

VOMS C API

1.5.0

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Chapter 1

Data Structure Index

1.1 Data Structures

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Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

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Chapter 3

Data Structure Documentation

3.1 attribute Struct Reference

```
#include <voms_apic.h>
```

Data Fields

- const char * [name](#)
- const char * [value](#)
- const char * [qualifier](#)

3.1.1 Detailed Description

Definition at line 62 of file voms_apic.h.

3.1.2 Field Documentation

3.1.2.1 const char* attribute::name

Definition at line 63 of file voms_apic.h.

3.1.2.2 const char* attribute::qualifier

Definition at line 65 of file voms_apic.h.

3.1.2.3 const char* attribute::value

Definition at line 64 of file voms_apic.h.

The documentation for this struct was generated from the following file:

- [voms_apic.h](#)

3.2 contactdata Struct Reference

The type of data returned.

```
#include <voms_apic.h>
```

Data Fields

- char * [nick](#)
- char * [host](#)
- char * [contact](#)
- char * [vo](#)
- int [port](#)
- char * [reserved](#)
- int [version](#)

3.2.1 Detailed Description

The type of data returned.

Definition at line 68 of file voms_apic.h.

3.2.2 Field Documentation

3.2.2.1 char* contactdata::contact

The subject of the server's certificate

Definition at line 73 of file voms_apic.h.

3.2.2.2 char* contactdata::host

The hostname of the server

Definition at line 72 of file voms_apic.h.

3.2.2.3 char* contactdata::nick

< You must never allocate directly this structure. Its sizeof() is subject to change without notice. The only supported way to obtain it is via the VOMS_FindBy* functions. The alias of the server

Definition at line 71 of file voms_apic.h.

3.2.2.4 int contactdata::port

The port on which the server is listening

Definition at line 75 of file voms_apic.h.

3.2.2.5 char* contactdata::reserved

HANDS OFF!

Definition at line 76 of file voms_apic.h.

3.2.2.6 int contactdata::version

The version of Globus on which this server runs.

Definition at line 77 of file voms_apic.h.

3.2.2.7 char* contactdata::vo

The VO served by this server

Definition at line 74 of file voms_apic.h.

The documentation for this struct was generated from the following file:

- [voms_apic.h](#)

3.3 data Struct Reference

User's characteristics: can be repeated.

```
#include <voms_apic.h>
```

Data Fields

- char * [group](#)
- char * [role](#)
- char * [cap](#)

3.3.1 Detailed Description

User's characteristics: can be repeated.

<

Definition at line 56 of file voms_apic.h.

3.3.2 Field Documentation

3.3.2.1 char* data::cap

user's capability

Definition at line 59 of file voms_apic.h.

3.3.2.2 char* data::group

user's group

Definition at line 57 of file voms_apic.h.

3.3.2.3 char* data::role

user's role

Definition at line 58 of file voms_apic.h.

The documentation for this struct was generated from the following file:

- [voms_apic.h](#)

3.4 voms Struct Reference

```
#include <voms_apic.h>
```

Data Fields

- int [siglen](#)
- char * [signature](#)
- char * [user](#)
- char * [userca](#)
- char * [server](#)
- char * [serverca](#)
- char * [voname](#)
- char * [uri](#)
- char * [date1](#)
- char * [date2](#)
- int [type](#)
- struct [data](#) ** [std](#)
- char * [custom](#)
- int [datalen](#)
- int [version](#)
- char ** [fqan](#)
- char * [serial](#)
- AC * [ac](#)
- X509 * [holder](#)

3.4.1 Detailed Description

Definition at line 88 of file `voms_apic.h`.

3.4.2 Field Documentation

3.4.2.1 AC* voms::ac

Definition at line 108 of file `voms_apic.h`.

3.4.2.2 char* voms::custom

The data returned by an S command

Definition at line 101 of file `voms_apic.h`.

3.4.2.3 int voms::datalen

Definition at line 102 of file `voms_apic.h`.

3.4.2.4 char* voms::date1

Beginning of validity of the user info

Definition at line 97 of file `voms_apic.h`.

3.4.2.5 char* voms::date2

End of validity of the user info

Definition at line 98 of file voms_apic.h.

3.4.2.6 char** voms::fqan

User's attributes in compact format

Definition at line 104 of file voms_apic.h.

3.4.2.7 X509* voms::holder

Definition at line 109 of file voms_apic.h.

3.4.2.8 char* voms::serial

Serial number. Only significant if coming from AC.

Null otherwise

Definition at line 105 of file voms_apic.h.

3.4.2.9 char* voms::server

The VOMS server DN, as from its certificate

Definition at line 93 of file voms_apic.h.

3.4.2.10 char* voms::serverca

The CA which signed the VOMS certificate

Definition at line 94 of file voms_apic.h.

3.4.2.11 int voms::siglen

The length of the VOMS server signature

Definition at line 89 of file voms_apic.h.

3.4.2.12 char* voms::signature

The VOMS server signature

Definition at line 90 of file voms_apic.h.

3.4.2.13 struct data** voms::std

User's characteristics

Definition at line 100 of file voms_apic.h.

3.4.2.14 int voms::type

The type of data returned

Definition at line 99 of file voms_apic.h.

3.4.2.15 char* voms::uri

The URI of the VOMS server

Definition at line 96 of file voms_apic.h.

3.4.2.16 char* voms::user

The user's DN, as from his certificate

Definition at line 91 of file voms_apic.h.

3.4.2.17 char* voms::userca

The CA which signed the user's certificate

Definition at line 92 of file voms_apic.h.

3.4.2.18 int voms::version

Definition at line 103 of file voms_apic.h.

3.4.2.19 char* voms::vname

The name of the VO to which the VOMS belongs

Definition at line 95 of file voms_apic.h.

The documentation for this struct was generated from the following file:

- [voms_apic.h](#)

3.5 vomsdata Struct Reference

```
#include <voms_apic.h>
```

Data Fields

- char * [cdir](#)
- char * [vdir](#)
- struct [voms](#) ** [data](#)
- char * [workvo](#)
- char * [extra_data](#)
- int [volen](#)
- int [extralen](#)
- struct [vomsdata](#) * [real](#)

3.5.1 Detailed Description

Definition at line 153 of file voms_apic.h.

3.5.2 Field Documentation

3.5.2.1 `char* vomsdata::cdir`

Definition at line 154 of file voms_apic.h.

3.5.2.2 `struct voms** vomsdata::data`

User's info, as in the certificate extension. It may contain data gathered from more than one VOMS server,

Definition at line 156 of file voms_apic.h.

3.5.2.3 `char* vomsdata::extra_data`

The data specified by the user with the `--include`

switch. Note that this field doesn't contain the result of a request to the VOMS server, but instead data specified by the user. The reason for the introduction of this extension is to let a user include important data into his proxy certificate, like, for example, a kerberos ticket

Definition at line 161 of file voms_apic.h.

3.5.2.4 `int vomsdata::extralen`

Definition at line 171 of file voms_apic.h.

3.5.2.5 `struct vomsdata* vomsdata::real`

Definition at line 173 of file voms_apic.h.

3.5.2.6 `char* vomsdata::vdir`

Definition at line 155 of file voms_apic.h.

3.5.2.7 `int vomsdata::volen`

Definition at line 170 of file voms_apic.h.

3.5.2.8 `char* vomsdata::workvo`

The value of the `-vo` option of the `voms-proxy-init` command

Definition at line 159 of file voms_apic.h.

The documentation for this struct was generated from the following file:

- [voms_apic.h](#)

Chapter 4

File Documentation

4.1 voms_apic.h File Reference

```
#include <openssl/x509.h>
#include <time.h>
#include "newformat.h"
```

Data Structures

- struct [data](#)
User's characteristics: can be repeated.
- struct [attribute](#)
- struct [contactdata](#)
The type of data returned.
- struct [voms](#)
- struct [vomsdata](#)

Macros

- #define [NOGLOBUS](#)
- #define [TYPE_NODATA](#) 0
- #define [TYPE_STD](#) 1
- #define [TYPE_CUSTOM](#) 2
- #define [RECURSE_CHAIN](#) 0
- #define [RECURSE_NONE](#) 1
- #define [VERIFY_FULL](#) 0xffffffff
- #define [VERIFY_NONE](#) 0x00000000
- #define [VERIFY_DATE](#) 0x00000001
- #define [VERIFY_NOTARGET](#) 0x00000002
- #define [VERIFY_KEY](#) 0x00000004
- #define [VERIFY_SIGN](#) 0x00000008
- #define [VERIFY_ORDER](#) 0x00000010
- #define [VERIFY_ID](#) 0x00000020
- #define [VERIFY_CERTLIST](#) 0x00000040
- #define [VERR_NONE](#) 0
Error codes.
- #define [VERR_NOSOCKET](#) 1

- `#define VERR_NOIDENT 2`
- `#define VERR_COMM 3`
- `#define VERR_PARAM 4`
- `#define VERR_NOEXT 5`
- `#define VERR_NOINIT 6`
- `#define VERR_TIME 7`
- `#define VERR_IDCHECK 8`
- `#define VERR_EXTRINFO 9`
- `#define VERR_FORMAT 10`
- `#define VERR_NODATA 11`
- `#define VERR_PARSE 12`
- `#define VERR_DIR 13`
- `#define VERR_SIGN 14`
- `#define VERR_SERVER 15`
- `#define VERR_MEM 16`
- `#define VERR_VERIFY 17`
- `#define VERR_TYPE 18`
- `#define VERR_ORDER 19`
- `#define VERR_SERVERCODE 20`
- `#define VERR_NOTAVAIL 21`

Typedefs

- `typedef void * gss_cred_id_t`
- `typedef void * gss_ctx_id_t`

Functions

- `struct contactdata ** VOMS_FindByAlias (struct vomsdata *vd, char *alias, char *system, char *user, int *error)`
- `struct contactdata ** VOMS_FindByVO (struct vomsdata *vd, char *vo, char *system, char *user, int *error)`
- `void VOMS_DeleteContacts (struct contactdata **list)`
- `struct vomsdata * VOMS_Init (char *voms, char *cert)`
- `struct voms * VOMS_Copy (struct voms *v, int *error)`
- `struct vomsdata * VOMS_CopyAll (struct vomsdata *vd, int *error)`
- `void VOMS_Delete (struct voms *v)`
- `int VOMS_AddTarget (struct vomsdata *vd, char *target, int *error)`
- `void VOMS_FreeTargets (struct vomsdata *vd, int *error)`
- `char * VOMS_ListTargets (struct vomsdata *vd, int *error)`
- `int VOMS_SetVerificationType (int type, struct vomsdata *vd, int *error)`
- `int VOMS_SetLifetime (int length, struct vomsdata *vd, int *error)`
- `void VOMS_Destroy (struct vomsdata *vd)`
- `int VOMS_ResetOrder (struct vomsdata *vd, int *error)`
- `int VOMS_Ordering (char *order, struct vomsdata *vd, int *error)`
- `int VOMS_Contact (char *hostname, int port, char *servsubject, char *command, struct vomsdata *vd, int *error)`
- `int VOMS_ContactRaw (char *hostname, int port, char *servsubject, char *command, void **data, int *datalen, int *version, struct vomsdata *vd, int *error)`
- `int VOMS_Retrieve (X509 *cert, STACK_OF(X509)*chain, int how, struct vomsdata *vd, int *error)`
- `int VOMS_Import (char *buffer, int buflen, struct vomsdata *vd, int *error)`
- `int VOMS_Export (char **buffer, int *buflen, struct vomsdata *vd, int *error)`
- `struct voms * VOMS_DefaultData (struct vomsdata *vd, int *error)`
- `char * VOMS_ErrorMessage (struct vomsdata *vd, int error, char *buffer, int len)`
- `int VOMS_RetrieveEXT (X509_EXTENSION *ext, struct vomsdata *vd, int *error)`

- int [VOMS_RetrieveFromCred](#) ([gss_cred_id_t](#) cred, int how, struct [vomsdata](#) *vd, int *error)
- int [VOMS_RetrieveFromFile](#) (FILE *file, int how, struct [vomsdata](#) *vd, int *error)
- int [VOMS_RetrieveFromCtx](#) ([gss_ctx_id_t](#) ctx, int how, struct [vomsdata](#) *vd, int *error)
- int [VOMS_RetrieveFromProxy](#) (int how, struct [vomsdata](#) *vd, int *error)
- int [VOMS_RetrieveFromAC](#) (AC *ac, struct [vomsdata](#) *vd, int *error)
- int [VOMS_GetAttributeSourcesNumber](#) (struct [voms](#) *v, struct [vomsdata](#) *vd, int *error)
- int [VOMS_GetAttributeSourceHandle](#) (struct [voms](#) *v, int num, struct [vomsdata](#) *vd, int *error)
- const char * [VOMS_GetAttributeGrantor](#) (struct [voms](#) *v, int handle, struct [vomsdata](#) *vd, int *error)
- int [VOMS_GetAttributesNumber](#) (struct [voms](#) *v, int handle, struct [vomsdata](#) *vd, int *error)
- int [VOMS_GetAttribute](#) (struct [voms](#) *v, int handle, int num, struct [attribute](#) *at, struct [vomsdata](#) *vd, int *error)
- struct [vomsdata](#) * [VOMS_Duplicate](#) (struct [vomsdata](#) *vd)
- AC * [VOMS_GetAC](#) (struct [voms](#) *v)
- int [getMajorVersionNumber](#) (void)
- int [getMinorVersionNumber](#) (void)
- int [getPatchVersionNumber](#) (void)
- int [VOMS_SetVerificationTime](#) (time_t verificationtime, struct [vomsdata](#) *vd, int *error)
- char ** [VOMS_GetTargetsList](#) (struct [voms](#) *v, struct [vomsdata](#) *vd, int *error)
- void [VOMS_FreeTargetsList](#) (char **)
- int [VOMS_SetTimeout](#) (int t, struct [vomsdata](#) *vd, int *error)
- int [VOMS_LoadCredentials](#) (X509 *cert, EVP_PKEY *pkey, STACK_OF(X509)*chain, struct [vomsdata](#) *vd, int *error)

4.1.1 Macro Definition Documentation

4.1.1.1 #define NOGLOBUS

Definition at line 33 of file voms_apic.h.

4.1.1.2 #define RECURSE_CHAIN 0

Definition at line 113 of file voms_apic.h.

4.1.1.3 #define RECURSE_NONE 1

Definition at line 114 of file voms_apic.h.

4.1.1.4 #define TYPE_CUSTOM 2

result of an S command

Definition at line 85 of file voms_apic.h.

4.1.1.5 #define TYPE_NODATA 0

no data

Definition at line 83 of file voms_apic.h.

4.1.1.6 #define TYPE_STD 1

group, role, capability triplet

Definition at line 84 of file voms_apic.h.

4.1.1.7 `#define VERIFY_CERTLIST 0x00000040`

Definition at line 124 of file voms_apic.h.

4.1.1.8 `#define VERIFY_DATE 0x00000001`

Definition at line 118 of file voms_apic.h.

4.1.1.9 `#define VERIFY_FULL 0xffffffff`

Definition at line 116 of file voms_apic.h.

4.1.1.10 `#define VERIFY_ID 0x00000020`

Definition at line 123 of file voms_apic.h.

4.1.1.11 `#define VERIFY_KEY 0x00000004`

Definition at line 120 of file voms_apic.h.

4.1.1.12 `#define VERIFY_NONE 0x00000000`

Definition at line 117 of file voms_apic.h.

4.1.1.13 `#define VERIFY_NOTARGET 0x00000002`

Definition at line 119 of file voms_apic.h.

4.1.1.14 `#define VERIFY_ORDER 0x00000010`

Definition at line 122 of file voms_apic.h.

4.1.1.15 `#define VERIFY_SIGN 0x00000008`

Definition at line 121 of file voms_apic.h.

4.1.1.16 `#define VERR_COMM 3`

Server problem

Definition at line 131 of file voms_apic.h.

4.1.1.17 `#define VERR_DIR 13`

Directory error

Definition at line 143 of file voms_apic.h.

4.1.1.18 #define VERR_EXTRINFO 9

VO name and URI missing

Definition at line 139 of file voms_apic.h.

4.1.1.19 #define VERR_FORMAT 10

Wrong data format

Definition at line 140 of file voms_apic.h.

4.1.1.20 #define VERR_IDCHECK 8

User data in extension different from the real ones

Definition at line 136 of file voms_apic.h.

4.1.1.21 #define VERR_MEM 16

Memory problems

Definition at line 146 of file voms_apic.h.

4.1.1.22 #define VERR_NODATA 11

Empty extension

Definition at line 141 of file voms_apic.h.

4.1.1.23 #define VERR_NOEXT 5

VOMS extension missing

Definition at line 133 of file voms_apic.h.

4.1.1.24 #define VERR_NOIDENT 2

Cannot identify itself (certificate problem)

Definition at line 130 of file voms_apic.h.

4.1.1.25 #define VERR_NOINIT 6

Initialization error

Definition at line 134 of file voms_apic.h.

4.1.1.26 #define VERR_NONE 0

Error codes.

Definition at line 128 of file voms_apic.h.

4.1.1.27 #define VERR_NOSOCKET 1

Socket problem

Definition at line 129 of file voms_apic.h.

4.1.1.28 #define VERR_NOTAVAIL 21

Method not available

Definition at line 151 of file voms_apic.h.

4.1.1.29 #define VERR_ORDER 19

Ordering different than required

Definition at line 149 of file voms_apic.h.

4.1.1.30 #define VERR_PARAM 4

Wrong parameters

Definition at line 132 of file voms_apic.h.

4.1.1.31 #define VERR_PARSE 12

Parse error

Definition at line 142 of file voms_apic.h.

4.1.1.32 #define VERR_SERVER 15

Unidentifiable VOMS server

Definition at line 145 of file voms_apic.h.

4.1.1.33 #define VERR_SERVERCODE 20

Error from the server

Definition at line 150 of file voms_apic.h.

4.1.1.34 #define VERR_SIGN 14

Signature error

Definition at line 144 of file voms_apic.h.

4.1.1.35 #define VERR_TIME 7

Error in time checking

Definition at line 135 of file voms_apic.h.

4.1.1.36 #define VERR_TYPE 18

Returned data of unknown type

Definition at line 148 of file voms_apic.h.

4.1.1.37 #define VERR_VERIFY 17

Generic verification error

Definition at line 147 of file voms_apic.h.

4.1.2 Typedef Documentation

4.1.2.1 typedef void* gss_cred_id_t

Definition at line 42 of file voms_apic.h.

4.1.2.2 typedef void* gss_ctx_id_t

Definition at line 43 of file voms_apic.h.

4.1.3 Function Documentation

4.1.3.1 int getMajorVersionNumber (void)

4.1.3.2 int getMinorVersionNumber (void)

4.1.3.3 int getPatchVersionNumber (void)

4.1.3.4 int VOMS.AddTarget (struct vomsdata * vd, char * target, int * error)

Adds a target to the AC.

Parameters

<i>vd</i>	The vomsdata structure.
<i>target</i>	The target to add. It should be a FQDN.
<i>error</i>	RETURN PARAMETER: qualifies the error message.

Returns

failure (0) or success (<>0)

4.1.3.5 int VOMS.Contact (char * hostname, int port, char * servsubject, char * command, struct vomsdata * vd, int * error)

Contacts a VOMS server to get a certificate

It is the equivalent of the voms_proxy_init command, but without the `--include` functionality.

Parameters

<i>hostname</i>	FQDN of the VOMS server
<i>port</i>	the port on which the VOMS server is listening
<i>servsubject</i>	the subject of the server's certificate
<i>command</i>	Command
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.6 `int VOMS.ContactRaw (char * hostname, int port, char * servsubject, char * command, void ** data, int * datalen, int * version, struct vomsdata * vd, int * error)`

The same as VOMS_Contact, except that instead of starting the verification process, the data is returned as is in the

Parameters

<i>data</i>	and
<i>datalen</i>	fields.
<i>hostname</i>	FQDN of the VOMS server
<i>port</i>	the port on which the VOMS server is listening
<i>servsubject</i>	the subject of the server's certificate
<i>command</i>	the command sent to the server
<i>version</i>	is the version number of the data.
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.7 `struct voms* VOMS.Copy (struct voms * v, int * error)` [read]

Copies a voms structure.

N.B: This is the ONLY way to correctly initialize a voms structure as a

copy of another voms structure.

Parameters

<i>v</i>	The structure to copy.
<i>error</i>	RETURN PARAMETER: qualifies the error message.

Returns

NULL (error) or the new voms structure.

4.1.3.8 `struct vomsdata* VOMS.CopyAll (struct vomsdata * vd, int * error)` [read]

Copies a vomsdata structure.

N.B: This is the ONLY way to correctly initialize a vomsdata structure

copy of another vomsdata structure.

Parameters

<i>vd</i>	The structure to copy.
<i>error</i>	RETURN PARAMETER: qualifies the error message.

Returns

NULL (error) or the new vomsdata structure.

4.1.3.9 struct voms* VOMS_DefaultData (struct vomsdata * *vd*, int * *error*) [read]

Gets the default attributes from a vomsdata structure.

Parameters

<i>vd</i>	the vomsdata structure to analyze
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

a pointer to the relevant voms structure. DO NOT modify the fields.

4.1.3.10 void VOMS_Delete (struct voms * *v*)

Deletes a voms structure

Parameters

<i>v</i>	Pointer to the structure to delete.
----------	-------------------------------------

4.1.3.11 void VOMS_DeleteContacts (struct contactdata ** *list*)

Frees a contactdata vector.

Parameters

<i>list</i>	The vector to free.
-------------	---------------------

Returns

NONE

4.1.3.12 void VOMS_Destroy (struct vomsdata * *vd*)

Destroys a proper vomsdata structure /param *vd* The structure to deallocate.

4.1.3.13 struct vomsdata* VOMS_Duplicate (struct vomsdata * *vd*) [read]

4.1.3.14 char* VOMS_ErrorMessage (struct vomsdata * *vd*, int *error*, char * *buffer*, int *len*)

Gets a textual description of the error.

Parameters

<i>vd</i>	The vomsdata structure to analyze
<i>error</i>	The error returned by the last function
<i>buffer</i>	A pointer to a buffer where the error message will be written. If NULL, then memory is allocated by the function, and will have to be free()ed by the caller.
<i>len</i>	The length of the memory pointed to by the buffer parameter.

Returns

A pointer to the error message.

4.1.3.15 int VOMS_Export (char ** *buffer*, int * *buflen*, struct vomsdata * *vd*, int * *error*)

Converts data into a test format

Parameters

<i>buffer</i>	OUTPUT PARAMETER contains the converted data
<i>buflen</i>	OUTPUT PARAMETER contains the length of buffer
<i>vd</i>	contains the data to convert
<i>error</i>	RETURN PARAMETER Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.16 struct contactdata** VOMS.FindByAlias (struct vomsdata * *vd*, char * *alias*, char * *system*, char * *user*, int * *error*) [read]

Gets a list of VOMS servers which share an alias.

Parameters

<i>vd</i>	The correctly initialized vomsdata structured.
<i>alias</i>	The alias to look for.
<i>system</i>	The directory in which to look for the system configuration files. If NULL, defaults to /opt/ed-c/etc/vomses
<i>user</i>	The directory in which to look for the user configuration files. Defaults to \$VOMS_USERCONF if NULL. Again defaults to \$HOME/.edg/vomses if the latter is NULL, or to ~/.edg/vomses as a last resort.
<i>error</i>	RETURN PARAMETER: qualifies the error message.

Returns

NULL, or a NULL-terminated vector of contactdata structures. The only supported way to free this array is via the VOMS_DeleteContacts function. Note also that the order in which the servers are returned is unspecified.

4.1.3.17 struct contactdata** VOMS.FindByVO (struct vomsdata * *vd*, char * *vo*, char * *system*, char * *user*, int * *error*) [read]

Gets a list of VOMS servers which serve the same VO.

Parameters

<i>vd</i>	The correctly initialized vomsdata structured.
<i>vo</i>	The VO to look for.
<i>system</i>	The directory in which to look for the system configuration files. If NULL, defaults to /opt/edc/etc/vomses
<i>user</i>	The directory in which to look for the user configuration files. Defaults to \$VOMS_USERCONF if NULL. Again defaults to \$HOME/.edg/vomses if the latter is NULL, or to ~/.edg/vomses as a last resort.
<i>error</i>	RETURN PARAMETER: qualifies the error message.

Returns

NULL, or a NULL-terminated vector of contactdata structures. The only supported way to free this array is via the VOMS_DeleteContacts function. Note also that the order in which the servers are returned is unspecified.

4.1.3.18 void VOMS_FreeTargets (struct vomsdata * *vd*, int * *error*)

Delete the targets from the AC.

Parameters

<i>vd</i>	The vomsdata structure.
<i>error</i>	RETURN PARAMETER: qualifies the error message.

4.1.3.19 void VOMS_FreeTargetsList (char **)

4.1.3.20 AC* VOMS_GetAC (struct voms * *v*)

4.1.3.21 int VOMS_GetAttribute (struct voms * *v*, int *handle*, int *num*, struct attribute * *at*, struct vomsdata * *vd*, int * *error*)

4.1.3.22 const char* VOMS_GetAttributeGrantor (struct voms * *v*, int *handle*, struct vomsdata * *vd*, int * *error*)

4.1.3.23 int VOMS_GetAttributesNumber (struct voms * *v*, int *handle*, struct vomsdata * *vd*, int * *error*)

4.1.3.24 int VOMS_GetAttributeSourceHandle (struct voms * *v*, int *num*, struct vomsdata * *vd*, int * *error*)

4.1.3.25 int VOMS_GetAttributeSourcesNumber (struct voms * *v*, struct vomsdata * *vd*, int * *error*)

4.1.3.26 char** VOMS_GetTargetsList (struct voms * *v*, struct vomsdata * *vd*, int * *error*)

4.1.3.27 int VOMS_Import (char * *buffer*, int *buflen*, struct vomsdata * *vd*, int * *error*)

Converts data from the format used for inclusion into a certificate to the internal format

The function does verify the data.

Parameters

<i>buffer</i>	contains the data to be converted
<i>buflen</i>	contains the length of buffer
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.28 struct vomsdata* VOMS_Init (char * voms, char * cert) [read]

Initializes a vomsdata structure for use by the other functions. N.B: This is the ONLY way to correctly initialize a vomsdata structure. It is also forbidden to directly take the sizeof() of this structure.

Parameters

<i>voms</i>	The directory which contains the certificates of the VOMS servers
<i>cert</i>	The directory which contains the CA certificates If voms_dir is empty, the value of the environment variable X509_VOMS_DIR is taken If cert_dir is empty, the value of the environment variable X509_CERT_DIR is taken

Returns

NULL for failure, or a pointer to a properly initialized structure.

4.1.3.29 char* VOMS_ListTargets (struct vomsdata * vd, int * error)**4.1.3.30 int VOMS_LoadCredentials (X509 * cert, EVP_PKEY * pkey, STACK_OF(X509)* chain, struct vomsdata * vd, int * error)****4.1.3.31 int VOMS_Ordering (char * order, struct vomsdata * vd, int * error)**

Further specified the order of the returned attributes. Please do note that calls are cumulative unless [VOMS_ResetOrder\(\)](#) is called.

Parameters

<i>order</i>	the group:role attribute.
<i>vd</i>	RETURN PARAMETER: contains the modified data.
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.32 int VOMS_ResetOrder (struct vomsdata * vd, int * error)

Unsets the return order of the attributes.

Parameters

<i>vd</i>	RETURN PARAMETER: contains the modified data.
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.33 int VOMS_Retrieve (X509 * *cert*, STACK_OF(X509)* *chain*, int *how*, struct vomsdata * *vd*, int * *error*)

Extracts the VOMS extension from an X.509 certificate.

The function doesn't check the validity of the certificates,
but it does check the content of the user data.

Parameters

<i>cert</i>	The certificate with the VOMS extensions
<i>chain</i>	The chain of the validation certificates (only the intermediate ones)
<i>how</i>	Recursion type
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.34 int VOMS_RetrieveEXT (X509_EXTENSION * *ext*, struct vomsdata * *vd*, int * *error*)

Gets VOMS information from the given extension

Parameters

<i>ext</i>	The extension to parse.
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.35 int VOMS_RetrieveFromAC (AC * *ac*, struct vomsdata * *vd*, int * *error*)

Gets VOMS information from an existing globus proxy

Parameters

<i>ac</i>	AC from which to get the credentials
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.36 int VOMS_RetrieveFromCred (gss_cred_id_t cred, int how, struct vomsdata * vd, int * error)

Gets VOMS information from the given globus credential

Parameters

<i>cred</i>	The credential from which to retrieve the certificate.
<i>how</i>	Recursion type
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.37 int VOMS_RetrieveFromCtx (gss_ctx_id_t ctx, int how, struct vomsdata * vd, int * error)

Gets VOMS information from the given globus context

Parameters

<i>ctx</i>	The context from which to retrieve the certificate.
<i>how</i>	Recursion type
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.38 int VOMS_RetrieveFromFile (FILE * file, int how, struct vomsdata * vd, int * error)

Gets VOMS information from the given globus credential

Parameters

<i>file</i>	The file from which to retrieve the certificate.
<i>how</i>	Recursion type
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.39 int VOMS_RetrieveFromProxy (int how, struct vomsdata * vd, int * error)

Gets VOMS information from an existing globus proxy

Parameters

<i>how</i>	Recursion type
<i>vd</i>	RETURN PARAMETER: contains the data returned by the connection
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.40 int VOMS_SetLifetime (int *length*, struct vomsdata * *vd*, int * *error*)

Set requested lifetime for [VOMS_Contact\(\)](#) calls.

Parameters

<i>length</i>	Lifetime requested.
<i>vd</i>	RETURN PARAMETER: contains the modified data.
<i>error</i>	RETURN PARAMETER: Qualifies the error message

Returns

failure (0) or success (<>0)

4.1.3.41 int VOMS_SetTimeout (int *t*, struct vomsdata * *vd*, int * *error*)

4.1.3.42 int VOMS_SetVerificationTime (time_t *verificationtime*, struct vomsdata * *vd*, int * *error*)

4.1.3.43 int VOMS_SetVerificationType (int *type*, struct vomsdata * *vd*, int * *error*)

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