

VOMS C API

1.5.0

Generated by Doxygen 1.8.5

Wed Jan 22 2014 18:11:58

Contents

1	Data Structure Index	1
1.1	Data Structures	1
2	File Index	3
2.1	File List	3
3	Data Structure Documentation	5
3.1	attribute Struct Reference	5
3.1.1	Detailed Description	5
3.1.2	Field Documentation	5
3.1.2.1	name	5
3.1.2.2	qualifier	5
3.1.2.3	value	5
3.2	contactdata Struct Reference	5
3.2.1	Detailed Description	6
3.2.2	Field Documentation	6
3.2.2.1	contact	6
3.2.2.2	host	6
3.2.2.3	nick	6
3.2.2.4	port	6
3.2.2.5	reserved	6
3.2.2.6	version	6
3.2.2.7	vo	7
3.3	data Struct Reference	7
3.3.1	Detailed Description	7
3.3.2	Field Documentation	7
3.3.2.1	cap	7
3.3.2.2	group	7
3.3.2.3	role	7
3.4	voms Struct Reference	8
3.4.1	Detailed Description	8
3.4.2	Field Documentation	8

3.4.2.1	ac	8
3.4.2.2	custom	8
3.4.2.3	datalen	8
3.4.2.4	date1	8
3.4.2.5	date2	9
3.4.2.6	fqan	9
3.4.2.7	holder	9
3.4.2.8	serial	9
3.4.2.9	server	9
3.4.2.10	serverca	9
3.4.2.11	siglen	9
3.4.2.12	signature	9
3.4.2.13	std	9
3.4.2.14	type	10
3.4.2.15	uri	10
3.4.2.16	user	10
3.4.2.17	userca	10
3.4.2.18	version	10
3.4.2.19	voname	10
3.5	vomsdata Struct Reference	10
3.5.1	Detailed Description	11
3.5.2	Field Documentation	11
3.5.2.1	cdir	11
3.5.2.2	data	11
3.5.2.3	extra_data	11
3.5.2.4	extralen	11
3.5.2.5	real	11
3.5.2.6	vdir	11
3.5.2.7	volen	11
3.5.2.8	workvo	11
4	File Documentation	13
4.1	voms_apic.h File Reference	13
4.1.1	Macro Definition Documentation	15
4.1.1.1	NOGLOBUS	15
4.1.1.2	RECURSE_CHAIN	15
4.1.1.3	RECURSE_NONE	15
4.1.1.4	TYPE_CUSTOM	15
4.1.1.5	TYPE_NODATA	15
4.1.1.6	TYPE_STD	15

4.1.1.7	VERIFY_CERTLIST	16
4.1.1.8	VERIFY_DATE	16
4.1.1.9	VERIFY_FULL	16
4.1.1.10	VERIFY_ID	16
4.1.1.11	VERIFY_KEY	16
4.1.1.12	VERIFY_NONE	16
4.1.1.13	VERIFY_NOTARGET	16
4.1.1.14	VERIFY_ORDER	16
4.1.1.15	VERIFY_SIGN	16
4.1.1.16	VERR_COMM	16
4.1.1.17	VERR_DIR	16
4.1.1.18	VERR_EXTRINFO	17
4.1.1.19	VERR_FORMAT	17
4.1.1.20	VERR_IDCHECK	17
4.1.1.21	VERR_MEM	17
4.1.1.22	VERR_NODATA	17
4.1.1.23	VERR_NOEXT	17
4.1.1.24	VERR_NOIDENT	17
4.1.1.25	VERR_NOINIT	17
4.1.1.26	VERR_NONE	17
4.1.1.27	VERR_NOSOCKET	18
4.1.1.28	VERR_NOTAVAIL	18
4.1.1.29	VERR_ORDER	18
4.1.1.30	VERR_PARAM	18
4.1.1.31	VERR_PARSE	18
4.1.1.32	VERR_SERVER	18
4.1.1.33	VERR_SERVERCODE	18
4.1.1.34	VERR_SIGN	18
4.1.1.35	VERR_TIME	18
4.1.1.36	VERR_TYPE	19
4.1.1.37	VERR_VERIFY	19
4.1.2	Typedef Documentation	19
4.1.2.1	gss_cred_id_t	19
4.1.2.2	gss_ctx_id_t	19
4.1.3	Function Documentation	19
4.1.3.1	getMajorVersionNumber	19
4.1.3.2	getMinorVersionNumber	19
4.1.3.3	getPatchVersionNumber	19
4.1.3.4	VOMS_AddTarget	19
4.1.3.5	VOMS_Contact	19

4.1.3.6	VOMS_ContactRaw	20
4.1.3.7	VOMS_Copy	20
4.1.3.8	VOMS_CopyAll	20
4.1.3.9	VOMS_DefaultData	21
4.1.3.10	VOMS_Delete	21
4.1.3.11	VOMS_DeleteContacts	21
4.1.3.12	VOMS_Destroy	21
4.1.3.13	VOMS_Duplicate	21
4.1.3.14	VOMS_ErrorMessage	21
4.1.3.15	VOMS_Export	22
4.1.3.16	VOMS_FindByAlias	22
4.1.3.17	VOMS_FindByVO	22
4.1.3.18	VOMS_FreeTargets	23
4.1.3.19	VOMS_FreeTargetsList	23
4.1.3.20	VOMS_GetAC	23
4.1.3.21	VOMS_GetAttribute	23
4.1.3.22	VOMS_GetAttributeGrantor	23
4.1.3.23	VOMS_GetAttributesNumber	23
4.1.3.24	VOMS_GetAttributeSourceHandle	23
4.1.3.25	VOMS_GetAttributeSourcesNumber	23
4.1.3.26	VOMS_GetTargetsList	23
4.1.3.27	VOMS_Import	23
4.1.3.28	VOMS_Init	24
4.1.3.29	VOMS_ListTargets	24
4.1.3.30	VOMS_LoadCredentials	24
4.1.3.31	VOMS_Ordering	24
4.1.3.32	VOMS_ResetOrder	24
4.1.3.33	VOMS_Retrieve	25
4.1.3.34	VOMS_RetrieveEXT	25
4.1.3.35	VOMS_RetrieveFromAC	25
4.1.3.36	VOMS_RetrieveFromCred	25
4.1.3.37	VOMS_RetrieveFromCtx	26
4.1.3.38	VOMS_RetrieveFromFile	26
4.1.3.39	VOMS_RetrieveFromProxy	26
4.1.3.40	VOMS_SetLifetime	26
4.1.3.41	VOMS_SetTimeout	27
4.1.3.42	VOMS_SetVerificationTime	27
4.1.3.43	VOMS_SetVerificationType	27

[Index](#)**28**

Chapter 1

Data Structure Index

1.1 Data Structures

Here are the data structures with brief descriptions:

attribute	5
contactdata		
	The type of data returned	5
data		
	User's characteristics: can be repeated	7
voms	8
vomldata	10

Chapter 2

File Index

2.1 File List

Here is a list of all files with brief descriptions:

voms_apic.h	13
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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)`

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)`

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*)

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*)**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*)

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/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.

4.1.3.17 struct contactdata** VOMS_FindByVO (struct vomsdata * *vd*, char * *vo*, char * *system*, char * *user*, int * *error*)

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)

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.
\param cert The certificate with the VOMS extensions
\param chain The chain of the validation certificates
        (only the intermediate ones)
\param how Recursion type
\param vd RETURN PARAMETER: contains the data returned by the connection
\param error RETURN PARAMETER: Qualifies the error message
\return 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)`

Index

- ac
 - voms, [8](#)
- attribute, [5](#)
 - name, [5](#)
 - qualifier, [5](#)
 - value, [5](#)
- cap
 - data, [7](#)
- cdir
 - vomsdata, [11](#)
- contact
 - contactdata, [6](#)
- contactdata, [5](#)
 - contact, [6](#)
 - host, [6](#)
 - nick, [6](#)
 - port, [6](#)
 - reserved, [6](#)
 - version, [6](#)
 - vo, [6](#)
- custom
 - voms, [8](#)
- data, [7](#)
 - cap, [7](#)
 - group, [7](#)
 - role, [7](#)
 - vomsdata, [11](#)
- datalen
 - voms, [8](#)
- date1
 - voms, [8](#)
- date2
 - voms, [8](#)
- extra_data
 - vomsdata, [11](#)
- extralen
 - vomsdata, [11](#)
- fqn
 - voms, [9](#)
- getMajorVersionNumber
 - voms_apic.h, [19](#)
- getMinorVersionNumber
 - voms_apic.h, [19](#)
- getPatchVersionNumber
 - voms_apic.h, [19](#)
- group
 - data, [7](#)
- gss_cred_id_t
 - voms_apic.h, [19](#)
- gss_ctx_id_t
 - voms_apic.h, [19](#)
- holder
 - voms, [9](#)
- host
 - contactdata, [6](#)
- NOGLOBUS
 - voms_apic.h, [15](#)
- name
 - attribute, [5](#)
- nick
 - contactdata, [6](#)
- port
 - contactdata, [6](#)
- qualifier
 - attribute, [5](#)
- RECURSE_CHAIN
 - voms_apic.h, [15](#)
- RECURSE_NONE
 - voms_apic.h, [15](#)
- real
 - vomsdata, [11](#)
- reserved
 - contactdata, [6](#)
- role
 - data, [7](#)
- serial
 - voms, [9](#)
- server
 - voms, [9](#)
- serverca
 - voms, [9](#)
- siglen
 - voms, [9](#)
- signature
 - voms, [9](#)
- std
 - voms, [9](#)
- TYPE_CUSTOM
 - voms_apic.h, [15](#)
- TYPE_NODATA

- voms_apic.h, [15](#)
- TYPE_STD
 - voms_apic.h, [15](#)
- type
 - voms, [9](#)
- uri
 - voms, [10](#)
- user
 - voms, [10](#)
- userca
 - voms, [10](#)
- VERIFY_CERTLIST
 - voms_apic.h, [15](#)
- VERIFY_DATE
 - voms_apic.h, [16](#)
- VERIFY_FULL
 - voms_apic.h, [16](#)
- VERIFY_ID
 - voms_apic.h, [16](#)
- VERIFY_KEY
 - voms_apic.h, [16](#)
- VERIFY_NONE
 - voms_apic.h, [16](#)
- VERIFY_NOTARGET
 - voms_apic.h, [16](#)
- VERIFY_ORDER
 - voms_apic.h, [16](#)
- VERIFY_SIGN
 - voms_apic.h, [16](#)
- VERR_COMM
 - voms_apic.h, [16](#)
- VERR_DIR
 - voms_apic.h, [16](#)
- VERR_EXTRINFO
 - voms_apic.h, [16](#)
- VERR_FORMAT
 - voms_apic.h, [17](#)
- VERR_IDCHECK
 - voms_apic.h, [17](#)
- VERR_MEM
 - voms_apic.h, [17](#)
- VERR_NODATA
 - voms_apic.h, [17](#)
- VERR_NOEXT
 - voms_apic.h, [17](#)
- VERR_NOIDENT
 - voms_apic.h, [17](#)
- VERR_NOINIT
 - voms_apic.h, [17](#)
- VERR_NONE
 - voms_apic.h, [17](#)
- VERR_NOSOCKET
 - voms_apic.h, [17](#)
- VERR_NOTAVAIL
 - voms_apic.h, [18](#)
- VERR_ORDER
 - voms_apic.h, [18](#)
- VERR_PARAM
 - voms_apic.h, [18](#)
- VERR_PARSE
 - voms_apic.h, [18](#)
- VERR_SERVER
 - voms_apic.h, [18](#)
- VERR_SERVERCODE
 - voms_apic.h, [18](#)
- VERR_SIGN
 - voms_apic.h, [18](#)
- VERR_TIME
 - voms_apic.h, [18](#)
- VERR_TYPE
 - voms_apic.h, [18](#)
- VERR_VERIFY
 - voms_apic.h, [19](#)
- VOMS_AddTarget
 - voms_apic.h, [19](#)
- VOMS_Contact
 - voms_apic.h, [19](#)
- VOMS_ContactRaw
 - voms_apic.h, [20](#)
- VOMS_Copy
 - voms_apic.h, [20](#)
- VOMS_CopyAll
 - voms_apic.h, [20](#)
- VOMS_DefaultData
 - voms_apic.h, [21](#)
- VOMS_Delete
 - voms_apic.h, [21](#)
- VOMS_DeleteContacts
 - voms_apic.h, [21](#)
- VOMS_Destroy
 - voms_apic.h, [21](#)
- VOMS_Duplicate
 - voms_apic.h, [21](#)
- VOMS_ErrorMessage
 - voms_apic.h, [21](#)
- VOMS_Export
 - voms_apic.h, [22](#)
- VOMS_FindByAlias
 - voms_apic.h, [22](#)
- VOMS_FindByVO
 - voms_apic.h, [22](#)
- VOMS_FreeTargets
 - voms_apic.h, [23](#)
- VOMS_FreeTargetsList
 - voms_apic.h, [23](#)
- VOMS_GetAC
 - voms_apic.h, [23](#)
- VOMS_GetAttribute
 - voms_apic.h, [23](#)
- VOMS_GetAttributeGrantor
 - voms_apic.h, [23](#)
- VOMS_GetAttributeSourceHandle
 - voms_apic.h, [23](#)
- VOMS_GetAttributeSourcesNumber
 - voms_apic.h, [23](#)

- VOMS_GetAttributesNumber
 - voms_apic.h, [23](#)
- VOMS_GetTargetsList
 - voms_apic.h, [23](#)
- VOMS_Import
 - voms_apic.h, [23](#)
- VOMS_Init
 - voms_apic.h, [24](#)
- VOMS_ListTargets
 - voms_apic.h, [24](#)
- VOMS_LoadCredentials
 - voms_apic.h, [24](#)
- VOMS_Ordering
 - voms_apic.h, [24](#)
- VOMS_ResetOrder
 - voms_apic.h, [24](#)
- VOMS_Retrieve
 - voms_apic.h, [24](#)
- VOMS_RetrieveEXT
 - voms_apic.h, [25](#)
- VOMS_RetrieveFromAC
 - voms_apic.h, [25](#)
- VOMS_RetrieveFromCred
 - voms_apic.h, [25](#)
- VOMS_RetrieveFromCtx
 - voms_apic.h, [26](#)
- VOMS_RetrieveFromFile
 - voms_apic.h, [26](#)
- VOMS_RetrieveFromProxy
 - voms_apic.h, [26](#)
- VOMS_SetLifetime
 - voms_apic.h, [26](#)
- VOMS_SetTimeout
 - voms_apic.h, [27](#)
- VOMS_SetVerificationTime
 - voms_apic.h, [27](#)
- VOMS_SetVerificationType
 - voms_apic.h, [27](#)
- value
 - attribute, [5](#)
- vdir
 - vomsdata, [11](#)
- version
 - contactdata, [6](#)
 - voms, [10](#)
- vo
 - contactdata, [6](#)
- volen
 - vomsdata, [11](#)
- voms, [8](#)
 - ac, [8](#)
 - custom, [8](#)
 - datalen, [8](#)
 - date1, [8](#)
 - date2, [8](#)
 - fqan, [9](#)
 - holder, [9](#)
 - serial, [9](#)
 - server, [9](#)
 - serverca, [9](#)
 - siglen, [9](#)
 - signature, [9](#)
 - std, [9](#)
 - type, [9](#)
 - uri, [10](#)
 - user, [10](#)
 - userca, [10](#)
 - version, [10](#)
 - voname, [10](#)
- voms_apic.h, [13](#)
 - getMajorVersionNumber, [19](#)
 - getMinorVersionNumber, [19](#)
 - getPatchVersionNumber, [19](#)
 - gss_cred_id_t, [19](#)
 - gss_ctx_id_t, [19](#)
 - NOGLOBUS, [15](#)
 - RECURSE_CHAIN, [15](#)
 - RECURSE_NONE, [15](#)
 - TYPE_CUSTOM, [15](#)
 - TYPE_NODATA, [15](#)
 - TYPE_STD, [15](#)
 - VERIFY_CERTLIST, [15](#)
 - VERIFY_DATE, [16](#)
 - VERIFY_FULL, [16](#)
 - VERIFY_ID, [16](#)
 - VERIFY_KEY, [16](#)
 - VERIFY_NONE, [16](#)
 - VERIFY_NOTARGET, [16](#)
 - VERIFY_ORDER, [16](#)
 - VERIFY_SIGN, [16](#)
 - VERR_COMM, [16](#)
 - VERR_DIR, [16](#)
 - VERR_EXTRINFO, [16](#)
 - VERR_FORMAT, [17](#)
 - VERR_IDCHECK, [17](#)
 - VERR_MEM, [17](#)
 - VERR_NODATA, [17](#)
 - VERR_NOEXT, [17](#)
 - VERR_NOIDENT, [17](#)
 - VERR_NOINIT, [17](#)
 - VERR_NONE, [17](#)
 - VERR_NOSOCKET, [17](#)
 - VERR_NOTAVAIL, [18](#)
 - VERR_ORDER, [18](#)
 - VERR_PARAM, [18](#)
 - VERR_PARSE, [18](#)
 - VERR_SERVER, [18](#)
 - VERR_SERVERCODE, [18](#)
 - VERR_SIGN, [18](#)
 - VERR_TIME, [18](#)
 - VERR_TYPE, [18](#)
 - VERR_VERIFY, [19](#)
 - VOMS_AddTarget, [19](#)
 - VOMS_Contact, [19](#)
 - VOMS_ContactRaw, [20](#)
 - VOMS_Copy, [20](#)

- VOMS_CopyAll, [20](#)
- VOMS_DefaultData, [21](#)
- VOMS_Delete, [21](#)
- VOMS_DeleteContacts, [21](#)
- VOMS_Destroy, [21](#)
- VOMS_Duplicate, [21](#)
- VOMS_ErrorMessage, [21](#)
- VOMS_Export, [22](#)
- VOMS_FindByAlias, [22](#)
- VOMS_FindByVO, [22](#)
- VOMS_FreeTargets, [23](#)
- VOMS_FreeTargetsList, [23](#)
- VOMS_GetAC, [23](#)
- VOMS_GetAttribute, [23](#)
- VOMS_GetAttributeGrantor, [23](#)
- VOMS_GetAttributeSourceHandle, [23](#)
- VOMS_GetAttributeSourcesNumber, [23](#)
- VOMS_GetAttributesNumber, [23](#)
- VOMS_GetTargetsList, [23](#)
- VOMS_Import, [23](#)
- VOMS_Init, [24](#)
- VOMS_ListTargets, [24](#)
- VOMS_LoadCredentials, [24](#)
- VOMS_Ordering, [24](#)
- VOMS_ResetOrder, [24](#)
- VOMS_Retrieve, [24](#)
- VOMS_RetrieveEXT, [25](#)
- VOMS_RetrieveFromAC, [25](#)
- VOMS_RetrieveFromCred, [25](#)
- VOMS_RetrieveFromCtx, [26](#)
- VOMS_RetrieveFromFile, [26](#)
- VOMS_RetrieveFromProxy, [26](#)
- VOMS_SetLifetime, [26](#)
- VOMS_SetTimeout, [27](#)
- VOMS_SetVerificationTime, [27](#)
- VOMS_SetVerificationType, [27](#)
- vomsdata, [10](#)
 - cdir, [11](#)
 - data, [11](#)
 - extra_data, [11](#)
 - extralen, [11](#)
 - real, [11](#)
 - vdir, [11](#)
 - volen, [11](#)
 - workvo, [11](#)
- voname
 - voms, [10](#)
- workvo
 - vomsdata, [11](#)