

## NGI Operational Tools Marketplace

# NGI\_AEGIS Operational Tools: WatG Browser, gFinger, DWARF

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- Motivation for development of operational tools
- Some of operational tools developed at SCL
  - WatG Browser
  - gFinger
  - DWARF
- Useful links

- gLite represents one of the major middleware stacks used today
- Installation, maintenance and everyday Grid operations of a successful gLite resource center (Grid site) is not an easy task
- Site administrators are responsible for:
  - Maintaining Grid resources provided to user communities
  - Resolving all operational problems identified by the deployed monitoring tools or diagnosed by the users

- Administrators of resource centers are usually deploying customized or home-made tools for different purposes:
  - Monitoring of resources
  - Automatization of maintenance tasks that have to be performed regularly on many nodes
- The good collaborative practice is to make such custom tools available to other interested site administrators



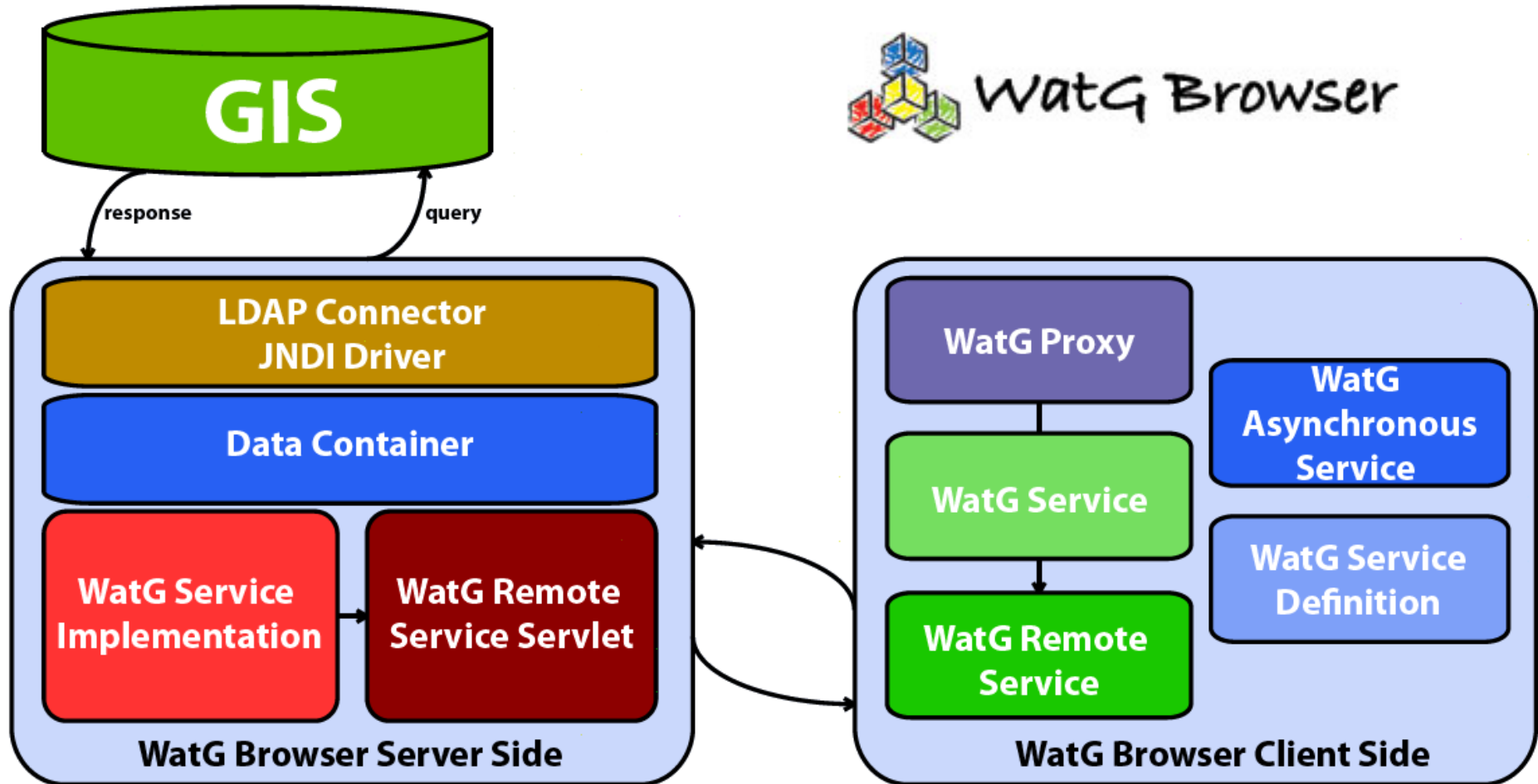
- Web-based Grid Information System visualization application
- Detailed overview of the status and availability of various Grid resources
- Queries and presents data obtained from gLite-based e-Infrastructure at different layers
  - Local resource information system (GRIS)
  - Grid site information system (site BDII)
  - Top-level information system (top-level BDII)
- Deployed by the AEGIS Grid e-Infrastructure

- Highly responsive tool
- Partial refreshes of a web page
  - When an interaction event fires - click on plus icon of LDAP tree - the server processes the information and returns a limited response specific to the data it receives – only LDAP's subtree that requires given condition
  - Application is driven by events and data, whereas conventional web applications are driven by pages

- Asynchronization of a web page
  - Client can continue processing while the server does its processing in the background
  - User can continue interacting with the client without noticing a lag in the response
- Simple and advanced search
- Browse large directories
- Access multiple directories
- View all available attributes
- Works across all major browsers



- Java programming language
- Google Web Toolkit (GWT) cross-compiles into optimized JavaScript
- GWT Remote Procedure Call (RPC) mechanism for interacting with a server across a network
- Java Naming and Directory Interface (JNDI) LDAP extensions for Grid Information System interaction





## WatG Browser



[Documentation](#) | WatGBrowser-v1.1.4

**Host**   
**Base**   
**Filter**   
**Attributes**

- [-] **Mds-Vo-name=local,o=grid**
  - [+] Mds-Vo-name=aegis01-ipb-scl,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis02-rcub,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis03-elef-leda,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis04-kg,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis05-etfbg,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis07-ipb-atlas,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis09-ftn-km,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aegis11-misanu,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=agIt2,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=am-03-ysu,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=am-04-yerphi,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=aragrid-ciencias,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=area-bo,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=arnes,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=auvergrid,Mds-Vo-name=local,o=grid
  - [+] Mds-Vo-name=az-01-ipanas,Mds-Vo-name=local,o=grid



## WatG Browser



[Documentation](#) | WatGBrowser-v1.1.4

**Host**   
**Base**   
**Filter**   
**Attributes**

- [-] **Mds-Vo-name=local,o=grid**
  - [+] **Mds-Vo-name=aegis01-ipb-sci,Mds-Vo-name=local,o=grid**
  - [+] **Mds-Vo-name=aegis02-rcub,Mds-Vo-name=local,o=grid**
  - [-] **Mds-Vo-name=aegis03-elef-leda,Mds-Vo-name=local,o=grid**
    - [-] **GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-aegis,Mds-Vo-name=AEGIS03-ELEF-LEDA,Mds-Vo-n**
      - [+] **GlueCESEBindSEUniqueID=grid02.elfak.ni.ac.rs,GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-a**
        - GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-aegis
        - GlueCESEBindGroupSEUniqueID=grid02.elfak.ni.ac.rs
        - GlueSchemaVersionMajor=1
        - GlueSchemaVersionMinor=3
        - objectClass=GlueCESEBindGroup
        - objectClass=GlueGeneralTop
        - objectClass=GlueSchemaVersion
    - [+] **GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-dteam,Mds-Vo-name=AEGIS03-ELEF-LEDA,Mds-Vo-i**
    - [+] **GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-env,Mds-Vo-name=AEGIS03-ELEF-LEDA,Mds-Vo-nar**
    - [+] **GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-meteo,Mds-Vo-name=AEGIS03-ELEF-LEDA,Mds-Vo-i**
    - [+] **GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-ops,Mds-Vo-name=AEGIS03-ELEF-LEDA,Mds-Vo-nar**
    - [+] **GlueCESEBindGroupCEUniqueID=grid01.elfak.ni.ac.rs:8443/cream-pbs-seegrid,Mds-Vo-name=AEGIS03-ELEF-LEDA,Mds-Vo-**



## WatG Browser



[Documentation](#) | WatGBrowser-v1.1.4

**Host**

**Base**

**Filter**

**Attributes**

- ⊕ **Mds-Vo-name=aegis01-ipb-scl,Mds-Vo-name=local,o=grid**
- ⊖ **Mds-Vo-name=aegis02-rcub,Mds-Vo-name=local,o=grid**
  - ⊕ **GlueSiteUniqueID=AEGIS02-RCUB,Mds-Vo-name=AEGIS02-RCUB,Mds-Vo-name=local,o=grid**
    - Mds-Vo-name=aegis02-rcub
    - objectClass=Mds
- ⊕ **Mds-Vo-name=aegis03-elef-leda,Mds-Vo-name=local,o=grid**
- ⊕ **Mds-Vo-name=aegis04-kg,Mds-Vo-name=local,o=grid**
- ⊕ **Mds-Vo-name=aegis07-ipb-atlas,Mds-Vo-name=local,o=grid**
- ⊕ **Mds-Vo-name=aegis11-misanu,Mds-Vo-name=local,o=grid**
  - Mds-Vo-name=local
  - objectClass=Mds

# gFinger

- The authorization of a user on a specific Grid resource can be done in different ways:
  - grid-mapfile mechanism
  - LCAS/LCMAPS
  - ARGUS
  - ...
- After authorization process is completed, information on account mapping is stored in `/etc/grid-security/gridmapdir` directory of a particular Grid service

- For each Unix username in the pool, an empty file named after a username exists in this directory
- When a certain Unix account is mapped to a Grid user, a hard link with the same name as the certificate subject is created in `/etc/grid-security/gridmapdir` directory, and points to the appropriate file according to the Unix username to which the subject is mapped



- gFinger is a command-line tool
- It provides information on local VOMS mapping of users authenticated by digital certificates on various Grid services such as Computing Element (CE), CREAM CE, Workload Management System (WMS), Storage Element (SE), etc.

- To find which username corresponds to which digital certificate subject and vice versa, gFinger searches /etc/gridsecurity/gridmapdir directory for links pointing to the same inode
- Useful when individual user has to be tracked, e.g. when resolving operational or user-reported problems, or when investigating a security related issue

```
[root@wms ~]# gfinger seevo002
```

```
DN: /c=rs/o=aegis/ou=institute of physics belgrade/cn=aleksandar bogojevic:seevo
```

```
Login: seevo002
```

```
Name: mapped user for group ID seevo
```

```
Directory: /home/seevo002
```

```
Shell: /bin/bash
```

```
User ID: 23002
```

```
Group ID: 2300
```

**OR**

```
[root@wms ~]# gfinger vudragovic
```

```
DN: /c=rs/o=aegis/ou=institute of physics belgrade/cn=dusan vudragovic:atlas:atlas
```

```
Login: atlas001
```

```
Name: mapped user for group ID atlas
```

```
Directory: /home/atlas001
```

```
Shell: /bin/bash
```

```
User ID: 20001
```

```
Group ID: 2000
```

```
DN: /c=rs/o=aegis/ou=institute of physics belgrade/cn=dusan vudragovic:aegis:aegis
```

```
Login: aegis002
```

```
Name: mapped user for group ID aegis
```

```
Directory: /home/aegis002
```

```
Shell: /bin/bash
```

```
User ID: 26002
```

```
Group ID: 2600
```

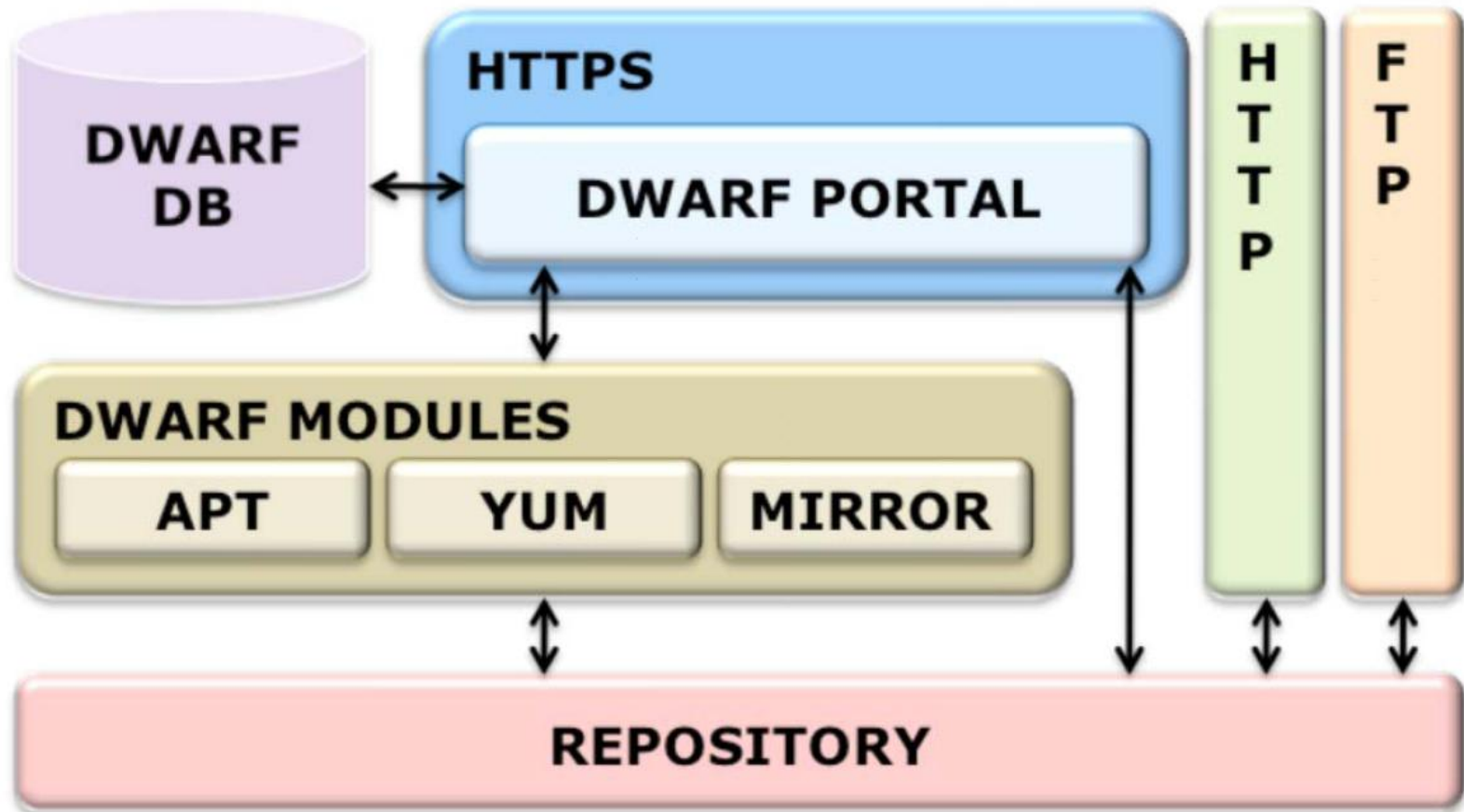


**dwarf**

- In user/development communities where large number of partners/collaborators from different institutions jointly contribute to applications and RPMs built from applications' sources, it is useful to create a unique software repository that collects all such RPMs
- For security, scalability and reliability reasons, authentication and authorization of submitters should be established and closely checked

- DWARF is a framework used for management of Advanced Packaging Tool (APT) and Yellow dog Updater Modified (YUM) repositories
- DWARF allows uploading of RPM packages and creation of APT and YUM repositories
- It provides authentication and authorization based on digital certificates using Public Key Infrastructure (PKI)

- From the DWARF web portal authenticated and authorized user can:
  - Create and change repository structure
  - Perform package uploading
  - Build repository
- Deployed within AEGIS e-Infrastructure





- DWARF modules are implemented as bash scripts that handle build action on repositories
- APT DWARF and YUM DWARF module
  - Analyzes RPM packages in a directory tree and builds information files so that that directory tree can be used as an APT or YUM repository
- MIRROR DWARF module
  - Responsible for mirroring some existing software repository locally (Scientific Linux, gLite software, Ubuntu, community repositories (dag)...)

- The DWARF database
  - Realized using MySQL database technology
  - Contains information on:
    - Security
    - Repositories type
    - Repositories metadata
    - Mirrored repositories
    - Logging information






# dwarf

framework for DN based RPMs  
uploading and creation of  
AFC and YUM repositories



home add rpm paths **users** tools

-  add new user
-  edit users information
-  remove user

- rpm
  - eclipse
    - [content of this path](#) [info](#)
  - CTAN
    - [content of this path](#) [info](#)
  - scl
    - sl4
      - i386
        - RPMS.scl
        - SRPMS.scl
      - i586
        - RPMS.scl
        - SRPMS.scl
      - x86\_64
        - RPMS.scl
        - SRPMS.scl
      - noarch
        - RPMS.scl
        - SRPMS.scl
    - el5
      - ppc
        - RPMS.scl
    - sl5
      - i386
        - RPMS.scl
        - SRPMS.scl
      - x86\_64
        - RPMS.scl
        - SRPMS.scl
  - jpackage
    - 5.0

- WatG browser
  - [https://http.ipb.ac.rs/tools/watg\\_browser/](https://http.ipb.ac.rs/tools/watg_browser/)
  - Soon to be available for download as a JAR file that will be easily deployed under the Tomcat server
- gFinger
  - <https://http.ipb.ac.rs/tools/gfinger/>
  - Source code and RPMs available for download
- DWARF @ SCL: <https://dwarf.scl.rs/>
- RPM @ SCL: <http://rpm.scl.rs/>