

# VOMS C API Reference Manual

## 1.5.0

Generated by Doxygen 1.4.4

Tue Nov 2 23:01:42 2010



# Contents

<b>1</b>	<b>VOMS C API Data Structure Index</b>	<b>1</b>
1.1	VOMS C API Data Structures . . . . .	1
<b>2</b>	<b>VOMS C API File Index</b>	<b>3</b>
2.1	VOMS C API File List . . . . .	3
<b>3</b>	<b>VOMS C API Data Structure Documentation</b>	<b>5</b>
3.1	attribute Struct Reference . . . . .	5
3.2	contactdata Struct Reference . . . . .	6
3.3	data Struct Reference . . . . .	8
3.4	voms Struct Reference . . . . .	9
3.5	vomsdata Struct Reference . . . . .	12
<b>4</b>	<b>VOMS C API File Documentation</b>	<b>15</b>
4.1	voms_apic.h File Reference . . . . .	15



# Chapter 1

## VOMS C API Data Structure Index

### 1.1 VOMS C API Data Structures

Here are the data structures with brief descriptions:

<a href="#">attribute</a>	5
<a href="#">contactdata</a>	6
<a href="#">data</a> (User's characteristics: can be repeated )	8
<a href="#">voms</a>	9
<a href="#">vomsdata</a>	12



## Chapter 2

# VOMS C API File Index

### 2.1 VOMS C API File List

Here is a list of all files with brief descriptions:

<a href="#">voms_apic.h</a>	.....	15
-----------------------------	-------	----





## Chapter 3

# VOMS C API 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 53 of file voms\_apic.h.

#### 3.1.2 Field Documentation

##### 3.1.2.1 const char\* [attribute::name](#)

Definition at line 54 of file voms\_apic.h.

##### 3.1.2.2 const char\* [attribute::qualifier](#)

Definition at line 56 of file voms\_apic.h.

##### 3.1.2.3 const char\* [attribute::value](#)

Definition at line 55 of file voms\_apic.h.

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

- [voms\\_apic.h](#)

## 3.2 contactdata Struct Reference

```
#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

Definition at line 59 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 64 of file voms\_apic.h.

#### 3.2.2.2 char\* [contactdata::host](#)

The hostname of the server

Definition at line 63 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 62 of file voms\_apic.h.

#### 3.2.2.4 int [contactdata::port](#)

The port on which the server is listening

Definition at line 66 of file voms\_apic.h.

#### 3.2.2.5 char\* [contactdata::reserved](#)

HANDS OFF!

Definition at line 67 of file voms\_apic.h.

### 3.2.2.6 int [contactdata::version](#)

The version of Globus on which this server runs.

Definition at line 68 of file voms\_apic.h.

### 3.2.2.7 char\* [contactdata::vo](#)

The VO served by this server

Definition at line 65 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 47 of file voms\_apic.h.

### 3.3.2 Field Documentation

#### 3.3.2.1 char\* [data::cap](#)

user's capability

Definition at line 50 of file voms\_apic.h.

#### 3.3.2.2 char\* [data::group](#)

user's group

Definition at line 48 of file voms\_apic.h.

#### 3.3.2.3 char\* [data::role](#)

user's role

Definition at line 49 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](#)
- data \*\* [std](#)
- char \* [custom](#)
- int [datalen](#)
- int [version](#)
- char \*\* [fqan](#)
- char \* [serial](#)
- AC \* [ac](#)
- X509 \* [holder](#)

### 3.4.1 Detailed Description

Definition at line 79 of file voms\_apic.h.

### 3.4.2 Field Documentation

#### 3.4.2.1 AC\* [voms::ac](#)

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

#### 3.4.2.2 char\* [voms::custom](#)

The data returned by an S command

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

#### 3.4.2.3 int [voms::datalen](#)

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

**3.4.2.4 char\* voms::date1**

Beginning of validity of the user info

Definition at line 88 of file voms\_apic.h.

**3.4.2.5 char\* voms::date2**

End of validity of the user info

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

**3.4.2.6 char\*\* voms::fqan**

User's attributes in compact format

Definition at line 95 of file voms\_apic.h.

**3.4.2.7 X509\* voms::holder**

Definition at line 100 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 96 of file voms\_apic.h.

**3.4.2.9 char\* voms::server**

The VOMS server DN, as from its certificate

Definition at line 84 of file voms\_apic.h.

**3.4.2.10 char\* voms::serverca**

The CA which signed the VOMS certificate

Definition at line 85 of file voms\_apic.h.

**3.4.2.11 int voms::siglen**

The length of the VOMS server signature

Definition at line 80 of file voms\_apic.h.

**3.4.2.12 char\* voms::signature**

The VOMS server signature

Definition at line 81 of file voms\_apic.h.

**3.4.2.13 struct data\*\* voms::std**

User's characteristics

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

**3.4.2.14 int voms::type**

The type of data returned

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

**3.4.2.15 char\* voms::uri**

The URI of the VOMS server

Definition at line 87 of file voms\_apic.h.

**3.4.2.16 char\* voms::user**

The user's DN, as from his certificate

Definition at line 82 of file voms\_apic.h.

**3.4.2.17 char\* voms::userca**

The CA which signed the user's certificate

Definition at line 83 of file voms\_apic.h.

**3.4.2.18 int voms::version**

Definition at line 94 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 86 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](#)
- voms \*\* [data](#)
- char \* [workvo](#)
- char \* [extra\\_data](#)
- int [volen](#)
- int [extralen](#)
- vomsdata \* [real](#)

#### 3.5.1 Detailed Description

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

#### 3.5.2 Field Documentation

##### 3.5.2.1 char\* [vomsdata::cdir](#)

Definition at line 144 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 146 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 151 of file voms\_apic.h.

##### 3.5.2.4 int [vomsdata::extralen](#)

Definition at line 161 of file voms\_apic.h.

##### 3.5.2.5 struct vomsdata\* [vomsdata::real](#)

Definition at line 163 of file voms\_apic.h.



**3.5.2.6 char\* [vomsdata::vdir](#)**

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

**3.5.2.7 int [vomsdata::volen](#)**

Definition at line 160 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 149 of file voms\_apic.h.

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

- [voms\\_apic.h](#)



## Chapter 4

# VOMS C API File Documentation

### 4.1 voms\_apic.h File Reference

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

#### Data Structures

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

#### Defines

- #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

## Functions

- [contactdata \\*\\* VOMS\\_FindByAlias](#) (struct [vomsdata](#) \*vd, char \*alias, char \*system, char \*user, int \*error)
- [contactdata \\*\\* VOMS\\_FindByVO](#) (struct [vomsdata](#) \*vd, char \*vo, char \*system, char \*user, int \*error)
- void [VOMS\\_DeleteContacts](#) (struct [contactdata](#) \*\*list)
- [vomsdata \\* VOMS\\_Init](#) (char \*voms, char \*cert)
- [voms \\* VOMS\\_Copy](#) (struct [voms](#) \*v, int \*error)
- [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)
- 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\\_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)
- [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)

### 4.1.1 Define Documentation

#### 4.1.1.1 #define RECURSE\_CHAIN 0

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

#### 4.1.1.2 #define RECURSE\_NONE 1

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

#### 4.1.1.3 #define TYPE\_CUSTOM 2

result of an S command

Definition at line 76 of file voms\_apic.h.

#### 4.1.1.4 #define TYPE\_NODATA 0

no data

Definition at line 74 of file voms\_apic.h.

**4.1.1.5 #define TYPE\_STD 1**

group, role, capability triplet

Definition at line 75 of file voms\_apic.h.

**4.1.1.6 #define VERIFY\_CERTLIST 0x00000040**

Definition at line 115 of file voms\_apic.h.

**4.1.1.7 #define VERIFY\_DATE 0x00000001**

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

**4.1.1.8 #define VERIFY\_FULL 0xffffffff**

Definition at line 107 of file voms\_apic.h.

**4.1.1.9 #define VERIFY\_ID 0x00000020**

Definition at line 114 of file voms\_apic.h.

**4.1.1.10 #define VERIFY\_KEY 0x00000004**

Definition at line 111 of file voms\_apic.h.

**4.1.1.11 #define VERIFY\_NONE 0x00000000**

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

**4.1.1.12 #define VERIFY\_NOTARGET 0x00000002**

Definition at line 110 of file voms\_apic.h.

**4.1.1.13 #define VERIFY\_ORDER 0x00000010**

Definition at line 113 of file voms\_apic.h.

**4.1.1.14 #define VERIFY\_SIGN 0x00000008**

Definition at line 112 of file voms\_apic.h.

**4.1.1.15 #define VERR\_COMM 3**

Server problem

Definition at line 122 of file voms\_apic.h.

**4.1.1.16 #define VERR\_DIR 13**

Directory error

Definition at line 133 of file voms\_apic.h.

**4.1.1.17 #define VERR\_EXTRAINFO 9**

VO name and URI missing

Definition at line 129 of file voms\_apic.h.

**4.1.1.18 #define VERR\_FORMAT 10**

Wrong data format

Definition at line 130 of file voms\_apic.h.

**4.1.1.19 #define VERR\_IDCHECK 8**

User data in extension different from the real ones

Definition at line 127 of file voms\_apic.h.

**4.1.1.20 #define VERR\_MEM 16**

Memory problems

Definition at line 136 of file voms\_apic.h.

**4.1.1.21 #define VERR\_NODATA 11**

Empty extension

Definition at line 131 of file voms\_apic.h.

**4.1.1.22 #define VERR\_NOEXT 5**

VOMS extension missing

Definition at line 124 of file voms\_apic.h.

**4.1.1.23 #define VERR\_NOIDENT 2**

Cannot identify itself (certificate problem)

Definition at line 121 of file voms\_apic.h.

**4.1.1.24 #define VERR\_NOINIT 6**

Initialization error

Definition at line 125 of file voms\_apic.h.

**4.1.1.25 #define VERR\_NONE 0**

Error codes.

Definition at line 119 of file voms\_apic.h.

**4.1.1.26 #define VERR\_NOSOCKET 1**

Socket problem

Definition at line 120 of file voms\_apic.h.

**4.1.1.27 #define VERR\_NOTAVAIL 21**

Method not available

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

**4.1.1.28 #define VERR\_ORDER 19**

Ordering different than required

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

**4.1.1.29 #define VERR\_PARAM 4**

Wrong parameters

Definition at line 123 of file voms\_apic.h.

**4.1.1.30 #define VERR\_PARSE 12**

Parse error

Definition at line 132 of file voms\_apic.h.

**4.1.1.31 #define VERR\_SERVER 15**

Unidentifiable VOMS server

Definition at line 135 of file voms\_apic.h.

**4.1.1.32 #define VERR\_SERVERCODE 20**

Error from the server

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

**4.1.1.33 #define VERR\_SIGN 14**

Signature error

Definition at line 134 of file voms\_apic.h.



**4.1.1.34 #define VERR\_TIME 7**

Error in time checking

Definition at line 126 of file voms\_apic.h.

**4.1.1.35 #define VERR\_TYPE 18**

Returned data of unknown type

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

**4.1.1.36 #define VERR\_VERIFY 17**

Generic verification error

Definition at line 137 of file voms\_apic.h.

**4.1.2 Function Documentation****4.1.2.1 int getMajorVersionNumber (void)****4.1.2.2 int getMinorVersionNumber (void)****4.1.2.3 int getPatchVersionNumber (void)****4.1.2.4 int VOMS\_AddTarget (struct vomsdata \* *vd*, char \* *target*, int \* *error*)**

Adds a target to the AC.

**Parameters:**

*vd* The vomsdata structure.

*target* The target to add. It should be a FQDN.

*error* RETURN PARAMETER: qualifies the error message.

**Returns:**

failure (0) or success (<>0)

**4.1.2.5 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:**

*hostname* FQDN of the VOMS server

*port* the port on which the VOMS server is listening

*servsubject* the subject of the server's certificate

*command* Command

*vd* RETURN PARAMETER: contains the data returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.2.6 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:**

*data* and

*datalen* fields.

*hostname* FQDN of the VOMS server

*port* the port on which the VOMS server is listening

*servsubject* the subject of the server's certificate

*command* the command sent to the server

*version* is the version number of the data.

*vd* RETURN PARAMETER: contains the data returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.2.7 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:**

*v* The structure to copy.

*error* RETURN PARAMETER: qualifies the error message.

**Returns:**

NULL (error) or the new voms structure.

**4.1.2.8 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 as a copy of another vomsdata structure.

**Parameters:**

*vd* The structure to copy.

*error* RETURN PARAMETER: qualifies the error message.

**Returns:**

NULL (error) or the new vomsdata structure.

**4.1.2.9 struct voms\* VOMS\_DefaultData (struct vomsdata \* vd, int \* error)**

Gets the default attributes from a vomsdata structure.

**Parameters:**

- vd* the vomsdata structure to analyze
- error* RETURN PARAMETER: Qualifies the error message

**Returns:**

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

**4.1.2.10 void VOMS\_Delete (struct voms \* v)**

Deletes a voms structure

**Parameters:**

- v* Pointer to the structure to delete.

**4.1.2.11 void VOMS\_DeleteContacts (struct contactdata \*\* list)**

Frees a contactdata vector.

**Parameters:**

- list* The vector to free.

**Returns:**

NONE

**4.1.2.12 void VOMS\_Destroy (struct vomsdata \* vd)**

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

**4.1.2.13 struct vomsdata\* VOMS\_Duplicate (struct vomsdata \* vd)****4.1.2.14 char\* VOMS\_ErrorMessage (struct vomsdata \* vd, int error, char \* buffer, int len)**

Gets a textual description of the error.

**Parameters:**

- vd* The vomsdata structure to analyze
- error* The error returned by the last function
- buffer* 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.
- len* The length of the memory pointed to by the buffer parameter.

**Returns:**

A pointer to the error message.

#### 4.1.2.15 `int VOMS_Export (char ** buffer, int * buflen, struct vomsdata * vd, int * error)`

Converts data into a test format

##### Parameters:

- buffer* OUTPUT PARAMETER contains the converted data
- buflen* OUTPUT PARAMETER contains the length of buffer
- vd* contains the data to convert
- error* RETURN PARAMETER Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.2.16 `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:

- vd* The correctly initialized vomsdata structured.
- alias* The alias to look for.
- system* The directory in which to look for the system configuration files. If NULL, defaults to /opt/edc/etc/vomses
- user* 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.
- error* 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.

#### 4.1.2.17 `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:

- vd* The correctly initialized vomsdata structured.
- vo* The VO to look for.
- system* The directory in which to look for the system configuration files. If NULL, defaults to /opt/edc/etc/vomses
- user* 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.
- error* 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.

**4.1.2.18 void VOMS\_FreeTargets (struct vomsdata \* vd, int \* error)**

Delete the targets from the AC.

**Parameters:**

*vd* The vomsdata structure.

*error* RETURN PARAMETER: qualifies the error message.

**4.1.2.19 void VOMS\_FreeTargetsList (char \*\*)****4.1.2.20 AC\* VOMS\_GetAC (struct voms \* v)****4.1.2.21 int VOMS\_GetAttribute (struct voms \* v, int handle, int num, struct attribute \* at, struct vomsdata \* vd, int \* error)****4.1.2.22 const char\* VOMS\_GetAttributeGrantor (struct voms \* v, int handle, struct vomsdata \* vd, int \* error)****4.1.2.23 int VOMS\_GetAttributesNumber (struct voms \* v, int handle, struct vomsdata \* vd, int \* error)****4.1.2.24 int VOMS\_GetAttributeSourceHandle (struct voms \* v, int num, struct vomsdata \* vd, int \* error)****4.1.2.25 int VOMS\_GetAttributeSourcesNumber (struct voms \* v, struct vomsdata \* vd, int \* error)****4.1.2.26 char\*\* VOMS\_GetTargetsList (struct voms \* v, struct vomsdata \* vd, int \* error)****4.1.2.27 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:**

*buffer* contains the data to be converted

*buflen* contains the length of buffer

*vd* RETURN PARAMETER: contains the data returned by the connection

*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

#### 4.1.2.28 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:

*voms* The directory which contains the certificates of the VOMS servers

*cert* 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.

#### 4.1.2.29 char\* VOMS\_ListTargets (struct [vomsdata](#) \* *vd*, int \* *error*)

#### 4.1.2.30 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:

*order* the group:role attribute.

*vd* RETURN PARAMETER: contains the modified data.

*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.2.31 int VOMS\_ResetOrder (struct [vomsdata](#) \* *vd*, int \* *error*)

Unsets the return order of the attributes.

##### Parameters:

*vd* RETURN PARAMETER: contains the modified data.

*error* RETURN PARAMETER: Qualifies the error message

##### Returns:

failure (0) or success (<>0)

#### 4.1.2.32 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:**

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

**Returns:**

failure (0) or success (<>0)

**4.1.2.33 int VOMS\_RetrieveEXT (X509\_EXTENSION \* *ext*, struct vomsdata \* *vd*, int \* *error*)**

Gets VOMS information from the given extension

**Parameters:**

*ext* The extension to parse.  
*vd* RETURN PARAMETER: contains the data returned by the connection  
*error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.2.34 int VOMS\_RetrieveFromCred (gss\_cred\_id\_t *cred*, int *how*, struct vomsdata \* *vd*, int \* *error*)**

Gets VOMS information from the given globus credential

**Parameters:**

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

**Returns:**

failure (0) or success (<>0)

**4.1.2.35 int VOMS\_RetrieveFromCtx (gss\_ctx\_id\_t *ctx*, int *how*, struct vomsdata \* *vd*, int \* *error*)**

Gets VOMS information from the given globus context

**Parameters:**

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

**Returns:**

failure (0) or success (<>0)

**4.1.2.36 int VOMS\_RetrieveFromFile (FILE \**file*, int *how*, struct [vomsdata](#) \* *vd*, int \* *error*)**

Gets VOMS information from the given globus credential

**Parameters:**

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

**Returns:**

failure (0) or success (<>0)

**4.1.2.37 int VOMS\_RetrieveFromProxy (int *how*, struct [vomsdata](#) \* *vd*, int \* *error*)**

Gets VOMS information from an existing globus proxy

**Parameters:**

- how* Recursion type
- vd* RETURN PARAMETER: contains the data returned by the connection
- error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.2.38 int VOMS\_SetLifetime (int *length*, struct [vomsdata](#) \* *vd*, int \* *error*)**

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

**Parameters:**

- length* Lifetime requested.
- vd* RETURN PARAMETER: contains the modified data.
- error* RETURN PARAMETER: Qualifies the error message

**Returns:**

failure (0) or success (<>0)

**4.1.2.39 int VOMS\_SetTimeout (int *t*, struct [vomsdata](#) \* *vd*, int \* *error*)****4.1.2.40 int VOMS\_SetVerificationTime (time\_t *verificationtime*, struct [vomsdata](#) \* *vd*, int \* *error*)****4.1.2.41 int VOMS\_SetVerificationType (int *type*, struct [vomsdata](#) \* *vd*, int \* *error*)**



# Index

ac  
    voms, 9  
attribute, 5  
    name, 5  
    qualifier, 5  
    value, 5  
  
cap  
    data, 8  
cdir  
    vomldata, 12  
contact  
    contactdata, 6  
contactdata, 6  
    contact, 6  
    host, 6  
    nick, 6  
    port, 6  
    reserved, 6  
    version, 6  
    vo, 7  
custom  
    voms, 9  
  
data, 8  
    cap, 8  
    group, 8  
    role, 8  
    vomldata, 12  
datalen  
    voms, 9  
date1  
    voms, 9  
date2  
    voms, 10  
  
extra\_data  
    vomldata, 12  
extralen  
    vomldata, 12  
  
fqan  
    voms, 10  
  
getMajorVersionNumber  
    voms\_apic.h, 21  
  
getMinorVersionNumber  
    voms\_apic.h, 21  
getPatchVersionNumber  
    voms\_apic.h, 21  
group  
    data, 8  
  
holder  
    voms, 10  
host  
    contactdata, 6  
  
name  
    attribute, 5  
nick  
    contactdata, 6  
  
port  
    contactdata, 6  
  
qualifier  
    attribute, 5  
  
real  
    vomldata, 12  
RECURSE\_CHAIN  
    voms\_apic.h, 17  
RECURSE\_NONE  
    voms\_apic.h, 17  
reserved  
    contactdata, 6  
role  
    data, 8  
  
serial  
    voms, 10  
server  
    voms, 10  
serverca  
    voms, 10  
siglen  
    voms, 10  
signature  
    voms, 10  
std  
    voms, 10

- type
  - voms, 11
- TYPE\_CUSTOM
  - voms\_apic.h, 17
- TYPE\_NODATA
  - voms\_apic.h, 17
- TYPE\_STD
  - voms\_apic.h, 17
- uri
  - voms, 11
- user
  - voms, 11
- userca
  - voms, 11
- value
  - attribute, 5
- vdir
  - vomsdata, 12
- VERIFY\_CERTLIST
  - voms\_apic.h, 18
- VERIFY\_DATE
  - voms\_apic.h, 18
- VERIFY\_FULL
  - voms\_apic.h, 18
- VERIFY\_ID
  - voms\_apic.h, 18
- VERIFY\_KEY
  - voms\_apic.h, 18
- VERIFY\_NONE
  - voms\_apic.h, 18
- VERIFY\_NOTARGET
  - voms\_apic.h, 18
- VERIFY\_ORDER
  - voms\_apic.h, 18
- VERIFY\_SIGN
  - voms\_apic.h, 18
- VERR\_COMM
  - voms\_apic.h, 18
- VERR\_DIR
  - voms\_apic.h, 18
- VERR\_EXTRINFO
  - voms\_apic.h, 19
- VERR\_FORMAT
  - voms\_apic.h, 19
- VERR\_IDCHECK
  - voms\_apic.h, 19
- VERR\_MEM
  - voms\_apic.h, 19
- VERR\_NODATA
  - voms\_apic.h, 19
- VERR\_NOEXT
  - voms\_apic.h, 19
- VERR\_NOIDENT
  - voms\_apic.h, 19
- VERR\_NOINIT
  - voms\_apic.h, 19
- VERR\_NONE
  - voms\_apic.h, 19
- VERR\_NOSOCKET
  - voms\_apic.h, 20
- VERR\_NOTAVAIL
  - voms\_apic.h, 20
- VERR\_ORDER
  - voms\_apic.h, 20
- VERR\_PARAM
  - voms\_apic.h, 20
- VERR\_PARSE
  - voms\_apic.h, 20
- VERR\_SERVER
  - voms\_apic.h, 20
- VERR\_SERVERCODE
  - voms\_apic.h, 20
- VERR\_SIGN
  - voms\_apic.h, 20
- VERR\_TIME
  - voms\_apic.h, 20
- VERR\_TYPE
  - voms\_apic.h, 21
- VERR\_VERIFY
  - voms\_apic.h, 21
- version
  - contactdata, 6
  - voms, 11
- vo
  - contactdata, 7
- volen
  - vomsdata, 13
- voms, 9
  - ac, 9
  - custom, 9
  - datalen, 9
  - date1, 9
  - date2, 10
  - fqan, 10
  - holder, 10
  - serial, 10
  - server, 10
  - serverca, 10
  - siglen, 10
  - signature, 10
  - std, 10
  - type, 11
  - uri, 11
  - user, 11
  - userca, 11
  - version, 11

- voname, 11
- VOMS\_AddTarget
  - voms\_apic.h, 21
- voms\_apic.h, 15
  - getMajorVersionNumber, 21
  - getMinorVersionNumber, 21
  - getPatchVersionNumber, 21
  - RECURSE\_CHAIN, 17
  - RECURSE\_NONE, 17
  - TYPE\_CUSTOM, 17
  - TYPE\_NODATA, 17
  - TYPE\_STD, 17
  - VERIFY\_CERTLIST, 18
  - VERIFY\_DATE, 18
  - VERIFY\_FULL, 18
  - VERIFY\_ID, 18
  - VERIFY\_KEY, 18
  - VERIFY\_NONE, 18
  - VERIFY\_NOTARGET, 18
  - VERIFY\_ORDER, 18
  - VERIFY\_SIGN, 18
  - VERR\_COMM, 18
  - VERR\_DIR, 18
  - VERR\_EXTRAINFO, 19
  - VERR\_FORMAT, 19
  - VERR\_IDCHECK, 19
  - VERR\_MEM, 19
  - VERR\_NODATA, 19
  - VERR\_NOEXT, 19
  - VERR\_NOIDENT, 19
  - VERR\_NOINIT, 19
  - VERR\_NONE, 19
  - VERR\_NOSOCKET, 20
  - VERR\_NOTAVAIL, 20
  - VERR\_ORDER, 20
  - VERR\_PARAM, 20
  - VERR\_PARSE, 20
  - VERR\_SERVER, 20
  - VERR\_SERVERCODE, 20
  - VERR\_SIGN, 20
  - VERR\_TIME, 20
  - VERR\_TYPE, 21
  - VERR\_VERIFY, 21
  - VOMS\_AddTarget, 21
  - VOMS\_Contact, 21
  - VOMS\_ContactRaw, 22
  - VOMS\_Copy, 22
  - VOMS\_CopyAll, 22
  - VOMS\_DefaultData, 22
  - VOMS\_Delete, 23
  - VOMS\_DeleteContacts, 23
  - VOMS\_Destroy, 23
  - VOMS\_Duplicate, 23
  - VOMS\_ErrorMessage, 23
  - VOMS\_Export, 23
  - VOMS\_FindByAlias, 24
  - VOMS\_FindByVO, 24
  - VOMS\_FreeTargets, 25
  - VOMS\_FreeTargetsList, 25
  - VOMS\_GetAC, 25
  - VOMS\_GetAttribute, 25
  - VOMS\_GetAttributeGrantor, 25
  - VOMS\_GetAttributesNumber, 25
  - VOMS\_GetAttributeSourceHandle, 25
  - VOMS\_GetAttributeSourcesNumber, 25
  - VOMS\_GetTargetsList, 25
  - VOMS\_Import, 25
  - VOMS\_Init, 25
  - VOMS\_ListTargets, 26
  - VOMS\_Ordering, 26
  - VOMS\_ResetOrder, 26
  - VOMS\_Retrieve, 26
  - VOMS\_RetrieveEXT, 27
  - VOMS\_RetrieveFromCred, 27
  - VOMS\_RetrieveFromCtx, 27
  - VOMS\_RetrieveFromFile, 27
  - VOMS\_RetrieveFromProxy, 28
  - VOMS\_SetLifetime, 28
  - VOMS\_SetTimeout, 28
  - VOMS\_SetVerificationTime, 28
  - VOMS\_SetVerificationType, 28
- VOMS\_Contact
  - voms\_apic.h, 21
- VOMS\_ContactRaw
  - voms\_apic.h, 22
- VOMS\_Copy
  - voms\_apic.h, 22
- VOMS\_CopyAll
  - voms\_apic.h, 22
- VOMS\_DefaultData
  - voms\_apic.h, 22
- VOMS\_Delete
  - voms\_apic.h, 23
- VOMS\_DeleteContacts
  - voms\_apic.h, 23
- VOMS\_Destroy
  - voms\_apic.h, 23
- VOMS\_Duplicate
  - voms\_apic.h, 23
- VOMS\_ErrorMessage
  - voms\_apic.h, 23
- VOMS\_Export
  - voms\_apic.h, 23
- VOMS\_FindByAlias
  - voms\_apic.h, 24
- VOMS\_FindByVO
  - voms\_apic.h, 24
- VOMS\_FreeTargets

- voms\_apic.h, [25](#)
- VOMS\_FreeTargetsList
  - voms\_apic.h, [25](#)
- VOMS\_GetAC
  - voms\_apic.h, [25](#)
- VOMS\_GetAttribute
  - voms\_apic.h, [25](#)
- VOMS\_GetAttributeGrantor
  - voms\_apic.h, [25](#)
- VOMS\_GetAttributesNumber
  - voms\_apic.h, [25](#)
- VOMS\_GetAttributeSourceHandle
  - voms\_apic.h, [25](#)
- VOMS\_GetAttributeSourcesNumber
  - voms\_apic.h, [25](#)
- VOMS\_GetTargetsList
  - voms\_apic.h, [25](#)
- VOMS\_Import
  - voms\_apic.h, [25](#)
- VOMS\_Init
  - voms\_apic.h, [25](#)
- VOMS\_ListTargets
  - voms\_apic.h, [26](#)
- VOMS\_Ordering
  - voms\_apic.h, [26](#)
- VOMS\_ResetOrder
  - voms\_apic.h, [26](#)
- VOMS\_Retrieve
  - voms\_apic.h, [26](#)
- VOMS\_RetrieveEXT
  - voms\_apic.h, [27](#)
- VOMS\_RetrieveFromCred
  - voms\_apic.h, [27](#)
- VOMS\_RetrieveFromCtx
  - voms\_apic.h, [27](#)
- VOMS\_RetrieveFromFile
  - voms\_apic.h, [27](#)
- VOMS\_RetrieveFromProxy
  - voms\_apic.h, [28](#)
- VOMS\_SetLifetime
  - voms\_apic.h, [28](#)
- VOMS\_SetTimeout
  - voms\_apic.h, [28](#)
- VOMS\_SetVerificationTime
  - voms\_apic.h, [28](#)
- VOMS\_SetVerificationType
  - voms\_apic.h, [28](#)
- vomsdata, [12](#)
  - cdir, [12](#)
  - data, [12](#)
  - extra\_data, [12](#)
  - extralen, [12](#)
  - real, [12](#)
  - vdir, [12](#)
- volen, [13](#)
- workvo, [13](#)
- voname
  - voms, [11](#)
- workvo
  - vomsdata, [13](#)