Writing your own DMLite plugin

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Overview

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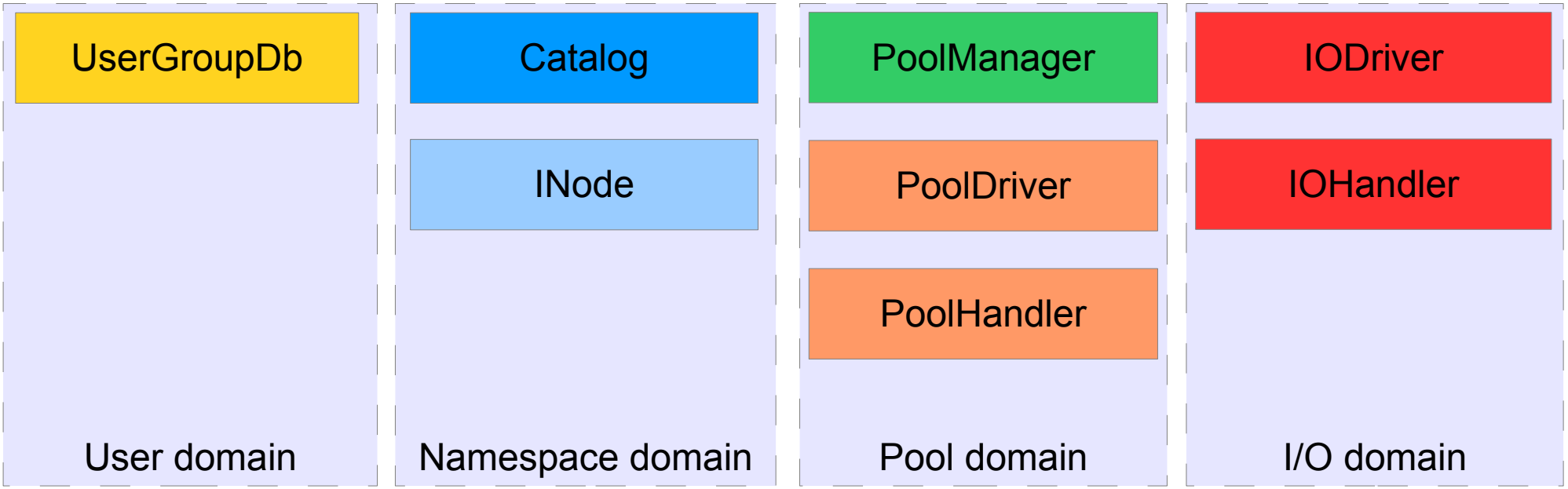
- Loading our plugin into the stack
- Adding a new Catalog
- Listing directories on a Hadoop namespace

Introduction

- DMLite aims to make plugin development easy
  - And as safe as possible
- We are going to write a simple plugin that provides a couple of methods only to show the bases
  - No need to implement every single method!

Introduction



Setting the development environment

- Since it is a small plugin, we will just use a simple Makefile
- We will keep two different files: one for the plugin registration, and another one for the plugin itself
  - *Makefile*
  - *MyPlugin.cpp*
  - *MyCatalog.h*
  - *MyCatalog.cpp*

Setting the development environment

- We need to install dmlite-devel to get the headers
  - yum install dmlite-devel
- Our plugin will need to link agains dmlite
  - LDFLAGS=-ldmlite
- If we are development on SL5, we need to point to the Boost 1.41 headers (coming from EPEL)
  - /usr/include/boost141

First dummy functionality

- We are going to start with the bare minimum: registering our plugin and printing every configuration entry that is read from the configuration files.

Loading our plugin into the stack

- We need to create a new file: /etc/dmlite.conf.d/00-myplugin.conf
  - Starts with 00 to be the first one
- And add the LoadPlugin directive
  - LoadPlugin plugin_my <so location>
- If now we restart HTTPD, we will see every configuration directive dumped to the stdout
  - Which is our plugin does!

Adding a new Catalog

- We need to create a new class that inherits from Catalog
- And our factory must inherit from CatalogFactory
- We implement the missing methods in the Factory
  - MyFactory::createCatalog
- And, at least, getImplId on out Catalog
- And register the factory as a CatalogFactory
  - PluginManager::registerCatalogFactory

Adding a new Catalog

- Now, we rename /etc/dmlite.conf.d/00-myplugin.conf to /etc/dmlite.conf.d/zmyplugin.conf
  - We want it to be the last one loaded
  - Remember, plugins are called as LIFO!
- We restart httpd
  - And we refresh the browser
  - It obviously fails: we haven't implemented anything yet

Listing directories on a Hadoop namespace

- We will need at least these methods to list a directory
  - Catalog::changeDir
  - Catalog::extendedStat
  - Catalog::openDir
  - Catalog::readDirx
  - Catalog::closeDir

And our new plugin...

- Is accessible through HTTP/DAV
- And GridFTP
- And xroot
- And NFS
- And SRM

But I don't like C++ :'(

- You will be able to do it in Python!

```
import pydmlite as pd
from dmlite.exceptions import *

class pyINode(pd.INode):
     …
  def getComment(self, inode):
    comment = None

    if inode in self.inode_dict:
      comment = self.inode_dict[inode].comment

    if comment == None:
      raise PyDmException(pd.DMLITE_NO_COMMENT, "There is no comment for inode %ld" % inode)

    return comment

  def setComment(self, inode, newcomment):
    if inode in self.inode_dict:
      self.inode_dict[inode].comment = newcomment

  def deleteComment(self, inode):
    try:
      self.inode_dict[inode].comment = None
    except KeyError:
      raise
```