUT	yes
options	ExportOp	options which encapsulate the option for the export	IN	no

Description

The exportCommands() function exports all the commands made by a user during a session

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
ERRCODE_UNDEFINED	Undefined error code
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized.

Signature

int **vishnu::exportCommands**(const string& sessionKey, const string& oldSessionId, string& filename, const ExportOp& options = ExportOp());

4.1.2 Function IMS::getMetricCurrentValue

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	The id of the machine	IN	yes
metricValue	ListMetric	Value of the metric	OUT	yes
options	CurMetricOp	The options for the current metric value	IN	yes

Description

The getMetricCurrentValue() function displays the current values of system metrics

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized.
ERRCODE_UNDEFINED	Undefined error code

Signature

int **vishnu::getMetricCurrentValue**(const string& sessionKey, const string& machineId, ListMetric& metricValue, const CurMetricOp& options);

4.1.3 Function IMS::getMetricHistory

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	The id of the machine	IN	yes
metricValues	ListMetric	List of metric values	OUT	yes
options	MetricHistOp	The optional fields for the metric history	IN	no

Description

The getMetricHistory() function displays the history of values of a system metric

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error

Name	Description
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized.
ERRCODE_UNDEFINED	Undefined error code

Signature

int **vishnu::getMetricHistory**(const string& sessionKey, const string& machineId, ListMetric& metricValues, const MetricHistOp& options = MetricHistOp());

4.1.4 Function IMS::getProcesses

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
process	ListProcesses	The list of the Vishnu processes on the machine	OUT	yes
options	ProcessOp	The options to search for the processes	IN	no

Description

The getProcesses() function displays the list of the VISHNU processes running on machines

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::getProcesses**(const string& sessionKey, ListProcesses& process, const ProcessOp& options = ProcessOp());

4.1.5 Function IMS::setSystemInfo

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
systemInfo	SystemInfo	Contains system information to store in Vishnu database	IN	yes

Description

The setSystemInfo() function updates the system information of a machine

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::setSystemInfo**(const string& sessionKey, const SystemInfo& systemInfo);

4.1.6 Function IMS::setSystemThreshold

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
threshold	Threshold	The threshold to set	IN	yes

Description

The setSystemThreshold() function sets a threshold on a machine of a system

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::setSystemThreshold**(const string& sessionKey, const Threshold& threshold);

4.1.7 Function IMS::getSystemThreshold

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
value	ListThreshold	The thresholds value	OUT	yes
options	ThresholdOp	The options for the threshold	IN	yes

Description

The getSystemThreshold() function gets a system threshold on a machine

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::getSystemThreshold**(const string& sessionKey, ListThreshold& value, const ThresholdOp& options);

4.1.8 Function IMS::defineUserIdentifier

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
format	string	The new format to use	IN	yes

Description

The defineUserIdentifier() function defines the shape of the identifiers automatically generated for the users

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
ERRCODE_DBERR	The database generated an error

Signature

int **vishnu::defineUserIdentifier**(const string& sessionKey, const string& format);

4.1.9 Function IMS::defineMachineIdentifier

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
format	string	The new format to use	IN	yes

Description

The defineMachineIdentifier() function defines the shape of the identifiers automatically generated for the machines

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::defineMachineIdentifier**(const string& sessionKey, const string& format);

4.1.10 Function IMS::defineJobIdentifier

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
format	string	The new format to use	IN	yes

Description

The defineJobIdentifier() function defines the shape of the identifiers automatically generated for the jobs

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::defineJobIdentifier**(const string& sessionKey, const string& format);

4.1.11 Function IMS::defineTransferIdentifier

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
format	string	The new format to use	IN	yes

Description

The defineTransferIdentifier() function defines the shape of the identifiers automatically generated for the file transfers

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::defineTransferIdentifier**(const string& sessionKey, const string& format);

4.1.12 Function IMS::loadShed

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	The id of the machine to stop	IN	yes
loadShedType	LoadShedType	Selects a load shedding mode (SOFT: stops all services and they can be restarted, HARD: stops all services, they cannot be restarted)	IN	yes

Description

The loadShed() function sheds load on a machine

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_COMPONENT_ERROR	If a component is unavailable
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::loadShed**(const string& sessionKey, const string& machineId, const LoadShedType& loadShedType);

4.1.13 Function IMS::setUpdateFrequency

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
freq	int	Frequency the data are updated, in second	IN	yes

Description

The setUpdateFrequency() function sets the update frequency of the IMS tables

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::setUpdateFrequency**(const string& sessionKey, const int& freq);

4.1.14 Function IMS::getUpdateFrequency

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
freq	int	Frequency the data are updated, in second	OUT	yes

Description

The getUpdateFrequency() function gets the update frequency of the IMS database

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized.
ERRCODE_UNDEFINED	Undefined error code

Signature

int **vishnu::getUpdateFrequency**(const string& sessionKey, int& freq);

4.1.15 Function IMS::stop

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
process	Process	The process to stop and do not try to restart anymore	IN	yes

Description

The stop() function to stop (and do not try to relaunch) a SeD

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_DBERR	The database generated an error
VISHNU_OK	Error code returned if success
ERRCODE_INVALID_PARAMETER	If a parameter is invalid

Signature

int **vishnu::stop**(const string& sessionKey, const Process& process);

4.1.16 Function IMS::getSystemInfo

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
res	ListSysInfo	The list of the system information gotten	OUT	yes
options	SysInfoOp	Optional field for system information	IN	no

Description

The getSystemInfo() function to get the system info on a machine

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_DBERR	The database generated an error
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
VISHNU_OK	Error code returned if success
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized.
ERRCODE_UNDEFINED	Undefined error code

Signature

int **vishnu::getSystemInfo**(const string& sessionKey, ListSysInfo& res, const SysInfoOp& options = SysInfoOp());

4.1.17 Function IMS::restart

Access

This function can be used by ADMIN users only

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
machineId	string	The id of the machine where to restart	IN	yes
options	RestartOp	The option for the restart	IN	yes

Description

The restart() function to restart a SeD or a MA

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	Error code returned if success
ERRCODE_INVALID_PARAMETER	If a parameter is invalid
ERRCODE_DBERR	The database generated an error

Signature

int **vishnu::restart**(const string& sessionKey, const string& machineId, const RestartOp& options);

4.2 Data types definitions

Class IMS::CurMetricOp Content

Name	Type	Description
metricType	MetricType	The type of the metric

Class IMS::ExportOp Content

Name	Type	Description
exportType	ExportType	The type to export

Class IMS::ListMetric Content

Name	Type	Description
metric	List of Metric	The metrics of the list

Class IMS::ListProcesses Content

Name	Type	Description
process	List of Process	The processes of the list

Class IMS::ListSysInfo Content

Name	Type	Description
sysInfo	List of SystemInfo	The set of system info

Class IMS::ListThreshold Content

Name	Type	Description
Threshold	List of Threshold	The list of the thresholds

Class IMS::Metric Content

Name	Type	Description
type	MetricType	The type of the metric

Name	Type	Description
value	long	The value of the metric
time	long	The timestamp the metric had the value

Class IMS::MetricHistOp Content

Name	Type	Description
startTime	long	The start time to get the history
endTime	long	The end time to get the history
type	MetricType	The type of metric searched

Class IMS::Process Content

Name	Type	Description
processName	string	The name of the process (the name of the executable)
machineId	string	The id of the machine
dietId	string	The diet id of the process
state	ProcessState	THe state of the process
timestamp	long	The timestamp corresponding to the moment the process has been updated
script	string	The content of the script used to launch the sed

Class IMS::ProcessOp Content

Name	Type	Description
machineId	string	The id of the machine

Class IMS::RestartOp Content

Name	Type	Description
vishnuConf	string	The path to the vishnu configuration file
sedType	SeDType	The type of the vishnu sed

Class IMS::SysInfoOp Content

Name	Type	Description
machineId	string	The machine id

Class IMS::SystemInfo Content

Name	Type	Description
memory	long	Amount of RAM memory available on the machine (in Bytes)
diskSpace	long	Amount of disk space available on the machine (in Bytes)
machineId	string	The id of the machine

Class IMS::Threshold Content

Name	Type	Description
value	long	The value of the threshold
machineId	string	The machine ID the threshold is available

Name	Type	Description
type	MetricType	The type of the threshold
handler	string	The userId of the admin responsible for handling the threshold problems

Class IMS::ThresholdOp Content

Name	Type	Description
machineId	string	The id of the machine where the metric is defined
metricType	MetricType	The type of the metric

Enumeration IMS::ExportType Type

Name	Value
UNDEFINED	0
SHELL	1

Enumeration IMS::LoadShedType Type

Name	Value
UNDEFINED	0
HARD	1
SOFT	2

Enumeration IMS::MetricType Type

Name	Value
UNDEFINED	0
CPUUSE	1
FREEDISKSPACE	2
FREEMEMORY	3

Enumeration IMS::ProcessState Type

Name	Value
UNDEFINED	0
RUNNING	1
DOWN	2
DELETED	3

Enumeration IMS::SeDType Type

Name	Value
UNDEFINED	0
UMS	1
TMS	2
FMS	3
IMS	4

Chapter 5

API specification for File Management Service (FMS)

5.1 Definition of the functions of the package

5.1.1 Function FMS::createFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key.	IN	yes
path	string	The file to create following the pattern [host:]file path.	IN	yes

Description

The createFile() function creates files on remote machines.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_UNKNOWN_USERID	The userId is unknown

Signature

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

5.1.2 Function FMS::createDir

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The directory to create following the pattern [host:]directory path.	IN	yes
options	CreateDirOptions	the create directory command options	IN	no

Description

The createDir() function creates directories on remote machines.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

int **vishnu::createDir**(const string& sessionKey, const string& path, const CreateDirOptions& options = CreateDirOptions());

5.1.3 Function FMS::removeFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The file to remove following the pattern [host:]file path	IN	yes
options	RmFileOptions	the remove command options	IN	no

Description

The removeFile() function removes files from remote hosts.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.4 Function FMS::removeDir

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The directory to remove following the pattern [host:]directory path	IN	yes

Description

The removeDir() function removes directories (and subdirectories) from remote machines.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
VISHNU_OK	The service has been performed succesfully.
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_NO_ADMIN	The user is not an administrator

Name	Description
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.5 Function FMS::chGrp

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
group	string	the new group owner of file/directory	IN	yes
path	string	The file/directory following the pattern [host:]file path	IN	yes

Description

The chGrp() function changes group owner of remote files/directories.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.6 Function FMS::chMod

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
mode	mode_t	the access rigths of file/directory in octal system.	IN	yes
path	string	The file/directory following the pattern [host:]file path	IN	yes

Description

The chMod() function changes access rights of remote files/directories.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.7 Function FMS::headOfFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The file following the pattern [host:]file path	IN	yes
fileContent	string	The first "nLine" lines of the file	OUT	yes
options	HeadOfFileOptions	the head commandoptions	IN	no

Description

The headOfFile() function displays a few first lines of files located on remote machines.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.8 Function FMS::tailOfFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The file following the pattern [host:]file path	IN	yes
fileContent	string	The last "nLine" lines of the file	OUT	yes
options	TailOfFileOptions	the tail command options	IN	no

Description

The tailOfFile() function displays a few last lines of files located on remote machines

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.9 Function FMS::contentOfFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The file to display following the pattern [host:]file path	IN	yes
fileContent	string	The content of the file	OUT	yes

Description

The contentOfFile() function displays content of files located on remote machines

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.10 Function FMS::listDir

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The directory to list following the pattern [host:]directory path	IN	yes

Parameter	Type	Description	Mode	Required
dirContent	DirEntryList	The content of the directory.	OUT	yes
options	LsDirOptions	List of options for the listDir command	IN	yes

Description

The listDir() function displays the content of a remote directory.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.11 Function FMS::copyFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
src	string	The source file to copy following the pattern [host:]file path	IN	yes
dest	string	The path of the destination file	IN	yes
options	CpFileOptions	the copy options	IN	no

Description

The copyFile() function executes a synchronous copy of file.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)

Name	Description
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown

Signature

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

5.1.12 Function FMS::copyAsyncFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
src	string	The source file to copy following the pattern [host:]file path	IN	yes
dest	string	The path of the destination file	IN	yes
transferInfo	FileTransfer	A file tranfer identifier (allowing for instance to ckeck the status of a file transfer, or to cancel it)	OUT	yes
options	CpFileOptions	the copy options	IN	yes

Description

The copyAsyncFile() function executes an asynchronous copy of file.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.13 Function FMS::moveFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
src	string	The source file to move following the pattern [host:]file path	IN	yes
dest	string	The path of the destination file	IN	yes
options	CpFileOptions	The move command options	IN	yes

Description

The moveFile() function executes a synchronous move of file.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.14 Function FMS::moveAsyncFile

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes

Parameter	Type	Description	Mode	Required
src	string	The source file to move following the pattern [host:]file path	IN	yes
dest	string	The path of the destination file	IN	yes
transferInfo	FileTransfer	A file tranfer identifier (allowing for instance to ckeck the status of a file transfer, or to cancel it)	OUT	yes
options	CpFileOptions	The transfer command options	IN	no

Description

The moveAsyncFile() function executes an asynchronous move of file.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

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

5.1.15 Function FMS::stopFileTransfer

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
options	StopTransferOptions	The stop file transfer command options	IN	no

Description

The stopFileTransfer() function stops an execution of a set of file transfers.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter

Name	Description
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.
ERRCODE_UNKNOWN_USERID	The userId is unknown

Signature

int **vishnu::stopFileTransfer**(const string& sessionKey, const StopTransferOptions& options = StopTransferOptions());

5.1.16 Function FMS::listFileTransfers

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
fileTransferList	FileTransferList	The file transfer list	OUT	yes
options	LsTransferOptions	The filter options	IN	no

Description

The listFileTransfers() function displays the history of all file transfers submitted by User.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.
ERRCODE_UNKNOWN_USERID	The userId is unknown

Signature

int **vishnu::listFileTransfers**(const string& sessionKey, FileTransferList& fileTransferList, const LsTransferOptions& options = LsTransferOptions());

5.1.17 Function FMS::getFileInfo

Access

This function can be used by any VISHNU user

Parameters

Parameter	Type	Description	Mode	Required
sessionKey	string	The session key	IN	yes
path	string	The file whose inode information will be displayed	IN	yes
filesinfo	FileStat	The inode information	OUT	yes

Description

The getFileInfo() function displays the information of files.

Return Value

An error code is returned when an error occurs during the execution of the function

Name	Description
ERRCODE_CONFIGNOTFOUND	Undefined configuration parameter
ERRCODE_DBERR	Vishnu not available (Database error)
ERRCODE_DIET	Vishnu not available (Service bus failure)
ERRCODE_INVALID_PARAM	an option or a parameter provided is invalid for this service
ERRCODE_INVALID_PATH	The path provided is invalid.
ERRCODE_NO_ADMIN	The user is not an administrator
ERRCODE_RUNTIME_ERROR	Runtime error
ERRCODE_SESSIONKEY_EXPIRED	The session key has expired. The session is closed.
ERRCODE_SESSIONKEY_NOT_FOUND	The session key is unrecognized
ERRCODE_UNDEFINED	Internal Error: Undefined exception
ERRCODE_UNKNOWN_FILE_TRANSFER	The transfer id is unknown
ERRCODE_UNKNOWN_LOCAL_ACCOUNT	The local account is unknown
ERRCODE_UNKNOWN_MACHINE	The machine id is unknown
VISHNU_OK	The service has been performed succesfully.

Signature

int **vishnu::getFileInfo**(const string& sessionKey, const string& path, FileStat& filesinfo);

5.2 Data types definitions

Class FMS::CpFileOptions Content

Name	Type	Description
isRecursive	boolean	It specifies when the copy is recursive (case of directory) or not.
trCommand	TransferCommand	the command to use to perform file transfer.

Class FMS::CreateDirOptions Content

Name	Type	Description
isRecursive	boolean	It specifies when the create command is recursive (create parent directory also) or not

Class FMS::DirEntry Content

Name	Type	Description
path	string	The path of the remote file
owner	string	The remote file owner's name
group	string	The group name of the owner
perms	int	The protection of the remote file
size	long	The size of the remote file in bytes
creationTime	string	The file creation time (in remote host time)
type	FileType	The file type

Class FMS::DirEntryList Content

Name	Type	Description
dirEntries	List of DirEntry	directory content.

Class FMS::FileStat Content

Name	Type	Description
path	string	The path of the file
owner	string	The name of the owner of the file
group	string	The group name of the owner
perms	int	The protection of the file
uid	long	The user identifier of the owner
gid	long	The group identifier of the owner
size	long	The size of the file in bytes
atime	long	The time of last access
mtime	long	The time of last modification
ctime	long	The time of the last change of the inode information
type	FileType	The file type

Class FMS::FileTransfer Content

Name	Type	Description
transferId	string	The file transfer identifier
status	Status	The file transfer status
userId	string	The user identifier
clientMachineId	string	The client machine identifier
sourceMachineId	string	The source machine identifier
destinationMachineId	string	The destination machine identifier
sourceFilePath	string	The source file path
destinationFilePath	string	The destination file path
size	long	The size of the file
start_time	long	The start time of the file transfer
trCommand	TransferCommand	The command used for the file transfer (scp or rsync)
errorMsg	string	The eventual error message if the file transfer failed

Class FMS::FileTransferList Content

Name	Type	Description
fileTransfers	List of FileTransfer	list of file transfers.

Class FMS::HeadOfFileOptions Content

Name	Type	Description
nline	int	the number of line to get

Class FMS::LsDirOptions Content

Name	Type	Description
longFormat	boolean	It specifies the long display format (all available file informations)
allFiles	boolean	Allows to display all files including hidden files

Class FMS::LsTransferOptions Content

Name	Type	Description
transferId	string	a given transfer id
fromMachineId	string	the machine that is the source of the file transfer
userId	string	allows the admin to list file transfers initiated by a specific user
status	Status	the file transfer status

Class FMS::RmFileOptions Content

Name	Type	Description
isRecursive	boolean	It specifies when the remove command is recursive (case of directory) or not

Class FMS::StopTransferOptions Content

Name	Type	Description
transferId	string	a given transfer id
fromMachineId	string	the machine that is the source or destination of the file transfer
userId	string	allows an admin to stop file transfers of a specific user

Class FMS::TailOfFileOptions Content

Name	Type	Description
nline	int	the number of line to get

Enumeration FMS::FileType Type

Name	Value
BLOCK	0
CHARACTER	1
DIRECTORY	2
SYMBOLICLINK	3
SCKT	4
FIFO	5

Name	Value
REGULAR	6

Enumeration FMS::Status Type

Name	Value
INPROGRESS	0
COMPLETED	1
CANCELLED	2
FAILED	3
UNDEFINED	4

Enumeration FMS::TransferCommand Type

Name	Value
SCP	0
RSYNC	1
UNDEFINED	2