edg-lcmaps Reference Manual

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LCMAPS - Local Credential MAPping Service

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1.3 The LCMAPS plugins

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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

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- 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 Data Structure Documentation

7.1 cred_data_s Struct Reference

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

`#include <lcmaps_cred_data.h>`

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 int cred_data_s::cntPriGid

number of primary groupIDs (in principle only one)

Definition at line 66 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.2 int cred_data_s::cntSecGid

number of secondary groupIDs (could be any number)
Definition at line 67 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.3 int cred_data_s::cntUid

number of userIDs
Definition at line 65 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.4 int cred_data_s::cntVoCred

number of VO data structures
Definition at line 68 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.5 int cred_data_s::cntVoCredMapping

number of VO mapping structures
Definition at line 70 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.6 int cred_data_s::cntVoCredString

number of VO data strings
Definition at line 69 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.7 char* cred_data_s::dn

user globus DN
Definition at line 58 of file lcmaps_cred_data.h.
Referenced by printCredData.

7.1.2.8 gid_t* cred_data_s::priGid

list of primary groupIDs

Definition at line 60 of file lcmaps_cred_data.h.

Referenced by printCredData.

7.1.2.9 gid_t* cred_data_s::secGid

list of secondary groupIDs

Definition at line 61 of file lcmaps_cred_data.h.

Referenced by printCredData.

7.1.2.10 uid_t* cred_data_s::uid

list of userIDs

Definition at line 59 of file lcmaps_cred_data.h.

Referenced by printCredData.

7.1.2.11 lcmaps_vo_data_t* cred_data_s::VoCred

list of VO data structures

Definition at line 62 of file lcmaps_cred_data.h.

Referenced by printCredData.

7.1.2.12 lcmaps_vo_mapping_t* cred_data_s::VoCredMapping

list of VO mapping structures

Definition at line 64 of file lcmaps_cred_data.h.

Referenced by printCredData.

7.1.2.13 char** cred_data_s::VoCredString

list of VO data strings

Definition at line 63 of file lcmaps_cred_data.h.

Referenced by printCredData.

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>`

Data Fields

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

7.4.1 Detailed Description

LCMAPS data base element structure.

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.

Referenced by free_lcmaps_db_entry, and getPluginNameAndArgs.

7.4.2.2 char lcmaps_db_entry_s::pluginargs[LCMAPS_MAXARGSTRING+1]

Argument list to be passed to authorization plugin/module

Definition at line 45 of file lcmaps_db_read.h.

Referenced by getPluginNameAndArgs, lcmaps_db_parse_line, lcmaps_db_read_entries, and PluginInit.

7.4.2.3 char lcmaps_db_entry_s::pluginname[LCMAPS_MAXPATHLEN+1]

Name of authorization plugin/module

Definition at line 44 of file lcmaps_db_read.h.

Referenced by getPluginNameAndArgs, lcmaps_db_parse_line, lcmaps_db_read_entries, and PluginInit.

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.

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
- lcmaps_plugindl_s * next

7.5.1 Detailed Description

the lcmaps plugin module structure.

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.

Referenced by clean_plugin_list, PluginInit, and print_lcmaps_plugin.

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.

Referenced by clean_plugin_list, PluginInit, and print_lcmaps_plugin.

7.5.2.3 char* lcmaps_plugindl_s::init_argv[LCMAPS_MAXARGS]

list of arguments for the initialization function

Definition at line 110 of file lcmaps_pluginmanager.c.

Referenced by clean_plugin_list, PluginInit, and print_lcmaps_plugin.

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.

Referenced by clean_plugin_list, PluginInit, and print_lcmaps_plugin.

7.5.2.5 char lcmaps_plugindl_s::pluginargs[LCMAPS_MAXARGSTRING+1]

argument string

Definition at line 108 of file lcmaps_pluginmanager.c.

Referenced by PluginInit, and print_lcmaps_plugin.

7.5.2.6 char lcmaps_plugindl_s::pluginname[LCMAPS_MAXPATHLEN+1]

name of plugin

Definition at line 107 of file lcmaps_pluginmanager.c.

Referenced by clean_plugin_list, PluginInit, and print_lcmaps_plugin.

7.5.2.7 lcmaps_proc_t lcmaps_plugindl_s::procs[MAXPROCS]

list of handles to interface functions of plugin

Definition at line 106 of file lcmaps_pluginmanager.c.

Referenced by clean_plugin_list, PluginInit, and print_lcmaps_plugin.

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.

Referenced by PluginInit, and print_lcmaps_plugin.

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.

Referenced by PluginInit, and print_lcmaps_plugin.

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>`

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.

- 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>`

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.

- policy_s * next

  Next policy, or 0 if none.

- 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>`

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.
- 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>`

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.

- 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"`

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.

Definition in file _lcmaps_cred_data.h.

8.1.2 Function Documentation

8.1.2.1 cleanCredentialData ()

Clean the credData structure.

Returns:
0

Definition at line 265 of file lcmaps_cred_data.c.

8.2 _lcmaps_db_read.h File Reference

Internal header file of LCMAPS database reader.

`#include "lcmaps_db_read.h"`

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.

Definition in file _lcmaps_db_read.h.

8.2.2 Function Documentation

8.2.2.1 lcmaps_db_clean ()

Clean/remove the database structure.

Return values:
0 succes

1 failure

Definition at line 585 of file lcmaps_db_read.c.

8.2.2.2 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.

Definition at line 555 of file lcmaps_db_read.c.

8.2.2.3 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)

Definition at line 198 of file lcmaps_db_read.c.

Referenced by lcmaps_db_read_entries.

8.2.2.4 lcmaps_db_read (char * *lcmaps_db*)

Read database from file.

Parameters:
lcmaps_db_fname database file.

Returns:
a pointer to the database list

Definition at line 89 of file lcmaps_db_read.c.

8.3 _lcmaps_log.h File Reference

Internal header file for LCMAPS logging routines.

```
#include "lcmaps_log.h"
```

Functions

- syslogging has to be done internal *int lcmaps_log_open (char *path, FILE *fp, unsigned short logtype)

  Start logging.

- int lcmaps_log_close ()

  Stop logging.

8.3.1 Detailed Description

Internal header file for LCMAPS logging routines.

Author:
Martijn Steenbakkers for the EU DataGrid.

Definition in file _lcmaps_log.h.

8.3.2 Function Documentation

8.3.2.1 lcmaps_log_close ()

Stop logging.

Definition at line 324 of file lcmaps_log.c.

8.3.2.2 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.

Definition at line 82 of file lcmaps_log.c.

8.4 _lcmaps_pluginmanager.h File Reference

API of the PluginManager.

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

Functions

- int startPluginManager ()

  start the PluginManager.

- int stopPluginManager ()

  Terminate the PluginManager module.

- int runPluginManager (lcmaps_request_t request, lcmaps_cred_id_t lcmaps_cred, int npols, char **policynames)

  Run the PluginManager.

- int runPlugin (const char *pluginname)

  Run a plugin.

- int resetCredentialData ()

  Reset the Credential data.

8.4.1 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.

8.4.2 Function Documentation

8.4.2.1 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 976 of file lcmaps_pluginmanager.c.

Referenced by pdl_next_plugin.

8.4.2.2 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 1008 of file lcmaps_pluginmanager.c.

8.4.2.3 runPluginManager (lcmaps_request_t *request*, lcmaps_cred_id_t *lcmaps_cred*, int *npols*, char ** *policynames*)

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

npols number of policies to be considered for evaluation

policynames the names of the policies to be considered for evaluation

Return values:
0 user mapping succeeded

1 user mapping failed

Definition at line 856 of file lcmaps_pluginmanager.c.

8.4.2.4 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.

8.4.2.5 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 1064 of file lcmaps_pluginmanager.c.

8.5 _lcmaps_runvars.h File Reference

API of runvars structure.

```
#include "lcmaps_types.h"
```

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.

8.5.1 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.

8.5.2 Function Documentation

8.5.2.1 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.

Definition at line 97 of file lcmaps_runvars.c.

8.5.2.2 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

Definition at line 192 of file lcmaps_runvars.c.

8.5.2.3 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.

Definition at line 233 of file lcmaps_runvars.c.

8.6 _lcmaps_utils.h File Reference

Internal header for the LCMAPS utilities.

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

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.

8.6.1 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():

Definition in file _lcmaps_utils.h.

8.6.2 Function Documentation

8.6.2.1 lcmaps_fill_cred (char * *dn*, gss_cred_id_t *cred*, lcmaps_cred_id_t * *lcmaps_credential*)

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.

Definition at line 74 of file lcmaps_utils.c.

8.6.2.2 lcmaps_release_cred (lcmaps_cred_id_t * *lcmaps_credential*)

Release the LCMAPS credential.

Parameters:

lcmaps_cred pointer to LCMAPS credential to be released

Return values:

0 succes.

1 failure.

Definition at line 117 of file lcmaps_utils.c.

8.6.2.3 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

Definition at line 464 of file lcmaps_utils.c.

8.7 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"
```

Functions

- int free_lcmaps_db_entry ()
- int startEvaluationManager (const char *name)
- int getPluginNameAndArgs (lcmaps_db_entry_t **plugins)
- int runEvaluationManager (int argc, char *argv[ ])
- int stopEvaluationManager (void)

Variables

- lcmaps_db_entry_t * global_plugin_list = NULL

8.7.1 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:
1.23

Date:

Date:
2004/10/01 15:17:31

Definition in file evaluationmanager.c.

8.7.2 Function Documentation

8.7.2.1 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 319 of file evaluationmanager.c.

References lcmaps_db_entry_s::next.

Referenced by stopEvaluationManager.

8.7.2.2 int getPluginNameAndArgs (lcmaps_db_entry_t ** *plugins*)

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.

References plugin_s::args, get_plugins, getPluginNameAndArgs, plugin_s::name, plugin_s::next, lcmaps_db_entry_s::next, pdl_path, lcmaps_db_entry_s::pluginargs, lcmaps_db_entry_s::pluginname, and TRUE.

Referenced by getPluginNameAndArgs.

8.7.2.3 int runEvaluationManager (int *argc*, char * *argv*[ ])

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.

References EVALUATION_FAILURE, EVALUATION_START, EVALUATION_SUCCESS, get_current_policy, policy_s::name, pdl_next_plugin, plugin_status_t, and runEvaluationManager.

Referenced by runEvaluationManager.

8.7.2.4 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.

References check_policies_for_recursion, pdl_init, reduce_policies, startEvaluationManager, stopEvaluationManager, and yyparse_errors.

Referenced by startEvaluationManager.

8.7.2.5 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 298 of file evaluationmanager.c.

References free_lcmaps_db_entry, and free_resources.

Referenced by startEvaluationManager.

8.7.3 Variable Documentation

8.7.3.1 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.

8.8 evaluationmanager.h File Reference

Evaluation Manager interface definition.

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

8.8.1 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:
1.8

Date:

Date:
2004/10/01 15:17:31

Definition in file evaluationmanager.h.

8.9 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"
```

8.9.1 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 lcmaps.h File Reference

API of the LCMAPS library.

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

Functions

- int lcmaps_init (FILE *fp)

  Initialize the LCMAPS module.

- int lcmaps_init_and_log (FILE *fp, unsigned short logtype)

  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, int npols, char **policynames)

  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.

8.10.1 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.

8.10.2 Function Documentation

8.10.2.1 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 or other previously opened file handle) If the file handle is zero, assume that only syslogging is requested

Return values:

0 initialization succeeded.

1 initialization failed.

Definition at line 180 of file lcmaps.c.

8.10.2.2 lcmaps_init_and_log (FILE * *fp*, unsigned short *logtype*)

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 or other previously opened file handle) If the file handle is zero, assume that only syslogging is requested

logtype type of logging (usrlog and/or syslog)

Return values:

0 initialization succeeded.

1 initialization failed.

Definition at line 115 of file lcmaps.c.

References lcmaps_request_t.

8.10.2.3 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 231 of file lcmaps.c.

8.10.2.4 lcmaps_run_and_return_username (gss_cred_id_t *user_cred*, lcmaps_request_t *request*, char ** *usernamep*, int *npols*, char ** *policynames*)

let LCMAPS handle the user mapping and return user name.

do the user mapping based on the provided list of policies (first successful policy found in the lcmaps policy file (lcmaps.db) will result in 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 (to be freed by calling application). Note: usernamep should be non-NULL at the start !

npols number of policies to be considered for evaluation

policynames the names of the policies to be considered for evaluation

Return values:

0 mapping succeeded.

1 mapping failed.

Definition at line 331 of file lcmaps.c.

8.10.2.5 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 442 of file lcmaps.c.

8.10.2.6 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 512 of file lcmaps.c.

8.11 lcmaps_arguments.c File Reference

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

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

8.11.1 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.

8.12 lcmaps_arguments.h File Reference

Public header file to be used by plugins.

Data Structures

- struct lcmaps_argument_s

  structure representing an LCMAPS plugin run argument.

Typedefs

- typedef 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.

8.12.1 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.

8.12.2 Function Documentation

8.12.2.1 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 273 of file lcmaps_arguments.c.

8.12.2.2 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 179 of file lcmaps_arguments.c.

8.12.2.3 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 230 of file lcmaps_arguments.c.

8.12.2.4 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 131 of file lcmaps_arguments.c.

8.12.2.5 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 72 of file lcmaps_arguments.c.

8.13 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"
```

Functions

- void printCredData (int debug_level)

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

8.13.1 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.

8.13.2 Function Documentation

8.13.2.1 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.

References cred_data_s::cntPriGid, cred_data_s::cntSecGid, cred_data_s::cntUid, cred_data_s::cntVoCred, cred_data_s::cntVoCredMapping, cred_data_s::cntVoCredString, cred_data_s::dn, cred_data_s::priGid, cred_data_s::secGid, cred_data_s::uid, cred_data_s::VoCred, cred_data_s::VoCredMapping, and cred_data_s::VoCredString.

8.13.3 Variable Documentation

8.13.3.1 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.

8.14 lcmaps_cred_data.h File Reference

Public header file to be used by plugins.

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

Data Structures

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

Typedefs

- typedef 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.

8.14.1 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.

8.14.2 Function Documentation

8.14.2.1 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.

8.14.2.2 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.

8.15 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"
```

Defines

- #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

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

8.15.1 Detailed Description

the LCMAPS database reader.

Author:
Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_db_read.c.

8.15.2 Define Documentation

8.15.2.1 #define PAIR_SEP_CHARS ","

Characters separating variable-value pairs in the lcmaps database file

Definition at line 40 of file lcmaps_db_read.c.

Referenced by lcmaps_db_parse_line.

8.15.2.2 #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.

Definition at line 52 of file lcmaps_db_read.c.

8.15.2.3 #define VARVAL_SEP_CHARS "="

Characters separating variables from values

Definition at line 42 of file lcmaps_db_read.c.

Referenced by lcmaps_db_parse_pair.

8.15.2.4 #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.

Definition at line 57 of file lcmaps_db_read.c.

8.15.3 Function Documentation

8.15.3.1 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.

Definition at line 261 of file lcmaps_db_read.c.

References lcmaps_db_parse_pair, PAIR_SEP_CHARS, lcmaps_db_entry_s::pluginargs, and lcmaps_db_entry_s::pluginname.

Referenced by lcmaps_db_read_entries.

8.15.3.2 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.

Definition at line 397 of file lcmaps_db_read.c.

References lcmaps_db_parse_string, and VARVAL_SEP_CHARS.

Referenced by lcmaps_db_parse_line.

8.15.3.3 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.

Definition at line 494 of file lcmaps_db_read.c.

Referenced by lcmaps_db_parse_pair.

8.15.3.4 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)

Definition at line 132 of file lcmaps_db_read.c.

References lcmaps_db_fill_entry, lcmaps_db_parse_line, lcmaps_db_entry_s::pluginargs, and lcmaps_db_entry_s::pluginname.

8.15.4 Variable Documentation

8.15.4.1 lcmaps_db_entry_t* lcmaps_db_list = NULL [static]

list of database entries

Definition at line 74 of file lcmaps_db_read.c.

8.16 lcmaps_db_read.h File Reference

header file for LCMAPS database structure.

`#include "lcmaps_defines.h"`

Data Structures

- struct lcmaps_db_entry_s
  LCMAPS data base element structure.

Typedefs

- typedef lcmaps_db_entry_s lcmaps_db_entry_t
  type of LCMAPS data base element.

8.16.1 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

Definition in file lcmaps_db_read.h.

8.17 lcmaps_defines.h File Reference

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

8.17.1 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 lcmaps_dummy_bad.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"
```

8.18.1 Detailed Description

Interface to the LCMAPS plugins.

Author:
Martijn Steenbakkers for the EU DataGrid.

This file contains code for a dummy LCMAPS plugin that always returns NOT OK. 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_dummy_bad.c.

8.19 lcmaps_dummy_good.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"
```

8.19.1 Detailed Description

Interface to the LCMAPS plugins.

Author:
Martijn Steenbakkers for the EU DataGrid.

This file contains code for a dummy LCMAPS plugin that always returns OK. 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_dummy_good.c.

8.20 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"
```

8.20.1 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.

8.21 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"
```

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.

8.21.1 Detailed Description

Plugin to get data for the Job Repository Database.

Author:
Oscar Koeroo for the EU DataGrid.

Definition in file lcmaps_jobrep.c.

8.21.2 Function Documentation

8.21.2.1 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 2278 of file lcmaps_jobrep.c.

Referenced by plugin_initialize.

8.21.2.2 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 453 of file lcmaps_jobrep.c.

References lcmaps_get_jobrep_config.

8.21.2.3 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 574 of file lcmaps_jobrep.c.

8.21.2.4 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 610 of file lcmaps_jobrep.c.

8.21.2.5 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 2033 of file lcmaps_jobrep.c.

8.22 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"
```

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.

8.22.1 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.

8.22.2 Function Documentation

8.22.2.1 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.

8.22.2.2 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.

8.22.2.3 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.

8.22.3 Variable Documentation

8.22.3.1 struct timeval timeout [static]

Initial value:

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

Definition at line 177 of file lcmaps_ldap.c.

8.23 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"
```

8.23.1 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.

8.24 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"
```

Variables

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

8.24.1 Detailed Description

Logging routines for LCMAPS.

Author:
Martijn Steenbakkers for the EU DataGrid.

Definition in file lcmaps_log.c.

8.24.2 Variable Documentation

8.24.2.1 int debug_level = 0 [static]

debugging level

Definition at line 45 of file lcmaps_log.c.

8.24.2.2 char* extra_logstr = NULL [static]

string to be included in every log statement

Definition at line 46 of file lcmaps_log.c.

8.24.2.3 FILE* lcmaps_logfp = NULL [static]

stream associated with logfile

Definition at line 41 of file lcmaps_log.c.

8.24.2.4 int logging_syslog = 0 [static]

flag to use syslog

Definition at line 43 of file lcmaps_log.c.

8.24.2.5 int logging_usrlog = 0 [static]

flag to do user logging

Definition at line 42 of file lcmaps_log.c.

8.24.2.6 int should_close_lcmaps_logfp = 0 [static]

Flag to check if the log stream should be closed

Definition at line 47 of file lcmaps_log.c.

8.25 lcmaps_log.h File Reference

Logging API for the LCMAPS plugins and LCMAPS itself.

`#include <syslog.h>`

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.

8.25.1 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.

8.25.2 Function Documentation

8.25.2.1 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 217 of file lcmaps_log.c.

8.25.2.2 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 284 of file lcmaps_log.c.

8.25.2.3 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 371 of file lcmaps_log.c.

8.26 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"
```

8.26.1 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.

8.27 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"
```

8.27.1 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.

8.28 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"
```

Data Structures

- struct lcmaps_plugindl_s

  the lcmaps plugin module structure.

Typedefs

- typedef int(* lcmaps_proc_t)()

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

- typedef lcmaps_plugindl_s lcmaps_plugindl_t

  the type definition of the lcmaps plugin module structure.

Enumerations

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

  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.

8.28.1 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.

8.28.2 Enumeration Type Documentation

8.28.2.1 enum lcmaps_proctype_e

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

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.

8.28.3 Function Documentation

8.28.3.1 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.

Definition at line 781 of file lcmaps_pluginmanager.c.

References lcmaps_plugindl_s::handle, lcmaps_plugindl_s::init_argc, lcmaps_plugindl_s::init_argv, lcmaps_plugindl_s::next, lcmaps_plugindl_s::pluginname, lcmaps_plugindl_s::procs, and TERMPROC.

8.28.3.2 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

Definition at line 639 of file lcmaps_pluginmanager.c.

References lcmaps_proc_t.

Referenced by PluginInit.

8.28.3.3 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.

Definition at line 578 of file lcmaps_pluginmanager.c.

Referenced by PluginInit.

8.28.3.4 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

Definition at line 354 of file lcmaps_pluginmanager.c.

References get_procsymbol, lcmaps_plugindl_s::handle, lcmaps_plugindl_s::init_argc, lcmaps_plugindl_s::init_argv, INITPROC, INTROPROC, lcmaps_proc_t, lcmaps_plugindl_s::next, parse_args_plugin, lcmaps_plugindl_s::pluginargs, lcmaps_db_entry_s::pluginargs, lcmaps_plugindl_s::pluginname, lcmaps_db_entry_s::pluginname, lcmaps_plugindl_s::procs, lcmaps_plugindl_s::run_argc, lcmaps_plugindl_s::run_argv, RUNPROC, and TERMPROC.

8.28.3.5 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.

Definition at line 680 of file lcmaps_pluginmanager.c.

References lcmaps_plugindl_s::handle, lcmaps_plugindl_s::init_argc, lcmaps_plugindl_s::init_argv, INITPROC, INTROPROC, lcmaps_plugindl_s::next, lcmaps_plugindl_s::pluginargs, lcmaps_plugindl_s::pluginname, lcmaps_plugindl_s::procs, lcmaps_plugindl_s::run_argc, lcmaps_plugindl_s::run_argv, RUNPROC, and TERMPROC.

8.29 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"
```

8.29.1 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.

8.30 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"
```

8.30.1 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.

8.31 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"
```

8.31.1 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

Definition in file lcmaps_runvars.c.

8.31.2 Variable Documentation

8.31.2.1 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}
}
```

Definition at line 58 of file lcmaps_runvars.c.

8.32 lcmaps_types.h File Reference

Public header file with typedefs for LCMAPS.

`#include <gssapi.h>`

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 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 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.

Referenced by lcmaps_init_and_log.

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"
```

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)

Definition at line 178 of file lcmaps_utils.c.

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 306 of file lcmaps_utils.c.

8.34 lcmaps_utils.h File Reference

API for the utilities for the LCMAPS.

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

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 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 391 of file lcmaps_utils.c.

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

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 249 of file lcmaps_utils.c.

8.34.2.3 lcmaps_get_dn (lcmaps_cred_id_t *lcmaps_credential*)

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 153 of file lcmaps_utils.c.

8.34.2.4 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 579 of file lcmaps_utils.c.

8.34.2.5 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 349 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"
```

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>`

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.

Typedefs

- typedef lcmaps_vo_data_s lcmaps_vo_data_t

  Type of VO information structure.

- typedef 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 Function Documentation

8.36.2.1 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.

8.36.2.2 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.

8.36.2.3 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.

8.36.2.4 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.

8.36.2.5 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.

8.36.2.6 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.

8.36.2.7 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.

8.36.2.8 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.

8.36.2.9 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.

8.36.2.10 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.

8.36.2.11 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"
```

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_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"
```

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_localaccount plugin

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

Definition in file lcmaps_voms_localaccount.c.

8.39 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"
```

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_localgroup plugin

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

Definition in file lcmaps_voms_localgroup.c.

8.40 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"
```

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_poolaccount plugin

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

Definition in file lcmaps_voms_poolaccount.c.

8.41 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"
```

Functions

- 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.

8.41.1 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.

8.41.2 Function Documentation

8.41.2.1 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 197 of file lcmaps_voms_poolgroup.c.

8.41.2.2 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 293 of file lcmaps_voms_poolgroup.c.

8.41.2.3 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 325 of file lcmaps_voms_poolgroup.c.

8.41.2.4 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 526 of file lcmaps_voms_poolgroup.c.

8.42 pdl.h File Reference

General include file.

`#include <stdio.h>`

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 record_s record_t

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

- typedef 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)

8.42.1 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.

8.42.2 Define Documentation

8.42.2.1 #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.

Referenced by _add_policy, _add_variable, check_policies_for_recursion, check_rule_for_recursion, free_path, getPluginNameAndArgs, make_list, pdl_init, reduce_policies, reduce_to_var, and warning.

8.42.3 Typedef Documentation

8.42.3.1 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.

8.42.3.2 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.

8.42.4 Enumeration Type Documentation

8.42.4.1 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.

Referenced by warning.

8.42.4.2 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.

Referenced by pdl_next_plugin, and runEvaluationManager.

8.42.5 Function Documentation

8.42.5.1 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 405 of file pdl_main.c.

8.42.5.2 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 460 of file pdl_main.c.

8.42.5.3 void free_resources (void)

Free the resources.

Definition at line 622 of file pdl_main.c.

Referenced by stopEvaluationManager.

8.42.5.4 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 146 of file pdl_main.c.

Referenced by getPluginNameAndArgs.

8.42.5.5 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 86 of file pdl_main.c.

8.42.5.6 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 510 of file pdl_main.c.

8.42.5.7 const char* pdl_path (void)

Get the path.

Returns:
Path.

Definition at line 318 of file pdl_main.c.

Referenced by getPluginNameAndArgs, and pdl_next_plugin.

8.42.5.8 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 348 of file pdl_main.c.

8.42.5.9 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 658 of file pdl_main.c.

8.42.5.10 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 331 of file pdl_main.c.

8.42.5.11 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 134 of file pdl_main.c.

Referenced by startEvaluationManager.

8.43 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"
```

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)
- policy_t * get_current_policy (void)
- 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.

8.43.1 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:
1.36

Date:

Date:
2004/10/01 15:17:31

Definition in file pdl_main.c.

8.43.2 Function Documentation

8.43.2.1 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 426 of file pdl_main.c.

References PDL_ERROR, record_s::string, and warning.

Referenced by concat_strings, and concat_strings_with_space.

8.43.2.2 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 365 of file pdl_main.c.

References default_path, record_s::lineno, path, path_lineno, PDL_ERROR, record_s::string, and warning.

Referenced by set_path.

8.43.2.3 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 405 of file pdl_main.c.

References _concat_strings, and record_s::string.

8.43.2.4 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 460 of file pdl_main.c.

References _concat_strings, and record_s::string.

8.43.2.5 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 301 of file pdl_main.c.

Referenced by plugin_exists.

8.43.2.6 void free_path (void)

Free the string allocated to hold the path

Definition at line 384 of file pdl_main.c.

References default_path, path, and TRUE.

Referenced by free_resources.

8.43.2.7 void free_resources (void)

Free the resources.

Definition at line 622 of file pdl_main.c.

References free_path, free_policies, free_variables, and script_name.

8.43.2.8 policy_t* get_current_policy (void)

Return the current policy.

Definition at line 72 of file pdl_main.c.

Referenced by runEvaluationManager.

8.43.2.9 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 146 of file pdl_main.c.

References FALSE_BRANCH, rule_s::false_branch, get_policies, policy_s::name, policy_s::next, rule_s::next, policies_have_been_reduced, policy_s::rule, STATE, rule_s::state, TRUE_BRANCH, and rule_s::true_branch.

8.43.2.10 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 86 of file pdl_main.c.

References plugin_s::args, d_path, default_path, level_str, plugin_s::name, plugin_s::next, parse_error, path, PDL_ERROR, PDL_INFO, PDL_UNKNOWN, PDL_WARNING, script_name, TRUE, and warning.

Referenced by startEvaluationManager.

8.43.2.11 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 510 of file pdl_main.c.

References EVALUATION_FAILURE, EVALUATION_START, EVALUATION_SUCCESS, rule_s::false_branch, get_policies, policy_s::name, policy_s::next, PDL_ERROR, pdl_path, plugin_status_t, resetCredentialData, policy_s::rule, rule_s::state, rule_s::true_branch, and warning.

Referenced by runEvaluationManager.

8.43.2.12 const char* pdl_path (void)

Get the path.

Returns:
Path.

Definition at line 318 of file pdl_main.c.

References path.

8.43.2.13 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 199 of file pdl_main.c.

References find_first_space.

8.43.2.14 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 206 of file pdl_policy.c.

References plugin_s::args, plugin_s::name, plugin_s::next, and TRUE.

Referenced by startEvaluationManager.

8.43.2.15 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 348 of file pdl_main.c.

References _set_path, path, and record_s::string.

8.43.2.16 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 658 of file pdl_main.c.

References level_str, lineno, parse_error, PDL_ERROR, pdl_error_t, PDL_SAME, PDL_UNKNOWN, script_name, and TRUE.

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.

8.43.2.17 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 331 of file pdl_main.c.

References PDL_ERROR, and warning.

8.43.2.18 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 134 of file pdl_main.c.

References parse_error.

8.44 pdl_policy.c File Reference

Implementation of the pdl policies.

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

Functions

- BOOL _add_policy (const record_t *name, const rule_t *rules)
- 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.

8.44.1 Detailed Description

Implementation of the pdl policies.

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

Version:

Revision:
1.15

Date:

Date:
2004/10/01 15:17:31

Definition in file pdl_policy.c.

8.44.2 Function Documentation

8.44.2.1 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 107 of file pdl_policy.c.

References allow_rules, find_policy, record_s::lineno, policy_s::lineno, policy_s::name, policy_s::next, PDL_ERROR, policy_s::prev, policy_s::rule, record_s::string, TRUE, and warning.

Referenced by add_policy.

8.44.2.2 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 73 of file pdl_policy.c.

References _add_policy, add_policy, start_new_rules, and record_s::string.

Referenced by add_policy.

8.44.2.3 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 55 of file pdl_policy.c.

References allow_rules.

Referenced by _add_policy, and allow_rules.

8.44.2.4 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 179 of file pdl_policy.c.

References get_policies, policy_s::name, policy_s::next, policy_s::rule, and TRUE.

Referenced by startEvaluationManager.

8.44.2.5 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 160 of file pdl_policy.c.

References find_policy, policy_s::name, and policy_s::next.

Referenced by _add_policy, and find_policy.

8.44.2.6 void free_policies (void)

Free all policies and their allocated resources.

Definition at line 260 of file pdl_policy.c.

References policy_s::name, policy_s::next, and policy_s::rule.

Referenced by free_resources.

8.44.2.7 policy_t* get_policies (void)

Get the list of policies.

Returns:
First policy in the list.

Definition at line 233 of file pdl_policy.c.

Referenced by check_policies_for_recursion, get_plugins, pdl_next_plugin, and reduce_policies.

8.44.2.8 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 282 of file pdl_policy.c.

References policies_reduced.

Referenced by get_plugins.

8.44.2.9 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 206 of file pdl_policy.c.

References get_policies, policy_s::next, rule_s::next, policies_reduced, policy_s::rule, and TRUE.

8.44.2.10 void remove_policy (record_t * *policy*)

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 146 of file pdl_policy.c.

References remove_policy, and record_s::string.

Referenced by remove_policy.

8.44.2.11 void show_policies (void)

Display the policies and the rules associated with the policy.

Definition at line 243 of file pdl_policy.c.

References policy_s::name, policy_s::next, and policy_s::rule.

8.45 pdl_policy.h File Reference

Include file for using the pdl policies.

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

Data Structures

- struct policy_s
  Keeping track of found policies.

Typedefs

- typedef policy_s policy_t
  Keeping track of found policies.

8.45.1 Detailed Description

Include file for using the pdl policies.

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

Version:

Revision:
1.10

Date:

Date:
2004/10/01 15:17:31

Definition in file pdl_policy.h.

8.45.2 Typedef Documentation

8.45.2.1 typedef struct policy_s policy_t

Keeping track of found policies.

8.46 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"
```

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)

8.46.1 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.

8.46.2 Function Documentation

8.46.2.1 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.

References rule_s::false_branch, record_s::lineno, rule_s::lineno, policy_s::lineno, rule_s::next, PDL_-ERROR, rule_s::state, record_s::string, rule_s::true_branch, and warning.

Referenced by add_rule.

8.46.2.2 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.

References _add_rule, add_rule, and record_s::string.

Referenced by add_rule.

8.46.2.3 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.

References allow_new_rules.

Referenced by allow_new_rules.

8.46.2.4 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.

References check_rule_for_recursion, count_rules, get_rule_number, has_recursion, rule_s::lineno, PDL_-WARNING, RECURSION, recursion_t, TRUE, and warning.

Referenced by check_rule_for_recursion.

8.46.2.5 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.

References rule_s::next.

Referenced by check_rule_for_recursion.

8.46.2.6 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.

References rule_number.

Referenced by make_list, and update_list.

8.46.2.7 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.

References rule_s::next, and rule_s::state.

8.46.2.8 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.

References rule_s::false_branch, free_rules, rule_s::next, rule_s::state, and rule_s::true_branch.

Referenced by free_rules.

8.46.2.9 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.

References rule_s::next.

Referenced by check_rule_for_recursion.

8.46.2.10 const rule_t* get_top_rule (void)

Get the top rule.

Returns:
Top rule.

Definition at line 658 of file pdl_rule.c.

8.46.2.11 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.

References rule_s::false_branch, rule_s::lineno, make_list, NO_RECURSION, PDL_ERROR, RECURSION, RECURSION_HANDLED, recursion_t, rule_number, rule_s::state, rule_s::true_branch, update_list, and warning.

Referenced by check_rule_for_recursion.

8.46.2.12 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.

References find_insert_position, rule_number, and TRUE.

Referenced by has_recursion.

8.46.2.13 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.

References FALSE_BRANCH, rule_s::false_branch, reduce_rule, STATE, rule_s::state, TRUE_BRANCH, and rule_s::true_branch.

Referenced by reduce_rule.

8.46.2.14 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.

References rule_s::next.

Referenced by find_insert_position, has_recursion, and make_list.

8.46.2.15 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.

References set_top_rule.

Referenced by set_top_rule.

8.46.2.16 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.

References rule_s::false_branch, rule_s::next, show_rules, rule_s::state, and rule_s::true_branch.

Referenced by show_rules.

8.46.2.17 void start_new_rules (void)

Start a new list of rules.

Definition at line 58 of file pdl_rule.c.

Referenced by add_policy.

8.46.2.18 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.

References find_insert_position.

Referenced by has_recursion.

8.47 pdl_rule.h File Reference

Include file for using the pdl rules.

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

Data Structures

- struct rule_s

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

Typedefs

- typedef 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.

8.47.1 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.

8.47.2 Typedef Documentation

8.47.2.1 typedef struct rule_s rule_t

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

8.47.3 Enumeration Type Documentation

8.47.3.1 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.

Referenced by check_rule_for_recursion, and has_recursion.

8.47.3.2 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.

Referenced by reduce_to_var.

8.47.3.3 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.

8.48 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"
```

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)

8.48.1 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.

8.48.2 Function Documentation

8.48.2.1 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.

References detect_loop, record_s::lineno, var_s::lineno, var_s::name, var_s::next, var_s::okay, PDL_ERROR, PDL_SAME, record_s::string, TRUE, var_s::value, and warning.

Referenced by add_variable.

8.48.2.2 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.

References _add_variable, add_variable, and record_s::string.

Referenced by add_variable.

8.48.2.3 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.

References var_s::next, and var_s::value.

Referenced by _add_variable.

8.48.2.4 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.

References var_s::name, and var_s::next.

8.48.2.5 void free_variables (void)

Free the resources allocated for the variables.

Definition at line 142 of file pdl_variable.c.

References var_s::name, var_s::next, and var_s::value.

Referenced by free_resources.

8.48.2.6 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.

8.48.2.7 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.

References left_side, var_s::lineno, var_s::name, var_s::okay, PDL_WARNING, reduce_to_var, right_side, rule_type_t, STATE, TRUE, var_s::value, and warning.

Referenced by reduce_to_var.

8.48.2.8 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.

References var_s::name, var_s::next, and var_s::value.

8.49 pdl_variable.h File Reference

Include file for using the pdl variables.

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

Data Structures

- struct var_s

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

Typedefs

- typedef var_s var_t

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

8.49.1 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.

8.49.2 Typedef Documentation

8.49.2.1 typedef struct var_s var_t

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

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 dummy NOT OK plugin

9.13 The dummy bad plugin

ALWAYS return NOT OK !

9.14 dummy OK plugin

9.15 The dummy bad plugin

ALWAYS return OK !

9.16 example plugin

9.17 bescrijving

beschrijf beschrijf ...

9.18 ldap enforcement plugin

9.19 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>

9.20 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)

9.21 OPTIONS

9.21.1 -maxuid <maxuid>

Maximum number of uids to be used. Strongly advised is to set this to 1.

9.21.2 -maxpgid <maxpgid>

Maximum number of primary gids to be used.

9.21.3 -maxsgid <maxsgid>

Maximum number of (secondary) gids to be used (not including primary group). Advised is to set this to 1.

9.21.4 -hostname <hostname>

The hostname on which the LDAP server is running, e.g. asen.nikhef.nl

9.21.5 -port <port>

The port number to which to connect, e.g. 389

9.21.6 -require_all_groups [yes|no]

Specify if all groups set by the PluginManager shall be used. Default is'yes'

9.21.7 -dn_manager <DN>

DN of the LDAP manager, e.g. "cn=Manager,dc=root"

9.21.8 -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.

9.21.9 -sb_groups <seachbase>

Search base for the (secondary) groups, e.g. ”ou=LocalGroups, dc=foobar, dc=ough”

9.21.10 -sb_user <searchbase>

Search base for the user, e.g. ”ou=LocalUsers, dc=foobar, dc=ough”

9.21.11 -timeout <timeout value>

timeout (in seconds) that will be applied to the ldap binding

9.22 RETURN VALUE

- LCMAPS_MOD_SUCCESS : succes
- LCMAPS_MOD_FAIL : failure

9.23 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.24 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

9.25 localaccount plugin

9.26 SYNOPSIS

lcmaps_localaccount.mod [-gridmapfile|-GRIDMAPFILE|-gridmap|-GRIDMAP <location gridmapfile>]

9.27 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.

9.28 OPTIONS

9.28.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

9.28.2 -gridmapfile <gridmapfile>

See -gridmap

9.28.3 -GRIDMAP <gridmapfile>

See -gridmap

9.28.4 -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).

9.29 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.30 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.31 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

9.32 poolaccount plugin

9.33 SYNOPSIS

lcmaps_poolaccount.mod [-gridmapfile|-GRIDMAPFILE|-gridmap|-GRIDMAP <location gridmapfile>] [-gridmapdir|-GRIDMAPDIR <location gridmapdir>]

9.34 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.

9.35 OPTIONS

9.35.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

9.35.2 -gridmapfile <gridmapfile>

See -gridmap

9.35.3 -GRIDMAP <gridmapfile>

See -gridmap

9.35.4 -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).

9.35.5 -GRIDMAPDIR <gridmapdir>

See -gridmapdir

9.35.6 -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.

9.35.7 -OVERRIDE_INCONSISTENCY

See -override_inconsistency

9.35.8 -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.

9.36 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.37 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

9.38 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

9.39 posix enforcement plugin

9.40 SYNOPSIS

lcmaps_posix_enf.mod [-maxuid|-MAXUID <number of uids>] [-maxpgid|-MAXPGID <number of primary gids>] [-maxsgid|-MAXSGID <number of secondary gids>]

9.41 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.

9.42 OPTIONS

9.42.1 -MAXUID <number of uids>

See -maxuid

9.42.2 -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.

9.42.3 -MAXPGID <number of primary gids>

See -maxpgid

9.42.4 -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.

9.42.5 -MAXSGID <number of secondary gids>

See -maxsgid

9.42.6 -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.

9.42.7 -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.

9.42.8 -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.

9.43 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.44 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.45 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

9.46 voms plugin

9.47 SYNOPSIS

lcmaps_voms.mod -vomsdir <vomsdir> -certdir <certdir>

9.48 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).

9.49 OPTIONS

9.49.1 -VOMSDIR <vomsdir>

See -vomsdir

9.49.2 -vomsdir <vomsdir>

This is the directory which contains the certificates of the VOMS servers

9.49.3 -CERTDIR <certdir>

See -certdir

9.49.4 -certdir <certdir>

This is the directory which contains the CA certificates

9.50 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.51 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.52 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,

9.53 voms local account plugin

9.54 SYNOPSIS

lcmaps_voms_localaccount.mod [-gridmapfile|-GRIDMAPFILE|-gridmap|-GRIDMAP <location gridmapfile>] [-use_voms_gid]

9.55 DESCRIPTION

This localaccount acquisition plugin is a 'VOMS-aware' modification of the 'localaccount' plugin. The plugin tries to find a local account (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 next to the name of an existing account, as shown in the following example.

EXAMPLE:

`"/VO=wilma/GROUP=management" wilmamgr`

`"/VO=fred/GROUP=*" fredmgr`

If the first matching VO-GROUP-ROLE combination is `"/VO=wilma/GROUP=management"` the plugin will map the user to the account wilmamgr. If the first matching VO-GROUP-ROLE combination is `"/VO=fred/GROUP=*"` the plugin will map the user to the account fredmgr.

9.56 NOTE 1

This plugin should only be used in combination with the '*voms_localgroup*' and/or '*voms_poolgroup*' plugins.

9.57 OPTIONS

9.57.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

9.57.2 -gridmapfile <gridmapfile>

See -gridmap

9.57.3 -GRIDMAP <gridmapfile>

See -gridmap

9.57.4 -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).

9.57.5 -use_voms_gid

When this option is set the LCMAPS system relies on other VOMS plugins such as lcmaps_voms_localgroup.mod and voms poolgroup plugin "lcmaps_voms_poolgroup.mod" to assign a primary GID based on the VOMS attributes contained in the user proxy instead of taking the default primary GID that comes with the local account.

9.58 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.59 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.60 SEE ALSO

lcmaps_voms.mod, lcmaps_voms_localgroup.mod, lcmaps_voms_localgroup.mod, lcmaps_voms_poolgroup.mod, lcmaps_localaccount.mod, lcmaps_poolaccount.mod, lcmaps_posix_enf.mod, lcmaps_ldap_enf.mod,

9.61 voms localgroup plugin

9.62 SYNOPSIS

lcmaps_voms_localgroup.mod -GROUPMAPFILE|-groupmapfile|-GROUPMAP|-groupmap <groupmapfile> [-mapall] [-mapmin <group count>]

9.63 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).

9.64 OPTIONS

9.64.1 -GROUPMAPFILE <groupmapfile>

See -groupmap

9.64.2 -groupmapfile <groupmapfile>

See -groupmap

9.64.3 -GROUPMAP <groupmapfile>

See -groupmap

9.64.4 -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).

9.64.5 -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.

9.64.6 -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.

9.65 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.66 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.67 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,

9.68 voms poolaccount plugin

9.69 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]

9.70 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%3dmart`

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.

9.71 NOTE 1

This plugin should only be used in combination with the '*voms_localgroup*' and/or '*voms_poolgroup*' plugins.

9.72 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.

9.73 OPTIONS

9.73.1 -GRIDMAPFILE <gridmapfile>

See -gridmap

9.73.2 -gridmapfile <gridmapfile>

See -gridmap

9.73.3 -GRIDMAP <gridmapfile>

See -gridmap

9.73.4 -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).

9.73.5 -GRIDMAPDIR <gridmapdir>

See -gridmapdir

9.73.6 -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.

9.73.7 -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.

9.73.8 -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.

9.73.9 -OVERRIDE_INCONSISTENCY

See -override_inconsistency

9.73.10 -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.

9.74 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.75 ERRORS

See bugzilla for known errors (`http://marianne.in2p3.fr/datagrid/bugzilla/`)

9.76 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,

9.77 voms poolgroup plugin

9.78 SYNOPSIS

lcmaps_voms_poolgroup.mod -GROUPMAPFILE|-groupmapfile|-GROUPMAP|-groupmap <groupmapfile> -GROUPMAPDIR|-groupmapdir <groupmapdir> [-mapall] [-mapmin <group count>]

9.79 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).

9.80 OPTIONS

9.80.1 -GROUPMAPFILE <groupmapfile>

See -groupmap

9.80.2 -groupmapfile <groupmapfile>

See -groupmap

9.80.3 -GROUPMAP <groupmapfile>

See -groupmap

9.80.4 -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).

9.80.5 -GROUPMAPDIR <groupmapdir>

See -groupmapdir

9.80.6 -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.

9.80.7 -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.

9.80.8 -OVERRIDE_INCONSISTENCY

See -override_inconsistency

9.80.9 -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.

9.80.10 -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.

9.81 RETURN VALUES

- LCMAPS_MOD_SUCCESS : Success
- LCMAPS_MOD_FAIL : Failure

9.82 ERRORS

See bugzilla for known errors (http://marianne.in2p3.fr/datagrid/bugzilla/)

9.83 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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