

# 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:

<a href="#">voms_apic.h</a>	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 Field Documentation

##### 3.1.1.1 const char\* attribute::name

Definition at line 63 of file voms\_apic.h.

##### 3.1.1.2 const char\* attribute::qualifier

Definition at line 65 of file voms\_apic.h.

##### 3.1.1.3 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.

### 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.

<

#### 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 Field Documentation

#### 3.4.1.1 AC\* voms::ac

Definition at line 108 of file voms\_apic.h.



**3.4.1.2 char\* voms::custom**

The data returned by an S command

Definition at line 101 of file voms\_apic.h.

**3.4.1.3 int voms::datalen**

Definition at line 102 of file voms\_apic.h.

**3.4.1.4 char\* voms::date1**

Beginning of validity of the user info

Definition at line 97 of file voms\_apic.h.

**3.4.1.5 char\* voms::date2**

End of validity of the user info

Definition at line 98 of file voms\_apic.h.

**3.4.1.6 char\*\* voms::fqan**

User's attributes in compact format

Definition at line 104 of file voms\_apic.h.

**3.4.1.7 X509\* voms::holder**

Definition at line 109 of file voms\_apic.h.

**3.4.1.8 char\* voms::serial**

Serial number. Only significant if coming from AC. Null otherwise

Definition at line 105 of file voms\_apic.h.

**3.4.1.9 char\* voms::server**

The VOMS server DN, as from its certificate

Definition at line 93 of file voms\_apic.h.

**3.4.1.10 char\* voms::serverca**

The CA which signed the VOMS certificate

Definition at line 94 of file voms\_apic.h.

**3.4.1.11 int voms::siglen**

The length of the VOMS server signature

Definition at line 89 of file voms\_apic.h.

**3.4.1.12 char\* voms::signature**

The VOMS server signature

Definition at line 90 of file voms\_apic.h.

**3.4.1.13 struct data\*\* voms::std**

User's characteristics

Definition at line 100 of file voms\_apic.h.

**3.4.1.14 int voms::type**

The type of data returned

Definition at line 99 of file voms\_apic.h.

**3.4.1.15 char\* voms::uri**

The URI of the VOMS server

Definition at line 96 of file voms\_apic.h.

**3.4.1.16 char\* voms::user**

The user's DN, as from his certificate

Definition at line 91 of file voms\_apic.h.

**3.4.1.17 char\* voms::userca**

The CA which signed the user's certificate

Definition at line 92 of file voms\_apic.h.

#### 3.4.1.18 int voms::version

Definition at line 103 of file voms\_apic.h.

#### 3.4.1.19 char\* voms::voname

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 Field Documentation

#### 3.5.1.1 char\* vomsdata::cdir

Definition at line 153 of file voms\_apic.h.

#### 3.5.1.2 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 155 of file voms\_apic.h.

### 3.5.1.3 `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 160 of file `voms_apic.h`.

### 3.5.1.4 `int vomsdata::extralen`

Definition at line 170 of file `voms_apic.h`.

### 3.5.1.5 `struct vomsdata* vomsdata::real`

Definition at line 172 of file `voms_apic.h`.

### 3.5.1.6 `char* vomsdata::vdir`

Definition at line 154 of file `voms_apic.h`.

### 3.5.1.7 `int vomsdata::volen`

Definition at line 169 of file `voms_apic.h`.

### 3.5.1.8 `char* vomsdata::workvo`

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

Definition at line 158 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](#)

#### Defines

- #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\\_EXTRAINFO](#) 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 Define 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 142 of file voms\_apic.h.

**4.1.1.18 #define VERR\_EXTRAINFO 9**

VO name and URI missing

Definition at line 138 of file voms\_apic.h.

**4.1.1.19 #define VERR\_FORMAT 10**

Wrong data format

Definition at line 139 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 145 of file voms\_apic.h.

**4.1.1.22 #define VERR\_NODATA 11**

Empty extension

Definition at line 140 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 150 of file voms\_apic.h.

**4.1.1.29 #define VERR\_ORDER 19**

Ordering different than required

Definition at line 148 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 141 of file voms\_apic.h.

**4.1.1.32 #define VERR\_SERVER 15**

Unidentifiable VOMS server

Definition at line 144 of file voms\_apic.h.

**4.1.1.33 #define VERR\_SERVERCODE 20**

Error from the server

Definition at line 149 of file voms\_apic.h.

**4.1.1.34 #define VERR\_SIGN 14**

Signature error

Definition at line 143 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 147 of file voms\_apic.h.

#### 4.1.1.37 #define VERR\_VERIFY 17

Generic verification error

Definition at line 146 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\_Contract, 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 as a 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.
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4.1.3.11 void VOMS\_DeleteContacts ( struct contactdata \*\* *list* )

Frees a contactdata vector.

## Parameters

<i>list</i>	The vector to free.
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## 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/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 ) [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* )