



Enabling Grids for E-scienceE

# AMGA PHP API

*Claudio Cherubino*  
*INFN - Catania*

[www.eu-egee.org](http://www.eu-egee.org)



- **AMGA:**
  - Features
  - Architecture
  - Interfaces
  - Client-Server protocol
  
- **AMGA PHP API**
  - Features
  - Methods
  - Examples
  
- **gLibrary**

- **Official gLite Metadata Catalogue**

- **Official gLite Metadata Catalogue**
- **Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)**

- Official gLite Metadata Catalogue
- Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)
- Modular front-end (High-performance TCP Streaming interface and standards compliant Web-Services front-ends)

- **Official gLite Metadata Catalogue**
- **Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)**
- **Modular front-end (High-performance TCP Streaming interface and standards compliant Web-Services front-ends)**
- **Client Authentication based on**
  - Username/password
  - General X509 certificates
  - Grid-proxy certificates

- **Official gLite Metadata Catalogue**
- **Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)**
- **Modular front-end (High-performance TCP Streaming interface and standards compliant Web-Services front-ends)**
- **Client Authentication based on**
  - Username/password
  - General X509 certificates
  - Grid-proxy certificates
- **Access control via a Virtual Organization Management System (VOMS)**

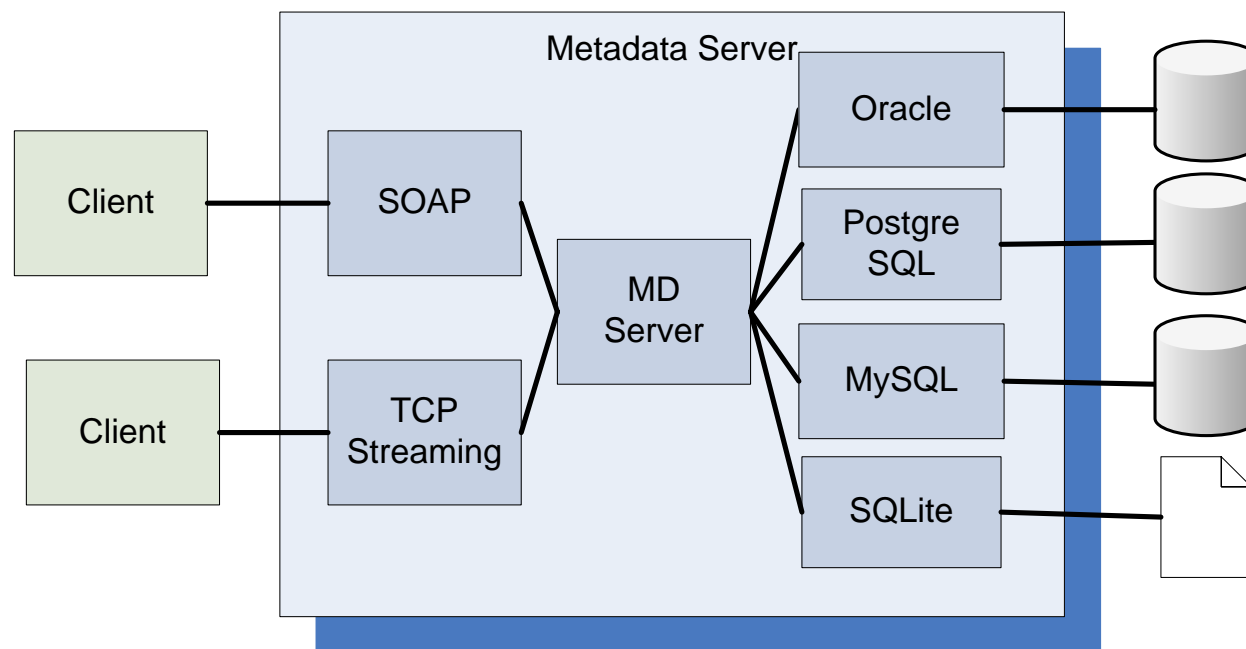
- **Official gLite Metadata Catalogue**
- **Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)**
- **Modular front-end (High-performance TCP Streaming interface and standards compliant Web-Services front-ends)**
- **Client Authentication based on**
  - Username/password
  - General X509 certificates
  - Grid-proxy certificates
- **Access control via a Virtual Organization Management System (VOMS)**
- **Secure client connections using SSL**



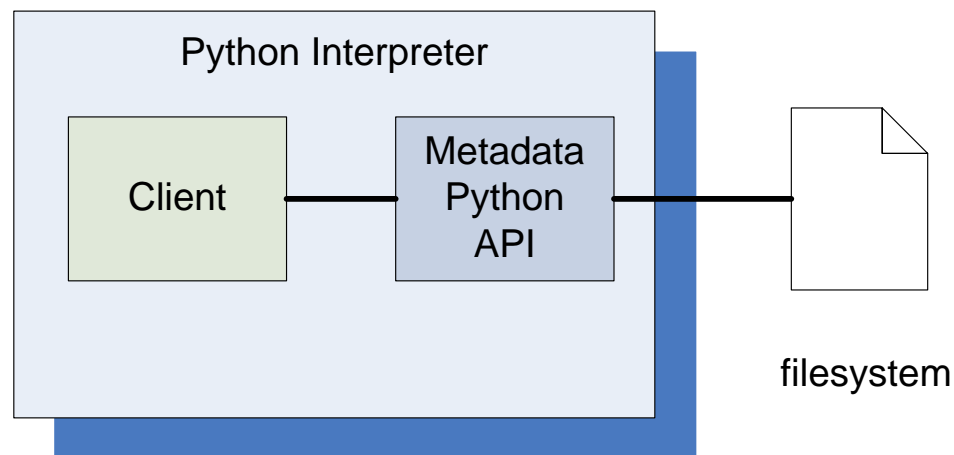
- **Official gLite Metadata Catalogue**
- **Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)**
- **Modular front-end (High-performance TCP Streaming interface and standards compliant Web-Services front-ends)**
- **Client Authentication based on**
  - Username/password
  - General X509 certificates
  - Grid-proxy certificates
- **Access control via a Virtual Organization Management System (VOMS)**
- **Secure client connections using SSL**
- **Authorization using ACLs**

- **Official gLite Metadata Catalogue**
- **Modular back-end (Oracle, PostgreSQL, MySQL and SQLite)**
- **Modular front-end (High-performance TCP Streaming interface and standards compliant Web-Services front-ends)**
- **Client Authentication based on**
  - Username/password
  - General X509 certificates
  - Grid-proxy certificates
- **Access control via a Virtual Organization Management System (VOMS)**
- **Secure client connections using SSL**
- **Authorization using ACLs**
- **SQL-like query language**

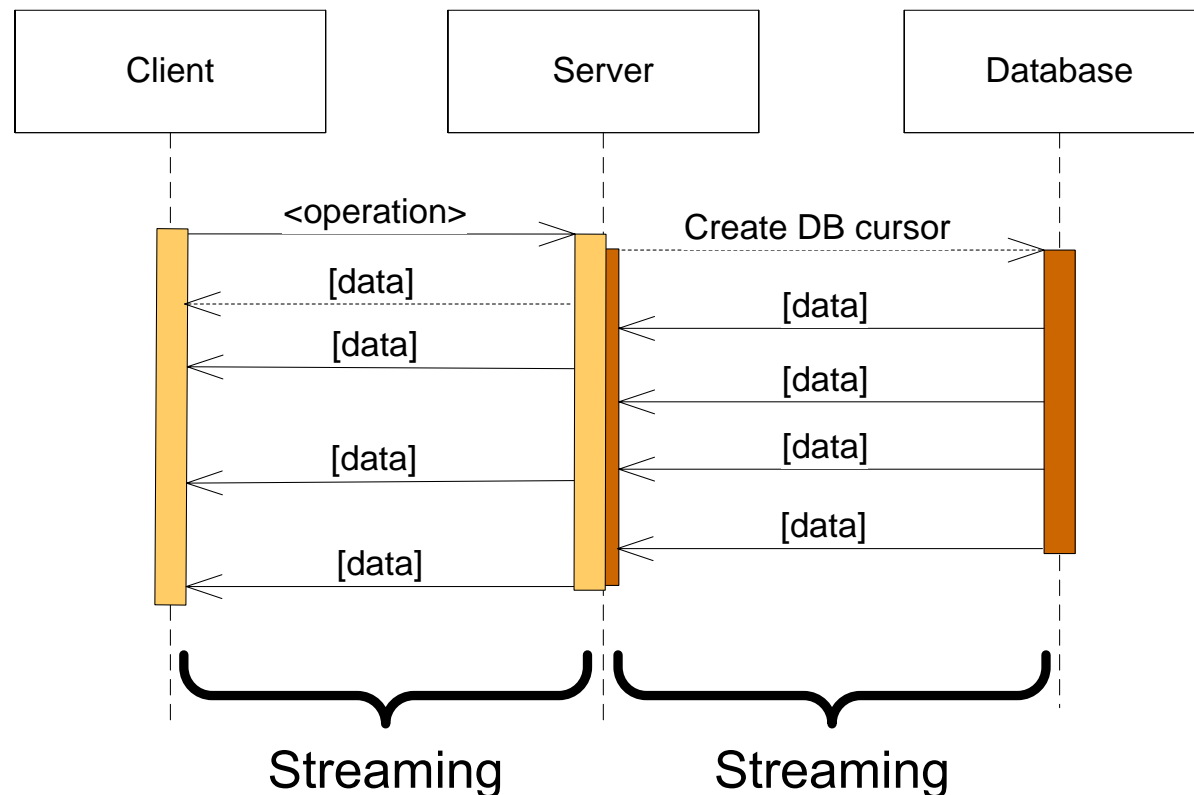
- **C++ multiprocess server**
  - Runs on any Linux flavour
- **Backends**
  - Oracle, MySQL, PostgreSQL, SQLite



- **Two front-ends**
  - TCP Streaming
    - High performance
    - Client API for C++, Java, Python, Perl, Ruby
  - SOAP
    - Interoperability
  
- **Also implemented as standalone Python library**
  - Data stored on filesystem



- TCP streaming front-end designed for scalability
  - Asynchronous operation
    - Reading from DB and sending data to client



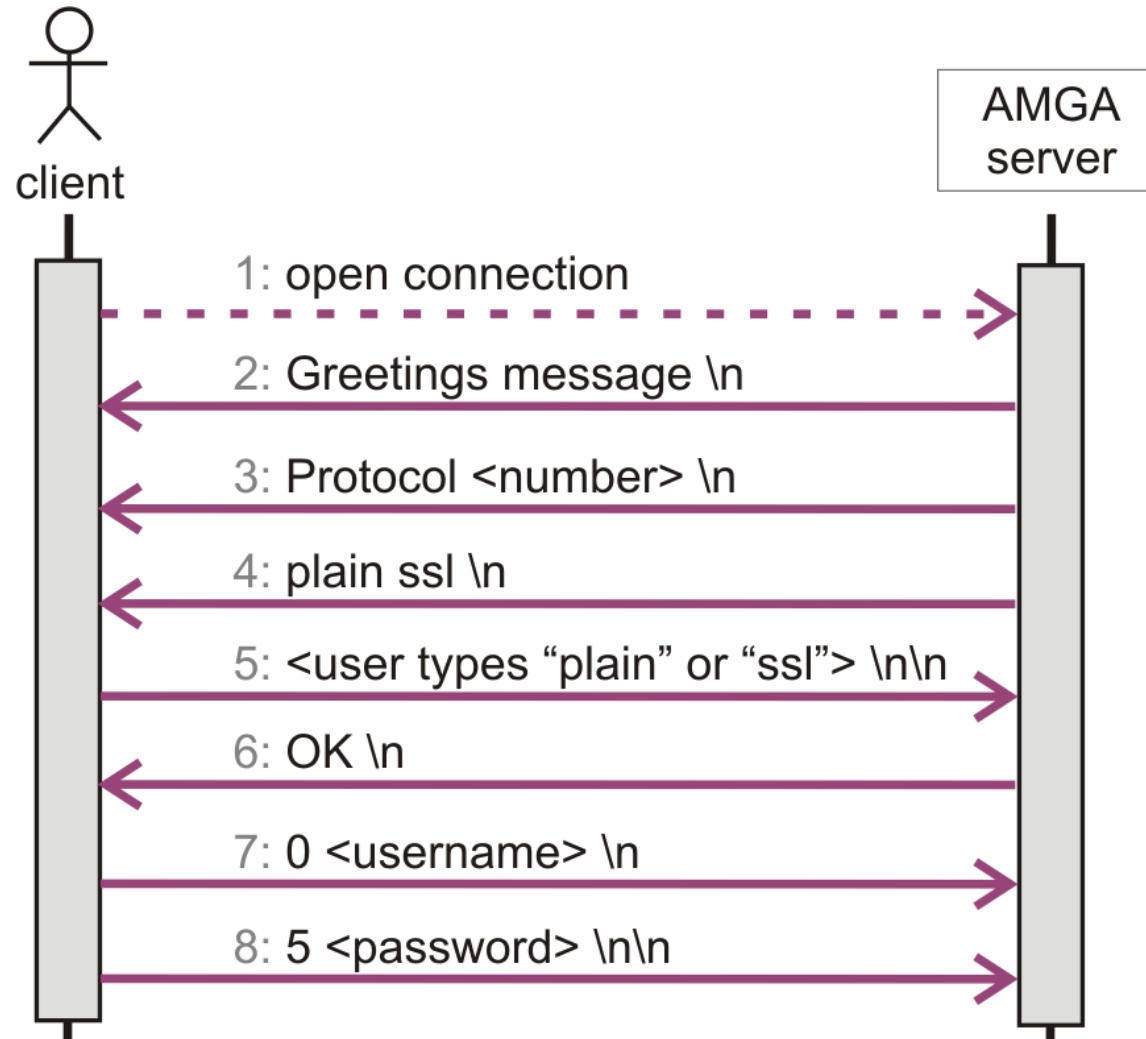
- **TCP streaming front-end designed for scalability**
  - Response sent to client in chunks
    - No limit on the maximum response size
  - Text based protocol (like SMTP, POP3,...)
  - Response streamed to client
  - Example:

```

Client:      listattr entry
Server:      0
              entry
              value1
              value2
              ...
              <EOT>
  
```

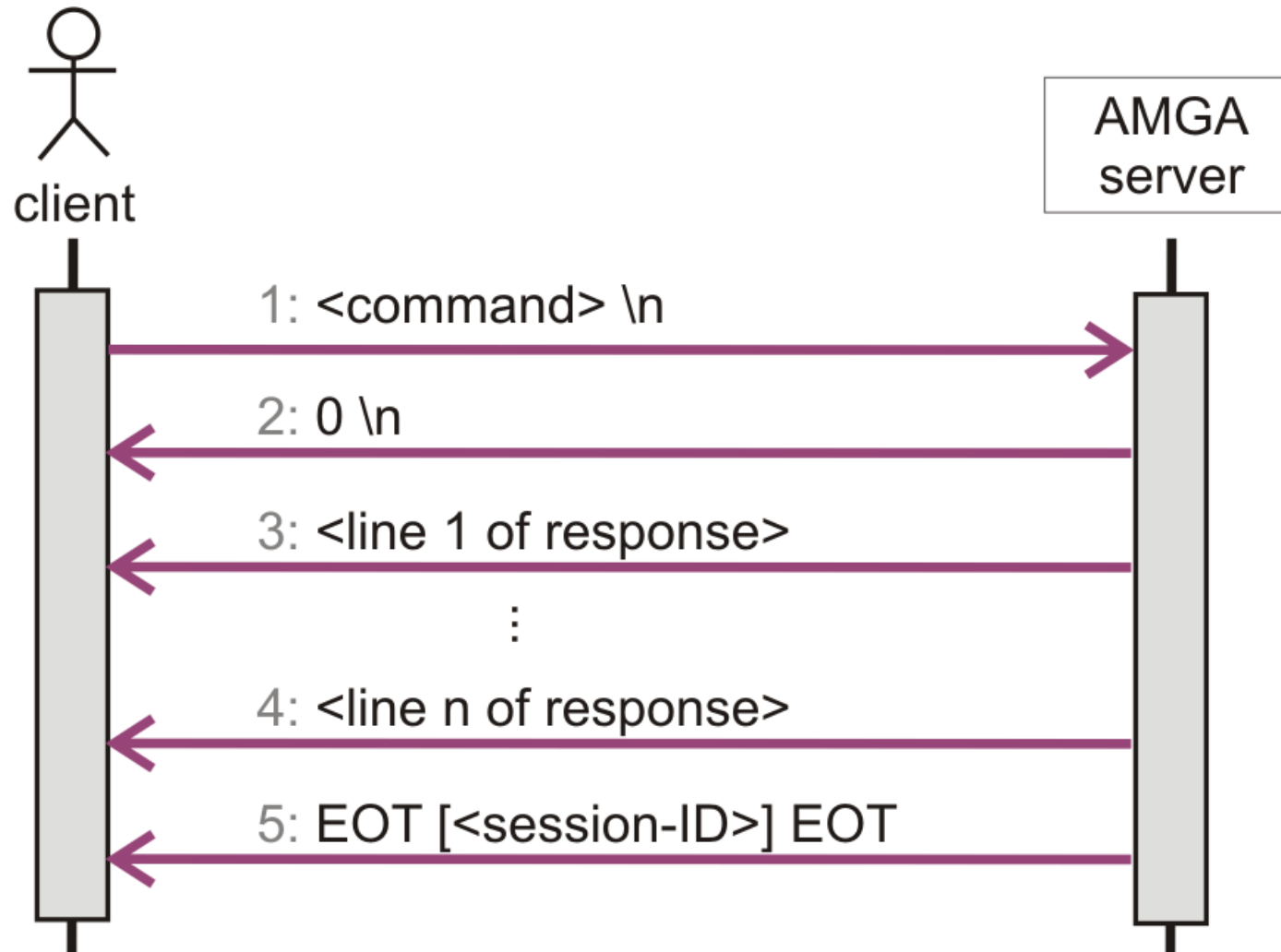
- **TCP Streaming Front-end**
  - mdcli & mdclient and C++ API (md\_cli.h, MD\_Client.h)
  - Python Client API
  - Java Client API and command line mdjavaclient.sh & mdjavacli.sh (also under Windows !!)
  - AMGA Web Interface
  - **AMGA PHP API**
- **SOAP Front-end (WSDL)**
  - C++ gSOAP
  - AXIS (Java)
  - ZSI (Python)

- Handshake





- Sending command and retrieving output



- **PHP5 Object Oriented Interface**
- **Ported from the C++, Python and Perl Client APIs**
- **Based on the MDClient class**
- **Can establish plain/SSL connection to AMGA server**
- **Provides a method for each AMGA command and a generic *execute(\$command)***

- `void __construct`(string \$host, integer \$port, [string \$login = "anonymous"], [string \$password = ""], [boolean \$keepalive = true])
- `void requireSSL`(string \$key, string \$cert, [ \$capath = "certificates"])
- `void connect`()
- `void execute`(string \$command)
- `void getAttr`(string \$file, array \$attributes)
- `void setAttr`(string \$file, string \$keys, string \$values)
- `void addEntry`(string \$file, string \$keys, string \$values)
- `void addAttr`(string \$file, string \$name, string \$t)
- `string listEntries`(string \$pattern)
- `array(array(attributes), array(types)) listAttr`(string \$file)
- `void selectAttr`(array \$attributes, string \$query)
- `array getSelectAttrEntry`()
- ...

```
// including AMGA PHP class
include 'mdclient.php';

// login parameters
$host = "glibrary.ct.infn.it";
$port = 8822;
$login = "NULL";

// establishing ssl connection with proxy authentication
try
{
    $client = new gLibrary($host, $port, $login);
    $client->requireSSL("x509_xxx", "x509_xxx");
    $client->connect();
}
catch (Exception $e)
{
    echo 'Unable to connect: '. $e->getMessage(). "\n";
}
```

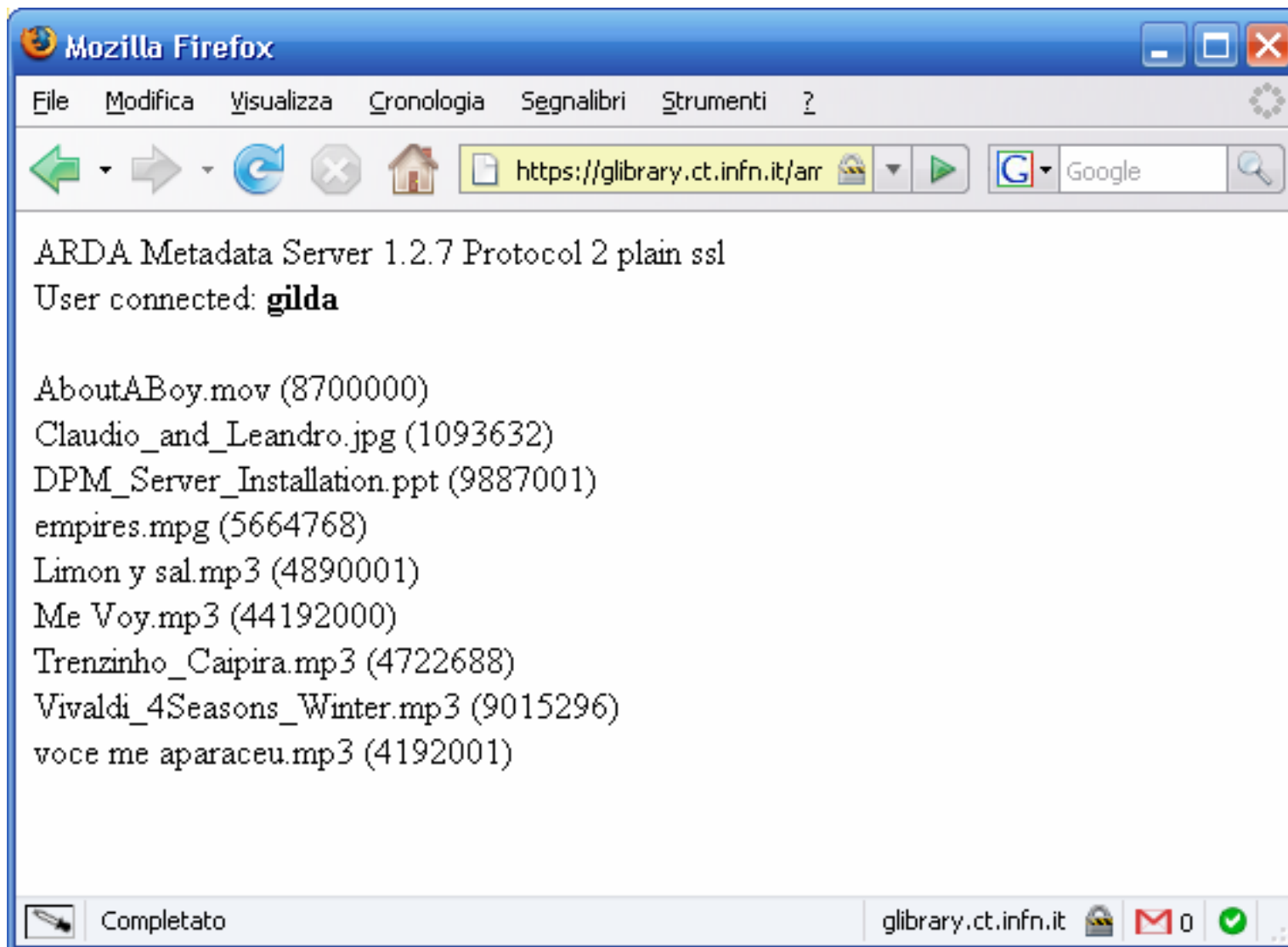
```

// printing the greetings message
echo $client->getGreetings()."<br>";

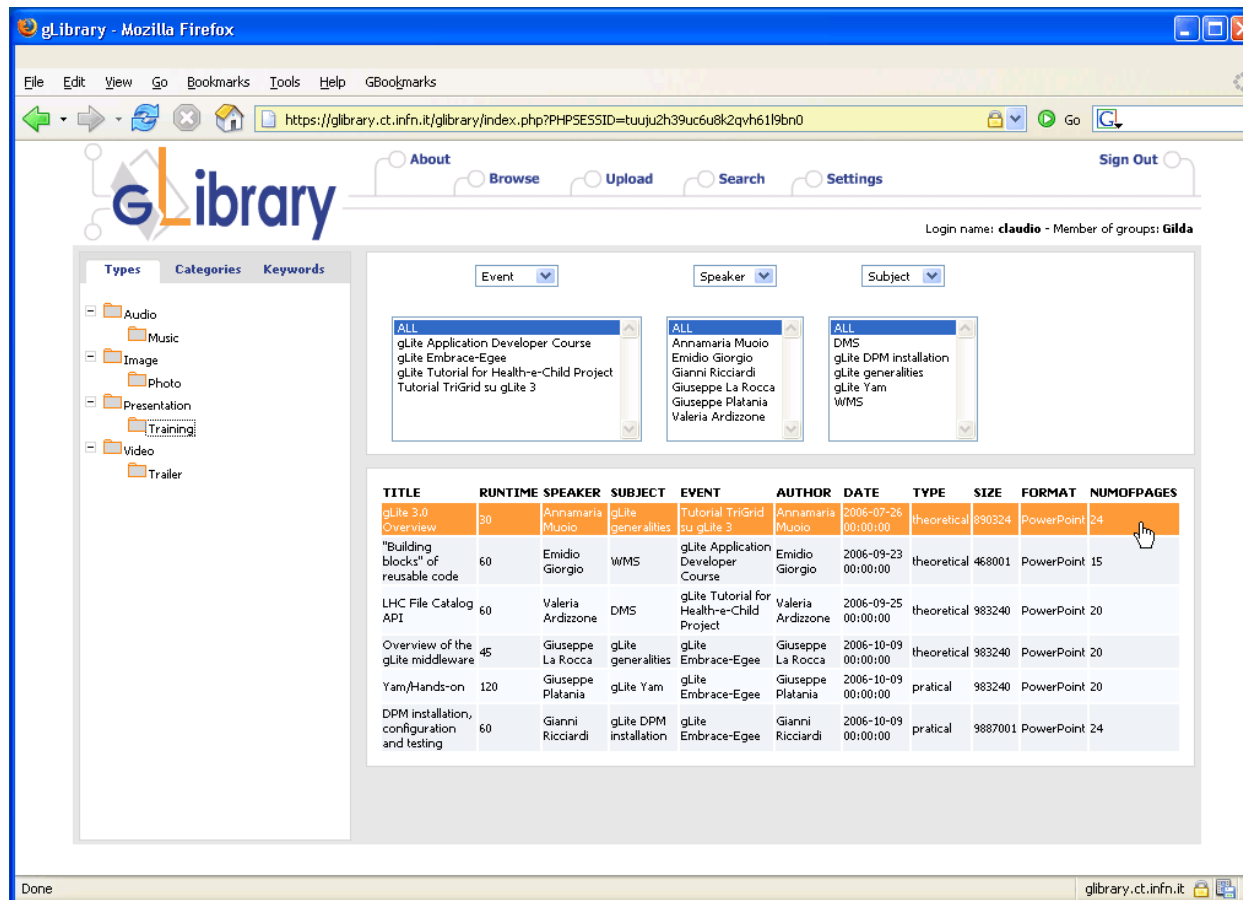
// retrieving name of the user connected
echo "User connected: <b>".$client->whoami()."</b><br><br>";

// getting FileName and Size of all entries
// in /gLibTest/Entries where Size > 1000000
$attrs = array("/gLibTest/Entries:FileName", "Size");
$condition = "'Size > 1000000 order(FileName)';
$num_attrs = count($attrs);

$result = $client->selectAttr($attrs, $condition);
while (!$client->eot())
{
    $FileName = $client->getSelectAttrEntry();
    $Size = $client->getSelectAttrEntry();
    echo $FileName[0]. " ( ".$Size[0]. " )<br>";
}
    
```



- Grid digital asset management software based on AMGA PHP API



The screenshot shows the gLibrary web interface. The browser title is "gLibrary - Mozilla Firefox". The address bar shows the URL: <https://glibrary.ct.infn.it/glibrary/index.php?PHPSESSID=tuuju2h39uc6u8k2qvh6119bn0>. The page has a navigation menu with "About", "Browse", "Upload", "Search", "Settings", and "Sign Out". The user is logged in as "claudio" and is a member of the "Gilda" group. There are three dropdown menus for "Event", "Speaker", and "Subject", all set to "ALL". A table of digital assets is displayed below, with columns for TITLE, RUNTIME, SPEAKER, SUBJECT, EVENT, AUTHOR, DATE, TYPE, SIZE, FORMAT, and NUMOFPAGES. The first row is highlighted in orange.

TITLE	RUNTIME	SPEAKER	SUBJECT	EVENT	AUTHOR	DATE	TYPE	SIZE	FORMAT	NUMOFPAGES
gLite 3.0 Overview	30	Annamaria Muolo	gLite generalities	Tutorial TriGrid su gLite 3	Annamaria Muolo	2006-07-26 00:00:00	theoretical	890324	PowerPoint	24
"Building blocks" of reusable code	60	Emidio Giorgio	WMS	gLite Application Developer Course	Emidio Giorgio	2006-09-23 00:00:00	theoretical	468001	PowerPoint	15
LHC File Catalog API	60	Valeria Ardizzone	DMS	gLite Tutorial for Health-e-Child Project	Valeria Ardizzone	2006-09-25 00:00:00	theoretical	983240	PowerPoint	20
Overview of the gLite middleware	45	Giuseppe La Rocca	gLite generalities	gLite Embrace-Egee	Giuseppe La Rocca	2006-10-09 00:00:00	theoretical	983240	PowerPoint	20
Yam/Hands-on	120	Giuseppe Platania	gLite Yam	gLite Embrace-Egee	Giuseppe Platania	2006-10-09 00:00:00	practical	983240	PowerPoint	20
DPM installation, configuration and testing	60	Gianni Ricciardi	gLite DPM installation	gLite Embrace-Egee	Gianni Ricciardi	2006-10-09 00:00:00	practical	9887001	PowerPoint	24

<https://glibrary.ct.infn.it>

- **AMGA - ARDA Metadata Catalogue Project**  
<http://amga.web.cern.ch/amga/>
- **AMGA PHP API gLite Module**  
<http://jra1mw.cvs.cern.ch:8180/cgi-bin/jra1mw.cgi/org.glite.amga.api-php/>
- **AMGA PHP API Documentation**  
<http://amga.web.cern.ch/amga/php/index.html>
- **gLibrary**  
<https://glibrary.ct.infn.it>



