# edg-lcmaps Reference Manual

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# Chapter 1

# LCMAPS - Local Credential MAPping Service

## 1.1 Introduction

This document describes the LCMAPS API and the LCMAPS plugins. Please check the links above.

## 1.2 the LCMAPS Interfaces

1. The interface to the LCMAPS credential mapping framework is described in Interface to LCMAPS (library)
2. The LCMAPS plugins should use the LCMAPS API described in The API to be used by the LCMAPS plugins
3. The interface that the plugins should provide to the LCMAPS framework is described in The interface to the LCMAPS plugins

## 1.3 The LCMAPS plugins

A description of the LCMAPS plugins can be found here ...

... the basic plugins:

1. posix enforcement plugin
2. ldap enforcement plugin
3. localaccount plugin

4. poolaccount plugin

... the voms-aware plugins:

1. voms plugin
2. voms poolaccount plugin
3. voms localgroup plugin
4. voms poolgroup plugin

... miscellaneous:

1. afs plugin
2. Job Repository plugin

# Chapter 2

# edg-lcmaps Module Index

## 2.1 edg-lcmaps Modules

Here is a list of all modules:

Interface to LCMAPS (library) . . . . . 11
The API to be used by the LCMAPS plugins . . . . . 12
The interface to the LCMAPS plugins . . . . . 13

# Chapter 3

# edg-lcmaps Data Structure Index

## 3.1 edg-lcmaps Data Structures

Here are the data structures with brief descriptions:


**cred_data_s** (Structure that contains the gathered (local) credentials en VOMS info) . . . . . 15
**lcmaps_argument_s** (Structure representing an LCMAPS plugin run argument) . . . . . 18
**lcmaps_cred_id_s** (Structure representing an LCMAPS credential) . . . . . 20
**lcmaps_db_entry_s** (LCMAPS data base element structure) . . . . . 21
**lcmaps_plugindl_s** (The lcmaps plugin module structure) . . . . . 23
**lcmaps_vo_data_s** (Structure that contains the VO information found in the user's gss credential) 25
**lcmaps_vo_mapping_s** (Structure that contains the VO information string (or FQAN) and the local Gid it is mapped to) . . . . . 27
**plugin_s** (Structure holds a plugin name and its arguments, as well as the line number the plugin is first mentioned) . . . . . 28
**policy_s** (Keeping track of found policies) . . . . . 29
**record_s** (Structure is used to keep track of strings and the line they appear on) . . . . . 30
**rule_s** (Structure keeps track of the state and the true/false braches) . . . . . 31
**var_s** (Structure keeps track of the variables, their value and the line number they are defined on) 32

# Chapter 4

# edg-lcmaps File Index

## 4.1 edg-lcmaps File List

Here is a list of all documented files with brief descriptions:


**_lcmaps_cred_data.h** (Internal header file of LCMAPS credential data) . . . . . 33
**_lcmaps_db_read.h** (Internal header file of LCMAPS database reader) . . . . . 35
**_lcmaps_defines.h** (Internal header file with some common defines for LCMAPS) . . . . . 38
**_lcmaps_log.h** (Internal header file for LCMAPS logging routines) . . . . . 40
**_lcmaps_pluginmanager.h** (API of the PluginManager) . . . . . 43
**_lcmaps_runvars.h** (API of runvars structure) . . . . . 46
**_lcmaps_utils.h** (Internal header for the LCMAPS utilities) . . . . . 49
**evaluationmanager.c** (Implementation of the evaluation manager interface) . . . . . 52
**evaluationmanager.h** (Evaluation Manager interface definition) . . . . . 55
**lcmaps.c** (The LCMAPS module - the local credential mapping service) . . . . . 58
**lcmaps.h** (API of the LCMAPS library) . . . . . 60
**lcmaps_arguments.c** (LCMAPS module for creating and passing introspect/run argument lists) 63
**lcmaps_arguments.h** (Public header file to be used by plugins) . . . . . 64
**lcmaps_cred_data.c** (Routines to handle lcmaps credential data) . . . . . 68
**lcmaps_cred_data.h** (Public header file to be used by plugins) . . . . . 70
**lcmaps_db_read.c** (The LCMAPS database reader) . . . . . 73
**lcmaps_db_read.h** (Header file for LCMAPS database structure) . . . . . 78
**lcmaps_defines.h** (Public header file with common definitions for the LCMAPS (authorization modules)) . . . . . 80
**lcmaps_gss_assist_gridmap.c** (Legacy interface for LCMAPS) . . . . . 83
**lcmaps_jobrep.c** (Plugin to get data for the Job Repository Database) . . . . . 84
**lcmaps_ldap.c** (Interface to the LCMAPS plugins) . . . . . 88
**lcmaps_localaccount.c** (Interface to the LCMAPS plugins) . . . . . 92
**lcmaps_log.c** (Logging routines for LCMAPS) . . . . . 93
**lcmaps_log.h** (Logging API for the LCMAPS plugins and LCMAPS itself) . . . . . 96
**lcmaps_modules.h** (The LCMAPS authorization plugins/modules should ”include” this file) . . 99
**lcmaps_plugin_example.c** (Interface to the LCMAPS plugins) . . . . . 101
**lcmaps_pluginmanager.c** (The plugin manager for LCMAPS) . . . . . 102
**lcmaps_poolaccount.c** (Interface to the LCMAPS plugins) . . . . . 109
**lcmaps_posix.c** (Interface to the LCMAPS plugins) . . . . . 110
**lcmaps_runvars.c** (Extract variables that will be used by the plugins) . . . . . 112
**lcmaps_test.c** (Program to test the LCMAPS and its plugins) . . . . . 114
**lcmaps_types.h** (Public header file with typedefs for LCMAPS) . . . . . 115

**lcmaps_utils.c** (The utilities for the LCMAPS) . . . . . 117
**lcmaps_utils.h** (API for the utilities for the LCMAPS) . . . . . 119
**lcmaps_vo_data.c** (LCMAPS utilities for creating and accessing VO data structures) . . . . . 123
**lcmaps_vo_data.h** (LCMAPS module for creating and accessing VO data structures) . . . . . 124
**lcmaps_voms.c** (Interface to the LCMAPS plugins) . . . . . 131
**lcmaps_voms_localgroup.c** (Interface to the LCMAPS plugins) . . . . . 133
**lcmaps_voms_poolaccount.c** (Interface to the LCMAPS plugins) . . . . . 135
**lcmaps_voms_poolgroup.c** (Interface to the LCMAPS plugins) . . . . . 136
**pdl.h** (General include file) . . . . . 138
**pdl_main.c** (All functions that do not fit elsewhere can be found here) . . . . . 144
**pdl_policy.c** (Implementation of the pdl policies) . . . . . 151
**pdl_policy.h** (Include file for using the pdl policies) . . . . . 155
**pdl_rule.c** (Implementation of the pdl rules) . . . . . 159
**pdl_rule.h** (Include file for using the pdl rules) . . . . . 166
**pdl_variable.c** (Implementation of the pdl variables) . . . . . 171
**pdl_variable.h** (Include file for using the pdl variables) . . . . . 175

# Chapter 5

# edg-lcmaps Page Index

## 5.1 edg-lcmaps Related Pages

Here is a list of all related documentation pages:


Job Repository plugin . . . . . 179
afs plugin . . . . . 182
example plugin . . . . . 184
ldap enforcement plugin . . . . . 185
localaccount plugin . . . . . 188
poolaccount plugin . . . . . 190
posix enforcement plugin . . . . . 193
voms plugin . . . . . 196
voms localgroup plugin . . . . . 198
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# Chapter 6

# edg-lcmaps Module Documentation

## 6.1 Interface to LCMAPS (library)

The API is available by including the header lcmaps.h.

### Files

- file lcmaps.h
  *API of the LCMAPS library.*

### 6.1.1 Detailed Description

The API is available by including the header lcmaps.h.

## 6.2 The API to be used by the LCMAPS plugins

The API is available by including the header lcmaps_modules.h.

### Files

- file lcmaps_arguments.h

  *Public header file to be used by plugins.*

- file lcmaps_cred_data.h

  *Public header file to be used by plugins.*

- file lcmaps_defines.h

  *Public header file with common definitions for the LCMAPS (authorization modules).*

- file lcmaps_log.h

  *Logging API for the LCMAPS plugins and LCMAPS itself.*

- file lcmaps_modules.h

  *The LCMAPS authorization plugins/modules should "include" this file.*

- file lcmaps_types.h

  *Public header file with typedefs for LCMAPS.*

- file lcmaps_utils.h

  *API for the utilities for the LCMAPS.*

- file lcmaps_vo_data.h

  *LCMAPS module for creating and accessing VO data structures.*

### 6.2.1 Detailed Description

The API is available by including the header lcmaps_modules.h.

## 6.3 The interface to the LCMAPS plugins

Here the interface is shown that the plugin has to provide to the LCMAPS. The interface consists of the following functions:

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

# Chapter 7

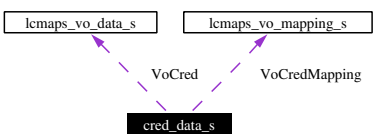
# edg-lcmaps Class Documentation

## 7.1 cred_data_s Struct Reference

structure that contains the gathered (local) credentials en VOMS info.

`#include <lcmaps_cred_data.h>`

Collaboration diagram for cred_data_s:




### Data Fields

- char* dn
- uid_t* uid
- gid_t* priGid
- gid_t* secGid
- lcmaps_vo_data_t* VoCred
- char** VoCredString
- lcmaps_vo_mapping_t* VoCredMapping
- int cntUid
- int cntPriGid
- int cntSecGid
- int cntVoCred
- int cntVoCredString
- int cntVoCredMapping

### 7.1.1 Detailed Description

structure that contains the gathered (local) credentials en VOMS info.

Definition at line 56 of file lcmaps_cred_data.h.

### 7.1.2 Field Documentation

#### 7.1.2.1 lcmaps_vo_data_t * cred_data_s::VoCred

list of VO data structures

Definition at line 62 of file lcmaps_cred_data.h.

#### 7.1.2.2 lcmaps_vo_mapping_t * cred_data_s::VoCredMapping

list of VO mapping structures

Definition at line 64 of file lcmaps_cred_data.h.

#### 7.1.2.3 char ** cred_data_s::VoCredString

list of VO data strings

Definition at line 63 of file lcmaps_cred_data.h.

#### 7.1.2.4 int cred_data_s::cntPriGid

number of primary groupIDs (in principle only one)

Definition at line 66 of file lcmaps_cred_data.h.

#### 7.1.2.5 int cred_data_s::cntSecGid

number of secondary groupIDs (could be any number)

Definition at line 67 of file lcmaps_cred_data.h.

#### 7.1.2.6 int cred_data_s::cntUid

number of userIDs

Definition at line 65 of file lcmaps_cred_data.h.

#### 7.1.2.7 int cred_data_s::cntVoCred

number of VO data structures

Definition at line 68 of file lcmaps_cred_data.h.

#### 7.1.2.8 int cred_data_s::cntVoCredMapping

number of VO mapping structures

Definition at line 70 of file lcmaps_cred_data.h.

#### 7.1.2.9 int cred_data_s::cntVoCredString

number of VO data strings

Definition at line 69 of file lcmaps_cred_data.h.

#### 7.1.2.10 char * cred_data_s::dn

user globus DN

Definition at line 58 of file lcmaps_cred_data.h.

#### 7.1.2.11 gid_t * cred_data_s::priGid

list of primary groupIDs

Definition at line 60 of file lcmaps_cred_data.h.

#### 7.1.2.12 gid_t * cred_data_s::secGid

list of secondary groupIDs

Definition at line 61 of file lcmaps_cred_data.h.

#### 7.1.2.13 uid_t * cred_data_s::uid

list of userIDs

Definition at line 59 of file lcmaps_cred_data.h.

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

- lcmaps_cred_data.h

## 7.2 lcmaps_argument_s Struct Reference

structure representing an LCMAPS plugin run argument.

`#include <lcmaps_arguments.h>`

### Data Fields

- char* argName
- char* argType
- int argInOut
- void* value

### 7.2.1 Detailed Description

structure representing an LCMAPS plugin run argument.

Definition at line 42 of file lcmaps_arguments.h.

### 7.2.2 Field Documentation

#### 7.2.2.1 int lcmaps_argument_s::argInOut

input or output argument (0 = false = Input / 1 = true = Out)

Definition at line 46 of file lcmaps_arguments.h.

#### 7.2.2.2 char * lcmaps_argument_s::argName

name of argument

Definition at line 44 of file lcmaps_arguments.h.

#### 7.2.2.3 char * lcmaps_argument_s::argType

type of the argument

Definition at line 45 of file lcmaps_arguments.h.

#### 7.2.2.4 void * lcmaps_argument_s::value

value of argument

Definition at line 47 of file lcmaps_arguments.h.

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

- lcmaps_arguments.h

## 7.3 lcmaps_cred_id_s Struct Reference

structure representing an LCMAPS credential.

`#include <lcmaps_types.h>`

### Data Fields

- gss_cred_id_t cred
- char* dn

### 7.3.1 Detailed Description

structure representing an LCMAPS credential.

Definition at line 47 of file lcmaps_types.h.

### 7.3.2 Field Documentation

#### 7.3.2.1 gss_cred_id_t lcmaps_cred_id_s::cred

the original gss (globus) credential

Definition at line 49 of file lcmaps_types.h.

#### 7.3.2.2 char * lcmaps_cred_id_s::dn

the user distinguished name (DN)

Definition at line 50 of file lcmaps_types.h.

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

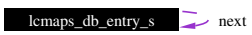
- lcmaps_types.h

## 7.4 lcmaps_db_entry_s Struct Reference

LCMAPS data base element structure.

`#include <lcmaps_db_read.h>`

Collaboration diagram for lcmaps_db_entry_s:




### Data Fields

- char pluginname [LCMAPS_MAXPATHLEN+1]
- char pluginargs [LCMAPS_MAXARGSTRING+1]
- struct lcmaps_db_entry_s* next

### 7.4.1 Detailed Description

LCMAPS data base element structure.

For internal use only.

Definition at line 42 of file lcmaps_db_read.h.

### 7.4.2 Field Documentation

#### 7.4.2.1 struct lcmaps_db_entry_s * lcmaps_db_entry_s::next

handle to next db element

Definition at line 46 of file lcmaps_db_read.h.

#### 7.4.2.2 char lcmaps_db_entry_s::pluginargs

Argument list to be passed to authorization plugin/module

Definition at line 45 of file lcmaps_db_read.h.

#### 7.4.2.3 char lcmaps_db_entry_s::pluginname

Name of authorization plugin/module

Definition at line 44 of file lcmaps_db_read.h.

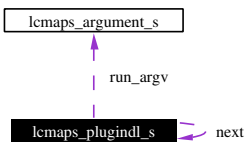
The documentation for this struct was generated from the following file:

- lcmaps_db_read.h

## 7.5 lcmaps_plugindl_s Struct Reference

the lcmaps plugin module structure.

Collaboration diagram for lcmaps_plugindl_s:




### Data Fields

- void* handle
- lcmaps_proc_t procs [MAXPROCS]
- char pluginname [LCMAPS_MAXPATHLEN+1]
- char pluginargs [LCMAPS_MAXARGSTRING+1]
- int init_argc
- char* init_argv [LCMAPS_MAXARGS]
- int run_argc
- lcmaps_argument_t* run_argv
- struct lcmaps_plugindl_s* next

### 7.5.1 Detailed Description

the lcmaps plugin module structure.

For internal use only.

Definition at line 103 of file lcmaps_pluginmanager.c.

### 7.5.2 Field Documentation

#### 7.5.2.1 void * lcmaps_plugindl_s::handle

dlopen handle to plugin module

Definition at line 105 of file lcmaps_pluginmanager.c.

#### 7.5.2.2 int lcmaps_plugindl_s::init_argc

number of arguments for the initialization function

Definition at line 109 of file lcmaps_pluginmanager.c.

#### 7.5.2.3 char * lcmaps_plugindl_s::init_argv

list of arguments for the initialization function

Definition at line 110 of file lcmaps_pluginmanager.c.

#### 7.5.2.4 struct lcmaps_plugindl_s * lcmaps_plugindl_s::next

pointer to the next plugin in the plugin list

Definition at line 113 of file lcmaps_pluginmanager.c.

#### 7.5.2.5 char lcmaps_plugindl_s::pluginargs

argument string

Definition at line 108 of file lcmaps_pluginmanager.c.

#### 7.5.2.6 char lcmaps_plugindl_s::pluginname

name of plugin

Definition at line 107 of file lcmaps_pluginmanager.c.

#### 7.5.2.7 lcmaps_proc_t lcmaps_plugindl_s::procs

list of handles to interface functions of plugin

Definition at line 106 of file lcmaps_pluginmanager.c.

#### 7.5.2.8 int lcmaps_plugindl_s::run_argc

number of arguments for the plugin run function (get credentials)

Definition at line 111 of file lcmaps_pluginmanager.c.

#### 7.5.2.9 lcmaps_argument_t * lcmaps_plugindl_s::run_argv

list of arguments for the plugin run function (get credentials)

Definition at line 112 of file lcmaps_pluginmanager.c.

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

- lcmaps_pluginmanager.c

## 7.6 lcmaps_vo_data_s Struct Reference

structure that contains the VO information found in the user's gss credential.

```
#include <lcmaps_vo_data.h>
```

### Data Fields

- char* vo
- char* group
- char* subgroup
- char* role
- char* capability

### 7.6.1 Detailed Description

structure that contains the VO information found in the user's gss credential.

Definition at line 57 of file lcmaps_vo_data.h.

### 7.6.2 Field Documentation

#### 7.6.2.1 char * lcmaps_vo_data_s::capability

the user's capability

Definition at line 63 of file lcmaps_vo_data.h.

#### 7.6.2.2 char * lcmaps_vo_data_s::group

group within the VO

Definition at line 60 of file lcmaps_vo_data.h.

#### 7.6.2.3 char * lcmaps_vo_data_s::role

the user's role

Definition at line 62 of file lcmaps_vo_data.h.

#### 7.6.2.4 char * lcmaps_vo_data_s::subgroup

subgroup name

Definition at line 61 of file lcmaps_vo_data.h.

#### 7.6.2.5 char * lcmaps_vo_data_s::vo

name of the VO to which the user belongs

Definition at line 59 of file lcmaps_vo_data.h.

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

- lcmaps_vo_data.h

## 7.7 lcmaps_vo_mapping_s Struct Reference

structure that contains the VO information string (or FQAN) and the local Gid it is mapped to.

`#include <lcmaps_vo_data.h>`

### Data Fields

- char* vostring
- char* groupname
- gid_t gid

### 7.7.1 Detailed Description

structure that contains the VO information string (or FQAN) and the local Gid it is mapped to.

Definition at line 75 of file lcmaps_vo_data.h.

### 7.7.2 Field Documentation

#### 7.7.2.1 gid_t lcmaps_vo_mapping_s::gid

GID the VO information string should be mapped to (according to the groupmapfile)

Definition at line 80 of file lcmaps_vo_data.h.

#### 7.7.2.2 char * lcmaps_vo_mapping_s::groupname

groupname the VO information string should be mapped to (according to the groupmapfile)

Definition at line 78 of file lcmaps_vo_data.h.

#### 7.7.2.3 char * lcmaps_vo_mapping_s::vostring

VO information string

Definition at line 77 of file lcmaps_vo_data.h.

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

- lcmaps_vo_data.h

## 7.8 plugin_s Struct Reference

Structure holds a plugin name and its arguments, as well as the line number the plugin is first mentioned.

`#include <pdl.h>`

Collaboration diagram for plugin_s:

### Data Fields

- char* name

  *Plugin name.*

- char* args

  *Arguments of the plugin.*

- unsigned int lineno

  *Line number where the plugin is first seen in the configuration file.*

- struct plugin_s* next

  *Next plugin, or 0 if there are no-more plugins.*

### 7.8.1 Detailed Description

Structure holds a plugin name and its arguments, as well as the line number the plugin is first mentioned.

Definition at line 94 of file pdl.h.

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

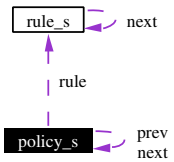
- pdl.h

## 7.9 policy_s Struct Reference

Keeping track of found policies.

`#include <pdl_policy.h>`

Collaboration diagram for policy_s:




### Data Fields

- const char* name

  *Name of the policy.*

- rule_t* rule

  *Pointer to the first rule of the policy.*

- unsigned int lineno

  *Line number where the polict was found.*

- struct policy_s* next

  *Next policy, or 0 if none.*

- struct policy_s* prev

  *Previous policy, or 0 if none.*

### 7.9.1 Detailed Description

Keeping track of found policies.

Definition at line 41 of file pdl_policy.h.

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

- pdl_policy.h

## 7.10 record_s Struct Reference

Structure is used to keep track of strings and the line they appear on.

```
#include <pdl.h>
```

### Data Fields

- char* string

  *Hold the symbol that lex has found.*

- int lineno

  *Hold the line number the symbol has been found.*

### 7.10.1 Detailed Description

Structure is used to keep track of strings and the line they appear on.

When lex finds a match, this structure is used to keep track of the relevant information. The matchig string as well as the line number are saved. The line number can be used for later references when an error related to the symbol has occured. This allows for easier debugging of the configuration file.

Definition at line 83 of file pdl.h.

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

- pdl.h

## 7.11 rule_s Struct Reference

Structure keeps track of the state and the true/false braches.

`#include <pdl_rule.h>`

Collaboration diagram for rule_s:

### Data Fields

- const char* state

  *Name of the state.*

- const char* true_branch

  *Name of the true_branch, or 0 if none.*

- const char* false_branch

  *Name of the false_branch, or 0 if none.*

- unsigned int lineno

  *Line number where rule appeared.*

- struct rule_s* next

  *Next rule, or 0 if none.*

### 7.11.1 Detailed Description

Structure keeps track of the state and the true/false braches.

Definition at line 40 of file pdl_rule.h.

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

- pdl_rule.h

## 7.12 var_s Struct Reference

Structure keeps track of the variables, their value and the line number they are defined on.

`#include <pdl_variable.h>`

Collaboration diagram for var_s:

### Data Fields

- const char* name

  *Name of the variable.*

- const char* value

  *Value of the variable.*

- BOOL okay

  *TRUE if substitution can be done without further checking.*

- unsigned int lineno

  *Line number the variable appears on.*

- struct var_s* next

  *Next variable, or 0 if none.*

### 7.12.1 Detailed Description

Structure keeps track of the variables, their value and the line number they are defined on.

Definition at line 44 of file pdl_variable.h.

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

- pdl_variable.h

# Chapter 8

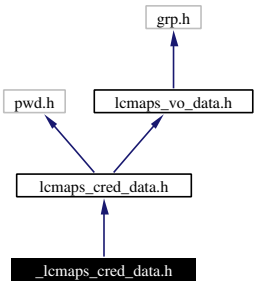
# edg-lcmaps File Documentation

## 8.1 _lcmaps_cred_data.h File Reference

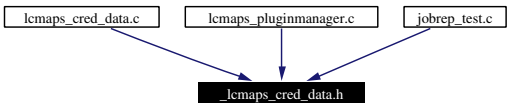
Internal header file of LCMAPS credential data.

`#include "lcmaps_cred_data.h"`

Include dependency graph for _lcmaps_cred_data.h:




This graph shows which files directly or indirectly include this file:




### Functions

- int cleanCredentialData ()

  *Clean the credData structure.*

### 8.1.1 Detailed Description

Internal header file of LCMAPS credential data.

**Author:**
Oscar Koeroo and Martijn Steenbakkers for the EU DataGrid.

For internal use only.

Definition in file _lcmaps_cred_data.h.

### 8.1.2 Function Documentation

#### 8.1.2.1 int cleanCredentialData ()

Clean the credData structure.

**Returns:**
0
For internal use only.

Definition at line 265 of file lcmaps_cred_data.c.

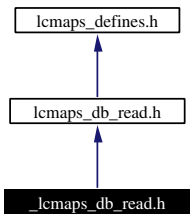
Referenced by resetCredentialData(), and stopPluginManager().

## 8.2 _lcmaps_db_read.h File Reference

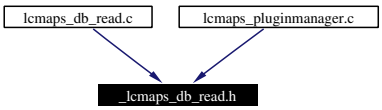
Internal header file of LCMAPS database reader.

`#include "lcmaps_db_read.h"`

Include dependency graph for _lcmaps_db_read.h:




This graph shows which files directly or indirectly include this file:




### Functions

- lcmaps_db_entry_t* lcmaps_db_fill_entry (lcmaps_db_entry_t **plcmaps_db, lcmaps_db_entry_t *db_-entry)

  *Add a database entry to a list.*

- lcmaps_db_entry_t** lcmaps_db_read (char *lcmaps_db_fname)

  *Read database from file.*

- int lcmaps_db_clean_list (lcmaps_db_entry_t **list)

  *Clean/remove the database list.*

- int lcmaps_db_clean ()

  *Clean/remove the database structure.*

### 8.2.1 Detailed Description

Internal header file of LCMAPS database reader.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS database reader functions and typedefs.

For internal use only.

Definition in file _lcmaps_db_read.h.

## 8.2.2 Function Documentation

### 8.2.2.1 int lcmaps_db_clean ()

Clean/remove the database structure.

**Return values:**

*0* succes

*1* failure

For internal use only.

Definition at line 585 of file lcmaps_db_read.c.

Referenced by startPluginManager().

### 8.2.2.2 int lcmaps_db_clean_list (lcmaps_db_entry_t ** *list*)

Clean/remove the database list.

**Parameters:**

*list* pointer to the database list

**Return values:**

*0* succes.

*1* failure.

For internal use only.

Definition at line 555 of file lcmaps_db_read.c.

### 8.2.2.3 lcmaps_db_entry_t * lcmaps_db_fill_entry (lcmaps_db_entry_t ** *list*, lcmaps_db_entry_t * *entry*)

Add a database entry to a list.

**Parameters:**

*list* database list (array of database entry pointers)

*entry* the database entry to be added

**Returns:**

a pointer to the newly created database entry in the list or NULL (error)
For internal use only.

Definition at line 198 of file lcmaps_db_read.c.

#### 8.2.2.4 lcmaps_db_entry_t ** lcmaps_db_read (char * *lcmaps_db_fname*)

Read database from file.

**Parameters:**
*lcmaps_db_fname* database file.

**Returns:**
a pointer to the database list
For internal use only.

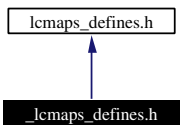
Definition at line 89 of file lcmaps_db_read.c.

## 8.3 _lcmaps_defines.h File Reference

Internal header file with some common defines for LCMAPS.

`#include "lcmaps_defines.h"`

Include dependency graph for _lcmaps_defines.h:




### Defines

- #define MAXPATHLEN 100
- #define MAXARGSTRING 500
- #define MAXARGS 51

### 8.3.1 Detailed Description

Internal header file with some common defines for LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.
For internal use only.

Definition in file _lcmaps_defines.h.

### 8.3.2 Define Documentation

#### 8.3.2.1 #define MAXARGS 51

maximum number of arguments (+1) to be passed to LCAS authorization plugins/modules.

For internal use only.

Definition at line 33 of file _lcmaps_defines.h.

#### 8.3.2.2 #define MAXARGSTRING 500

maximum length of the plugin argument string as specified in the LCAS database.

For internal use only.

Definition at line 31 of file _lcmaps_defines.h.

#### 8.3.2.3 #define MAXPATHLEN 100

maximum path lengths of files, used in plugin and database structures.

For internal use only.

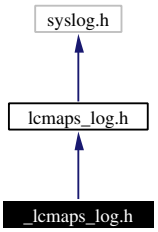
Definition at line 29 of file _lcmaps_defines.h.

## 8.4 _lcmaps_log.h File Reference

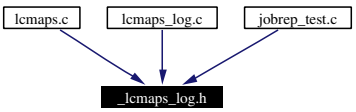
Internal header file for LCMAPS logging routines.

`#include "lcmaps_log.h"`

Include dependency graph for _lcmaps_log.h:




This graph shows which files directly or indirectly include this file:




### Defines

- #define MAX_LOG_BUFFER_SIZE 2048
- #define DO_USRLOG ((unsigned short)0x0001)
- #define DO_SYSLOG ((unsigned short)0x0002)

### Functions

- int lcmaps_log_open (char *path, FILE *fp, unsigned short logtype)

  *Start logging.*

- int lcmaps_log_close ()

  *Stop logging.*

### 8.4.1 Detailed Description

Internal header file for LCMAPS logging routines.

**Author:**
Martijn Steenbakkers for the EU DataGrid.
For internal use only.

Definition in file _lcmaps_log.h.

## 8.4.2 Define Documentation

### 8.4.2.1 #define DO_SYSLOG ((unsigned short)0x0002)

flag to indicate that syslogging has to be done

For internal use only.

Definition at line 34 of file _lcmaps_log.h.

### 8.4.2.2 #define DO_USRLOG ((unsigned short)0x0001)

flag to indicate that user logging has to be done

For internal use only.

Definition at line 32 of file _lcmaps_log.h.

### 8.4.2.3 #define MAX_LOG_BUFFER_SIZE 2048

Maximum logging buffer size, length of log may not exceed this number

For internal use only.

Definition at line 29 of file _lcmaps_log.h.

## 8.4.3 Function Documentation

### 8.4.3.1 int lcmaps_log_close ()

Stop logging.

For internal use only.

Definition at line 317 of file lcmaps_log.c.

### 8.4.3.2 int lcmaps_log_open (char * *path*, FILE * *fp*, unsigned short *logtype*)

Start logging.

This function should only be used by the LCMAPS itself. It opens the logfile and tries to set the debugging level in the following order:

1. Try if DEBUG_LEVEL > 0
2. Try if environment variable LCMAPS_DEBUG_LEVEL is set and if it is an integer > 0
3. Otherwise set debug_level = 0;

**Parameters:**

***path*** path of logfile.

***fp*** file pointer to already opened file (or NULL)

***logtype*** DO_USRLOG, DO_SYSLOG

**Return values:**

***0*** succes.

***1*** failure.

For internal use only.

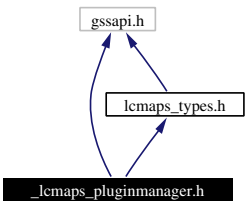
Definition at line 81 of file lcmaps_log.c.

## 8.5 _lcmaps_pluginmanager.h File Reference

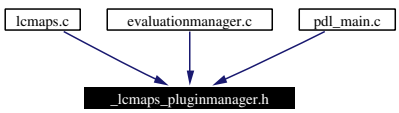
API of the PluginManager.

```
#include <gssapi.h>
#include "lcmaps_types.h"
```

Include dependency graph for _lcmaps_pluginmanager.h:




This graph shows which files directly or indirectly include this file:




### Functions

- int startPluginManager ()

  *start the PluginManager.*

- int stopPluginManager ()

  *Terminate the PluginManager module.*

- int runPluginManager (lcmaps_request_t request, lcmaps_cred_id_t lcmaps_cred)

  *Run the PluginManager.*

- int runPlugin (const char *pluginname)

  *Run a plugin.*

- int resetCredentialData ()

  *Reset the Credential data.*

### 8.5.1 Detailed Description

API of the PluginManager.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS library functions:

1. startPluginManager(): start the PluginManager –> load plugins, start evaluation manager
2. runPluginManager(): run the PluginManager –> run evaluation manager –> run plugins
3. stopPluginManager(): stop the PluginManager
4. runPlugin(): run the specified plugin. (used by Evaluation Manager)
5. resetCredentialData(): reset the Credential Data. (used by Evaluation Manager)

Definition in file _lcmaps_pluginmanager.h.

## 8.5.2 Function Documentation

### 8.5.2.1 int resetCredentialData ()

Reset the Credential data.

Wrapper around cleanCredentialData() to be used by the Evaluation Manager, before a new policy is evaluated

**Returns:**
the return value of cleanCredentialData()

Definition at line 957 of file lcmaps_pluginmanager.c.

Referenced by pdl_next_plugin().

### 8.5.2.2 int runPlugin (const char * *pluginname*)

Run a plugin.

Run a plugin for the Evaluation Manager the result (succes or not will be passed to the Evaluation Manager)

**Parameters:**
***pluginname*** the name of the plugin module

**Return values:**
***0*** plugin run succeeded
***1*** plugin run failed

Definition at line 989 of file lcmaps_pluginmanager.c.

#### 8.5.2.3 int runPluginManager (lcmaps_request_t *request*, lcmaps_cred_id_t *lcmaps_cred*)

Run the PluginManager.

This function runs the PluginManager for user mapping. Contact Evaluation Manager –> runs plugins

**Parameters:**

***request*** RSL request (job request)

***lcmaps_cred*** user credential

**Return values:**

***0*** user mapping succeeded

***1*** user mapping failed

Definition at line 849 of file lcmaps_pluginmanager.c.

#### 8.5.2.4 int startPluginManager ()

start the PluginManager.

start the PluginManager –> load plugins, start evaluation manager

**Return values:**

***0*** succes

***1*** failure

Definition at line 155 of file lcmaps_pluginmanager.c.

Referenced by lcmaps_init().

#### 8.5.2.5 int stopPluginManager ()

Terminate the PluginManager module.

stop the PluginManager –> terminate plugins, clean plugin list, (stop evaluation manager)

**Return values:**

***0*** succes

***1*** failure

Definition at line 1045 of file lcmaps_pluginmanager.c.

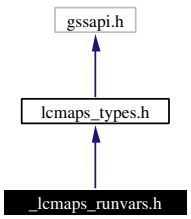
Referenced by lcmaps_term().

## 8.6 _lcmaps_runvars.h File Reference

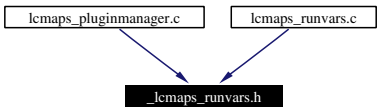
API of runvars structure.

`#include "lcmaps_types.h"`

Include dependency graph for _lcmaps_runvars.h:




This graph shows which files directly or indirectly include this file:




### Functions

- int lcmaps_extractRunVars (lcmaps_request_t request, lcmaps_cred_id_t lcmaps_cred)

  *extract the variables from user credential that can be used by the plugins.*

- void* lcmaps_getRunVars (char *argName, char *argType)

  *returns a void pointer to the requested value.*

- int lcmaps_setRunVars (char *argName, char *argType, void *value)

  *fill the runvars_list with a value for argName and argType.*

### 8.6.1 Detailed Description

API of runvars structure.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This module takes the data that are presented to LCMAPS (the global credential and Job request) and extracts the variables that will be used by the plugins from it and stores them into a list. The interface to the LCMAPS module is composed of:

1. lcmaps_extractRunVars(): takes the global credential and Job request and extracts run variables from them
2. lcmaps_setRunVars(): adds run variables to a list
3. lcmaps_getRunVars(): gets run variables from list

Definition in file _lcmaps_runvars.h.

## 8.6.2 Function Documentation

### 8.6.2.1 int lcmaps_extractRunVars (lcmaps_request_t *request*, lcmaps_cred_id_t *lcmaps_cred*)

extract the variables from user credential that can be used by the plugins.

This function takes the user credential and job request (in RSL) and extracts the information which is published in the runvars_list. These variables can be accessed by the plugins.

**Parameters:**

***request*** the job request (RSL)

***lcmaps_cred*** the credential presented by the user

**Return values:**

***0*** succes.

***1*** failure.

For internal use only.

Definition at line 97 of file lcmaps_runvars.c.

### 8.6.2.2 void * lcmaps_getRunVars (char * *argName*, char * *argType*)

returns a void pointer to the requested value.

This function returns a void pointer to the requested variable with name argName and type argType in the runvars_list. Internally it uses lcmaps_getArgValue().

**Parameters:**

***argName*** name of the variable

***argType*** type of the variable

**Returns:**

void pointer to the value or NULL
For internal use only.

Definition at line 192 of file lcmaps_runvars.c.

#### 8.6.2.3 int lcmaps_setRunVars (char * *argName*, char * *argType*, void * *value*)

fill the runvars_list with a value for argName and argType.

This function fills the (internal) runvars_list with the value for the variable with name argName and type argType. Internally lcmaps_setArgValue() is used.

**Parameters:**

***argName*** name of the runvars variable

***argType*** type of the runvars variable

***values*** void pointer to the value

**Return values:**

***0*** succes.

***-1*** failure.

For internal use only.

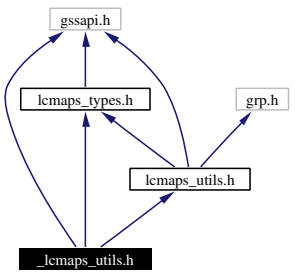
Definition at line 233 of file lcmaps_runvars.c.

## 8.7 _lcmaps_utils.h File Reference

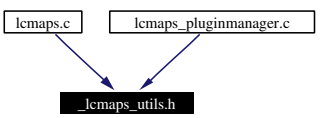
Internal header for the LCMAPS utilities.

```
#include <gssapi.h>
#include "lcmaps_types.h"
#include "lcmaps_utils.h"
```

Include dependency graph for _lcmaps_utils.h:




This graph shows which files directly or indirectly include this file:




### CREDENTIAL FUNCTIONS

- int lcmaps_fill_cred (char *dn, gss_cred_id_t cred, lcmaps_cred_id_t *lcmaps_credential)
  *Fill cedential from distinghuished name and globus credential.*
- int lcmaps_release_cred (lcmaps_cred_id_t *lcmaps_credential)
  *Release the LCMAPS credential.*

### OTHER FUNCTIONS

- int lcmaps_tokenize (const char *command, char **args, int *n, char *sep)
  *Break the argument string up into tokens.*

### 8.7.1 Detailed Description

Internal header for the LCMAPS utilities.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS utility functions:

1. lcmaps_fill_cred():
2. lcmaps_release_cred():
3. lcmaps_tokenize():
   For internal use only.

Definition in file _lcmaps_utils.h.

### 8.7.2 Function Documentation

#### 8.7.2.1 int lcmaps_fill_cred (char * *dn*, gss_cred_id_t *cred*, lcmaps_cred_id_t * *plcmaps_cred*)

Fill cedential from distinghuished name and globus credential.

The LCMAPS credential only differs from the GLOBUS credential by the extra entry for the dn. This allows (temporarily) the passed delegated GLOBUS credential to be empty.

**Parameters:**
***dn*** distinguished name
***cred*** GLOBUS credential
***lcmaps_cred*** pointer to LCMAPS credential to be filled.

**Return values:**
***0*** succes.
***1*** failure.
For internal use only.

Definition at line 74 of file lcmaps_utils.c.

#### 8.7.2.2 int lcmaps_release_cred (lcmaps_cred_id_t * *plcmaps_cred*)

Release the LCMAPS credential.

**Parameters:**
***lcmaps_cred*** pointer to LCMAPS credential to be released

**Return values:**
***0*** succes.
***1*** failure.
For internal use only.

Definition at line 115 of file lcmaps_utils.c.

#### 8.7.2.3 int lcmaps_tokenize (const char * *command*, char ** *args*, int * *n*, char * *sep*)

Break the argument string up into tokens.

Breakup the command in to arguments, pointing the args array at the tokens. Replace white space at the end of each token with a null. A token maybe in quotes. (Copied (and modified) from GLOBUS gatekeeper.c)

**Parameters:**

***command*** the command line to be parsed

***args*** pointer to an array of pointers to be filled

***n*** size of the array, on input, and set to size used on output

***sep*** string of separating characters

**Return values:**

***0*** succes

***-1*** malloc error

***-2*** too many args

***-3*** quote not matched

For internal use only.

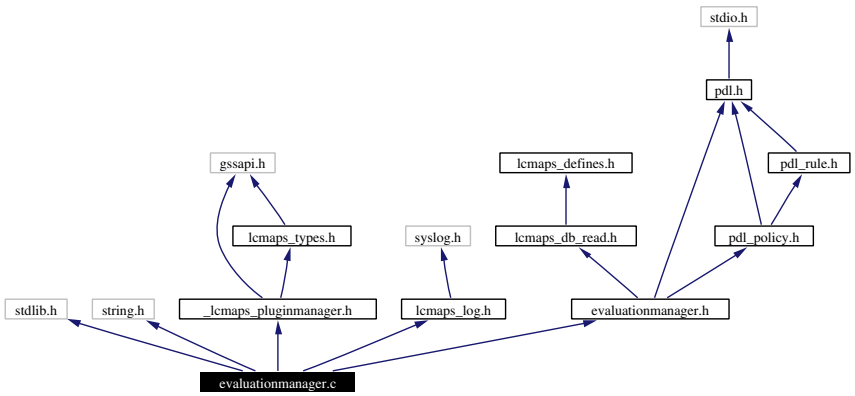
Definition at line 462 of file lcmaps_utils.c.

## 8.8 evaluationmanager.c File Reference

Implementation of the evaluation manager interface.

```
#include <stdlib.h>
#include <string.h>
#include "_lcmaps_pluginmanager.h"
#include "lcmaps_log.h"
#include "evaluationmanager.h"
```

Include dependency graph for evaluationmanager.c:




### Functions

- int free_lcmaps_db_entry ()
- int startEvaluationManager (const char *name)
- int getPluginNameAndArgs (lcmaps_db_entry_t **plugins)
- int runEvaluationManager (void)
- int stopEvaluationManager (void)

### Variables

- lcmaps_db_entry_t* global_plugin_list = NULL

### 8.8.1 Detailed Description

Implementation of the evaluation manager interface.

Besides the implementation of the interface of the evaluation manager some additional functions are implemented here. Please note that these are **not** part of the interface and hence should not be used. Look in evaluationmanager.h for the functions that can be called by external sources.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.21

**Date:**

**Date:**
2003/08/15 12:55:40

Definition in file evaluationmanager.c.

## 8.8.2 Function Documentation

### 8.8.2.1 int free_lcmaps_db_entry ()

During the getPluginsAndArgs() call, a list structure is created. This structure is never cleaned automatically, nor can it be. When it is necessay and safe to free the resources, call this function

**Return values:**
***0*** when the call is successful,

***1*** otherwise.

Definition at line 261 of file evaluationmanager.c.

Referenced by stopEvaluationManager().

### 8.8.2.2 int getPluginNameAndArgs (lcmaps_db_entry_t ** *plugin*)

Get a list of plugins and their arguments based on the configuration file. The memory that is allocted is freed during the stopEvaluationManager() call.

**Parameters:**
***plugins*** Pointer to be intialized with the first entry of the plugin list.

**Return values:**
***0*** when the call is successful,

***1*** otherwise.

Definition at line 110 of file evaluationmanager.c.

#### 8.8.2.3 int runEvaluationManager (void)

Run the evaluation manager. The evaluation manager has to be initialized by calling statrEvaluation Manager first.

**Return values:**

*0* when the call is successful,

*1* otherwise.

Definition at line 205 of file evaluationmanager.c.

Referenced by runPluginManager().

#### 8.8.2.4 int startEvaluationManager (const char * *name*)

Start the evaluation manager.

**Parameters:**

*name* Name of the configure script.

**Return values:**

*0* when the call is successful,

*1* otherwise.

Definition at line 63 of file evaluationmanager.c.

#### 8.8.2.5 int stopEvaluationManager (void)

Stop the evaluation manager after is has run successfully. Strictly speaking, the evalauation manager needs no stopping. This call is a good point to clean up the resources used by the evaluation manager.

**Return values:**

*0* when the call is successful,

*1* otherwise.

Definition at line 240 of file evaluationmanager.c.

Referenced by startEvaluationManager(), and stopPluginManager().

### 8.8.3 Variable Documentation

#### 8.8.3.1 lcmaps_db_entry_t * global_plugin_list = NULL [static]

When the getPluginNameAndArgs() function has been called, the global_plugin_list variable get initialized with the first element of the list. This variable is later used to free the resources held by the list. In addition, multiple calls to getPluginNameAndArgs() result in returning the value of this pointer.

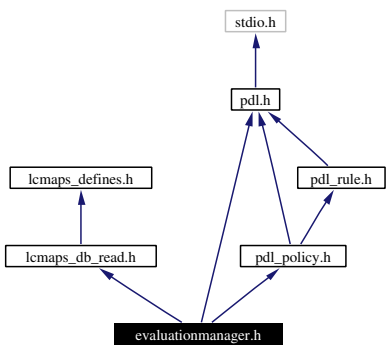
Definition at line 50 of file evaluationmanager.c.

## 8.9 evaluationmanager.h File Reference

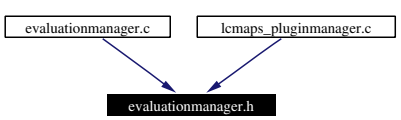
Evaluation Manager interface definition.

```
#include "lcmaps_db_read.h"
#include "pdl.h"
#include "pdl_policy.h"
```

Include dependency graph for evaluationmanager.h:




This graph shows which files directly or indirectly include this file:




### Functions

- int startEvaluationManager (const char *name)
- int getPluginNameAndArgs (lcmaps_db_entry_t **plugin)
- int runEvaluationManager (void)
- int stopEvaluationManager (void)

### 8.9.1 Detailed Description

Evaluation Manager interface definition.

The function listed in here are accessible to anyone. This is the way to communicate with the evaluation manager. The evaluation manager deligates the becessary work to the Policy Language Description module (PDL).

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.6

**Date:**

**Date:**
2003/05/26 10:50:26

Definition in file evaluationmanager.h.

## 8.9.2 Function Documentation

### 8.9.2.1 int getPluginNameAndArgs (lcmaps_db_entry_t ** *plugin*)

Get a list of plugins and their arguments based on the configuration file. The memory that is allocted is freed during the stopEvaluationManager() call.

**Parameters:**
***plugins*** Pointer to be intialized with the first entry of the plugin list.

**Return values:**
***0*** when the call is successful,

***1*** otherwise.

Definition at line 110 of file evaluationmanager.c.

Referenced by startPluginManager().

### 8.9.2.2 int runEvaluationManager (void)

Run the evaluation manager. The evaluation manager has to be initialized by calling statrEvaluation Manager first.

**Return values:**
***0*** when the call is successful,

***1*** otherwise.

Definition at line 205 of file evaluationmanager.c.

### 8.9.2.3 int startEvaluationManager (const char * *name*)

Start the evaluation manager.

**Parameters:**

***name*** Name of the configure script.

**Return values:**

***0*** when the call is successful,

***1*** otherwise.

Definition at line 63 of file evaluationmanager.c.

Referenced by startPluginManager().

#### 8.9.2.4 int stopEvaluationManager (void)

Stop the evaluation manager after is has run successfully. Strictly speaking, the evalauation manager needs no stopping. This call is a good point to clean up the resources used by the evaluation manager.

**Return values:**

***0*** when the call is successful,

***1*** otherwise.

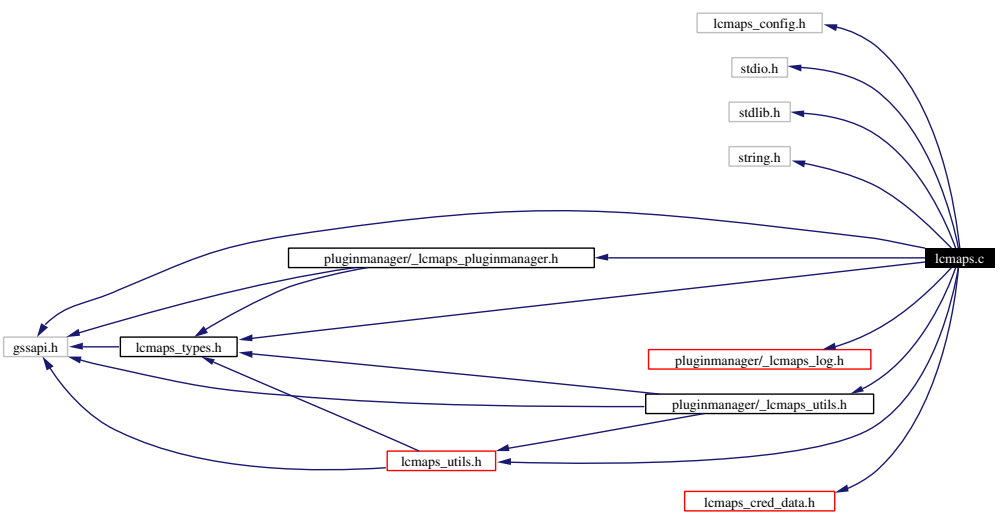
Definition at line 240 of file evaluationmanager.c.

## 8.10 lcmaps.c File Reference

the LCMAPS module - the local credential mapping service.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <gssapi.h>
#include "pluginmanager/_lcmaps_pluginmanager.h"
#include "pluginmanager/_lcmaps_log.h"
#include "lcmaps_types.h"
#include "lcmaps_utils.h"
#include "pluginmanager/_lcmaps_utils.h"
#include "lcmaps_cred_data.h"
```

Include dependency graph for lcmaps.c:




### Variables

- lcmaps_cred_id_t lcmaps_cred
- int lcmaps_initialized = 0

### 8.10.1 Detailed Description

the LCMAPS module - the local credential mapping service.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

The interface to the LCMAPS module is composed of:

1. lcmaps_init(): start the PluginManager –> load plugins, start evaluation manager
2. lcmaps_run(): run the PluginManager –> run evaluation manager –> run plugins
3. lcmaps_term(): stop the PluginManager

Definition in file lcmaps.c.

## 8.10.2 Variable Documentation

### 8.10.2.1 lcmaps_cred_id_t lcmaps_cred [static]

For internal use only.

Definition at line 74 of file lcmaps.c.

### 8.10.2.2 int lcmaps_initialized = 0 [static]

For internal use only.

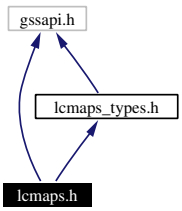
Definition at line 75 of file lcmaps.c.

## 8.11 lcmaps.h File Reference

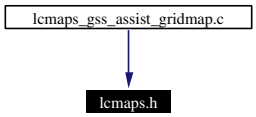
API of the LCMAPS library.

```
#include <gssapi.h>
#include "lcmaps_types.h"
```

Include dependency graph for lcmaps.h:




This graph shows which files directly or indirectly include this file:




### Functions

- int lcmaps_init (FILE *fp)

  *Initialize the LCMAPS module.*

- int lcmaps_term ()

  *Terminate the LCMAPS module.*

- int lcmaps_run (gss_cred_id_t user_cred, lcmaps_request_t request)

  *let LCMAPS handle the user mapping.*

- int lcmaps_run_and_return_username (gss_cred_id_t user_cred, lcmaps_request_t request, char **usernamep)

  *let LCMAPS handle the user mapping and return user name.*

- int lcmaps_run_without_credentials (char *user_dn_tmp)

  *do the user mapping without credentials, only the user DN.*

### 8.11.1 Detailed Description

API of the LCMAPS library.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS library functions:

1. lcmaps_init(): To initialize the LCMAPS module
2. lcmaps_run(): To do the user mapping
3. lcmaps_run_without_credentials(): To do the user mapping, without credentials
4. lcmaps_term(): To cleanly terminate the module

Definition in file lcmaps.h.

### 8.11.2 Function Documentation

#### 8.11.2.1 int lcmaps_init (FILE * *fp*)

Initialize the LCMAPS module.

The function does the following:

- initialize LCMAPS module.
- setup logging, error handling (not yet).
- start PluginManager

**Parameters:**
***fp*** file handle for logging (from gatekeeper)

**Return values:**
***0*** initialization succeeded.
***1*** initialization failed.

Definition at line 104 of file lcmaps.c.

#### 8.11.2.2 int lcmaps_run (gss_cred_id_t *user_cred*, lcmaps_request_t *request*)

let LCMAPS handle the user mapping.

This function runs the PluginManager for user mapping.

**Parameters:**
***request*** authorization request in RSL (later JDL)
***user_cred*** GLOBUS user credential

**Return values:**

*0* mapping succeeded.

*1* mapping failed.

Definition at line 174 of file lcmaps.c.

#### 8.11.2.3 int lcmaps_run_and_return_username (gss_cred_id_t *user_cred*, lcmaps_request_t *request*, char ** *usernamep*)

let LCMAPS handle the user mapping and return user name.

do the user mapping and return user name (needed for e.g. GridFTP)

**Parameters:**

***request*** authorization request in RSL (later JDL)

***user_cred*** GLOBUS user credential

***usernamep*** pointer to user name

**Return values:**

*0* mapping succeeded.

*1* mapping failed.

Definition at line 259 of file lcmaps.c.

#### 8.11.2.4 int lcmaps_run_without_credentials (char * *user_dn_tmp*)

do the user mapping without credentials, only the user DN.

This function runs the PluginManager for user mapping without credentials.

**Parameters:**

***user_dn_tmp*** user DN

**Return values:**

*0* mapping succeeded.

*1* mapping failed.

Definition at line 337 of file lcmaps.c.

#### 8.11.2.5 int lcmaps_term ()

Terminate the LCMAPS module.

The function does the following:

- terminate the LCMAPS module
- terminate the plugins

**Return values:**

*0* termination succeeded.

*1* termination failed.

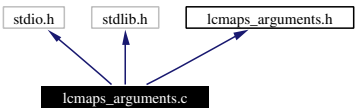
Definition at line 406 of file lcmaps.c.

## 8.12 lcmaps_arguments.c File Reference

LCMAPS module for creating and passing introspect/run argument lists.

```
#include <stdio.h>
#include <stdlib.h>
#include "lcmaps_arguments.h"
```

Include dependency graph for lcmaps_arguments.c:




### 8.12.1 Detailed Description

LCMAPS module for creating and passing introspect/run argument lists.

**Author:**
Oscar Koeroo and Martijn Steenbakkers for the EU DataGrid.

The interface is composed of:

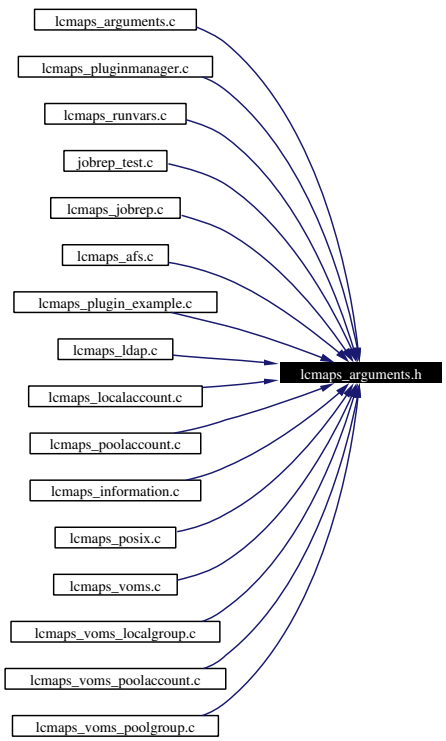
1. lcmaps_setArgValue(): Set the value of argument with name argName of argType to value
2. lcmaps_getArgValue(): Get the value of argument with name argName of argType
3. lcmaps_findArgName(): Get index of argument with name argName
4. lcmaps_cntArgs(): Count the number of arguments

Definition in file lcmaps_arguments.c.

## 8.13 lcmaps_arguments.h File Reference

Public header file to be used by plugins.

This graph shows which files directly or indirectly include this file:




### Data Structures

- struct lcmaps_argument_s

  *structure representing an LCMAPS plugin run argument.*

### Typedefs

- typedef struct lcmaps_argument_s lcmaps_argument_t

  *Type of LCMAPS plugin run argument (to be passed to the plugin by plugin_run()).*

### Functions

- int lcmaps_setArgValue (char *argName, char *argType, void *value, int argcx, lcmaps_argument_t **argvx)

  *Set the value of argument with name argName of argType to value.*

- void* lcmaps_getArgValue (char *argName, char *argType, int argcx, lcmaps_argument_t *argvx)
  *Get the value of argument with name argName of argType.*
- int lcmaps_findArgName (char *argName, int argcx, lcmaps_argument_t *argvx)
  *Get index of argument with name argName.*
- int lcmaps_findArgNameAndType (char *argName, char *argType, int argcx, lcmaps_argument_t *argvx)
  *Get index of argument with name argName.*
- int lcmaps_cntArgs (lcmaps_argument_t *argvx)
  *Count the number of arguments.*

## 8.13.1 Detailed Description

Public header file to be used by plugins.

**Author:**
Martijn Steenbakkers and Oscar Koeroo for the EU DataGrid.

Routines to access the plugin arguments.

The interface is composed of:

1. lcmaps_setArgValue(): Set the value of argument with name argName of argType to value
2. lcmaps_getArgValue(): Get the value of argument with name argName of argType
3. lcmaps_findArgName(): Get index of argument with name argName
4. lcmaps_cntArgs(): Count the number of arguments

Definition in file lcmaps_arguments.h.

## 8.13.2 Function Documentation

### 8.13.2.1 int lcmaps_cntArgs (lcmaps_argument_t * *argvx*)

Count the number of arguments.

Count the number of arguments that are defined in a plug-in Returns this number.

**Parameters:**
***argvx*** array of arguments structures

**Returns:**
the number of arguments

Definition at line 272 of file lcmaps_arguments.c.

#### 8.13.2.2 int lcmaps_findArgName (char * *argName*, int *argcx*, lcmaps_argument_t * *argvx*)

Get index of argument with name argName.

Search for argName in the arguments list. Returns the index to lcmaps_argument_t element.

**Parameters:**

*argName* name of argument

*argcx* number of arguments

*argvx* array of arguments structures

**Returns:**

index to lcmaps_argument_t element

Definition at line 178 of file lcmaps_arguments.c.

#### 8.13.2.3 int lcmaps_findArgNameAndType (char * *argName*, char * *argType*, int *argcx*, lcmaps_argument_t * *argvx*)

Get index of argument with name argName.

Search for argName in the arguments list. Returns the index to lcmaps_argument_t element.

**Parameters:**

*argName* name of argument

*argType* type of argument

*argcx* number of arguments

*argvx* array of arguments structures

**Returns:**

index to lcmaps_argument_t element

Definition at line 229 of file lcmaps_arguments.c.

#### 8.13.2.4 void * lcmaps_getArgValue (char * *argName*, char * *argType*, int *argcx*, lcmaps_argument_t * *argvx*)

Get the value of argument with name argName of argType.

Set the value of argType on the reserved place in values. The place within values is determined by the place where argName is found in the arguments list Returns a void pointer to the value.

**Parameters:**

*argName* name of argument

*argType* type of argument

*argcx* number of arguments

*argvx* array of arguments structures

**Returns:**

void pointer to the value or NULL

Definition at line 130 of file lcmaps_arguments.c.

#### 8.13.2.5 int lcmaps_setArgValue (char * *argName*, char * *argType*, void * *value*, int *argcx*, lcmaps_argument_t ** *argvx*)

Set the value of argument with name argName of argType to value.

Set the value of argType on the reserved place in values. The place within values is determined by the place where argName is found in the arguments list

**Parameters:**

***argName*** name of argument

***argType*** type of argument

***argcx*** number of arguments

***argvx*** array of arguments structures

**Returns:**

0 in case of succes

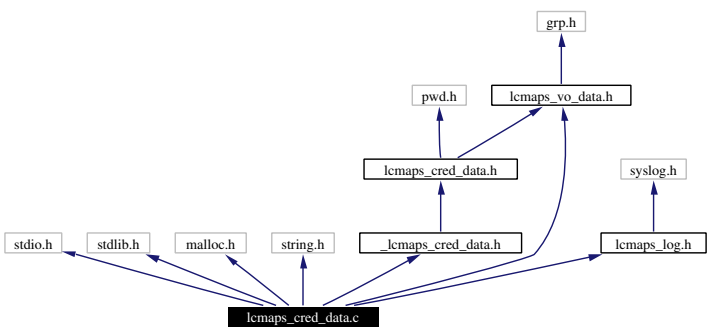
Definition at line 71 of file lcmaps_arguments.c.

## 8.14 lcmaps_cred_data.c File Reference

Routines to handle lcmaps credential data.

```
#include <stdio.h>
#include <stdlib.h>
#include <malloc.h>
#include <string.h>
#include "_lcmaps_cred_data.h"
#include "lcmaps_log.h"
#include "lcmaps_vo_data.h"
```

Include dependency graph for lcmaps_cred_data.c:




### Functions

- void printCredData (int debug_level)

  *Get pointer to a list of credential data of a certain type.*

### 8.14.1 Detailed Description

Routines to handle lcmaps credential data.

**Author:**
Oscar Koeroo and Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_cred_data.c.

### 8.14.2 Function Documentation

#### 8.14.2.1 void printCredData (int *debug_level*)

Get pointer to a list of credential data of a certain type.

**Parameters:**
*debug_level* the debug level

**Returns:**
nothing

Definition at line 320 of file lcmaps_cred_data.c.

Referenced by stopPluginManager().

### 8.14.3 Variable Documentation

#### 8.14.3.1 cred_data_t credData [static]

**Initial value:**

```
{
    (char *) NULL,
    (uid_t *) NULL,
    (gid_t *) NULL,
    (gid_t *) NULL,
    (lcmaps_vo_data_t *) NULL,
    (char **) NULL,
    (lcmaps_vo_mapping_t *) NULL,
    0,
    0,
    0,
    0,
    0,
    0,
}
```

Definition at line 41 of file lcmaps_cred_data.c.

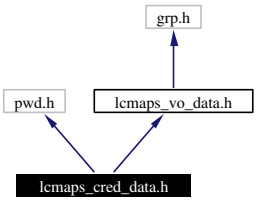
## 8.15 lcmaps_cred_data.h File Reference

Public header file to be used by plugins.

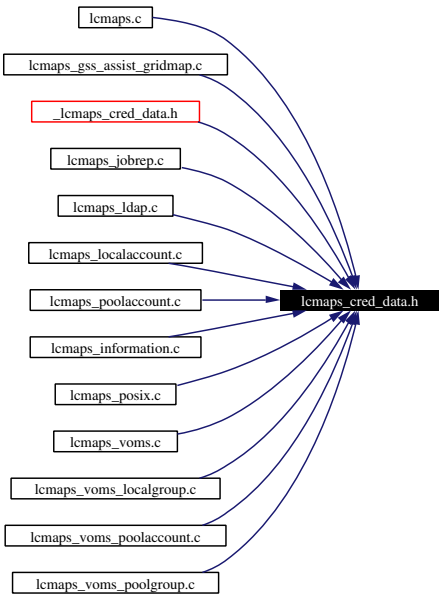
```
#include <pwd.h>
```

```
#include "lcmaps_vo_data.h"
```

Include dependency graph for lcmaps_cred_data.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct cred_data_s

  *structure that contains the gathered (local) credentials en VOMS info.*

### Typedefs

- typedef struct cred_data_s cred_data_t

  *Type of credential data.*

## Functions

- int addCredentialData (int datatype, void *data)

  *Add a credential to the list of found credentials (uids, gids etc).*

- void* getCredentialData (int datatype, int *count)

  *Get pointer to a list of credential data of a certain type.*

### 8.15.1 Detailed Description

Public header file to be used by plugins.

Routines to access the credential data that are gathered by the plugins.

**Author:**
Martijn Steenbakkers and Oscar Koeroo for the EU DataGrid.

Definition in file lcmaps_cred_data.h.

### 8.15.2 Function Documentation

#### 8.15.2.1 int addCredentialData (int *datatype*, void * *data*)

Add a credential to the list of found credentials (uids, gids etc).

The credential value is copied into list (memory is allocated for this)

**Parameters:**
***datatype*** type of credential

***data*** pointer to credential

**Returns:**
0 in case of succes

Definition at line 84 of file lcmaps_cred_data.c.

#### 8.15.2.2 void * getCredentialData (int *datatype*, int * *count*)

Get pointer to a list of credential data of a certain type.

**Parameters:**
***datatype*** type of credential

***count*** number of credentials found in list of datatype (filled by routine)

**Returns:**
pointer to list of credential data or NULL in case of failure

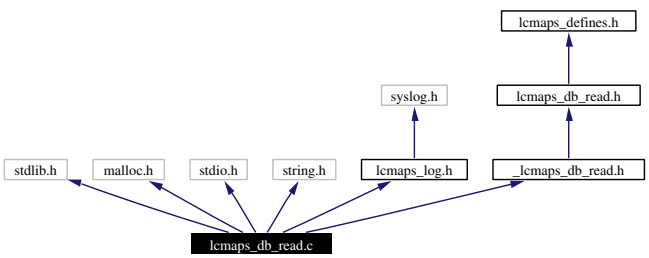
Definition at line 211 of file lcmaps_cred_data.c.

## 8.16 lcmaps_db_read.c File Reference

the LCMAPS database reader.

```
#include <stdlib.h>
#include <malloc.h>
#include <stdio.h>
#include <string.h>
#include "lcmaps_log.h"
#include "_lcmaps_db_read.h"
```

Include dependency graph for lcmaps_db_read.c:




### Defines

- #define MAXDBENTRIES 250
- #define MAXPAIRS 2
- #define WHITESPACE_CHARS " \t\n"
- #define QUOTING_CHARS "\""
- #define ESCAPING_CHARS "\\"
- #define COMMENT_CHARS "#"
- #define PAIR_SEP_CHARS ","
- #define VARVAL_SEP_CHARS "="
- #define PAIR_TERMINATOR_CHARS PAIR_SEP_CHARS WHITESPACE_CHARS
- #define VARVAL_TERMINATOR_CHARS VARVAL_SEP_CHARS WHITESPACE_CHARS
- #define NUL '\0'

### Functions

- int lcmaps_db_read_entries (FILE *)

  *Read db entries from stream and fill a lsit of db entries.*

- int lcmaps_db_parse_line (char *, lcmaps_db_entry_t **)

  *Parses database line and fills database structure.*

- int lcmaps_db_parse_pair (char *, char **, char **)

  *Parses a database variable-value pair and returns the variable name and its value.*

- int lcmaps_db_parse_string (char **)

  *Takes a string and removes prepending and trailing spaces and quotes (unless escaped).*

## Variables

- lcmaps_db_entry_t* lcmaps_db_list = NULL

### 8.16.1 Detailed Description

the LCMAPS database reader.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_db_read.c.

### 8.16.2 Define Documentation

#### 8.16.2.1 #define COMMENT_CHARS "#"

For internal use only.

Definition at line 37 of file lcmaps_db_read.c.

#### 8.16.2.2 #define ESCAPING_CHARS "\\"

For internal use only.

Definition at line 36 of file lcmaps_db_read.c.

#### 8.16.2.3 #define MAXDBENTRIES 250

maximum number of LCMAPS database entries

For internal use only.

Definition at line 30 of file lcmaps_db_read.c.

#### 8.16.2.4 #define MAXPAIRS 2

maximum number of variable-value pairs that will be parsed per line

For internal use only.

Definition at line 31 of file lcmaps_db_read.c.

#### 8.16.2.5 #define NUL '\0'

For internal use only.

Definition at line 60 of file lcmaps_db_read.c.

#### 8.16.2.6 #define PAIR_SEP_CHARS ","

Characters separating variable-value pairs in the lcmaps database file

For internal use only.

Definition at line 40 of file lcmaps_db_read.c.

#### 8.16.2.7 #define PAIR_TERMINATOR_CHARS PAIR_SEP_CHARS WHITESPACE_CHARS

Characters that terminate pairs in the lcmaps database file. This is a combination of whitespace and separators.

For internal use only.

Definition at line 52 of file lcmaps_db_read.c.

#### 8.16.2.8 #define QUOTING_CHARS "\""

For internal use only.

Definition at line 35 of file lcmaps_db_read.c.

#### 8.16.2.9 #define VARVAL_SEP_CHARS "="

Characters separating variables from values

For internal use only.

Definition at line 42 of file lcmaps_db_read.c.

#### 8.16.2.10 #define VARVAL_TERMINATOR_CHARS VARVAL_SEP_CHARS WHITESPACE_CHARS

Characters that terminate variables and values in the lcmaps database file. This is a combination of whitespace and separators.

For internal use only.

Definition at line 57 of file lcmaps_db_read.c.

#### 8.16.2.11 #define WHITESPACE_CHARS " \t\n"

For internal use only.

Definition at line 34 of file lcmaps_db_read.c.

### 8.16.3 Function Documentation

#### 8.16.3.1 int lcmaps_db_parse_line (char * *line*, lcmaps_db_entry_t ** *entry*) [static]

Parses database line and fills database structure.

**Parameters:**

*line* database line

*entry* pointer to a pointer to a database structure (can/should be freed afterwards)

**Return values:**

*1* succes.

*0* failure.

For internal use only.

Definition at line 261 of file lcmaps_db_read.c.

Referenced by lcmaps_db_read_entries().

#### 8.16.3.2 int lcmaps_db_parse_pair (char * *pair*, char ** *pvar*, char ** *pval*) [static]

Parses a database variable-value pair and returns the variable name and its value.

**Parameters:**

*pair* string containing the pair

*pvar* pointer to the variable string

*pval* pointer to the value string

**Return values:**

*1* succes.

*0* failure.

For internal use only.

Definition at line 397 of file lcmaps_db_read.c.

Referenced by lcmaps_db_parse_line().

#### 8.16.3.3 int lcmaps_db_parse_string (char ** *pstring*) [static]

Takes a string and removes prepending and trailing spaces and quotes (unless escaped).

**Parameters:**

*pstring* pointer to a pointer to a char

**Return values:**

*1* succes.

*0* failure.
For internal use only.

Definition at line 494 of file lcmaps_db_read.c.

Referenced by lcmaps_db_parse_pair().

#### 8.16.3.4 int lcmaps_db_read_entries (FILE * *dbstream*) [static]

Read db entries from stream and fill a lsit of db entries.

**Parameters:**
*dbstream* database stream

**Returns:**
the number of entries found (failure –> negative number)
For internal use only.

Definition at line 132 of file lcmaps_db_read.c.

Referenced by lcmaps_db_read().

### 8.16.4 Variable Documentation

#### 8.16.4.1 lcmaps_db_entry_t * lcmaps_db_list = NULL [static]

list of database entries

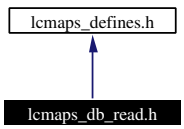
Definition at line 74 of file lcmaps_db_read.c.

## 8.17 lcmaps_db_read.h File Reference

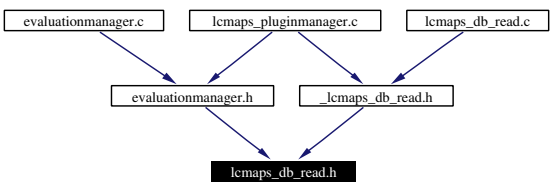
header file for LCMAPS database structure.

`#include "lcmaps_defines.h"`

Include dependency graph for lcmaps_db_read.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct lcmaps_db_entry_s
  *LCMAPS data base element structure.*

### Typedefs

- typedef struct lcmaps_db_entry_s lcmaps_db_entry_t
  *type of LCMAPS data base element.*

### 8.17.1 Detailed Description

header file for LCMAPS database structure.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS database structure

For internal use only.

Definition in file lcmaps_db_read.h.

## 8.17.2 Typedef Documentation

### 8.17.2.1 typedef struct lcmaps_db_entry_s lcmaps_db_entry_t

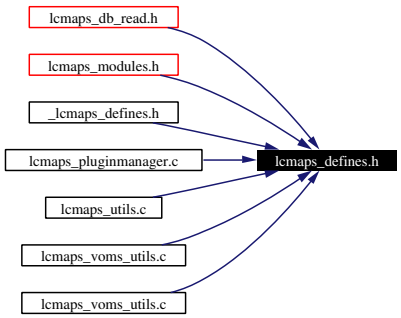
type of LCMAPS data base element.

For internal use only.

## 8.18 lcmaps_defines.h File Reference

Public header file with common definitions for the LCMAPS (authorization modules).

This graph shows which files directly or indirectly include this file:




### Defines

- #define LCMAPS_MOD_SUCCESS (int)(0)
- #define LCMAPS_MOD_FAIL (int)(1)
- #define LCMAPS_MOD_NOFILE (int)(2)
- #define LCMAPS_MOD_ENTRY (int)(3)
- #define LCMAPS_MOD_NOENTRY (int)(4)
- #define LCMAPS_ETC_HOME "/opt/edg/etc/lcmaps"
- #define LCMAPS_LIB_HOME "/opt/edg/lib/lcmaps"
- #define LCMAPS_MOD_HOME "/opt/edg/lib/lcmaps/modules"
- #define LCMAPS_MAXPATHLEN 500
- #define LCMAPS_MAXARGSTRING 2000
- #define LCMAPS_MAXARGS 51

### 8.18.1 Detailed Description

Public header file with common definitions for the LCMAPS (authorization modules).

**Author:**
Martijn Steenbakkers for the EU DataGrid.

Here the return values for the LCMAPS plugins/modules are defined as well as the default locations of the LCMAPS "etc", "lib" and "modules" directories.

Definition in file lcmaps_defines.h.

### 8.18.2 Define Documentation

#### 8.18.2.1 #define LCMAPS_ETC_HOME "/opt/edg/etc/lcmaps"

default directory for LCMAPS configuration data bases

Definition at line 39 of file lcmaps_defines.h.

#### 8.18.2.2 #define LCMAPS_LIB_HOME "/opt/edg/lib/lcmaps"

default directory for the LCMAPS library

Definition at line 41 of file lcmaps_defines.h.

#### 8.18.2.3 #define LCMAPS_MAXARGS 51

maximum number of arguments (+1) to be passed to LCMAPS authorization plugins/modules.

For internal use only.

Definition at line 50 of file lcmaps_defines.h.

#### 8.18.2.4 #define LCMAPS_MAXARGSTRING 2000

maximum length of the plugin argument string as specified in the LCMAPS database.

For internal use only.

Definition at line 48 of file lcmaps_defines.h.

#### 8.18.2.5 #define LCMAPS_MAXPATHLEN 500

maximum path lengths of files, used in plugin and database structures.

For internal use only.

Definition at line 46 of file lcmaps_defines.h.

#### 8.18.2.6 #define LCMAPS_MOD_ENTRY (int)(3)

Return value of LCMAPS plugin module indicating that an entry was found

Definition at line 34 of file lcmaps_defines.h.

#### 8.18.2.7 #define LCMAPS_MOD_FAIL (int)(1)

Return value of LCMAPS plugin module indicating failure (no authorization)

Definition at line 30 of file lcmaps_defines.h.

#### 8.18.2.8 #define LCMAPS_MOD_HOME "/opt/edg/lib/lcmaps/modules"

default directory for the LCMAPS plugins/modules

Definition at line 43 of file lcmaps_defines.h.

#### 8.18.2.9 #define LCMAPS_MOD_NOENTRY (int)(4)

Return value of LCMAPS plugin module indicating that no entry was found

Definition at line 36 of file lcmaps_defines.h.

#### 8.18.2.10 #define LCMAPS_MOD_NOFILE (int)(2)

Return value of LCMAPS plugin module indicating that no file could be found

Definition at line 32 of file lcmaps_defines.h.

#### 8.18.2.11 #define LCMAPS_MOD_SUCCESS (int)(0)

Return value of LCMAPS plugin module indicating succes (authorization granted)

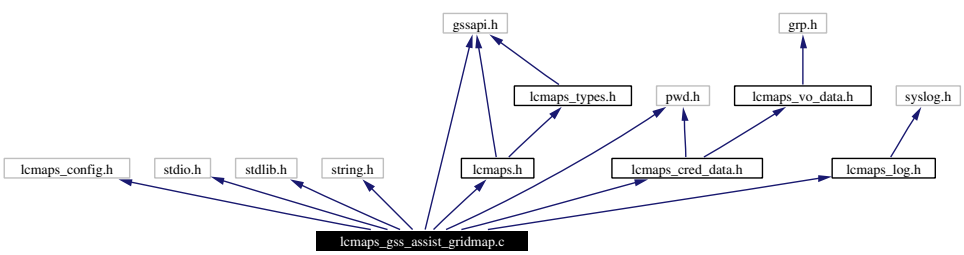
Definition at line 28 of file lcmaps_defines.h.

## 8.19 lcmaps_gss_assist_gridmap.c File Reference

legacy interface for LCMAPS.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <gssapi.h>
#include <pwd.h>
#include "lcmaps.h"
#include "lcmaps_log.h"
#include "lcmaps_cred_data.h"
```

Include dependency graph for lcmaps_gss_assist_gridmap.c:




### 8.19.1 Detailed Description

legacy interface for LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

The legacy interface to the LCMAPS module is the original gridmap interface provided by globus. Given the user distinguished name (DN) a username is returned, based on the gridmap file

1. globus_gss_assist_gridmap: the interface

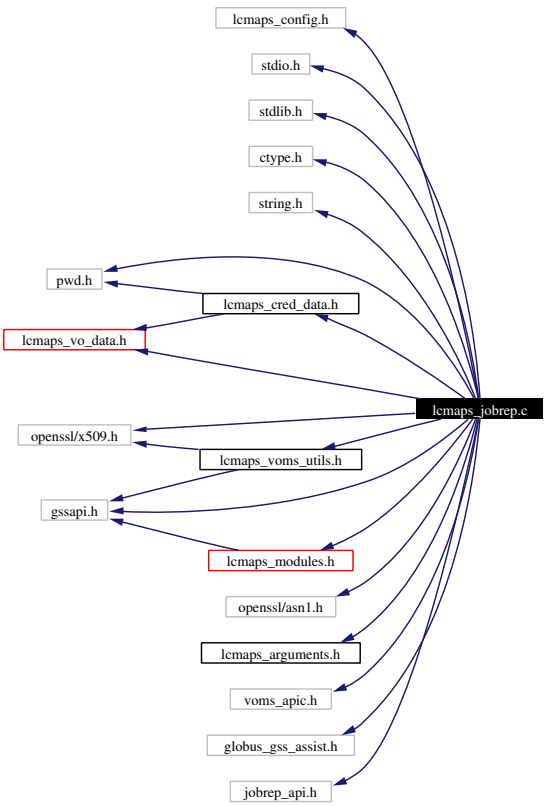
Definition in file lcmaps_gss_assist_gridmap.c.

## 8.20 lcmaps_jobrep.c File Reference

Plugin to get data for the Job Repository Database.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <ctype.h>
#include <string.h>
#include <pwd.h>
#include <openssl/x509.h>
#include <openssl/asn1.h>
#include "gssapi.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_voms_utils.h"
#include "lcmaps_vo_data.h"
#include "voms_apic.h"
#include "globus_gss_assist.h"
#include "jobrep_api.h"
```

Include dependency graph for lcmaps_jobrep.c:




## Functions

- int lcmaps_get_jobrep_config (const char *, char **)
  *Get the Job Repository configuration from file.*
- int plugin_initialize (int argc, char **argv)
  *initialize the plugin.*
- int plugin_introspect (int *argc, lcmaps_argument_t **argv)
  *Plugin asks for required arguments.*
- int plugin_run (int argc, lcmaps_argument_t *argv)
  *Gather credentials for user making use of the ordered arguments.*
- int plugin_terminate ()
  *Whatever is needed to terminate the plugin module goes in here.*

### 8.20.1 Detailed Description

Plugin to get data for the Job Repository Database.

**Author:**
Oscar Koeroo for the EU DataGrid.

Definition in file lcmaps_jobrep.c.

## 8.20.2 Function Documentation

### 8.20.2.1 int lcmaps_get_jobrep_config (const char * *path*, char ** *jobrep_config*) [static]

Get the Job Repository configuration from file.

This function tries to read the Job Repository configuration from the jobrep_config file. It also tests if the access bits of the file are correctly set.

**Parameters:**

***path*** the path to the jobrep_config file containing the config string.

***jobrep_config*** variable to set the configuration string in

**Return values:**

***0*** success

***1*** other failure

Definition at line 2170 of file lcmaps_jobrep.c.

Referenced by plugin_initialize().

### 8.20.2.2 int plugin_initialize (int *argc*, char ** *argv*)

initialize the plugin.

plugin_initialize(int argc, char **argv)

Everything that is needed to initialize the plugin should be put inside this function. Arguments as read from the LCMAPS database (argc, argv) are passed to the plugin.

**Parameters:**

***argc*** number of passed arguments.

***argv*** argument list. argv[0] contains the name of the plugin.

**Return values:**

***LCMAPS_MOD_SUCCESS*** successful initialization

***LCMAPS_MOD_FAIL*** failure in the plugin initialization

***LCMAPS_MOD_NOFILE*** private plugin database could not be found (same effect as LCMAPS_MOD_FAIL)

Definition at line 418 of file lcmaps_jobrep.c.

#### 8.20.2.3 int plugin_introspect (int * *argc*, lcmaps_argument_t ** *argv*)

Plugin asks for required arguments.

plugin_introspect(int *argc, lcmaps_argument_t **argv)

**Parameters:**

*int* *argc

*lcmaps_argument_t* **argv

**Return values:**

*LCMAPS_MOD_SUCCESS* success

*LCMAPS_MOD_FAIL* failure (will result in a lcmaps failure)

Definition at line 529 of file lcmaps_jobrep.c.

#### 8.20.2.4 int plugin_run (int *argc*, lcmaps_argument_t * *argv*)

Gather credentials for user making use of the ordered arguments.

plugin_run(int argc, lcmaps_argument_t *argv)

Ask for credentials by passing the arguments (like JDL, globus DN, VOMS roles etc.) that were ordered earlier by the plugin_introspect() function

**Parameters:**

*argc* number of arguments

*argv* list of arguments

**Return values:**

*LCMAPS_MOD_SUCCESS* authorization succeeded

*LCMAPS_MOD_FAIL* authorization failed

Definition at line 565 of file lcmaps_jobrep.c.

#### 8.20.2.5 int plugin_terminate ()

Whatever is needed to terminate the plugin module goes in here.

plugin_terminate()

**Return values:**

*LCMAPS_MOD_SUCCESS* success

*LCMAPS_MOD_FAIL* failure (will result in an authorization failure)

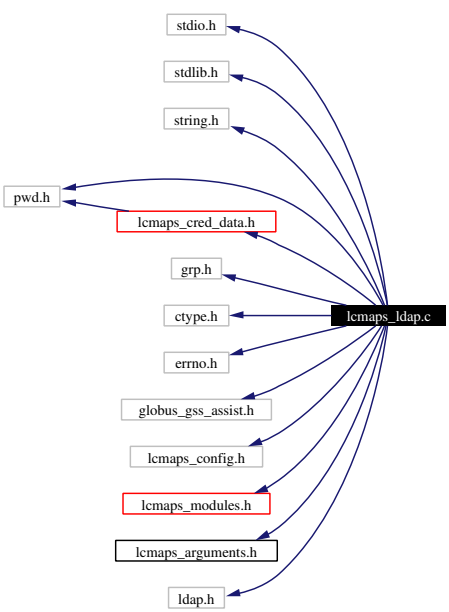
Definition at line 1925 of file lcmaps_jobrep.c.

## 8.21 lcmaps_ldap.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include <grp.h>
#include <ctype.h>
#include <errno.h>
#include "globus_gss_assist.h"
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "ldap.h"
```

Include dependency graph for lcmaps_ldap.c:




### Defines

- #define MAX_LOG_BUFFER_SIZE 2048

## Functions

- int lcmaps_get_ldap_pw (const char *path, char **ldap_passwd)

  *Get the LDAP password from file.*

- int lcmaps_set_pgid (const char *username, const char *pgroupname, gid_t pgroupnumber, LDAP *ld_handle, const char *searchBase)

  *Sets the primary group ID.*

- int lcmaps_add_username_to_ldapgroup (const char *username, const char *groupname, gid_t groupnumber, LDAP *ld_handle, const char *searchBase)

  *Adds the username to the appropriate (LDAP) group.*

### 8.21.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Wim Som de Cerff and Martijn Steenbakkers for the EU DataGrid.

This file contains the code for the ldap LCMAPS plugin The interface consists of the following functions:

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

The following internal functions are available:

1. lcmaps_set_pgid()
2. lcmaps_add_username_to_ldapgroup()

Definition in file lcmaps_ldap.c.

### 8.21.2 Define Documentation

#### 8.21.2.1 #define MAX_LOG_BUFFER_SIZE 2048

Maximum logging buffer size, length of log may not exceed this number

For internal use only.

Definition at line 125 of file lcmaps_ldap.c.

### 8.21.3 Function Documentation

#### 8.21.3.1 int lcmaps_add_username_to_ldapgroup (const char * *username*, const char * *groupname*, gid_t *groupnumber*, LDAP * *ld_handle*, const char * *searchBase*) [static]

Adds the username to the appropriate (LDAP) group.

This function tries to add the username to the list of usernames belonging to the group with name groupname and gid groupnumber in the posixGroup LDAP structure. If the group does not exist, -1 is returned.

**Parameters:**

*username* the name of the user

*groupname* the name of the group

*groupnumber* group id number

*ld_handle* handle to LDAP

*searchBase* dn search base

**Return values:**

*0* success

*-1* ldap failure

*1* other failure

Definition at line 1016 of file lcmaps_ldap.c.

#### 8.21.3.2 int lcmaps_get_ldap_pw (const char * *path*, char ** *ldap_passwd*) [static]

Get the LDAP password from file.

This function tries to read the LDAP password from the ldap_pw file. It also tests if the access bits of the file are correctly set.

**Parameters:**

*path* the path to the ldap_pw file containing the password.

*ldap_passwd* variable to set the password in

**Return values:**

*0* success

*1* other failure

Definition at line 1363 of file lcmaps_ldap.c.

#### 8.21.3.3 int lcmaps_set_pgid (const char * *username*, const char * *pgroupname*, gid_t *pgroupnumber*, LDAP * *ld_handle*, const char * *searchBase*) [static]

Sets the primary group ID.

This function tries to set the primary group in the posixAccount LDAP structure for the user "username".

**Parameters:**

***username*** the name of the user

***pgroupname*** the name of the primary group

***pgroupnumber*** primary group id number

***ld_handle*** handle to LDAP

***searchBase*** dn search base

**Return values:**

***0*** success

***-1*** ldap failure

***1*** other failure

Definition at line 1255 of file lcmaps_ldap.c.

## 8.21.4 Variable Documentation

### 8.21.4.1 struct timeval timeout [static]

**Initial value:**

```
{
    (time_t) 0,
    (suseconds_t) 0
}
```

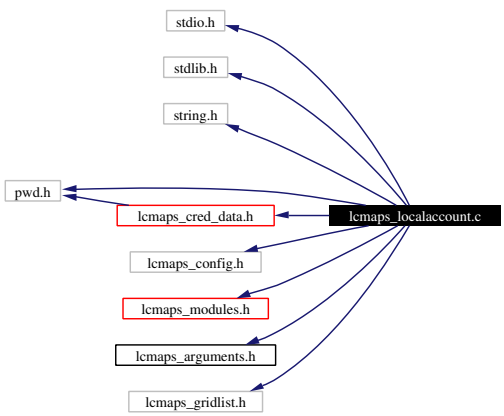
Definition at line 177 of file lcmaps_ldap.c.

## 8.22 lcmaps_localaccount.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_gridlist.h"
```

Include dependency graph for lcmaps_localaccount.c:




### 8.22.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code for localaccount plugin

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

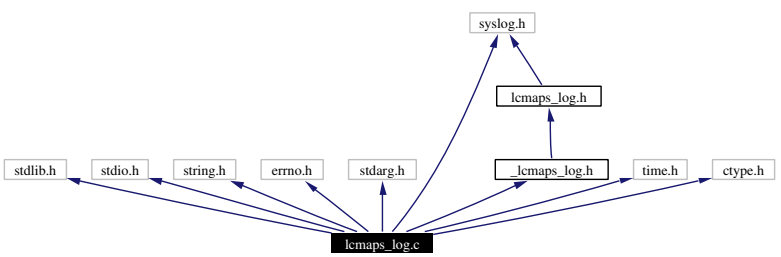
Definition in file lcmaps_localaccount.c.

## 8.23 lcmaps_log.c File Reference

Logging routines for LCMAPS.

```
#include <stdlib.h>
#include <stdio.h>
#include <string.h>
#include <errno.h>
#include <stdarg.h>
#include <syslog.h>
#include <time.h>
#include <ctype.h>
#include "_lcmaps_log.h"
```

Include dependency graph for lcmaps_log.c:




### Defines

- #define DEBUG_LEVEL 0

### Variables

- FILE* lcmaps_logfp = NULL
- int logging_usrlog = 0
- int logging_syslog = 0
- int debug_level = 0
- char* extra_logstr = NULL

### 8.23.1 Detailed Description

Logging routines for LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_log.c.

### 8.23.2 Define Documentation

#### 8.23.2.1 #define DEBUG_LEVEL 0

default debugging level

Definition at line 35 of file lcmaps_log.c.

### 8.23.3 Variable Documentation

#### 8.23.3.1 int debug_level = 0 [static]

debugging level

For internal use only.

Definition at line 45 of file lcmaps_log.c.

#### 8.23.3.2 char * extra_logstr = NULL [static]

string to be included in every log statement

For internal use only.

Definition at line 46 of file lcmaps_log.c.

#### 8.23.3.3 FILE * lcmaps_logfp = NULL [static]

logfile descriptor.

For internal use only.

Definition at line 41 of file lcmaps_log.c.

#### 8.23.3.4 int logging_syslog = 0 [static]

flag to use syslog

For internal use only.

Definition at line 43 of file lcmaps_log.c.

#### 8.23.3.5 int logging_usrlog = 0 [static]

flag to do user logging

For internal use only.

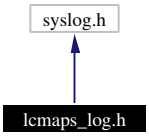
Definition at line 42 of file lcmaps_log.c.

## 8.24 lcmaps_log.h File Reference

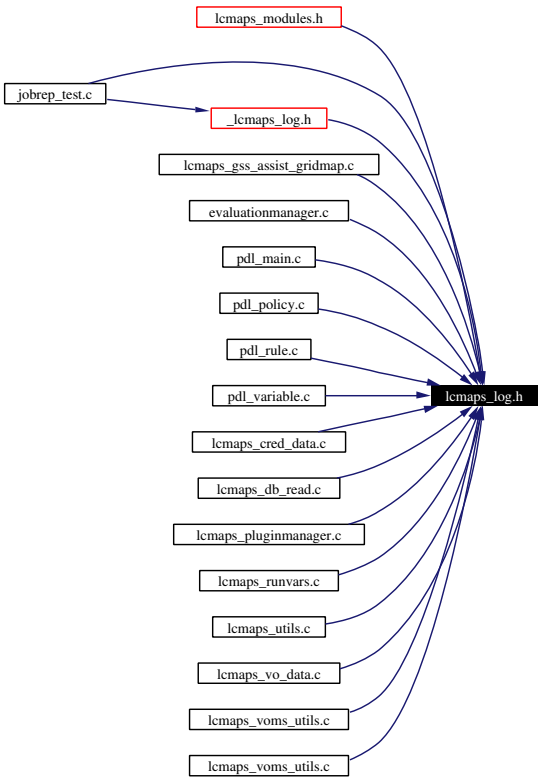
Logging API for the LCMAPS plugins and LCMAPS itself.

`#include <syslog.h>`

Include dependency graph for lcmaps_log.h:




This graph shows which files directly or indirectly include this file:




### Functions

- int lcmaps_log (int prty, char *fmt,...)

  *log information.*

- int lcmaps_log_debug (int debug_lvl, char *fmt,...)

*Print debugging information.*

- int lcmaps_log_time (int prty, char *fmt,...)

  *log information with timestamp.*

### 8.24.1 Detailed Description

Logging API for the LCMAPS plugins and LCMAPS itself.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS logging functions The LCMAPS plugins can use this API to write output to the LCMAPS logging devices.

1. lcmaps_log(): Log to LCMAPS logging devices.
2. lcmaps_log_debug(): Produce debugging output.

Definition in file lcmaps_log.h.

### 8.24.2 Function Documentation

#### 8.24.2.1 int lcmaps_log (int *prty*, char * *fmt*, ...)

log information.

This function logs information for LCMAPS and its plugins. Syslog() is called with the specified priority. No syslog() is done if the priority is 0.

**Parameters:**

***prty*** syslog priority (if 0 don't syslog).

***fmt*** string format

**...** variable argument list

**Return values:**

***0*** succes.

***1*** failure.

Definition at line 210 of file lcmaps_log.c.

#### 8.24.2.2 int lcmaps_log_debug (int *debug_lvl*, char * *fmt*, ...)

Print debugging information.

This function prints debugging information (using lcmaps_log with priority 0) provided debug_lvl <= DEBUG_LEVEL (default is 0).

**Parameters:**

***debug_lvl*** debugging level

***fmt*** string format

**...** variable argument list

**Return values:**

***0*** succes.

***1*** failure.

Definition at line 277 of file lcmaps_log.c.

#### 8.24.2.3 int lcmaps_log_time (int *prty*, char * *fmt*, ...)

log information with timestamp.

This function logs information with a timestamp for LCMAPS and its plugins. Syslog() is called with the specified priority. No syslog() is done if the priority is 0.

**Parameters:**

***prty*** syslog priority (if 0 don't syslog).

***fmt*** string format

**...** variable argument list

**Return values:**

***0*** succes.

***1*** failure.

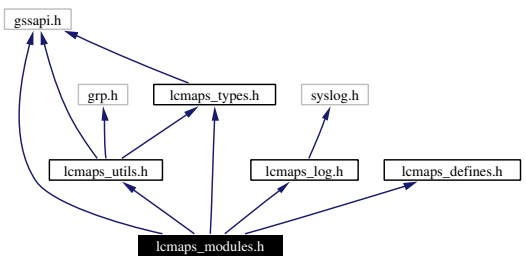
Definition at line 363 of file lcmaps_log.c.

## 8.25 lcmaps_modules.h File Reference

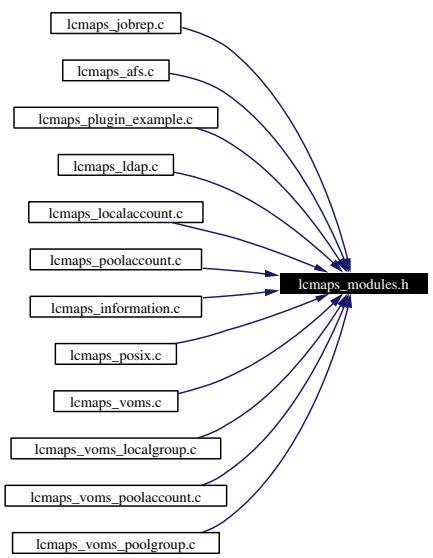
The LCMAPS authorization plugins/modules should ”include” this file.

```
#include <gssapi.h>
#include "lcmaps_utils.h"
#include "lcmaps_log.h"
#include "lcmaps_types.h"
#include "lcmaps_defines.h"
```

Include dependency graph for lcmaps_modules.h:




This graph shows which files directly or indirectly include this file:




### 8.25.1 Detailed Description

The LCMAPS authorization plugins/modules should ”include” this file.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file includes the header files that are needed by the LCMAPS authorization plugins/modules.

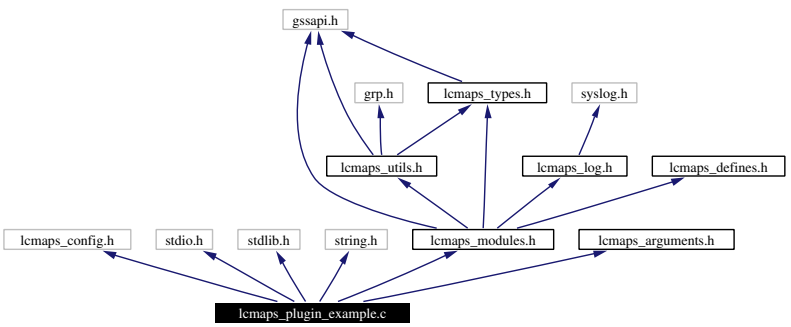
Definition in file lcmaps_modules.h.

## 8.26 lcmaps_plugin_example.c File Reference

Interface to the LCMAPS plugins.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
```

Include dependency graph for lcmaps_plugin_example.c:




### 8.26.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Gerben Venekamp for the EU DataGrid.

This file contains the code for an example LCMAPS plugin and shows the interface the plugin has to provide to the LCMAPS. The interface consists of the following functions:

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

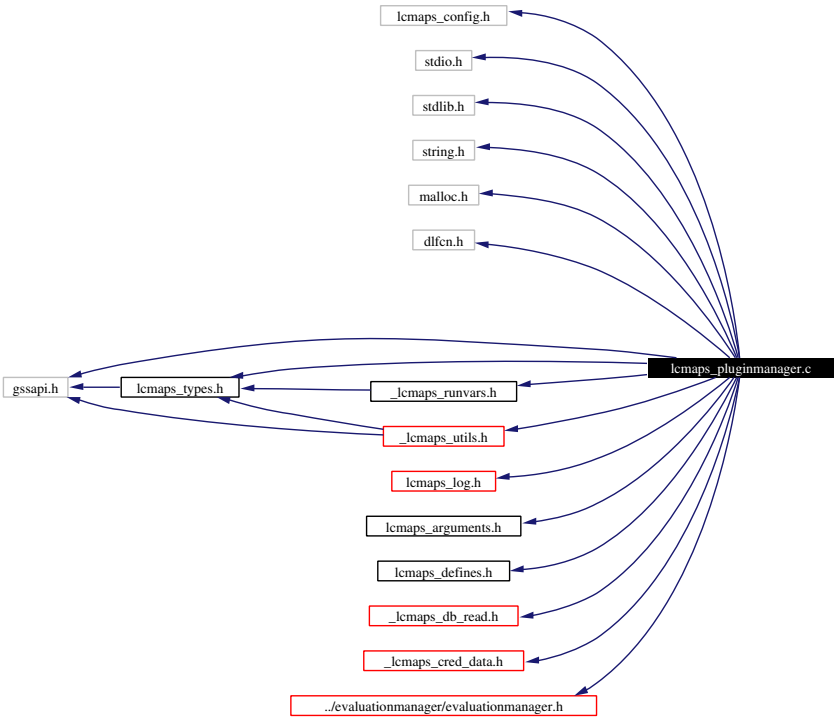
Definition in file lcmaps_plugin_example.c.

## 8.27 lcmaps_pluginmanager.c File Reference

the plugin manager for LCMAPS.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <malloc.h>
#include <dlfcn.h>
#include <gssapi.h>
#include "lcmaps_types.h"
#include "lcmaps_log.h"
#include "lcmaps_arguments.h"
#include "lcmaps_defines.h"
#include "_lcmaps_utils.h"
#include "_lcmaps_db_read.h"
#include "_lcmaps_runvars.h"
#include "_lcmaps_cred_data.h"
#include "../evaluationmanager/evaluationmanager.h"
```

Include dependency graph for lcmaps_pluginmanager.c:




## Data Structures

- struct lcmaps_plugindl_s

  *the lcmaps plugin module structure.*

## Defines

- #define NUL '\0'
- #define MAXPROCS 4

## Typedefs

- typedef int (* lcmaps_proc_t )()

  *this type corresponds to the types of the plugin interface functions.*

- typedef struct lcmaps_plugindl_s lcmaps_plugindl_t

  *the type definition of the lcmaps plugin module structure.*

## Enumerations

- enum lcmaps_proctype_e { INITPROC, RUNPROC, TERMPROC, INTROPROC, **ENDOFPROCS** }

  *This enumeration type gives the different plugin symbol/function types.*

## Functions

- lcmaps_plugindl_t* PluginInit (lcmaps_db_entry_t *, lcmaps_plugindl_t **)

  *Initialize the plugin.*

- lcmaps_proc_t get_procsymbol (void *, char *)

  *get procedure symbol from dlopen-ed library.*

- int print_lcmaps_plugin (int, lcmaps_plugindl_t *)

  *print the lcmaps_plugindl_t structure.*

- int parse_args_plugin (const char *, const char *, char **, int *)

  *convert plugin argument string into xargc, xargv.*

- int clean_plugin_list (lcmaps_plugindl_t **)

  *clean (free) the list of plugins and call the plugin termination functions.*

## Variables

- char* lcmaps_db_file_default = NULL
- char* lcmaps_dir = NULL
- lcmaps_plugindl_t* plugin_list = NULL

### 8.27.1 Detailed Description

the plugin manager for LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

The interface to the PluginManager module is composed of:

1. startPluginManager(): start the PluginManager –> load plugins, start evaluation manager
2. runPluginManager(): run the PluginManager –> run evaluation manager –> run plugins
3. stopPluginManager(): stop the PluginManager
4. reloadPluginManager(): reload the PluginManager ? (will we implement this ?)
5. runPlugin(): run the specified plugin. (used by Evaluation Manager)
6. resetCredentialData(): reset the Credential Data. (used by Evaluation Manager)

Definition in file lcmaps_pluginmanager.c.

### 8.27.2 Define Documentation

#### 8.27.2.1 #define MAXPROCS 4

maximum number of interface symbols in plugin modules

For internal use only.

Definition at line 65 of file lcmaps_pluginmanager.c.

#### 8.27.2.2 #define NUL '\0'

NUL character

For internal use only.

Definition at line 61 of file lcmaps_pluginmanager.c.

### 8.27.3 Typedef Documentation

#### 8.27.3.1 typedef struct lcmaps_plugindl_s lcmaps_plugindl_t

the type definition of the lcmaps plugin module structure.

For internal use only.

#### 8.27.3.2 typedef int(* lcmaps_proc_t)()

this type corresponds to the types of the plugin interface functions.

For internal use only.

Definition at line 91 of file lcmaps_pluginmanager.c.

### 8.27.4 Enumeration Type Documentation

#### 8.27.4.1 enum lcmaps_proctype_e

This enumeration type gives the different plugin symbol/function types.

For internal use only.

**Enumeration values:**

- ***INITPROC*** this value corresponds to the plugin initialization function
- ***RUNPROC*** this value corresponds to the plugin run function (get credentials)
- ***TERMPROC*** this value corresponds to the plugin termination function
- ***INTROPROC*** this value corresponds to the plugin introspect function

Definition at line 77 of file lcmaps_pluginmanager.c.

### 8.27.5 Function Documentation

#### 8.27.5.1 lcmaps_plugindl_t * PluginInit (lcmaps_db_entry_t * *db_handle*, lcmaps_plugindl_t ** *list*) [static]

Initialize the plugin.

This function takes a plugin LCMAPS database entry and performs the following tasks:

- Create entry in (plugin)list
- Open the plugins and check the symbols plugin_init and confirm_authorization
- run plugin_init

**Parameters:**

*db_handle* handle to LCMAPS db (containing pluginname and pluginargs)

*list* pointer to plugin structure list to which (plugin) module has to be added

**Returns:**

pointer to newly created plugin structure or NULL in case of failure
For internal use only.

Definition at line 354 of file lcmaps_pluginmanager.c.

Referenced by startPluginManager().

#### 8.27.5.2 int clean_plugin_list (lcmaps_plugindl_t ** *list*) [static]

clean (free) the list of plugins and call the plugin termination functions.

**Parameters:**

*list*

*list* pointer to list of plugins which has to be freeed.

**Return values:**

*0* succes.

*1* failure.
For internal use only.

Definition at line 781 of file lcmaps_pluginmanager.c.

Referenced by startPluginManager(), and stopPluginManager().

#### 8.27.5.3 lcmaps_proc_t get_procsymbol (void * *handle*, char * *symname*) [static]

get procedure symbol from dlopen-ed library.

**Parameters:**

***handle*** handle of dynamic library

***symname*** name of procedure symbol

**Returns:**

handle to procedure symbol or NUll
For internal use only.

Definition at line 639 of file lcmaps_pluginmanager.c.

Referenced by PluginInit().

#### 8.27.5.4 int parse_args_plugin (const char * *name*, const char * *argstring*, char ** *xargv*, int * *xargc*) [static]

convert plugin argument string into xargc, xargv.

Parse the argument string of the plugin and create xargv and xargc

**Parameters:**

***name*** name of the plugin (goes into xargv[0])

***argstring*** string containing the arguments

***xargv*** array of argument strings (has to be freed later)

***xargc*** number of arguments

**Return values:**

***0*** succes.

***1*** failure.
For internal use only.

Definition at line 578 of file lcmaps_pluginmanager.c.

Referenced by PluginInit().

#### 8.27.5.5 int print_lcmaps_plugin (int *debug_lvl*, lcmaps_plugindl_t * *plugin*) [static]

print the lcmaps_plugindl_t structure.

**Parameters:**

***debug_lvl*** debugging level

***plugin*** plugin structure

**Return values:**

***0*** succes.

***1*** failure.
For internal use only.

Definition at line 680 of file lcmaps_pluginmanager.c.

Referenced by runPluginManager(), and startPluginManager().

### 8.27.6 Variable Documentation

#### 8.27.6.1 char * lcmaps_db_file_default = NULL [static]

For internal use only.

Definition at line 129 of file lcmaps_pluginmanager.c.

#### 8.27.6.2 char * lcmaps_dir = NULL [static]

For internal use only.

Definition at line 130 of file lcmaps_pluginmanager.c.

#### 8.27.6.3 lcmaps_plugindl_t * plugin_list = NULL [static]

For internal use only.

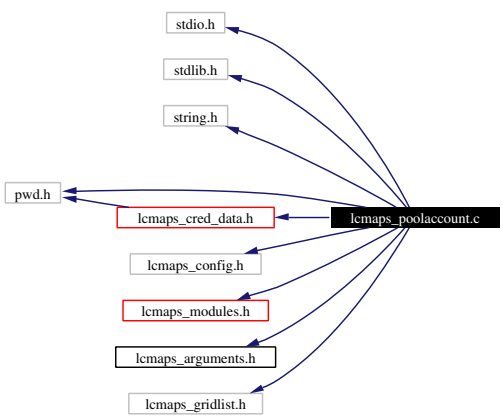
Definition at line 131 of file lcmaps_pluginmanager.c.

## 8.28 lcmaps_poolaccount.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_gridlist.h"
```

Include dependency graph for lcmaps_poolaccount.c:




### 8.28.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code of the poolaccount plugin

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

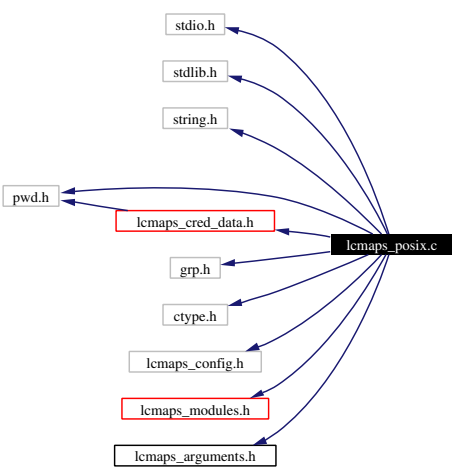
Definition in file lcmaps_poolaccount.c.

## 8.29 lcmaps_posix.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include <grp.h>
#include <ctype.h>
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
```

Include dependency graph for lcmaps_posix.c:




### 8.29.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code for the posix process enforcement LCMAPS plugin

1. plugin_initialize()
2. plugin_run()

3. plugin_terminate()
4. plugin_introspect()

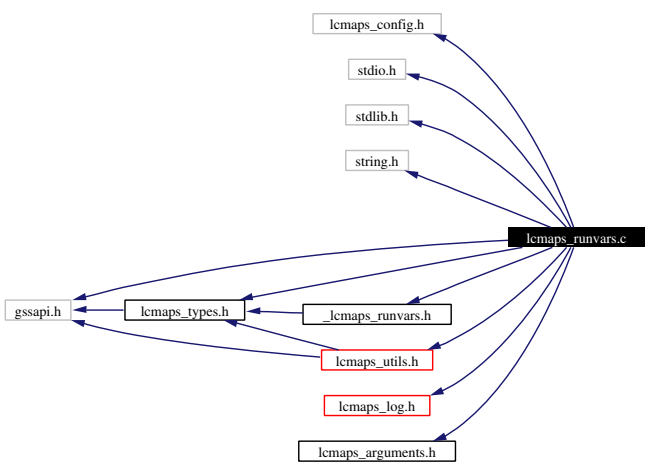
Definition in file lcmaps_posix.c.

## 8.30 lcmaps_runvars.c File Reference

Extract variables that will be used by the plugins.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <gssapi.h>
#include "lcmaps_log.h"
#include "lcmaps_types.h"
#include "lcmaps_utils.h"
#include "lcmaps_arguments.h"
#include "_lcmaps_runvars.h"
```

Include dependency graph for lcmaps_runvars.c:




### Variables

- lcmaps_argument_t runvars_list [ ]

### 8.30.1 Detailed Description

Extract variables that will be used by the plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This module takes the data that are presented to LCMAPS (the global credential and Job request) and extracts the variables that will be used by the plugins from it and stores them into a list. The interface to the LCMAPS module is composed of:

1. lcmaps_extractRunVars(): takes the global credential and Job request and extracts run variables from them
2. lcmaps_setRunVars(): adds run variables to a list
3. lcmaps_getRunVars(): gets run variables from list

   For internal use only.

Definition in file lcmaps_runvars.c.

## 8.30.2 Variable Documentation

### 8.30.2.1 lcmaps_argument_t runvars_list [static]

**Initial value:**

```
 {
    { "user_dn"     , "char *"           ,  0,   NULL},
    { "user_cred"   , "gss_cred_id_t"    ,  0,   NULL},
    { "lcmaps_cred" , "lcmaps_cred_id_t" ,  0,   NULL},
    { "job_request" , "lcmaps_request_t" ,  0,   NULL},
    { "job_request" , "char *"           ,  0,   NULL},
    { NULL          , NULL               , -1,   NULL}
}
```

For internal use only.

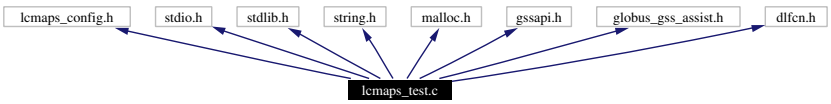
Definition at line 58 of file lcmaps_runvars.c.

## 8.31 lcmaps_test.c File Reference

Program to test the LCMAPS and its plugins.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <malloc.h>
#include <gssapi.h>
#include "globus_gss_assist.h"
#include <dlfcn.h>
```

Include dependency graph for lcmaps_test.c:




### 8.31.1 Detailed Description

Program to test the LCMAPS and its plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This program has elements of the edg-gatekeeper to be able to test the LCMAPS and its plugins without having the edg-gatekeeper installed. To run it : just run ./lcmaps-test It is not possible (yet) to feed a user credential (proxy) to the program.

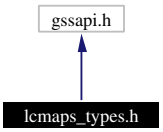
Definition in file lcmaps_test.c.

## 8.32 lcmaps_types.h File Reference

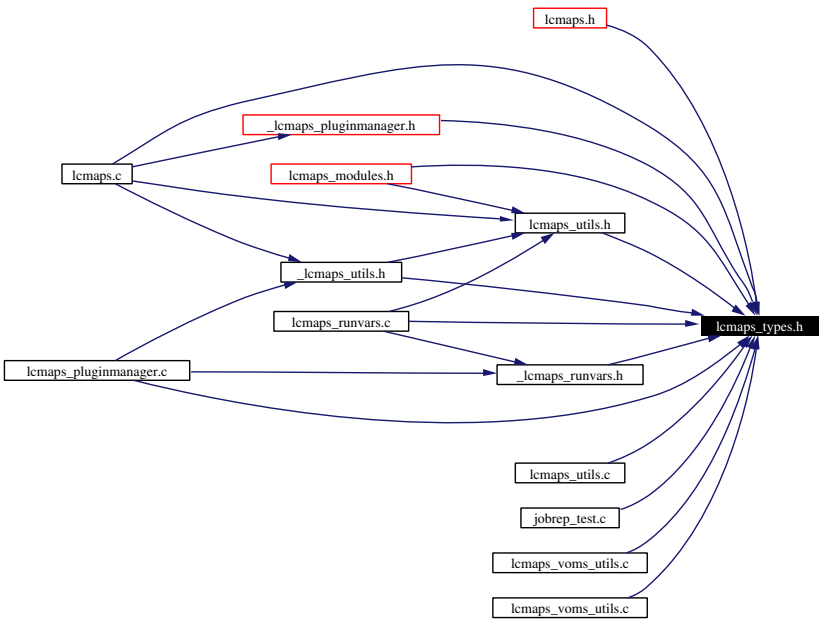
Public header file with typedefs for LCMAPS.

`#include <gssapi.h>`

Include dependency graph for lcmaps_types.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct lcmaps_cred_id_s

  *structure representing an LCMAPS credential.*

### Typedefs

- typedef char* lcmaps_request_t

  *Type of the LCMAPS request expressed in RSL/JDL.*

- typedef struct lcmaps_cred_id_s lcmaps_cred_id_t
  *Type of LCMAPS credentials.*

### 8.32.1 Detailed Description

Public header file with typedefs for LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_types.h.

### 8.32.2 Typedef Documentation

#### 8.32.2.1 typedef char * lcmaps_request_t

Type of the LCMAPS request expressed in RSL/JDL.

(Internal) just a string.

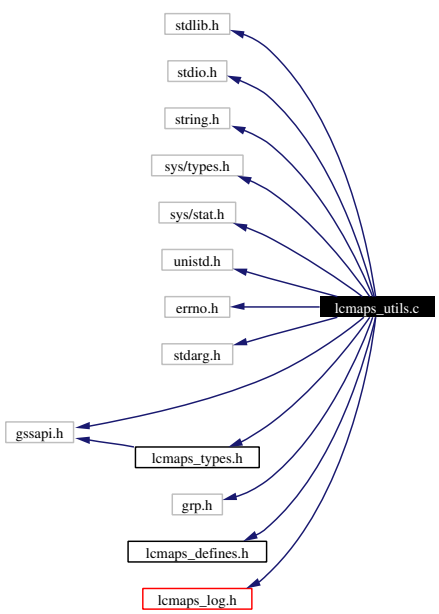
Definition at line 37 of file lcmaps_types.h.

## 8.33 lcmaps_utils.c File Reference

the utilities for the LCMAPS.

```
#include <stdlib.h>
#include <stdio.h>
#include <string.h>
#include <sys/types.h>
#include <sys/stat.h>
#include <unistd.h>
#include <errno.h>
#include <stdarg.h>
#include <gssapi.h>
#include <grp.h>
#include "lcmaps_defines.h"
#include "lcmaps_types.h"
#include "lcmaps_log.h"
```

Include dependency graph for lcmaps_utils.c:




### Functions

- char* cred_to_dn (gss_cred_id_t)

  *Get the globus DN from GLOBUS credential (gssapi).*

- int fexist (char *)
  *check the existence of file corresponding to <path>.*

### 8.33.1 Detailed Description

the utilities for the LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_utils.c.

### 8.33.2 Function Documentation

#### 8.33.2.1 char * cred_to_dn (gss_cred_id_t *globus_cred*) [static]

Get the globus DN from GLOBUS credential (gssapi).

(copied and modified from GLOBUS gatekeeper.c)

**Parameters:**
***globus_cred*** GLOBUS credential

**Returns:**
globus DN string (which may be freed)
For internal use only.

Definition at line 176 of file lcmaps_utils.c.

Referenced by lcmaps_fill_cred().

#### 8.33.2.2 int fexist (char * *path*) [static]

check the existence of file corresponding to <path>.

**Parameters:**
***path*** absolute filename to be checked.

**Return values:**
***1*** file exists.
***0*** failure.

Definition at line 304 of file lcmaps_utils.c.

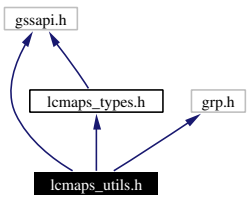
Referenced by lcmaps_getfexist().

## 8.34 lcmaps_utils.h File Reference

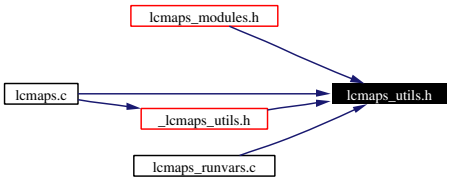
API for the utilities for the LCMAPS.

```
#include <gssapi.h>
#include "lcmaps_types.h"
#include <grp.h>
```

Include dependency graph for lcmaps_utils.h:




This graph shows which files directly or indirectly include this file:




### CREDENTIAL FUNCTIONS

- char* lcmaps_get_dn (lcmaps_cred_id_t lcmaps_credential)

  *Retrieve user DN from (LCMAPS) credential.*

### FILENAME FUNCTIONS

- char* lcmaps_genfilename (char *prefix, char *path, char *suffix)

  *Generate an absolute file name.*

- char* lcmaps_getfexist (int n,...)

  *Picks the first existing file in argument list.*

- char* lcmaps_findfile (char *name)

  *Checks for file in standard directories.*

## Functions

- int lcmaps_get_gidlist (const char *username, int *ngroups, gid_t **group_list)
  *Finds the list of gids for user in the group file (/etc/group).*

### 8.34.1 Detailed Description

API for the utilities for the LCMAPS.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This header contains the declarations of the LCMAPS utility functions:

1. lcmaps_get_dn():
2. lcmaps_genfilename():
3. lcmaps_getfexist():
4. lcmaps_findfile():
5. lcmaps_findfile():
6. lcmaps_get_gidlist():

Definition in file lcmaps_utils.h.

### 8.34.2 Function Documentation

#### 8.34.2.1 char * lcmaps_findfile (char * *name*)

Checks for file in standard directories.

The directories that are checked are:

- current directory
- "modules"
- LCMAPS_ETC_HOME
- LCMAPS_MOD_HOME
- LCMAPS_LIB_HOME

**Parameters:**
***name*** string containing the file name

**Returns:**
pointer to a string containing the absolute path to the file, which has to be freed or NULL.

Definition at line 389 of file lcmaps_utils.c.

#### 8.34.2.2 char * lcmaps_genfilename (char * *prefixp*, char * *pathp*, char * *suffixp*)

Generate an absolute file name.

Given a starting prefix, a relative or absolute path, and a suffix an absolute file name is generated. Uses the prefix only if the path is relative. (Copied (and modified) from GLOBUS gatekeeper.c)

**Parameters:**

***prefix*** string containing the prefix to be prepended.

***path*** relative/absolute path to file name.

***suffix*** string containing the suffix to be appended.

**Returns:**

pointer to a string containing the absolute path to the file, which has to be freed.

Definition at line 247 of file lcmaps_utils.c.

#### 8.34.2.3 char * lcmaps_get_dn (lcmaps_cred_id_t *lcmaps_cred*)

Retrieve user DN from (LCMAPS) credential.

This function takes an LCMAPS credential as input and returns the corresponding user distinguished name (DN).

(Internal:) If the GLOBUS credential part of the LCMAPS credential is empty the user DN is already included in the LCMAPS credential.

**Parameters:**

***lcmaps_credential*** the LCMAPS credential

**Returns:**

a string containing the user DN

Definition at line 151 of file lcmaps_utils.c.

#### 8.34.2.4 int lcmaps_get_gidlist (const char * *username*, int * *ngroups*, gid_t ** *group_list*)

Finds the list of gids for user in the group file (/etc/group).

Returns a list of gid_t which should be freed by calling program.

**Parameters:**

***username*** the name of the user

***ngroups*** ptr to int which will be filled with the number of gids

***group_list*** ptr to an array of gid_t

**Return values:**

***0*** success

***-1*** realloc failure

***-2*** getgrent failure

***1*** failure

Definition at line 577 of file lcmaps_utils.c.

#### 8.34.2.5 char * lcmaps_getfexist (int *n*, ...)

Picks the first existing file in argument list.

**Parameters:**

***n*** the number of paths presented in the following argument list.

**...** variable argument list of paths.

**Returns:**

filename found or NULL

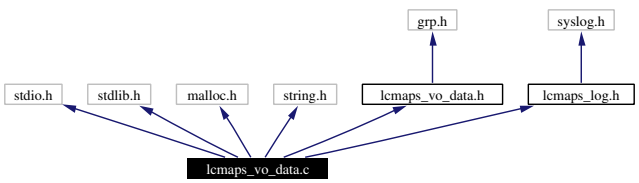
Definition at line 347 of file lcmaps_utils.c.

## 8.35 lcmaps_vo_data.c File Reference

LCMAPS utilities for creating and accessing VO data structures.

```
#include <stdio.h>
#include <stdlib.h>
#include <malloc.h>
#include <string.h>
#include "lcmaps_vo_data.h"
#include "lcmaps_log.h"
```

Include dependency graph for lcmaps_vo_data.c:




### 8.35.1 Detailed Description

LCMAPS utilities for creating and accessing VO data structures.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

The interface is composed of:

1. lcmaps_createVoData(): create a VoData structure
2. lcmaps_deleteVoData(): delete a VoData structure
3. lcmaps_copyVoData(): copy (the contents of) a VoData structure
4. lcmaps_printVoData(): print the contents of a VoData structure
5. lcmaps_stringVoData(): cast a VoData structure into a string

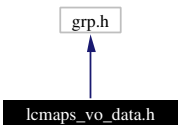
Definition in file lcmaps_vo_data.c.

## 8.36 lcmaps_vo_data.h File Reference

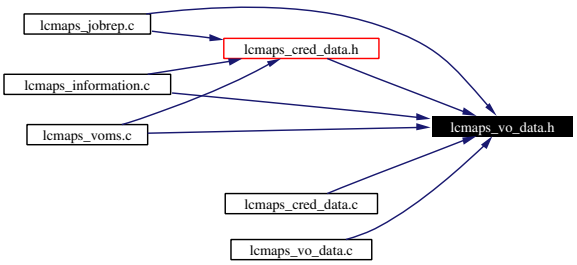
LCMAPS module for creating and accessing VO data structures.

`#include <grp.h>`

Include dependency graph for lcmaps_vo_data.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct lcmaps_vo_data_s

  *structure that contains the VO information found in the user's gss credential.*

- struct lcmaps_vo_mapping_s

  *structure that contains the VO information string (or FQAN) and the local Gid it is mapped to.*

### Defines

- #define LCMAPS_NO_GID (gid_t)(-1)

### Typedefs

- typedef struct lcmaps_vo_data_s lcmaps_vo_data_t

  *Type of VO information structure.*

- typedef struct lcmaps_vo_mapping_s lcmaps_vo_mapping_t

  *Type of VO mapping structure.*

## Functions

- lcmaps_vo_data_t* lcmaps_createVoData (const char *vo, const char *group, const char *subgroup, const char *role, const char *capability)

  *Create a VoData structure.*

- int lcmaps_deleteVoData (lcmaps_vo_data_t **vo_data)

  *Delete a VoData structure.*

- int lcmaps_cleanVoData (lcmaps_vo_data_t *vo_data)

  *Clean a VoData structure.*

- int lcmaps_copyVoData (lcmaps_vo_data_t *dst_vo_data, const lcmaps_vo_data_t *src_vo_data)

  *Copy a VoData structure into an empty VoData structure.*

- int lcmaps_printVoData (int debug_level, const lcmaps_vo_data_t *vo_data)

  *Print the contents of a VoData structure.*

- int lcmaps_stringVoData (const lcmaps_vo_data_t *vo_data, char *buffer, int nchars)

  *Cast a VoData structure into a string.*

- lcmaps_vo_mapping_t* lcmaps_createVoMapping (const char *vo_data_string, const char *groupname, const gid_t gid)

  *Create a VoMapping structure.*

- int lcmaps_deleteVoMapping (lcmaps_vo_mapping_t **vo_mapping)

  *Delete a VoMapping structure.*

- int lcmaps_cleanVoMapping (lcmaps_vo_mapping_t *vo_mapping)

  *Clean a VoMapping structure.*

- int lcmaps_copyVoMapping (lcmaps_vo_mapping_t *dst_vo_mapping, const lcmaps_vo_mapping_t *src_vo_mapping)

  *Copy a VoMapping structure into an empty VoMapping structure.*

- int lcmaps_printVoMapping (int debug_level, const lcmaps_vo_mapping_t *vo_mapping)

  *Print the contents of a VoMapping structure.*

### 8.36.1 Detailed Description

LCMAPS module for creating and accessing VO data structures.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

The interface is composed of:

1. lcmaps_createVoData(): create a VoData structure
2. lcmaps_deleteVoData(): delete a VoData structure

3. lcmaps_cleanVoData(): clean a VoData structure
4. lcmaps_copyVoData(): copy (the contents of) a VoData structure
5. lcmaps_printVoData(): print the contents of a VoData structure
6. lcmaps_stringVoData(): cast a VoData structure into a string
7. lcmaps_createVoMapping(): create a VoMapping structure
8. lcmaps_deleteVoMapping(): delete a VoMapping structure
9. lcmaps_cleanVoMapping(): clean a VoMapping structure
10. lcmaps_copyVoMapping(): copy (the contents of) a VoMapping structure
11. lcmaps_printVoMapping(): print the contents of a VoMapping structure

Definition in file lcmaps_vo_data.h.

## 8.36.2 Define Documentation

### 8.36.2.1 #define LCMAPS_NO_GID (gid_t)(-1)

Invalid GID

Definition at line 37 of file lcmaps_vo_data.h.

## 8.36.3 Function Documentation

### 8.36.3.1 int lcmaps_cleanVoData (lcmaps_vo_data_t * *vo_data*)

Clean a VoData structure.

Clean a VoData structure that was previously filled with lcmaps_copyVoData(). The contents are freed and set to zero.

**Parameters:**

***vo_data*** a pointer to a VoData structure

**Return values:**

***0*** in case of success

***-1*** in case of failure

Definition at line 195 of file lcmaps_vo_data.c.

#### 8.36.3.2 int lcmaps_cleanVoMapping (lcmaps_vo_mapping_t * *vo_mapping*)

Clean a VoMapping structure.

Clean a VoMapping structure that was previously filled with lcmaps_copyVoMapping(). The contents are freed and set to zero.

**Parameters:**

***vo_mapping*** a pointer to a VoMapping structure

**Return values:**

***0*** in case of success

***-1*** in case of failure

Definition at line 682 of file lcmaps_vo_data.c.

#### 8.36.3.3 int lcmaps_copyVoData (lcmaps_vo_data_t * *dst_vo_data*, const lcmaps_vo_data_t * *src_vo_data*)

Copy a VoData structure into an empty VoData structure.

Copy a VoData structure into an empty VoData structure which has to exist.

**Parameters:**

***dst_vo_data*** pointer to a empty VoData structure that should be filled

***src_vo_data*** pointer to the VoData structure that should be copied

**Return values:**

***0*** success

***-1*** failure (either src_vo_data or dst_vo_data was empty)

Definition at line 263 of file lcmaps_vo_data.c.

#### 8.36.3.4 int lcmaps_copyVoMapping (lcmaps_vo_mapping_t * *dst_vo_mapping*, const lcmaps_vo_mapping_t * *src_vo_mapping*)

Copy a VoMapping structure into an empty VoMapping structure.

Copy a VoMapping structure into an empty VoMapping structure which has to exist.

**Parameters:**

***dst_vo_mapping*** pointer to a empty VoMapping structure that should be filled

***src_vo_mapping*** pointer to the VoMapping structure that should be copied

**Return values:**

***0*** success

***-1*** failure (either src_vo_mapping or dst_vo_mapping was empty)

Definition at line 736 of file lcmaps_vo_data.c.

#### 8.36.3.5 lcmaps_vo_data_t * lcmaps_createVoData (const char * *vo*, const char * *group*, const char * *subgroup*, const char * *role*, const char * *capability*)

Create a VoData structure.

Create a VoData structure (store a VO, group, (subgroup,) role, capability combination). Allocate the memory. To be freed with lcmaps_deleteVoData().

**Parameters:**

*vo* name of the VO

*group* name of the group

*subgroup* name of the subgroup (ignored for the moment)

*role* the role

*capability* the capability (whatever it is)

**Returns:**

pointer to the VoData structure or NULL

Definition at line 81 of file lcmaps_vo_data.c.

#### 8.36.3.6 lcmaps_vo_mapping_t * lcmaps_createVoMapping (const char * *vo_data_string*, const char * *groupname*, const gid_t *gid*)

Create a VoMapping structure.

Create a VoMapping structure store the VO information string (or FQAN) in combination with the corresponding gid. Allocate the memory. To be freed with lcmaps_deleteVoMapping().

**Parameters:**

*vo_data_string* the VO information string (or FQAN)

*groupname* the (POSIX) group name

*gid* the (POSIX) GID

**Returns:**

pointer to the VoMapping structure or NULL

Definition at line 577 of file lcmaps_vo_data.c.

#### 8.36.3.7 int lcmaps_deleteVoData (lcmaps_vo_data_t ** *vo_data*)

Delete a VoData structure.

Delete a VoData structure that was previously created with lcmaps_createVoData(). The pointer to the VoData structure is finally set to NULL;

**Parameters:**

*vo_data* pointer to a pointer to a VoData structure

**Return values:**

*0* in case of success

*-1* in case of failure

Definition at line 141 of file lcmaps_vo_data.c.

#### 8.36.3.8 int lcmaps_deleteVoMapping (lcmaps_vo_mapping_t ** *vo_mapping*)

Delete a VoMapping structure.

Delete a VoMapping structure that was previously created with lcmaps_createVoMapping(). The pointer to the VoMapping structure is finally set to NULL;

**Parameters:**

***vo_mapping*** pointer to a pointer to a VoMapping structure

**Return values:**

***0*** in case of success

***-1*** in case of failure

Definition at line 631 of file lcmaps_vo_data.c.

#### 8.36.3.9 int lcmaps_printVoData (int *debug_level*, const lcmaps_vo_data_t * *vo_data*)

Print the contents of a VoData structure.

**Parameters:**

***vo_data*** pointer to a VoData structure

***debug_level*** debug_level for which the contents will be printed

**Returns:**

0 (always)

Definition at line 324 of file lcmaps_vo_data.c.

#### 8.36.3.10 int lcmaps_printVoMapping (int *debug_level*, const lcmaps_vo_mapping_t * *vo_mapping*)

Print the contents of a VoMapping structure.

**Parameters:**

***vo_mapping*** pointer to a VoMapping structure

***debug_level*** debug_level for which the contents will be printed

**Returns:**

0 (always)

Definition at line 787 of file lcmaps_vo_data.c.

#### 8.36.3.11 int lcmaps_stringVoData (const lcmaps_vo_data_t * *vo_data*, char * *buffer*, int *nchars*)

Cast a VoData structure into a string.

The user of this function should create the buffer of size nchars beforehand. In buffer a string like the following will be written: "/VO=fred/GROUP=fred/flintstone/ROLE=director/CAPABILITY=destroy"

Currently the SUBGROUP entry is ignored. Only if the information is present in the VoData structure, it is added to the string. Both data for VO and GROUP are required (might change).

**Parameters:**

***vo_data*** pointer to a VoData structure

***buffer*** pointer to character array of size nchars

***nchars*** size of character array

**Return values:**

***0*** in case of success

***-1*** in case of failure

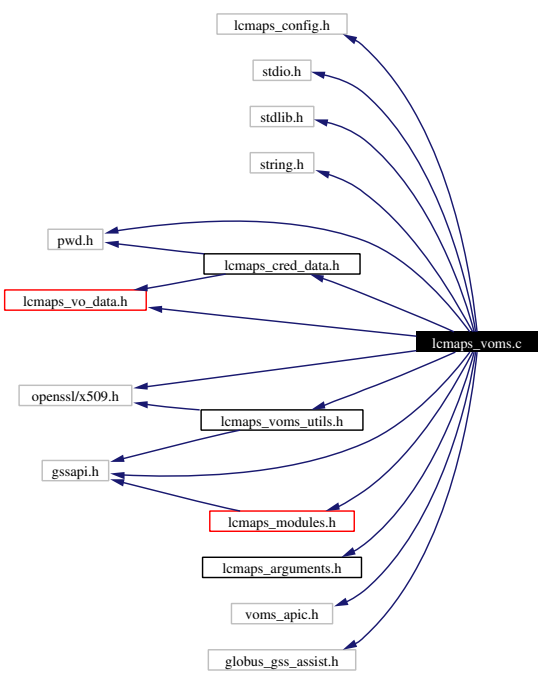
Definition at line 392 of file lcmaps_vo_data.c.

## 8.37 lcmaps_voms.c File Reference

Interface to the LCMAPS plugins.

```
#include "lcmaps_config.h"
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include <openssl/x509.h>
#include "gssapi.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_voms_utils.h"
#include "lcmaps_vo_data.h"
#include "voms_apic.h"
#include "globus_gss_assist.h"
```

Include dependency graph for lcmaps_voms.c:



### 8.37.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code for the voms plugin (extracts the VOMS info from the certificate). The interface consists of the following functions:

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

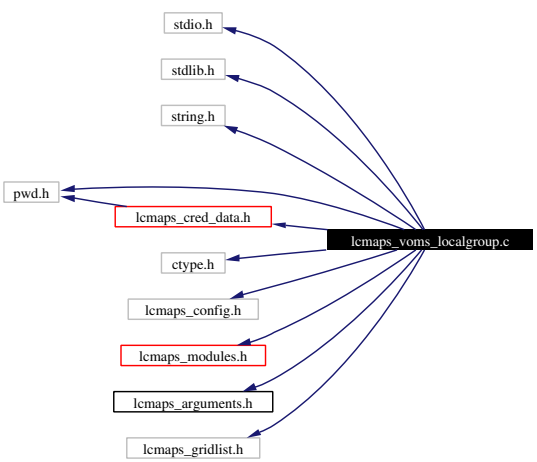
Definition in file lcmaps_voms.c.

## 8.38 lcmaps_voms_localgroup.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include <ctype.h>
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_gridlist.h"
```

Include dependency graph for lcmaps_voms_localgroup.c:




### 8.38.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code of the voms_localgroup plugin

1. plugin_initialize()
2. plugin_run()

3. plugin_terminate()
4. plugin_introspect()

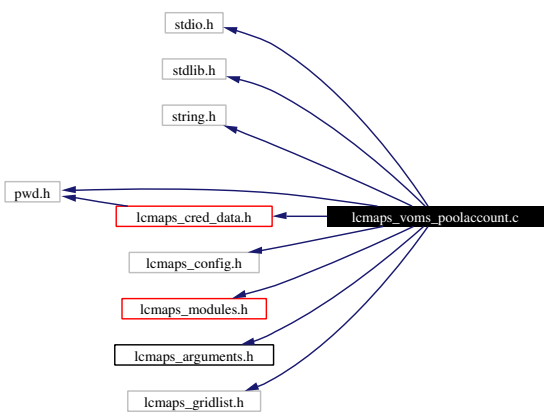
Definition in file lcmaps_voms_localgroup.c.

## 8.39 lcmaps_voms_poolaccount.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_gridlist.h"
```

Include dependency graph for lcmaps_voms_poolaccount.c:




### 8.39.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code of the voms_poolaccount plugin

1. plugin_initialize()
2. plugin_run()
3. plugin_terminate()
4. plugin_introspect()

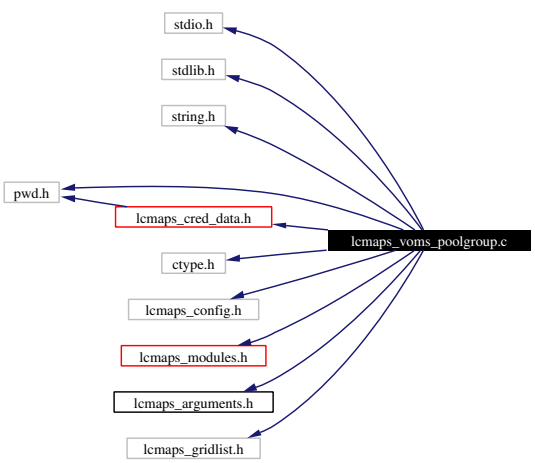
Definition in file lcmaps_voms_poolaccount.c.

## 8.40 lcmaps_voms_poolgroup.c File Reference

Interface to the LCMAPS plugins.

```
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include <pwd.h>
#include <ctype.h>
#include "lcmaps_config.h"
#include "lcmaps_modules.h"
#include "lcmaps_arguments.h"
#include "lcmaps_cred_data.h"
#include "lcmaps_gridlist.h"
```

Include dependency graph for lcmaps_voms_poolgroup.c:




### 8.40.1 Detailed Description

Interface to the LCMAPS plugins.

**Author:**
Martijn Steenbakkers for the EU DataGrid.

This file contains the code of the voms_poolgroup plugin

1. plugin_initialize()
2. plugin_run()

3. plugin_terminate()
4. plugin_introspect()

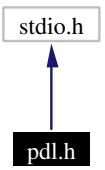
Definition in file lcmaps_voms_poolgroup.c.

## 8.41 pdl.h File Reference

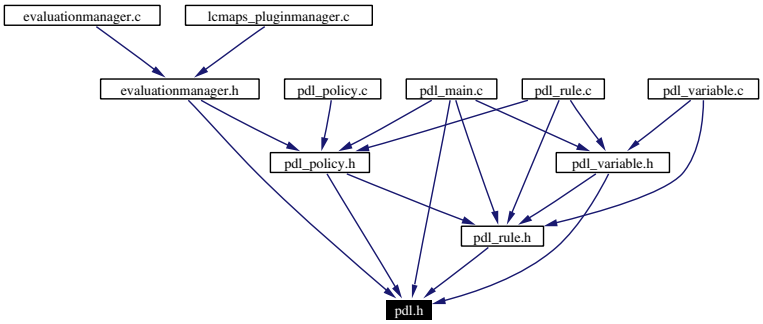
General include file.

`#include <stdio.h>`

Include dependency graph for pdl.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct plugin_s

  *Structure holds a plugin name and its arguments, as well as the line number the plugin is first mentioned.*

- struct record_s

  *Structure is used to keep track of strings and the line they appear on.*

### Defines

- #define TRUE 1

### Typedefs

- typedef struct record_s record_t

*Structure is used to keep track of strings and the line they appear on.*

- typedef struct plugin_s plugin_t

  *Structure holds a plugin name and its arguments, as well as the line number the plugin is first mentioned.*

## Enumerations

- enum pdl_error_t { PDL_UNKNOWN, PDL_INFO, PDL_WARNING, PDL_ERROR, PDL_SAME }
- enum plugin_status_t { EVALUATION_START, EVALUATION_SUCCESS, EVALUATION_FAILURE }

## Functions

- int pdl_init (const char *name)
- const char* pdl_path (void)
- int yyparse_errors (void)
- int yyerror (const char *)
- void set_path (record_t *_path)
- record_t* concat_strings (record_t *s1, record_t *s2)
- record_t* concat_strings_with_space (record_t *s1, record_t *s2)
- const plugin_t* get_plugins (void)
- void warning (pdl_error_t error, const char *s,...)
- void free_resources (void)
- const char* pdl_next_plugin (plugin_status_t status)

## Variables

- unsigned int lineno = 1

  *The first line of a configuration sctipt is labeled 1.*

### 8.41.1 Detailed Description

General include file.

In this include file all general "things" can be found.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.14

**Date:**

**Date:**
2003/09/11 11:20:28

Definition in file pdl.h.

## 8.41.2 Define Documentation

### 8.41.2.1 #define TRUE 1

The evaluation manager defines its own boolean type. It first undefines any existing type defenitions before it defines it itself.

Definition at line 44 of file pdl.h.

## 8.41.3 Typedef Documentation

### 8.41.3.1 typedef struct plugin_s plugin_t

Structure holds a plugin name and its arguments, as well as the line number the plugin is first mentioned.

### 8.41.3.2 typedef struct record_s record_t

Structure is used to keep track of strings and the line they appear on.

When lex finds a match, this structure is used to keep track of the relevant information. The matchig string as well as the line number are saved. The line number can be used for later references when an error related to the symbol has occured. This allows for easier debugging of the configuration file.

## 8.41.4 Enumeration Type Documentation

### 8.41.4.1 enum pdl_error_t

Different levels of error logging.

**Enumeration values:**

***PDL_UNKNOWN*** Unknown error level.

***PDL_INFO*** Informational level.

***PDL_WARNING*** Warning level.

***PDL_ERROR*** Error level.

***PDL_SAME*** Repeat the previous level.

Definition at line 52 of file pdl.h.

#### 8.41.4.2 enum plugin_status_t

Guide the selection of the next plugin.

**Enumeration values:**

*EVALUATION_START* The evaluation process has just started.

*EVALUATION_SUCCESS* The evaluation of the plugin was successful.

*EVALUATION_FAILURE* The evaluation of the plugin was unsuccessfyl.

Definition at line 65 of file pdl.h.

### 8.41.5 Function Documentation

#### 8.41.5.1 record_t * concat_strings (record_t * *s1*, record_t * *s2*)

Concatenate two strings. The orginal two strings are freed. When the concatenation fails, the origial strings are still freed. The actual concatenation is done by _concat_strings().

**Parameters:**

*s1* First string.

*s2* Second string

**Returns:**

Concatenated strings of s1 + s2.

Definition at line 393 of file pdl_main.c.

#### 8.41.5.2 record_t * concat_strings_with_space (record_t * *s1*, record_t * *s2*)

Concatenate two strings. The orginal two strings are freed. When the concatenation fails, the origial strings are still freed. The actual concatenation is done by _concat_strings().

**Parameters:**

*s1* First string.

*s2* Second string

**Returns:**

Concatenated strings of s1 + s2.

Definition at line 448 of file pdl_main.c.

#### 8.41.5.3 void free_resources (void)

Free the resources.

Definition at line 612 of file pdl_main.c.

Referenced by stopEvaluationManager().

#### 8.41.5.4 const plugin_t * get_plugins (void)

Get a list of plugins as known by the configuration file.

**Returns:**
Plugin list (linked list).

Definition at line 134 of file pdl_main.c.

Referenced by getPluginNameAndArgs().

#### 8.41.5.5 int pdl_init (const char * *name*)

Init the pdl engine. The function takes one arguments, the name of a configuration file to use.

**Parameters:**
***name*** Name of the configuration file to use.

**Returns:**
0 in case the initialization is successful; -1 in case of not being successful.

Definition at line 74 of file pdl_main.c.

#### 8.41.5.6 const char * pdl_next_plugin (plugin_status_t *status*)

Find the next plugin to evaluate based on the return status of the previous plugin evaluation. There are three statuses, two of which are rather obvious: either the previous evaluation has succeeded (EVALUATION_SUCCESS), or it has failed (EVALUATION_FAILURE). Based on these results, the next plugin should be the true_branch or false_branch respectively. There is one situation where there is no previous evaluation and that is at the very beginning. The very first call to this function should have (EVALUATION_START) as arguments. In this case the current state of the rule is returned as the next plugin to evaluate.

**Parameters:**
***status*** Status of previous evaluation.

**Returns:**
plugin name to be evaluation according to the configuration file.

Definition at line 498 of file pdl_main.c.

#### 8.41.5.7 const char * pdl_path (void)

Get the path.

**Returns:**
Path.

Definition at line 306 of file pdl_main.c.

Referenced by getPluginNameAndArgs(), and pdl_next_plugin().

#### 8.41.5.8 void set_path (record_t * *path*)

Function is called when the parser has found the value of the reserved path word. This function acts as a wrapper for the _set_path() function.

**Parameters:**
*path*

Definition at line 336 of file pdl_main.c.

#### 8.41.5.9 void warning (pdl_error_t *error*, const char * *s*, ...)

Display a warning message.

**Parameters:**
*error* Severity of the error.

*s* The text string.

... Additional values; much like printf(char *, ...);

Definition at line 648 of file pdl_main.c.

#### 8.41.5.10 int yyerror (const char * *s*)

When yacc encounters an error during the parsing process of the configuration file, it calls yyerror(). The actual message formatting is done in waring();

**Parameters:**
*s* error string.

Definition at line 319 of file pdl_main.c.

#### 8.41.5.11 int yyparse_errors (void)

Tell if there were errors/warning during parsing.

**Returns:**
0, if the are no errors/warnings, -1 otherwise.

Definition at line 122 of file pdl_main.c.

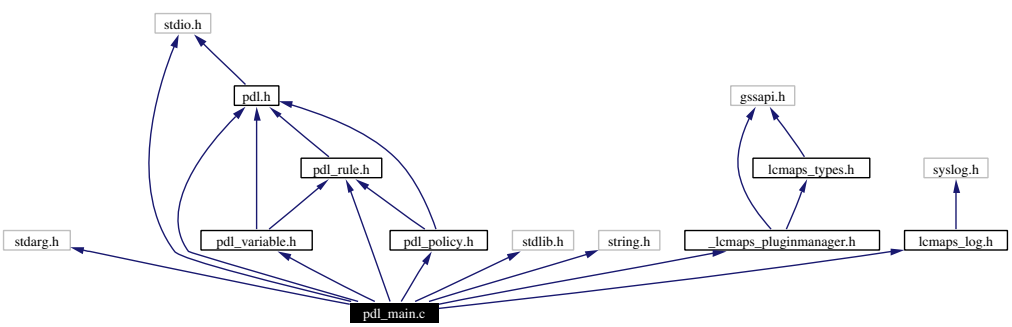
Referenced by startEvaluationManager().

## 8.42 pdl_main.c File Reference

All functions that do not fit elsewhere can be found here.

```
#include <stdarg.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "_lcmaps_pluginmanager.h"
#include "lcmaps_log.h"
#include "pdl.h"
#include "pdl_variable.h"
#include "pdl_policy.h"
#include "pdl_rule.h"
```

Include dependency graph for pdl_main.c:




### Functions

- void _set_path (const record_t *_path)
- record_t* _concat_strings (const record_t *s1, const record_t *s2, const char *extra)
- void reduce_policies (void)
- BOOL plugin_exists (const char *string)
- int find_first_space (const char *string)
- int pdl_init (const char *name)
- int yyparse_errors (void)
- const plugin_t* get_plugins (void)
- const char* pdl_path (void)
- int yyerror (const char *s)
- void set_path (record_t *path)
- void free_path (void)
- record_t* concat_strings (record_t *s1, record_t *s2)
- record_t* concat_strings_with_space (record_t *s1, record_t *s2)

- const char* pdl_next_plugin (plugin_status_t status)
- void free_resources (void)
- void warning (pdl_error_t error, const char *s,...)

## Variables

- const char* script_name = NULL

  *If non NULL, the name of the configuration script.*

- const char* d_path = "/usr/lib"

  *Default path where plugins can be found.*

- const char* path = 0

  *Path where plugins can be found.*

- int path_lineno = 0

  *???*

- plugin_t* top_plugin = NULL

  *First node of the list.*

- BOOL default_path = TRUE

  *Has the default vallue of the path been changed.*

- BOOL parse_error = FALSE

  *Tell if there have been any error during parsing.*

- char* level_str [PDL_SAME]

  *When a message is printed, how do we spell warning in a given language.*

- unsigned int lineno = 1

  *The first line of a configuration sctipt is labeled 1.*

### 8.42.1 Detailed Description

All functions that do not fit elsewhere can be found here.

In here one can find the more general functions. Most of them are accessible to outside sources. For a complete list of usable function to out side sources,

**See also:**
pdl.h.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.34

**Date:**

**Date:**
2003/10/07 11:21:17

Definition in file pdl_main.c.

## 8.42.2 Function Documentation

### 8.42.2.1 record_t * _concat_strings (const record_t * *s1*, const record_t * *s2*, const char * *extra*)

Concatenate two string.

**Parameters:**
*s1* first half of the string.
*s2* second half of the string.

**Returns:**
new string which is the concatenation of s1 and s2.

Definition at line 414 of file pdl_main.c.

Referenced by concat_strings(), and concat_strings_with_space().

### 8.42.2.2 void _set_path (const record_t * *_path*)

Overwrite the default path with the new value. If this function is called more than once, a warning message is displayed for each occurent.

**Parameters:**
*_path* The new path.

Definition at line 353 of file pdl_main.c.

Referenced by set_path().

### 8.42.2.3 record_t* concat_strings (record_t * *s1*, record_t * *s2*)

Concatenate two strings. The orginal two strings are freed. When the concatenation fails, the origial strings are still freed. The actual concatenation is done by _concat_strings().

**Parameters:**
*s1* First string.

*s2* Second string

**Returns:**
Concatenated strings of s1 + s2.

Definition at line 393 of file pdl_main.c.

#### 8.42.2.4 record_t* concat_strings_with_space (record_t * *s1*, record_t * *s2*)

Concatenate two strings. The orginal two strings are freed. When the concatenation fails, the origial strings are still freed. The actual concatenation is done by _concat_strings().

**Parameters:**
*s1* First string.

*s2* Second string

**Returns:**
Concatenated strings of s1 + s2.

Definition at line 448 of file pdl_main.c.

#### 8.42.2.5 int find_first_space (const char * *string*)

Find the first occurrence of a space in a string.

**Parameters:**
*string* String where the first space needs to be found.

**Returns:**
Position of the first occurrence of the space. If no space could be found, the position is set to the length of the string.

Definition at line 289 of file pdl_main.c.

Referenced by plugin_exists().

#### 8.42.2.6 void free_path (void)

Free the string allocated to hold the path

Definition at line 372 of file pdl_main.c.

Referenced by free_resources().

#### 8.42.2.7 void free_resources (void)

Free the resources.

Definition at line 612 of file pdl_main.c.

#### 8.42.2.8 const plugin_t* get_plugins (void)

Get a list of plugins as known by the configuration file.

**Returns:**
Plugin list (linked list).

Definition at line 134 of file pdl_main.c.

#### 8.42.2.9 int pdl_init (const char * *name*)

Init the pdl engine. The function takes one arguments, the name of a configuration file to use.

**Parameters:**
***name*** Name of the configuration file to use.

**Returns:**
0 in case the initialization is successful; -1 in case of not being successful.

Definition at line 74 of file pdl_main.c.

Referenced by startEvaluationManager().

#### 8.42.2.10 const char* pdl_next_plugin (plugin_status_t *status*)

Find the next plugin to evaluate based on the return status of the previous plugin evaluation. There are three statuses, two of which are rather obvious: either the previous evaluation has succeeded (EVALUATION_-SUCCESS), or it has failed (EVALUATION_FAILURE). Based on these results, the next plugin should be the true_branch or false_branch respectively. There is one situation where there is no previous evaluation and that is at the very beginning. The very first call to this function should have (EVALUATION_START) as arguments. In this case the current state of the rule is returned as the next plugin to evaluate.

**Parameters:**
***status*** Status of previous evaluation.

**Returns:**
plugin name to be evaluation according to the configuration file.

Definition at line 498 of file pdl_main.c.

Referenced by runEvaluationManager().

#### 8.42.2.11 const char* pdl_path (void)

Get the path.

**Returns:**
Path.

Definition at line 306 of file pdl_main.c.

#### 8.42.2.12 BOOL plugin_exists (const char * *string*)

Check if a plugin as specified by the string argument exists.

**Parameters:**
*string* Name of the plugin.

**Returns:**
TRUE if the plugin exists, FALSE otherwise.

Definition at line 187 of file pdl_main.c.

#### 8.42.2.13 void reduce_policies (void)

Reduce_policies to its elemantry form, i.e. each policy has a list of rules which need to be reduced.

Definition at line 217 of file pdl_policy.c.

Referenced by startEvaluationManager().

#### 8.42.2.14 void set_path (record_t * *path*)

Function is called when the parser has found the value of the reserved path word. This function acts as a wrapper for the _set_path() function.

**Parameters:**
*path*

Definition at line 336 of file pdl_main.c.

#### 8.42.2.15 void warning (pdl_error_t *error*, const char * *s*, ...)

Display a warning message.

**Parameters:**
*error* Severity of the error.

*s* The text string.

**...** Additional values; much like printf(char *, ...);

Definition at line 648 of file pdl_main.c.

Referenced by _add_policy(), _add_rule(), _add_variable(), _concat_strings(), _set_path(), check_rule_for_-recursion(), has_recursion(), pdl_init(), pdl_next_plugin(), reduce_to_var(), and yyerror().

#### 8.42.2.16 int yyerror (const char * *s*)

When yacc encounters an error during the parsing process of the configuration file, it calls yyerror(). The actual message formatting is done in waring();

**Parameters:**
*s* error string.

Definition at line 319 of file pdl_main.c.

#### 8.42.2.17 int yyparse_errors (void)

Tell if there were errors/warning during parsing.

**Returns:**
0, if the are no errors/warnings, -1 otherwise.

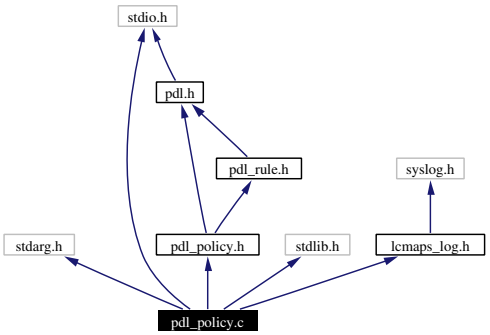
Definition at line 122 of file pdl_main.c.

## 8.43 pdl_policy.c File Reference

Implementation of the pdl policies.

```
#include <stdarg.h>
#include <stdio.h>
#include <stdlib.h>
#include "lcmaps_log.h"
#include "pdl_policy.h"
```

Include dependency graph for pdl_policy.c:




### Functions

- BOOL _add_policy (const record_t *name, const rule_t *rules)
- policy_t* current_policy (void)
- void allow_rules (BOOL allow)
- void add_policy (record_t *policy, rule_t *rules)
- void remove_policy (record_t *policy)
- policy_t* find_policy (const char *name)
- BOOL check_policies_for_recursion (void)
- void reduce_policies (void)
- policy_t* get_policies (void)
- void show_policies (void)
- void free_policies (void)
- BOOL policies_have_been_reduced (void)

### Variables

- BOOL policies_reduced = FALSE

  *Tell if reduce_policy() has been called.*

### 8.43.1 Detailed Description

Implementation of the pdl policies.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.13

**Date:**

**Date:**
2003/08/06 08:15:36

Definition in file pdl_policy.c.

### 8.43.2 Function Documentation

#### 8.43.2.1 BOOL _add_policy (const record_t * *name*, const rule_t * *rules*)

Add a policy with its rules to the list of policies.

Before the policy name is actually added to list of policies, a check is made to see weather or not a policy by the same name exists. if it does, the policy name will not be added and an error message is displayed, letting the user know that the configuration file contains multiple policy rules with the same name.

**Parameters:**
*name* Name of the new policy.

*rules* List of associated rules for the policy.

**Returns:**
TRUE, If the policy has been added successfully; FALSE otherwise.

Definition at line 118 of file pdl_policy.c.

Referenced by add_policy().

#### 8.43.2.2 void add_policy (record_t * *policy*, rule_t * *rules*)

Wrapper around the _add_policy(name) function.

When the _add_policy() call fails, this function cleans up the data structure allocated for holding information about the policy that was found. See _add_policy() for information about the kind of reasons it can fail.

**Parameters:**

***name*** Name of the policy.

***rules*** List of associated rules for the policy.

Definition at line 84 of file pdl_policy.c.

#### 8.43.2.3 void allow_rules (BOOL *allow*)

Allow or disallow the additions of rules depending on the argument. When for example a policy is defined for the second time, an error should be generated, but the parsing should still continue. However, no rules can be added to the policy as there is currently no policy defined.

**Parameters:**

***allow*** TRUE if addition of new rules is allowd, FALSE otherwise.

Definition at line 66 of file pdl_policy.c.

#### 8.43.2.4 BOOL check_policies_for_recursion (void)

Check for recursions in the policy rules.

**Returns:**

TRUE if at least one recustion has been found, FALSE otherwise.

Definition at line 190 of file pdl_policy.c.

Referenced by startEvaluationManager().

#### 8.43.2.5 policy_t * current_policy (void)

Return the current policy.

**Returns:**

Current policy.

Definition at line 50 of file pdl_policy.c.

#### 8.43.2.6 policy_t * find_policy (const char * *name*)

Find a policy based.

**Parameters:**

***name*** Name of the policy to be found. \retrun The policy if a polict with name 'name' exists, 0 otherwise.

Definition at line 171 of file pdl_policy.c.

#### 8.43.2.7 void free_policies (void)

Free all policies and their allocated resources.

Definition at line 271 of file pdl_policy.c.

Referenced by free_resources().

#### 8.43.2.8 policy_t * get_policies (void)

Get the list of policies.

**Returns:**
First policy in the list.

Definition at line 244 of file pdl_policy.c.

Referenced by check_policies_for_recursion(), get_plugins(), pdl_next_plugin(), and reduce_policies().

#### 8.43.2.9 BOOL policies_have_been_reduced (void)

Tell if the reduce_policy() call has been called.

**Returns:**
TRUE if reduce_policy() has been called; FALSE otherwise.

Definition at line 293 of file pdl_policy.c.

Referenced by get_plugins().

#### 8.43.2.10 void reduce_policies (void)

Reduce_policies to its elemantry form, i.e. each policy has a list of rules which need to be reduced.

Definition at line 217 of file pdl_policy.c.

#### 8.43.2.11 void remove_policy (record_t * *name*)

Remove a policy from the list of policies and free all associated resources of the policy.

**Parameters:**
*name* Policy to be removed.

Definition at line 157 of file pdl_policy.c.

#### 8.43.2.12 void show_policies (void)

Display the policies and the rules associated with the policy.

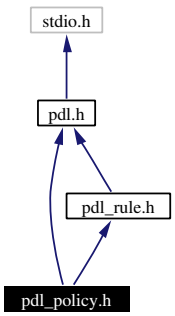
Definition at line 254 of file pdl_policy.c.

## 8.44 pdl_policy.h File Reference

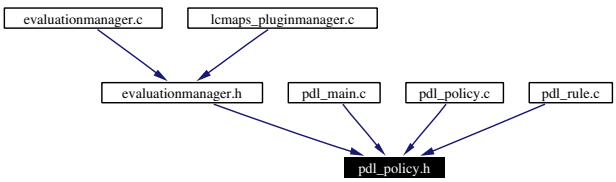
Include file for using the pdl policies.

```
#include "pdl.h"
#include "pdl_rule.h"
```

Include dependency graph for pdl_policy.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct policy_s

  *Keeping track of found policies.*

### Typedefs

- typedef struct policy_s policy_t

  *Keeping track of found policies.*

### Functions

- void add_policy (record_t *policy, rule_t *rules)

- void remove_policy (record_t *name)
- void show_policies (void)
- void free_policies (void)
- void allow_rules (BOOL allow)
- BOOL check_policies_for_recursion (void)
- void reduce_policies (void)
- BOOL policies_have_been_reduced (void)
- policy_t* find_policy (const char *name)
- policy_t* current_policy (void)
- policy_t* get_policies (void)

### 8.44.1 Detailed Description

Include file for using the pdl policies.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.8

**Date:**

**Date:**
2003/07/30 14:37:08

Definition in file pdl_policy.h.

### 8.44.2 Typedef Documentation

#### 8.44.2.1 typedef struct policy_s policy_t

Keeping track of found policies.

### 8.44.3 Function Documentation

#### 8.44.3.1 void add_policy (record_t * *policy*, rule_t * *rules*)

Wrapper around the _add_policy(name) function.

When the _add_policy() call fails, this function cleans up the data structure allocated for holding information about the policy that was found. See _add_policy() for information about the kind of reasons it can fail.

**Parameters:**

***name*** Name of the policy.

***rules*** List of associated rules for the policy.

Definition at line 84 of file pdl_policy.c.

#### 8.44.3.2 void allow_rules (BOOL *allow*)

Allow or disallow the additions of rules depending on the argument. When for example a policy is defined for the second time, an error should be generated, but the parsing should still continue. However, no rules can be added to the policy as there is currently no policy defined.

**Parameters:**

***allow*** TRUE if addition of new rules is allowd, FALSE otherwise.

Definition at line 66 of file pdl_policy.c.

Referenced by _add_policy().

#### 8.44.3.3 BOOL check_policies_for_recursion (void)

Check for recursions in the policy rules.

**Returns:**

TRUE if at least one recustion has been found, FALSE otherwise.

Definition at line 190 of file pdl_policy.c.

#### 8.44.3.4 policy_t* current_policy (void)

Return the current policy.

**Returns:**

Current policy.

Definition at line 50 of file pdl_policy.c.

#### 8.44.3.5 policy_t* find_policy (const char * *name*)

Find a policy based.

**Parameters:**

***name*** Name of the policy to be found. \retrun The policy if a polict with name 'name' exists, 0 otherwise.

Definition at line 171 of file pdl_policy.c.

Referenced by _add_policy(), and _add_rule().

#### 8.44.3.6 void free_policies (void)

Free all policies and their allocated resources.

Definition at line 271 of file pdl_policy.c.

#### 8.44.3.7 policy_t* get_policies (void)

Get the list of policies.

**Returns:**
First policy in the list.

Definition at line 244 of file pdl_policy.c.

#### 8.44.3.8 BOOL policies_have_been_reduced (void)

Tell if the reduce_policy() call has been called.

**Returns:**
TRUE if reduce_policy() has been called; FALSE otherwise.

Definition at line 293 of file pdl_policy.c.

#### 8.44.3.9 void reduce_policies (void)

Reduce_policies to its elemantry form, i.e. each policy has a list of rules which need to be reduced.

Definition at line 217 of file pdl_policy.c.

#### 8.44.3.10 void remove_policy (record_t * *name*)

Remove a policy from the list of policies and free all associated resources of the policy.

**Parameters:**
*name* Policy to be removed.

Definition at line 157 of file pdl_policy.c.

#### 8.44.3.11 void show_policies (void)

Display the policies and the rules associated with the policy.

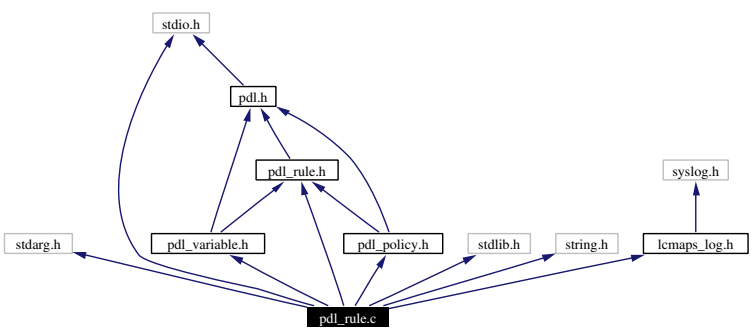
Definition at line 254 of file pdl_policy.c.

## 8.45 pdl_rule.c File Reference

Implementation of the pdl rules.

```
#include <stdarg.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "lcmaps_log.h"
#include "pdl_rule.h"
#include "pdl_policy.h"
#include "pdl_variable.h"
```

Include dependency graph for pdl_rule.c:




### Functions

- rule_t* _add_rule (const record_t *state, const record_t *true_branch, const record_t *false_branch)
- const rule_t* find_state (const rule_t *rule, const char *state)
- int find_insert_position (const int *list, const int rule_number, unsigned int high)
- unsigned int rule_number (const rule_t *rule)
- BOOL make_list (int *new_list, const int *list, const int rule_number, const unsigned int depth)
- unsigned int count_rules (const rule_t *rule)
- void update_list (unsigned int *rules, unsigned int rule)
- const rule_t* get_rule_number (unsigned int rule_num)
- void start_new_rules (void)
- void allow_new_rules (BOOL allow)
- rule_t* add_rule (record_t *state, record_t *true_branch, record_t *false_branch)
- BOOL check_rule_for_recursion (const rule_t *rule)
- recursion_t has_recursion (const rule_t *rule, int *list, unsigned int depth, unsigned int *seen_rules)
- void reduce_rule (rule_t *rule)
- void show_rules (const rule_t *rule)
- void free_rules (rule_t *rule)

- const rule_t* get_top_rule (void)
- void set_top_rule (const rule_t *rule)

### 8.45.1 Detailed Description

Implementation of the pdl rules.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.19

**Date:**

**Date:**
2003/09/04 13:47:35

Definition in file pdl_rule.c.

### 8.45.2 Function Documentation

#### 8.45.2.1 rule_t * _add_rule (const record_t * *state*, const record_t * *true_branch*, const record_t * *false_branch*)

Rules come in three different forms:

1. a -> b
2. a -> b | c
3. ~a ->b

They share a common structure. First the left hand side gives the starting state and right hand side the states to transit to. This means that each rule has a starting state and depending on the form one or two transit states:

- The first form has only the true transit state;
- The second form had both true and false transit states;
- The thrird for has only the false transit state. When either the true or false transit state for a rule does not exists, 0 should be supplied.

**Parameters:**

***state*** Starting state

***true_branch*** True transit state

*false_branch* False transit state

**Returns:**
TRUE if the rule has been added successfully, FALSE otherwise.

Definition at line 144 of file pdl_rule.c.

Referenced by add_rule().

#### 8.45.2.2 rule_t * add_rule (record_t * *state*, record_t * *true_branch*, record_t * *false_branch*)

Add a new rule to the list of rules. This function acts as a wrapper function for _add_rule().

**Parameters:**
*state* Starting state
*true_branch* True transit state
*false_branch* False transit state

Definition at line 86 of file pdl_rule.c.

#### 8.45.2.3 void allow_new_rules (BOOL *allow*)

Is it allowed to add new rules?

**Parameters:**
*allows* TRUE if adding new rules is allowed, FALSE otherwise.

Definition at line 71 of file pdl_rule.c.

#### 8.45.2.4 BOOL check_rule_for_recursion (const rule_t * *rule*)

Check the rule for occurances of recursion.

**Returns:**
TRUE if a recursion have been found, FALSE otherwise.

Definition at line 220 of file pdl_rule.c.

#### 8.45.2.5 unsigned int count_rules (const rule_t * *rule*)

Count the number of rules that follow 'rule' inclusive.

**Parameters:**
*rule* The rule to start count from.

**Returns:**
Number of counted rules.

Definition at line 257 of file pdl_rule.c.

Referenced by check_rule_for_recursion().

#### 8.45.2.6 int find_insert_position (const int * *list*, const int *rule_number*, unsigned int *high*)

Based on a sorted list, find the position where to insert an new element without disturbing the ordering in the list. The search is a binary search.

**Parameters:**

*list* List of sorted numbers.

*rule_number* Number to be inserted.

*high* Element number of last element in the list.

**Returns:**

Position of insertion.

Definition at line 488 of file pdl_rule.c.

Referenced by make_list(), and update_list().

#### 8.45.2.7 const rule_t * find_state (const rule_t * *rule*, const char * *state*)

Find a state with name state.

**Parameters:**

*state* Name of the state to be found.

**Returns:**

Rule which contains the state or 0 when no such rule could be found.

Definition at line 202 of file pdl_rule.c.

#### 8.45.2.8 void free_rules (rule_t * *rule*)

Free all resource associated with the rule.

**Parameters:**

*rule* Rule for which the resources must be freed.

Definition at line 637 of file pdl_rule.c.

#### 8.45.2.9 const rule_t * get_rule_number (unsigned int *rule_num*)

Give the position of the rule in the policy, return that rule.

**Parameters:**

*rule_num* Position of the rule in the current policy.

**Returns:**

Rule that is associated with the rule_num, NULL if the rule cannot be found.

Definition at line 278 of file pdl_rule.c.

Referenced by check_rule_for_recursion().

#### 8.45.2.10 const rule_t * get_top_rule (void)

Get the top rule.

**Returns:**
Top rule.

Definition at line 658 of file pdl_rule.c.

#### 8.45.2.11 recursion_t has_recursion (const rule_t * *rule*, int * *list*, unsigned int *depth*, unsigned int * *seen_rules*)

Check the a rule for recursion. This is done in a recursive manner. From the top rule, all possible paths are considered. Each path becomes a top of its own and from their all possible paths are traveled. Each time the tree is searched at a greater depth, a list is kept to tell which states have been seen for the current path. In this list of states no duplicates should be present. If a seen state state already appears in the list, the path taken is recursive. This information is propagated back up the traveled tree.

At the same time another list is maintained. In this list all visited states are remembered. Duplicates are not added. When all possible paths have been traveled, the list tells all visited rules. When a particular rule is not part of the tree, it is also not listed in the list. This way one can check for disconnected rules.

**Parameters:**

***rule*** Rule to check for recursion.

***list*** List to keep track of each traveled path.

***depth*** Current depth of the tree.

***seen_rules*** Rules that have been visited and hence are part of the path.

**Returns:**
Whether or not recursion has been detected and also if it has been reported.

Definition at line 318 of file pdl_rule.c.

Referenced by check_rule_for_recursion().

#### 8.45.2.12 BOOL make_list (int * *new_list*, const int * *list*, const int *rule_number*, const unsigned int *depth*)

Make a new sorted list based on the current list and the element to be inserted. The element will only be added to the list if it is not already present.

**Parameters:**

***new_list*** New list after sorted insertion of new element.

***list*** Old list.

***rule_number*** Number to be inserted into the list.

***depth*** Current depth of the tree. It is used to detmine the number of elements of the list.

**Returns:**
TRUE if element has been added, FALSE otherwise

Definition at line 526 of file pdl_rule.c.

Referenced by has_recursion().

#### 8.45.2.13 void reduce_rule (rule_t * *rule*)

Reduce a rule to its elementry form, i.e. all variables in the rule are substituted by their respective values.

**Parameters:**
*rule* Rule to reduce.

Definition at line 558 of file pdl_rule.c.

#### 8.45.2.14 unsigned int rule_number (const rule_t * *rule*)

Given a rule, find the corresponding position in the policy.

**Parameters:**
*rule* Rule of which the position must be found.

**Returns:**
Position of the rule in the current policy.

Definition at line 425 of file pdl_rule.c.

Referenced by has_recursion().

#### 8.45.2.15 void set_top_rule (const rule_t * *rule*)

Set the top rule to a new value.

**Parameters:**
*rule* New value of top rule.

Definition at line 670 of file pdl_rule.c.

#### 8.45.2.16 void show_rules (const rule_t * *rule*)

Show a rule and its descendants.

**Parameters:**
*rule* Rule to display.

Definition at line 615 of file pdl_rule.c.

#### 8.45.2.17 void start_new_rules (void)

Start a new list of rules.

Definition at line 58 of file pdl_rule.c.

Referenced by add_policy().

#### 8.45.2.18 void update_list (unsigned int * *rules*, unsigned int *rule*)

Update the list that hold the visited rules. This is a sorted list for easy insertion and look-up. Duplicate rules are not inserted. The first element of the list tells the total number of elements that follow.

**Note:**

The list expects rules to be numbered starting from 1. This is because 0 denotes empty cells. The find_insert_position() returns numbers starting from 0. This is corrected for in this function.

**Parameters:**

***rules*** List of visited rules.

***rule*** rule to insert.

Definition at line 453 of file pdl_rule.c.

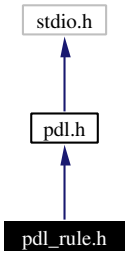
Referenced by has_recursion().

## 8.46 pdl_rule.h File Reference

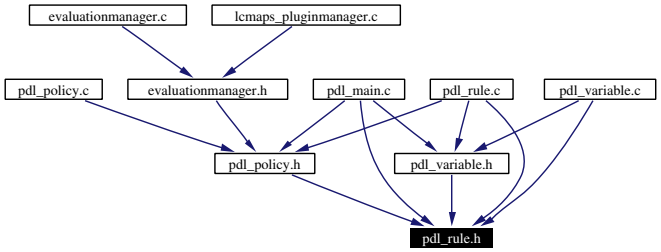
Include file for using the pdl rules.

`#include "pdl.h"`

Include dependency graph for pdl_rule.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct rule_s

  *Structure keeps track of the state and the true/false braches.*

### Typedefs

- typedef struct rule_s rule_t

  *Structure keeps track of the state and the true/false braches.*

### Enumerations

- enum rule_type_t { STATE, TRUE_BRANCH, FALSE_BRANCH }

  *Which type is the current rule.*

- enum recursion_t { NO_RECURSION = 0x00, RECURSION = 0x01, RECURSION_HANDLED = 0x02 }

  *Tell something about recursion in rules.*

- enum side_t { left_side, right_side }

  *Given a rule, which side of the rule are we working on.*

## Functions

- rule_t* add_rule (record_t *state, record_t *true_branch, record_t *false_branch)
- void free_rules (rule_t *rule)
- void show_rules (const rule_t *rule)
- void start_new_rules (void)
- const rule_t* get_top_rule (void)
- void allow_new_rules (BOOL allow)
- void set_top_rule (const rule_t *rule)
- BOOL check_rule_for_recursion (const rule_t *rule)
- void reduce_rule (rule_t *rule)

### 8.46.1 Detailed Description

Include file for using the pdl rules.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.11

**Date:**

**Date:**
2003/07/31 10:33:00

Definition in file pdl_rule.h.

### 8.46.2 Typedef Documentation

#### 8.46.2.1 typedef struct rule_s rule_t

Structure keeps track of the state and the true/false braches.

## 8.46.3 Enumeration Type Documentation

### 8.46.3.1 enum recursion_t

Tell something about recursion in rules.

**Enumeration values:**

*NO_RECURSION* There is no known recursion.

*RECURSION* Recursion has been found.

*RECURSION_HANDLED* Recursion has been found and handled/reported.

Definition at line 62 of file pdl_rule.h.

### 8.46.3.2 enum rule_type_t

Which type is the current rule.

**Enumeration values:**

*STATE* State.

*TRUE_BRANCH* True branch.

*FALSE_BRANCH* False branch.

Definition at line 52 of file pdl_rule.h.

### 8.46.3.3 enum side_t

Given a rule, which side of the rule are we working on.

**Enumeration values:**

*left_side* left side, i.e. state part of the rule.

*right_side* right side, i.e. either true or false branch.

Definition at line 72 of file pdl_rule.h.

## 8.46.4 Function Documentation

### 8.46.4.1 rule_t* add_rule (record_t * *state*, record_t * *true_branch*, record_t * *false_branch*)

Add a new rule to the list of rules. This function acts as a wrapper function for _add_rule().

**Parameters:**

*state* Starting state

*true_branch* True transit state

*false_branch* False transit state

Definition at line 86 of file pdl_rule.c.

#### 8.46.4.2 void allow_new_rules (BOOL *allow*)

Is it allowed to add new rules?

**Parameters:**
*allows* TRUE if adding new rules is allowed, FALSE otherwise.

Definition at line 71 of file pdl_rule.c.

Referenced by allow_rules().

#### 8.46.4.3 BOOL check_rule_for_recursion (const rule_t * *rule*)

Check the rule for occurances of recursion.

**Returns:**
TRUE if a recursion have been found, FALSE otherwise.

Definition at line 220 of file pdl_rule.c.

Referenced by check_policies_for_recursion().

#### 8.46.4.4 void free_rules (rule_t * *rule*)

Free all resource associated with the rule.

**Parameters:**
*rule* Rule for which the resources must be freed.

Definition at line 637 of file pdl_rule.c.

Referenced by add_policy(), and free_policies().

#### 8.46.4.5 const rule_t* get_top_rule (void)

Get the top rule.

**Returns:**
Top rule.

Definition at line 658 of file pdl_rule.c.

#### 8.46.4.6 void reduce_rule (rule_t * *rule*)

Reduce a rule to its elementry form, i.e. all variables in the rule are substituted by their respective values.

**Parameters:**
*rule* Rule to reduce.

Definition at line 558 of file pdl_rule.c.

Referenced by reduce_policies().

#### 8.46.4.7 void set_top_rule (const rule_t * *rule*)

Set the top rule to a new value.

**Parameters:**
*rule* New value of top rule.

Definition at line 670 of file pdl_rule.c.

Referenced by reduce_policies().

#### 8.46.4.8 void show_rules (const rule_t * *rule*)

Show a rule and its descendants.

**Parameters:**
*rule* Rule to display.

Definition at line 615 of file pdl_rule.c.

Referenced by show_policies().

#### 8.46.4.9 void start_new_rules (void)

Start a new list of rules.

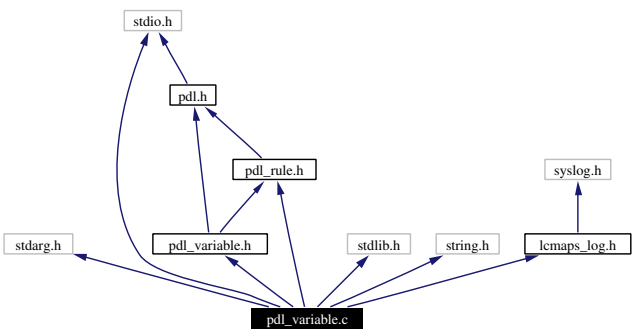
Definition at line 58 of file pdl_rule.c.

## 8.47 pdl_variable.c File Reference

Implementation of the pdl variables.

```
#include <stdarg.h>
#include <stdio.h>
#include <stdlib.h>
#include <string.h>
#include "lcmaps_log.h"
#include "pdl_variable.h"
#include "pdl_rule.h"
```

Include dependency graph for pdl_variable.c:




### Functions

- BOOL _add_variable (const record_t *name, const record_t *value)
- var_t* find_variable (const char *name)
- var_t* detect_loop (const char *name, const char *value)
- void add_variable (record_t *name, record_t *value)
- void free_variables (void)
- void reduce_to_var (const char **name, rule_type_t rule_type)
- var_t* get_variables (void)
- void show_variables (void)

### 8.47.1 Detailed Description

Implementation of the pdl variables.

Not all functions defined in this file are accessible to everyone. A subset is used by the pdl variable functions themselves. For the list API functions look in pdl_variables.h.

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.9

**Date:**

**Date:**
2003/07/30 14:37:09

Definition in file pdl_variable.c.

## 8.47.2 Function Documentation

### 8.47.2.1 BOOL _add_variable (const record_t * *name*, const record_t * *value*)

Actual implementation of the add_variable call. When the variable has been added the call returns TRUE, otherwise its FALSE. There can be several reasons for failure:

- Variable allready exists;
- Variable refers to itself through a loop;
- No more resources to allocate for variable.

**Parameters:**
***name*** Name of the variable to be added.
***value*** Value of the variable.

**Returns:**
TRUE in case the variable has been added, FALSE otherwise.

Definition at line 89 of file pdl_variable.c.

Referenced by add_variable().

### 8.47.2.2 void add_variable (record_t * *name*, record_t * *value*)

Wrapper function for the _add_variable() function call. The hard work is done in the _add_variable() call. When that call succeeds only the resources allocated for holding the name and value parameters are freed, i.e. the structures name and value. In case the _add_variable() calls fails, the string that is contained within the name and value strutures is freed as well.

**Parameters:**
***name*** Name of the variable.
***value*** Value of the variable.

Definition at line 64 of file pdl_variable.c.

#### 8.47.2.3 var_t * detect_loop (const char * *name*, const char * *value*)

Try to detect a loop in the variable references. When e.g. a=b, b=c and c=a, then the call should detect a loop.

**Parameters:**

*name* Name of the variable.

*value* Value of the variable.

**Returns:**

0 if no loop was detected. When a loop is detected, the first variable in the loop is returned.

Definition at line 193 of file pdl_variable.c.

Referenced by _add_variable().

#### 8.47.2.4 var_t * find_variable (const char * *name*)

Find a variable based on the variable name. This way the value of a variable can be retrieved.

**Parameters:**

*name* Name of the variable to find.

**Returns:**

Pointer to the corresponding variable, or 0 when not found.

Definition at line 168 of file pdl_variable.c.

#### 8.47.2.5 void free_variables (void)

Free the resources allocated for the variables.

Definition at line 142 of file pdl_variable.c.

Referenced by free_resources().

#### 8.47.2.6 var_t * get_variables (void)

Get a list of all variables in the configure file.

**Returns:**

First variable of the list.

Definition at line 269 of file pdl_variable.c.

#### 8.47.2.7 void reduce_to_var (const char ** *name*, rule_type_t *rule_type*)

Reduce the variable to its real value. When a variable has another variable as its value, the variable will be reduced to the value of the refering variable.

**Parameters:**

***name*** Name of the variable to be reduced.

**Returns:**

Real value of the redunced variable.

Definition at line 239 of file pdl_variable.c.

#### 8.47.2.8 void show_variables (void)

Print all variables and their value as described in the configure file to stdout.

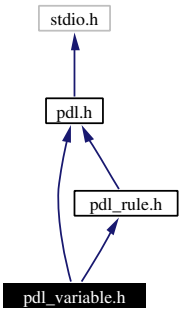
Definition at line 280 of file pdl_variable.c.

## 8.48 pdl_variable.h File Reference

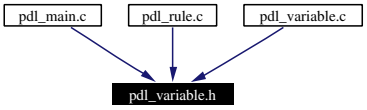
Include file for using the pdl variables.

```
#include "pdl.h"
#include "pdl_rule.h"
```

Include dependency graph for pdl_variable.h:




This graph shows which files directly or indirectly include this file:




### Data Structures

- struct var_s

  *Structure keeps track of the variables, their value and the line number they are defined on.*

### Typedefs

- typedef struct var_s var_t

  *Structure keeps track of the variables, their value and the line number they are defined on.*

### Functions

- void add_variable (record_t *name, record_t *value)
- void reduce_to_var (const char **name, rule_type_t rule_type)
- void show_variables (void)
- void free_variables (void)

- var_t* get_variables (void)

### 8.48.1 Detailed Description

Include file for using the pdl variables.

All functions listed in here are accessible and usable for external "modules".

**Author:**
G.M. Venekamp (venekamp@nikhef.nl)

**Version:**

**Revision:**
1.6

**Date:**

**Date:**
2003/07/30 14:37:09

Definition in file pdl_variable.h.

### 8.48.2 Typedef Documentation

#### 8.48.2.1 typedef struct var_s var_t

Structure keeps track of the variables, their value and the line number they are defined on.

### 8.48.3 Function Documentation

#### 8.48.3.1 void add_variable (record_t * *name*, record_t * *value*)

Wrapper function for the _add_variable() function call. The hard work is done in the _add_variable() call. When that call succeeds only the resources allocated for holding the name and value parameters are freed, i.e. the structures name and value. In case the _add_variable() calls fails, the string that is contained within the name and value strutures is freed as well.

**Parameters:**

***name*** Name of the variable.

***value*** Value of the variable.

Definition at line 64 of file pdl_variable.c.

#### 8.48.3.2 void free_variables (void)

Free the resources allocated for the variables.

Definition at line 142 of file pdl_variable.c.

#### 8.48.3.3 var_t* get_variables (void)

Get a list of all variables in the configure file.

**Returns:**
First variable of the list.

Definition at line 269 of file pdl_variable.c.

#### 8.48.3.4 void reduce_to_var (const char ** *name*, rule_type_t *rule_type*)

Reduce the variable to its real value. When a variable has another variable as its value, the variable will be reduced to the value of the refering variable.

**Parameters:**
***name*** Name of the variable to be reduced.

**Returns:**
Real value of the redunced variable.

Definition at line 239 of file pdl_variable.c.

Referenced by reduce_rule().

#### 8.48.3.5 void show_variables (void)

Print all variables and their value as described in the configure file to stdout.

Definition at line 280 of file pdl_variable.c.

# Chapter 9

# edg-lcmaps Page Documentation

## 9.1 Job Repository plugin

## 9.2 SYNOPSIS

**lcmaps_jobrep.mod** -vomsdir <path> -certdir <path> [server=<MySQL hostname/dns-name>] [dsn=<DSN-name>] [port=<port nr.>] [driver=<path/file>] [database=<database-name>] [username=<database username>] [password=<database password>] [-jr_config <path/file>]

## 9.3 DESCRIPTION

The Job Repository module collects the user, job and user-mapping information when a job has been assigned to a fabric and handled by LCMAPS. This information is stored into a SQL database. It is essential that this information is kept secure due to the nature of the data it stores.

## 9.4 OPTIONS

### 9.4.1 dsn=<DSN-name>

This will select the Data Source Name (DSN) that has been set in a odbc.ini file. In the odbc.ini file are one or more Database sources described with the needed settings to connect to a database. (Note: also partial connection settings are supported (3rd party support))

### 9.4.2 server=<dns-name>

specifies the host that has the database to connect to.

### 9.4.3 port=<port nr.>

specifies the port number on the host to override the default portnumber

### 9.4.4 driver=<path/file>

specifies the path and filename of the shared object distributed by the MyODBC package. ODBC needs a driver file to know what kind of database it will be connecting to.

### 9.4.5 database=<database-name>

specifies the name of the database that has to be connected to. One machine can host several databases. The default name to fill in is: ”JobRepository”.

### 9.4.6 username=<database username>

specifies the database username that the LCMAPS module must use to authorize itself with.

### 9.4.7 password=<database password>

specifies the database password that the LCMAPS module must use to authorize itself with. (Note: Disadviced to use this in the lcmaps.db file because it is publicly accessable)

### 9.4.8 -jr_config <path/file>

The path and file specification leads to the root-only-readable file that should contain the database password (or more things like the username) to prevent that a simple user could comprimse the information that is in the database. There is a specific format for this file. All these database parameters must be semi-colon delimited. The same parameters as states above are used. This means that in the lcmaps.db all these parameters could be in this file. Also that is not really adviced due to practical reasons (shifting of servers for example) then you’ll just have to edit one file. The lcmaps.db file in this case. This means that you can mix these parameters as you like between the files. All these parameters are concatinated after each other.

When parameters are more then ounce defined the last one in the concatinated string will be effectivly used. (default: /opt/edg/etc/lcmaps/jobrep_config)

### 9.4.9 -vomsdir <path>

This is the same directory as the LCMAPS VOMS Extract module looks at. This where the VO certificates are stored. (default: /etc/grid-security/vomsdir/). Note: this parameter can not be used in the jobrep_config file.

### 9.4.10 -certdir <path>

This is the same directory as the LCMAPS VOMS Extract module looks at. This where the user certificates end up (temporarily) (default: /etc/grid-security/certificates/). Note: this parameter can not be used in the jobrep_config file.

## 9.5 afs plugin

## 9.6 SYNOPSIS

**lcmaps_afs.mod** [ -lifetime <hh[:mm[:ss]]> | -server <server> | -port <port> | -cell <cell> | -setpag | -gsiklog ]

## 9.7 DESCRIPTION

This plugin is an Acquisition and Enforcement Plugin and provides the LCMAPS with afs access. Users must have an accessible afs file syteme somewhere. The plugin can only function when gssklog and gssklogd are installed. Underneath it uses the client program gssklog to get an afs token using the user's proxy. The gssklog client depends on the daemon gssklogd to get the afs token. The daemon must be installed one of the afs servers and hence there is no necessity for it to be installed on the same machine as the gatekeeper or the client side of gssklog. The afs machine must be reachable from the client machine. The gssklogd daemon uses the file /etc/grid-security/afsgrid-mapfile for the DN-to-AFSaccount mapping.

## 9.8 OPTIONS

### 9.8.1 -lifetime <ticket lifetime in hh[:mm[:ss]]>

Use this option to specify the maximum lifetime of afs token. gssklog allows a maximum of 720 hours. Defaults to 12 hours.

### 9.8.2 -server <afs server>

Name of the server where gssklogd runs.

### 9.8.3 -port <port>

Port number at which the gssklod daemon runs. Defaults to 750.

### 9.8.4 -cell <cell>

Cell name.

### 9.8.5 -setpag

Setpag.

### 9.8.6 -gsiklog

Use GSI interface instead of GSS interface

## 9.9 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.10 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

## 9.11 SEE ALSO

lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod, lcmaps_voms.mod,

## 9.12 example plugin

## 9.13 bescrijving

beschrijf beschrijf ...

## 9.14 ldap enforcement plugin

## 9.15 SYNOPSIS

**lcmaps_ldap_enf.mod** -maxuid <maxuid> -maxpgid <maxpgid> -maxsgid <maxsgid> -hostname <hostname> -port <port> [-require_all_groups [yes|no]] -dn_manager <DN> -ldap_pw <path/filename> -sb_groups <seachbase> -sb_user <searchbase> -timeout <timeout value>

## 9.16 DESCRIPTION

Ldap enforcement plugin will alter the user and group settings in the ldap database, using the user and groups settings provided by the credential acquisition plugins. Note that LDAP has to be used as the source of account information for PAM or NSS and has to be RFC 2307 complient. (see documentation)

## 9.17 OPTIONS

### 9.17.1 -maxuid <maxuid>

Maximum number of uids to be used. Strongly advised is to set this to 1.

### 9.17.2 -maxpgid <maxpgid>

Maximum number of primary gids to be used.

### 9.17.3 -maxsgid <maxsgid>

Maximum number of (secondary) gids to be used (not including primary group). Advised is to set this to 1.

### 9.17.4 -hostname <hostname>

The hostname on which the LDAP server is running, e.g. asen.nikhef.nl

### 9.17.5 -port <port>

The port number to which to connect, e.g. 389

### 9.17.6 -require_all_groups [yes|no]

Specify if all groups set by the PluginManager shall be used. Default is'yes'

### 9.17.7 -dn_manager <DN>

DN of the LDAP manager, e.g. "cn=Manager,dc=root"

### 9.17.8 -ldap_pw <path/filename>

Path to the file containing the password of the LDAP manager. Note: the mode of the file containing the password must be read-only for root (400), otherwise the plugin will not run.

### 9.17.9 -sb_groups <seachbase>

Search base for the (secondary) groups, e.g. "ou=LocalGroups, dc=foobar, dc=ough"

### 9.17.10 -sb_user <searchbase>

Search base for the user, e.g. "ou=LocalUsers, dc=foobar, dc=ough"

### 9.17.11 -timeout <timeout value>

timeout (in seconds) that will be applied to the ldap binding

## 9.18 RETURN VALUE

- LCMAPS_MOD_SUCCESS : succes
- LCMAPS_MOD_FAIL : failure

## 9.19 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

## 9.20 SEE ALSO

lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_voms.mod, lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod, lcmaps_voms_localgroup.mod

## 9.21 localaccount plugin

## 9.22 SYNOPSIS

**lcmaps_localaccount.mod** [-gridmapfile|-GRIDMAPFILE|-gridmap|-GRIDMAP <location gridmapfile>]

## 9.23 DESCRIPTION

This plugin is an Acquisition Plugin and will provide the LCMAPS system with Local Account credential information. To do this it needs to look up the Distinghuished Name (DN) from a user's certificate in the gridmapfile. If this DN is found in the gridmapfile the plugin knows the mapped local (system) account username. By knowing the username of the local account the plugin can gather additional information about this account. The plugin will resolve the UID, GID and all the secondary GIDs. When this has been done and there weren't any problems detected, the plugin will add this information to a datastructure in the Plugin Manager. The plugin will finish its run with a LCMAPS_MOD_SUCCESS. This result will be reported to the Plugin Manager which started this plugin and it will forward this result to the Evaluation Manager, which will take appropriate actions for the next plugin to run. Normally this plugin would be followed by an Enforcement plugin that can apply these gathered credentials in a way that is appropriate to a system administration's needs.

## 9.24 OPTIONS

### 9.24.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

### 9.24.2 -gridmapfile <gridmapfile>

See -gridmap

### 9.24.3 -GRIDMAP <gridmapfile>

See -gridmap

### 9.24.4 -gridmap <gridmapfile>

When this option is set it will override the default path of the gridmapfile. It is advised to use an absolute path to the gridmapfile to avoid usage of the wrong file(path).

## 9.25 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.26 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

## 9.27 SEE ALSO

lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod, lcmaps_voms.mod, lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod, lcmaps_voms_localgroup.mod

## 9.28 poolaccount plugin

## 9.29 SYNOPSIS

**lcmaps_poolaccount.mod** [-gridmapfile|-GRIDMAPFILE|-gridmap|-GRIDMAP <location gridmapfile>] [-gridmapdir|-GRIDMAPDIR <location gridmapdir>]

## 9.30 DESCRIPTION

This plugin is a Acquisition Plugin and will provide the LCMAPS system with Pool Account information. To do this it needs to look up the Distinguished Name (DN) from a user's certificate in the gridmapfile. If this DN is found in the gridmapfile the plugin now knows to which pool of local system accounts the user wil be mapped. The poolname (starting with a dot ('.') instead of an alphanumeric character) will be converted into the an account from a list of local accounts. This list is located in the *gridmapdir* and is made out of filenames. These filenames correspond to the system poolaccount names. (E.g. if a DN corresponds to `.test` in the gridmapfile, it will be mapped to `test001`, `test002`, etc., which names can be found in the gridmapdir)

If there is no pool account assigned to the user yet, the plugin will get a directory listing of the gridmapdir. This list will contain usernames corresponding to system accounts specially designated for pool accounting. If the plugin resolved the mapping of a certain pool name, let's say '.test', the plugin will look into the directory list and will find the first available file in the list corresponding with 'test' (e.g. 'test001') by checking the number of links to its i-node. If this number is 1, this account is still available. To lease this account a second hard link is created, named after the URL-encoded, decapitalized DN.

When a user returns to this site the plugin will look for the DN of the user (URL encoded) in this directory. If found, the corresponding poolaccount will be assigned to the user.

The plugin will resolve the UID, GID and all the secondary GIDs belonging to the poolaccount. When this has been done and there weren't any problems detected, the plugin will add this information to a datastructure in the Plugin Manager. The plugin will finish its run with a LCMAPS_MOD_SUCCESS. This result will be reported to the Plugin Manager which started this plugin and it will forward this result to the Evaluation Manager, which will take appropriate actions for the next plugin to run. Normally this plugin would be followed by an Enforcement plugin that can apply these gathered credentials in a way that is appropriate to a system administration's needs.

## 9.31 OPTIONS

### 9.31.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

### 9.31.2 -gridmapfile <gridmapfile>

See -gridmap

### 9.31.3 -GRIDMAP <gridmapfile>

See -gridmap

### 9.31.4 -gridmap <gridmapfile>

If this option is set, it will override the default path of the gridmapfile. It is advised to use an absolute path to the gridmapfile to avoid usage of the wrong file(path).

### 9.31.5 -GRIDMAPDIR <gridmapdir>

See -gridmapdir

### 9.31.6 -gridmapdir <gridmapdir>

If this option is set, it will override the default path to the gridmapdir. It is advised to use an absolute path to the gridmapdir to avoid usage of the wrong path.

### 9.31.7 -OVERRIDE_INCONSISTENCY

See -override_inconsistency

### 9.31.8 -override_inconsistency

Moving a user from one pool to another (because of a VO change) should only be done by changing the gridmapfile indicating the new pool for this user. If a user has already been mapped previously to a poolaccount, there is a link present between this poolaccount and his DN. In the good old days prior to LCMAPS, a 'pool change' would still result in a mapping to the old pool account, neglecting the administrative changes in the gridmapfile. LCMAPS corrects this behaviour: By default the poolaccount plugin will *fail*

if the pool designated by the gridmapfile doesn't match the previously mapped poolaccount leasename. If the site doesn't want a failure on this inconsistency it can turn on this parameter. When the inconsistency is detected the plugin will automatically unlink the previous mapping and will proceed by making a *new* lease from the new pool.

## 9.32 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.33 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

## 9.34 SEE ALSO

lcmaps_localaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod, lcmaps_voms.mod, lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod, lcmaps_voms_localgroup.mod

## 9.35 posix enforcement plugin

## 9.36 SYNOPSIS

**lcmaps_posix_enf.mod** [-maxuid|-MAXUID <number of uids>] [-maxpgid|-MAXPGID <number of primary gids>] [-maxsgid|-MAXSGID <number of secondary gids>]

## 9.37 DESCRIPTION

The Posix Enforcement plugin will enforce (apply) the gathered credentials that are stacked in the datastructure of the Plugin Manager. The plugin will get the credential information that is gathered by one or more Acquisition plugins. This implies that at least one Acquisition should have been run prior to this Enforcement. All of the gathered information will be checked by looking into the 'passwd' file of the system. These files have information about all registered system account and its user groups.

The Posix Enforcent plugin does not validate the secondary GIDs. It does check the existance of the GID and the UID. They must exist although it is not needed that the GID and UID are a pair of each other.

The (BSD/POSIX) functions setreuid(), setregid() and setgroups() are used to change the privileges of the process from root to that of a local user.

## 9.38 OPTIONS

### 9.38.1 -MAXUID <number of uids>

See -maxuid

### 9.38.2 -maxuid <number of uids>

In principle, this will set the maximum number of allowed UIDs that this plugin will handle, but at the moment only the first UID found will be enforced; the others will discarded. By setting the value to a maximum there will be a failure raised when the amount of UIDs exceed the set maximum. Without this value the plugin will continue and will enforce only the first found value in the credential data structure.

### 9.38.3 -MAXPGID <number of primary gids>

See -maxpgid

### 9.38.4 -maxpgid <number of primary gids>

This will set the maximum number of allowed Primary GIDs that this plugin will handle, similar to -maxuid. Also here only the first primary GID found will be taken into account.

### 9.38.5 -MAXSGID <number of secondary gids>

See -maxsgid

### 9.38.6 -maxsgid <number of secondary gids>

This will set the maximum allowed Secondary GIDs that this plugin will handle. This number is limited by the system (NGROUPS) and is usually 32. If the plugin cannot determine the system value, it limits itself to 32.

### 9.38.7 -set_only_euid [yes|no]

The result of setting this option to 'yes' is that only the effective uid is set. In other words, it is still possible to regain root (uid) privileges for the process. This is definitely undesirable if this module is used from a process like the gatekeeper, since it would be possible for user jobs to get root privileges ! **THIS** IS A DANGEROUS OPTION, PLEASE KNOW WHAT YOU'RE DOING ! By default, this option is set to 'no'. Possibly this option should be set if the module is used by gridFTP, since this service does not spawn user jobs and has to regain root pivileges at the end.

### 9.38.8 -set_only_egid [yes|no]

Analogue to the previous option the result of setting this option to 'yes' is that only the effective (primary) gid is set. In other words, it is still possible to regain root (gid) privileges for the process. This is definitely undesirable if this module is used from a process like the gatekeeper, since it would be possible for user jobs to get root privileges ! **THIS** IS A DANGEROUS OPTION, PLEASE KNOW WHAT YOU'RE DOING ! By default, this option is set to 'no'. Possibly this option should be set if the module is used by gridFTP, since this service does not spawn user jobs and has to regain root pivileges at the end.

## 9.39 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.40 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

## 9.41 SEE ALSO

lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_ldap_enf.mod, lcmaps_voms.mod, lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod, lcmaps_voms_localgroup.mod

## 9.42 voms plugin

## 9.43 SYNOPSIS

**lcmaps_voms.mod** -vomsdir <vomsdir> -certdir <certdir>

## 9.44 DESCRIPTION

This plugin forms the link between the VOMS data found in the user grid credential (X509 certificate) and the lcmaps system. It will retrieve the VOMS data by using the VOMS API. The plugin stores the VOMS data in the LCMAPS process space, where it is accessible by other 'VOMS-aware' plugins, and should, therefore, be evaluated before the other plugins, that actually gather the local credentials based on the VOMS information (e.g. lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod and lcmaps_voms_localgroup.mod).

## 9.45 OPTIONS

### 9.45.1 -VOMSDIR <vomsdir>

See -vomsdir

### 9.45.2 -vomsdir <vomsdir>

This is the directory which contains the certificates of the VOMS servers

### 9.45.3 -CERTDIR <certdir>

See -certdir

### 9.45.4 -certdir <certdir>

This is the directory which contains the CA certificates

## 9.46 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.47 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

## 9.48 SEE ALSO

lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod, lcmaps_voms_localgroup.mod lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod,

## 9.49 voms localgroup plugin

## 9.50 SYNOPSIS

**lcmaps_voms_localgroup.mod** -GROUPMAPFILE|-groupmapfile|-GROUPMAP|-groupmap <groupmapfile> [-mapall] [-mapmin <group count>]

## 9.51 DESCRIPTION

The localgroup acquisition plugin is a 'VOMS-aware' plugin. It uses the VOMS information (acquired by the plugin lcmaps_voms.mod) to gather primary and secondary GIDs. This is accomplished by matching VO-GROUP-ROLE(-CAPABILITY) combinations in the so-called *groupmapfile* (gridmapfile style) and by finding the corresponding local GID. Wildcards can be used in the groupmapfile to match VO-GROUP-ROLE combinations.

EXAMPLE 'groupmapfile':

"`/VO=atlas/GROUP=mcprod`" `atmcprod`

"`/VO=atlas/GROUP=*`" `atlasgrps`

A VO-GROUP combination /VO=atlas/GROUP=mcprod matches "`/VO=atlas/GROUP=mcprod`", resulting in a mapping to the GID of the 'atmcprod' group. All the other groups within the 'atlas' VO will be mapped to 'atlasgrps'. A user with /VO=cms/GROUP=user will not be mapped to any local system group, unless there will be an extra row in the groupmapfile like '"`/VO=*`" `allothers`' resulting in a mapping from any other VO-GROUP-ROLE combination to 'allothers'. The mapping is based on the first match found for a VO-GROUP-ROLE combination, implying that the most significant row must be on top.

The poolgroup plugin will try to match each VO-GROUP-ROLE combination that was found by the plugin lcmaps_voms.mod. The first VO-GROUP-ROLE combination will become the primary group, the others secondary groups. As the primary GID may be used for auditing and accounting purposes it is important that the user uses the correct ordering of VO-GROUP-ROLE combinations in his grid credential (X509 certificate).

## 9.52 OPTIONS

### 9.52.1 -GROUPMAPFILE <groupmapfile>

See -groupmap

### 9.52.2 -groupmapfile <groupmapfile>

See -groupmap

### 9.52.3 -GROUPMAP <groupmapfile>

See -groupmap

### 9.52.4 -groupmap <groupmapfile>

If this option is set, it will override the default path to the groupmapfile. It is advised to use an absolute path to the groupmapfile to avoid usage of the wrong file(path).

### 9.52.5 -mapall

If this parameter is set, the plugin only succeeds if it manages to map all voms data entries to (system) groups and find their GID. There is no communication between different plugins (like the voms_poolgroup plugin) about the failures. A log entry will state the VO-GROUP-ROLE combination that made the plugin fail.

### 9.52.6 -mapmin <group count>

This option will set a minimum amount of groups that have to be resolved for later mapping. If the minimum is not set then the minimum amount is set to '0' by default. If the plugin is not able to the required number of local groups it will fail. Note: if the minimum is set to zero or the minimum is not set the plugin will return a success if no other errors occur, even if no local groups were found.

## 9.53 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.54 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

## 9.55 SEE ALSO

lcmaps_voms.mod, lcmaps_voms_poolaccount.mod, lcmaps_voms_poolgroup.mod, lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod,

## 9.56 voms poolaccount plugin

## 9.57 SYNOPSIS

**lcmaps_voms_poolaccount.mod** [-gridmapfile|-GRIDMAPFILE|-gridmap|-GRIDMAP <location gridmapfile>] [-gridmapdir|-GRIDMAPDIR <location gridmapdir>] [-do_not_use_secondary_gids] [-do_not_require_primary_gid]

## 9.58 DESCRIPTION

This poolaccount acquisition plugin is a 'VOMS-aware' modification of the 'poolaccount' plugin. The plugin tries to find a poolaccount (more specifically a UID) based on the VOMS information that has been retrieved by the plugin lcmaps_voms.mod from the user's grid credential. It will try to match a VO-GROUP-ROLE combination from the user's grid credential with an entry in a gridmapfile (most likely the traditional gridmapfile, used by the localaccount and poolaccount plugins) In this file VO-GROUP-ROLE combinations are listed with a poolaccount entry, as shown in the following example.

EXAMPLE:

`"/VO=wilma/GROUP=*".wilma`

`"/VO=fred/GROUP=*".fred`

If the first matching VO-GROUP-ROLE combination is `"/VO=wilma/GROUP=*"` the plugin will get a poolaccount from the '.test' pool. This could result in 'wilma001' as a poolaccount for this user. The linking between `"/VO=wilma/GROUP=*"`, this user and a poolaccount must be made in the same directory as the for the '*poolaccount*' plugin (the *gridmapdir)*, otherwise it gives rise to inconsistancies when both are used on a site. The actual account assigned to the user is based on his VO information matched in the gridmapfile, the user's DN and the primary (and secondary) GIDs gathered so far. In the *gridmapdir* directory this is reflected in the leasename, which consists of the url-encoded DN + a concatenation of the gathered groupnames. So a lease name could look like this:

EXAMPLE DN with pool/localgroups attached: `%2fo%3ddutchgrid%2fo%3dusers%2fo%3dnikhef%2fcn%3dmartij`

If a user changes his VO-GROUP-ROLE combinations (but not his VO), in this case he will be mapped to a different account (UID) within the same pool.

## 9.59 NOTE 1

This plugin should only be used in combination with the '*voms_localgroup*' and/or '*voms_poolgroup*' plugins.

## 9.60 NOTE 2

The options '-do_not_require_primary_gid' and '-do_not_use_secondary_gids' can not be used together, because at least one GID is needed.

## 9.61 OPTIONS

### 9.61.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

### 9.61.2 -gridmapfile <gridmapfile>

See -gridmap

### 9.61.3 -GRIDMAP <gridmapfile>

See -gridmap

### 9.61.4 -gridmap <gridmapfile>

When this option is set it will override the default path to the gridmapfile. It is advised to use an absolute path to the gridmapfile to avoid usage of the wrong file(path).

### 9.61.5 -GRIDMAPDIR <gridmapdir>

See -gridmapdir

### 9.61.6 -gridmapdir <gridmapdir>

If this option is set, it will override the default path to the gridmapdir. It is advised to use an absolute path to the gridmapdir to avoid usage of the wrong path.

### 9.61.7 -do_not_use_secondary_gids

The determination of the poolaccount will not be based on the secondary GIDs found, but only on the user's DN, the VOMS info for the user and the primary GID that has been found. Cannot be used with -do_not_require_primary_gid.

### 9.61.8 -do_not_require_primary_gid

The determination of the poolaccount will not be based on the primary GID found, but only on the user's DN, the VOMS info for the user and the secondary GIDs found. Normally this option should not be used, but it can be useful for debugging. Cannot be used with -do_not_use_secondary_gids.

### 9.61.9 -OVERRIDE_INCONSISTENCY

See -override_inconsistency

### 9.61.10 -override_inconsistency

Moving a user from one pool to another (because of a VO change) should only be done by changing the gridmapfile indicating the new pool for this user. If a user has already been mapped previously to a poolaccount, there is a link present between this poolaccount and his DN. In the good old days prior to LCMAPS, a 'pool change' would still result in a mapping to the old pool account, neglecting the administrative changes in the gridmapfile. LCMAPS corrects this behaviour: By default the voms_poolaccount plugin will *fail* if the pool designated by the gridmapfile doesn't match the previously mapped voms_poolaccount leasename. If the site doesn't want a failure on this inconsistency it can turn on this parameter. When the inconsistency is detected the plugin will automatically unlink the previous mapping and will proceed by making a *new* lease from the new pool.

## 9.62 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.63 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

## 9.64 SEE ALSO

lcmaps_voms.mod, lcmaps_voms_localgroup.mod, lcmaps_voms_poolgroup.mod, lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod,

## 9.65 voms poolgroup plugin

## 9.66 SYNOPSIS

**lcmaps_voms_poolgroup.mod** -GROUPMAPFILE|-groupmapfile|-GROUPMAP|-groupmap <groupmapfile> -GROUPMAPDIR|-groupmapdir <groupmapdir> [-mapall] [-mapmin <group count>]

## 9.67 DESCRIPTION

The poolgroup acquisition plugin is a 'VOMS-aware' plugin. It uses the VOMS information (acquired by the plugin lcmaps_voms.mod) to gather primary and secondary GIDs. This is accomplished by matching VO-GROUP-ROLE(-CAPABILITY) combinations in the so-called *groupmapfile* (gridmapfile style) and by finding the corresponding 'poolgroup' (similar to the 'poolaccount' procedure, see lcmaps_poolaccount.mod) Wildcards can be used in the groupmapfile to match VO-GROUP-ROLE combinations.

EXAMPLE 'groupmapfile':

"`/VO=atlas/GROUP=mcprod`" `mcprod`

"`/VO=atlas/GROUP=mcprod`" `.atlas`

"`/VO=atlas/GROUP=dev`" `.atlas`

"`/VO=atlas/GROUP=*`" `.atlas`

The VO-GROUP-ROLE combination "`/VO=atlas/GROUP=mcprod`" starts with an alfanumeric character (not ".") and indicates a localgroup entry in the groupmapfile (will be resolved by the lcmaps_voms_localgroup.mod). The VO-GROUP-ROLE combination "`/VO=atlas/GROUP=*`" indicates that all users from the Atlas VO with every other group than 'mcprod' will be mapped to the '.atlas' pool of (system) groups. Just like the *poolaccount* plugin this plugin will link an entry (in this case a VO-GROUP-ROLE combination) to a locally known group (a.k.a. poolgroup) in the *groupmapdir* directory. The difference with the *poolaccount* plugin is that there is not a Distinghuished Name but a VO-GROUP-ROLE combination and there is no poolaccount but poolgroup defined in de groupmapfile (similar to the gridmapfile). Instead of the *gridmapdir* the *groupmapdir* directory is used for the registration of thew mapping between poolgroups and the VO-GROUP-ROLE combination.

As you can see the in the example the 'mcprod' GROUP can be found by using the localgroup plugin and the poolgroup plugin. With the poolgroup plugin there can be made a mapping between "/VO=atlas/GROUP=mcprod" and the group 'atlas001' (based on the .atlas pool). The entry "`/VO=atlas/GROUP=dev`" will also result in a group from this '.atlas' pool, but a different one, e.g. 'atlas002'. Finally, we have random other groups not predefined in the groupmapfile, for example "`/VO=atlas/GROUP=foo`", which matches "`/VO=atlas/GROUP=*`" in the groupmapfile. This VO-GROUP combination will be mapped to a poolgroup (probably) called 'atlas003'.

The poolgroup plugin will try to match each VO-GROUP-ROLE combination that was found by the plugin lcmaps_voms.mod. The first VO-GROUP-ROLE combination will become the primary group, the others

secondary groups. As the primary GID may be used for auditing and accounting purposes it is important that the user uses the correct ordering of VO-GROUP-ROLE combinations in his grid credential (X509 certificate).

## 9.68 OPTIONS

### 9.68.1 -GROUPMAPFILE <groupmapfile>

See -groupmap

### 9.68.2 -groupmapfile <groupmapfile>

See -groupmap

### 9.68.3 -GROUPMAP <groupmapfile>

See -groupmap

### 9.68.4 -groupmap <groupmapfile>

If this option is set, it will override the default path to the groupmapfile. It is advised to use an absolute path to the groupmapfile to avoid usage of the wrong file(path).

### 9.68.5 -GROUPMAPDIR <groupmapdir>

See -groupmapdir

### 9.68.6 -groupmapdir <groupmapdir>

Here you can override the default directory path to the 'groupmapdir'. This directory is just like the *gridmapdir* and holds all the poolgroup mappings that has/will be made by linking filenames to a i-node indicating a mapping between a VO-GROUP-ROLE combination and a (system) group or GID.

### 9.68.7 -mapall

If this parameter is set, the plugin only succeeds if it manages to map all voms data entries to (system) groups and find their GID. There is no communication between different plugins (like the voms_localgroup plugin) about the failures. A log entry will state the VO-GROUP-ROLE combination that made the plugin fail.

### 9.68.8 -OVERRIDE_INCONSISTENCY

See -override_inconsistency

### 9.68.9 -override_inconsistency

Moving a VO group from one pool to another should only be done by changing the groupmapfile indicating the new pool for this VO group. If a VO group has already been mapped previously to a poolaccount, there is a link present between this poolgroup and its VO-GROUP-ROLE combination. By default the voms_-poolgroup plugin will *fail* if the pool designated by the gridmapfile doesn't match the previously mapped poolgroup leasename. If the site doesn't want a failure on this inconsistency it can turn on this parameter. When the inconsistency is detected the plugin will automatically unlink the previous mapping and will proceed by making a *new* lease from the new pool.

### 9.68.10 -mapmin <group count>

This option will set a minimum amount of groups that have to be resolved for later mapping. If the minimum is not set then the minimum amount is set to '0' by default. If the plugin is not able to the required number of poolgroups it will fail. Note: if the minimum is set to zero or the minimum is not set the plugin will return a success if no other errors occur, even if no poolgroups were found.

## 9.69 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

## 9.70 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

## 9.71 SEE ALSO

lcmaps_voms.mod, lcmaps_voms_poolaccount.mod, lcmaps_voms_localgroup.mod, lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod,

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