Installing a gLite VOMS Server

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gLite

Lightweight Middleware for
Grid Computing

www.eu-egee.org

Information Society

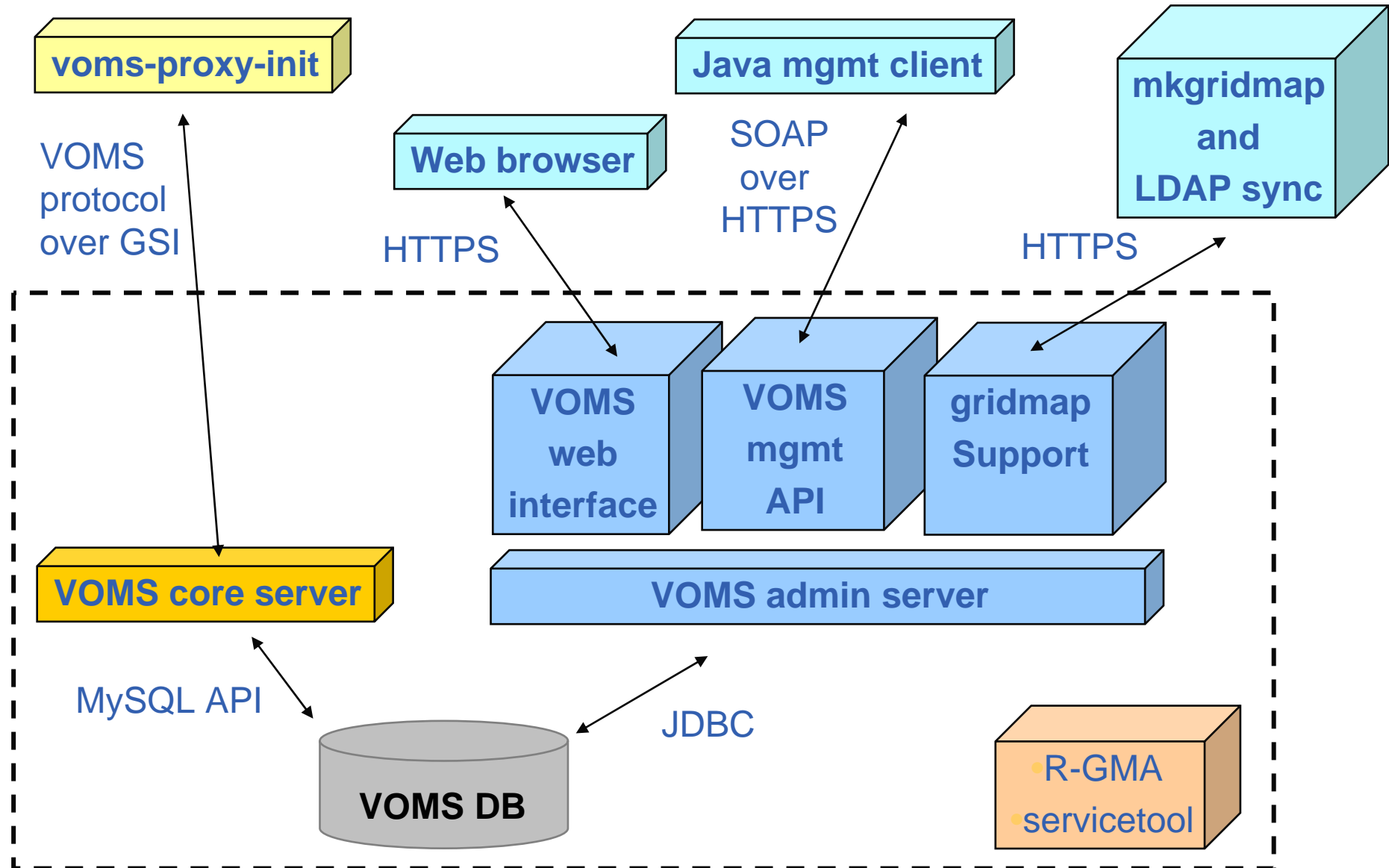**Enabling Grids for E-sciencE**

- **Introduction to VOMS**
  - **Features**
  - **Registration**
  - **Groups & Roles**
- **Installing VOMS**
  - **Reminder of gLite installation**
  - **Installation via apt**
- **Configuring VOMS**
  - **Key aspects**
  - **Verifying installation**
- **Registering VOMS admin**
- **VOMS server web interface**
  - **Groups**
  - **Roles**
- **VOMS command line interface**

Enabling Grids for E-sciencE

- **Virtual Organization Membership Service (VOMS)**
  - **Account Database**
    - **Serving information in a special format (VOMS credentials)**
    - **Can be administered via command line & via web interface**
  - **Provides information on the user's relationship with his/her Virtual Organization (VO)**
    - **Membership**
    - **Group membership**
    - **Roles of user**
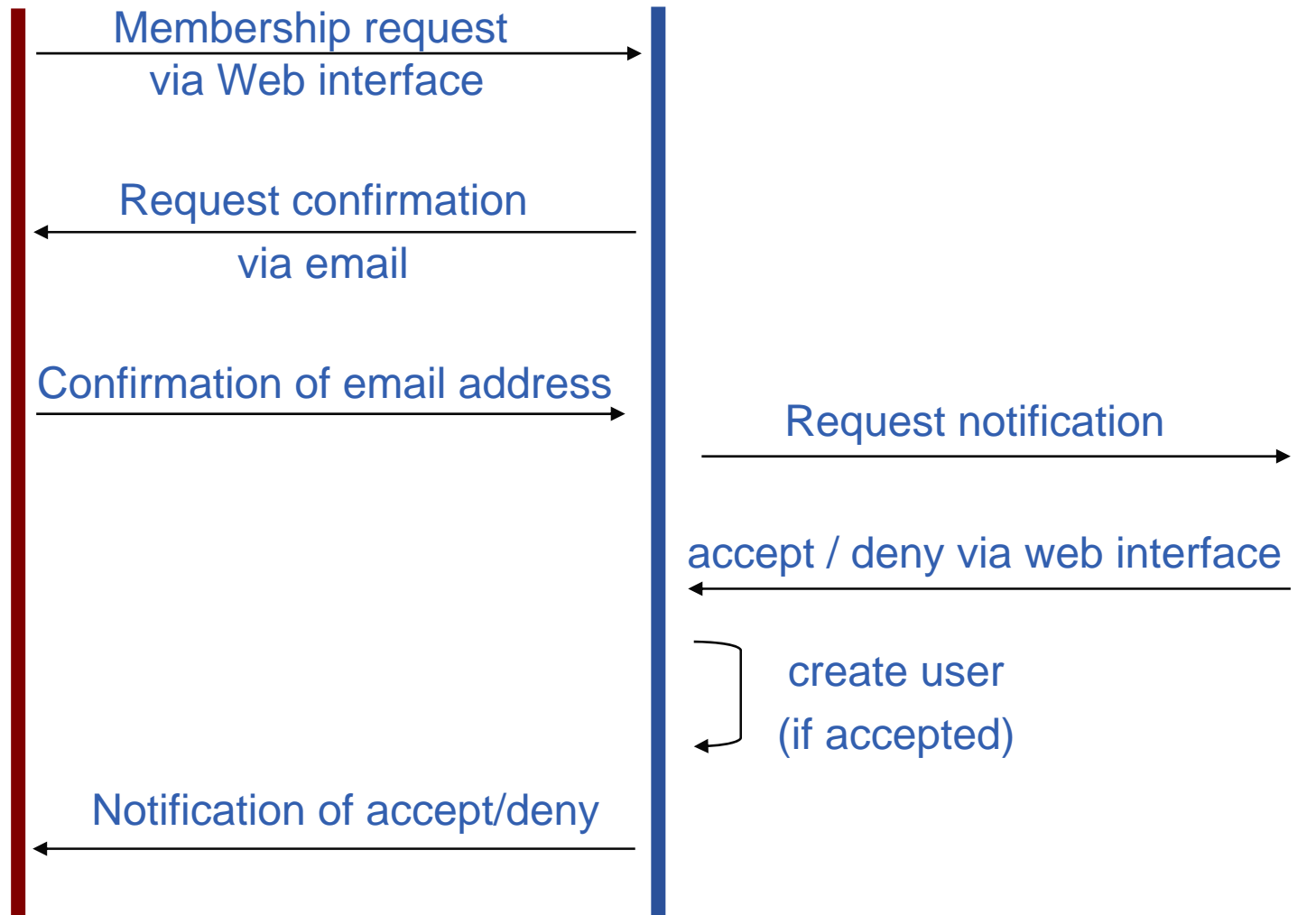
Enabling Grids for E-sciencE

- **VOMS Features**
  - **Single login using (proxy-init) only at the beginning of a session**
    - **Attaches VOMS certificate to user proxy**
  - **Expiration time**
    - **The authorization information is only valid for a limited period of the time as the proxy certificate itself**
  - **Multiple VO**
    - **User may log-in into multiple VOs and create an aggregate proxy certificate, which enables him/her to access resources in any one of them**
  - **Backward compatibility**
    - **The extra VO related information is in the user's proxy certificate**
    - **User's proxy certificate can be still used with non VOMS-aware service**
  - **Security**
    - **All client-server communications are secured and authenticated.**

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voms-proxy-init

Java mgmt client

mkgridmap and LDAP sync

VOMS protocol over GSI

Web browser

SOAP over HTTPS

HTTPS

HTTPS

VOMS web interface

VOMS mgmt API

gridmap Support

VOMS core server

VOMS admin server

MySQL API

JDBC

VOMS DB

• R-GMA servicetool

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Enabling Grids for E-sciencE

VO USER   **VOMS SERVER**   **VO ADMIN**

Membership request
via Web interface

Request confirmation
via email

Confirmation of email address

Request notification

accept / deny via web interface

create user
(if accepted)

Notification of accept/deny

Enabling Grids for E-sciencE

- **The number of users of a VO can be very high:**
  - **E.g. the experiment ATLAS has 2000 member**

- **Make VO manageable by organizing users in groups:**
  Examples:
  - **VO BIOMED-FRANCE**
    - **Group Paris**
      - *Sorbonne University*
        - **Group Prof. de Gaulle**
      - *Central University*
    - **Group Lyon**
    - **Group Marseille**
  - **VO BIOMED-FRANCE**
    - **BIOMED-FRANCE/STAFF**   **can write to normal storage**
    - **BIOMED-FRANCE/STUDENT**   **can only to volatile space**

- **Groups can have a hierarchical structure**

- **Group membership is added automatically to your proxy when doing a *voms-proxy-init***

- **Assign rights to certain members of the groups**
  - using Access Control Lists (ACL) like in a file system
    - Allow / Deny
      - create/delete – controls subgroup operations
      - add/remove – controls membership operations
      - setACL/getACL – controls ACL operations
      - setDefault/getDefault – controls default membership operations
      - ALL – special permission for all operations
  - Specifying unit for entry:
    - The local database administrator
    - A specific user (not necessarily a member of this VO)
    - Anyone who has a specific VOMS attribute FQAN
    - Anyone who presents a certificate issued by a known CA (Including host and service certificates)
    - Absolutely anyone, even unauthenticated clients

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- **Roles are specific roles a user has and that distinguishes him from others in his group:**
    - Software manager
    - Administrator
    - Manager

- **Difference between roles and groups:**
    - Roles have no hierarchical structure – there is no sub-role
    - Roles are not used in 'normal operation'
        - They are not added to the proxy by default when running *voms-proxy-init*
        - But they can be added to the proxy for special purposes when running *voms-proxy-init*

- **Example:**
    - User Emidio has the following membership
        - VO=gildav, Group=tutors, Role=SoftwareManager
    - During normal operation the role is not taken into account, e.g. Emidio can work as a normal user
    - For special things he can obtain the role "Software Manager"

Installing VOMS Server

- **VOMS server can be installed via a gLite deployment package**
  - Download: http://glite.web.cern.ch/glite/packages
- **Installation via**
  - Installer script
  - APT http://glite.web.cern.ch/glite/packages/APT.asp
- **Installation will install all dependencies, including**
  - other necessary gLite modules
  - external dependencies (e.g. TOMCAT)
- **You will need to install non-freely available packages yourself (e.g. Java)**

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- **Request host certificates for VOMS Server.**
  - https://gilda.ct.infn.it/CA/mgt/restricted/srvreq.php
- **Install host certificate (hostcert.pem and hostkey.pem) in /etc/grid-certificates.**
  - *chmod 644 hostcert.pem*
  - *chmod 400 hostkey.pem*

- **If planning to use certificates released by unsupported EGEE CA's, be sure that their public key and CRLs (usually distributed with an rpm) are installed.**
  - **The CRL of the VO GILDA are available from**

  https://gilda.ct.infn.it/RPMS/ca_GILDA-0.28.1.i386.rpm

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1. **Verify if apt is present:**
   - **rpm -qa | grep apt**
   - **Install apt if necessary:**
     - **rpm -ivh** http://linuxsoft.cern.ch/cern/slc30X/i386/SL/RPMS/apt-0.5.15cnc6-8.SL.cern.i386.rpm

2. **Add gLite apt repository:**
   - Put one this line in a file (e.g. glite.list) inside the /etc/apt/sources.list.d directory (R 1.4)
   - ```
     rpm http://glitesoft.cern.ch/EGEE/gLite/APT/R1.4/
     rhel30 externals Release1.4 updates
     ```

3. **Update apt repository:**
   - ```
     apt-get update
     ```
   - ```
     apt-get upgrade
     ```

4. **Install VOMS server:**
   - ```
     apt-get install glite-voms-server-mysql-config
     ```

Extra packages needed (non freely distributable) :

- **Exception: J2SE v 1.4.2_08 JRE:
  http://java.sun.com/j2se/1.4.2/download.html**

See http://glite.web.cern.ch/glite/packages/APT.asp

- **Configuration files**
  - **XML format**
  - **templates provided in /opt/glite/etc/config/templates**
- **Hierarchy of configuration file**
  - **Global configuration file**
  - **service specific configuration files**
- **Parameter groups**
  - **User parameters ('changeme')**
  - **Advanced parameters**
  - **System parameters**

Enabling Grids for E-sciencE

- **Go to configuration directory and copy templates**
  - `cd /opt/glite/etc/config`
  - `cp templates/*.xml .`

- **Customize configuration files by replacing all 'changeme' values with the proper values**

- **Virtual organization description (one instance per VO)**
  - **name** of the VO
  - **VOMS (core) service TCP port** number on which the server will listen for one VO
    - must be a valid, unique port number – typically from 15000 upwards
  - **e-mail** address used to send emails on behalf of the VOMS server

```
<instance name="newVO">
      <parameters>
            <voms.vo.name
      description="Name of the VO associated with this VOMS instance.
      [Example: 'EGEE'] [Type: 'string']"
      value="newVO"/>


      <voms.port.number
      description="Port number listening for request for this VO instance
      [Example: '15001'][Type: 'string']"
      value="1500X"/>
```

<voms.admin.notification.e-mail

description="E-mail address that is used to send notification mails

from the VOMS-admin.

[Example: name.surname@domain.org][Type: 'string']"

value="voms-admin@..."/> ⬅

<voms.admin.certificate

description="The certificate file (in pem format) of an initial VO administrator.

The VO will be set up so that this user has full VO administration privileges.

Remove parameter or leave parameter empty if you don't want to create an initial VO administartor.

[Example: '/your/path/admincert.pem'] [Type: 'string']"

value="/etc/grid-security/usercert.pem"/> ⬅

- ## Copy the admin certificate (usercert.pem) in /etc/grid-security/

- **Servicetool configuration**
  - To publish the existence and status of the VOMS server to the information system (R-GMA)

- **Service discovery configuration**
  - For the rgma client of the machine

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- **MySQL database configuration**
  - Administrator **password** of used MySQL database (it has to be set **before** configuration)

  - `/usr/bin/mysqladmin --u root password '<your passwd>'`

  - `/usr/bin/mysqladmin --u root -h '<voms-server>' password '<your passwd>'`

- `-A RH-Firewall-1-INPUT -m state --state NEW -m tcp -p tcp --dport 8443 -j ACCEPT`

- `-A RH-Firewall-1-INPUT -m state --state NEW -m tcp -p tcp --dport 1500X -j ACCEPT`

- **service iptables restart**

Enabling Grids for E-sciencE

- **Go to the scripts directory and execute the VOMS Server configuration script**

  - ```
    cd scripts
    ```
  - ```
    ./glite-voms-server-config.py --configure
    ```

- **Start the VOMS server**

  - ```
    ./glite-voms-server-config.py --start
    ```

The first VOMS administrator has to be added manually using the command line tools:

- Copy your public grid certificate to your VOMS server
- Run voms-admin command to add yourself as admin

$GLITE_LOCATION/bin/voms-admin --vo *<VO name>*

create-user *<certificate.pem>*

assign-role <VO name> VO-Admin *<certificate.pem>*
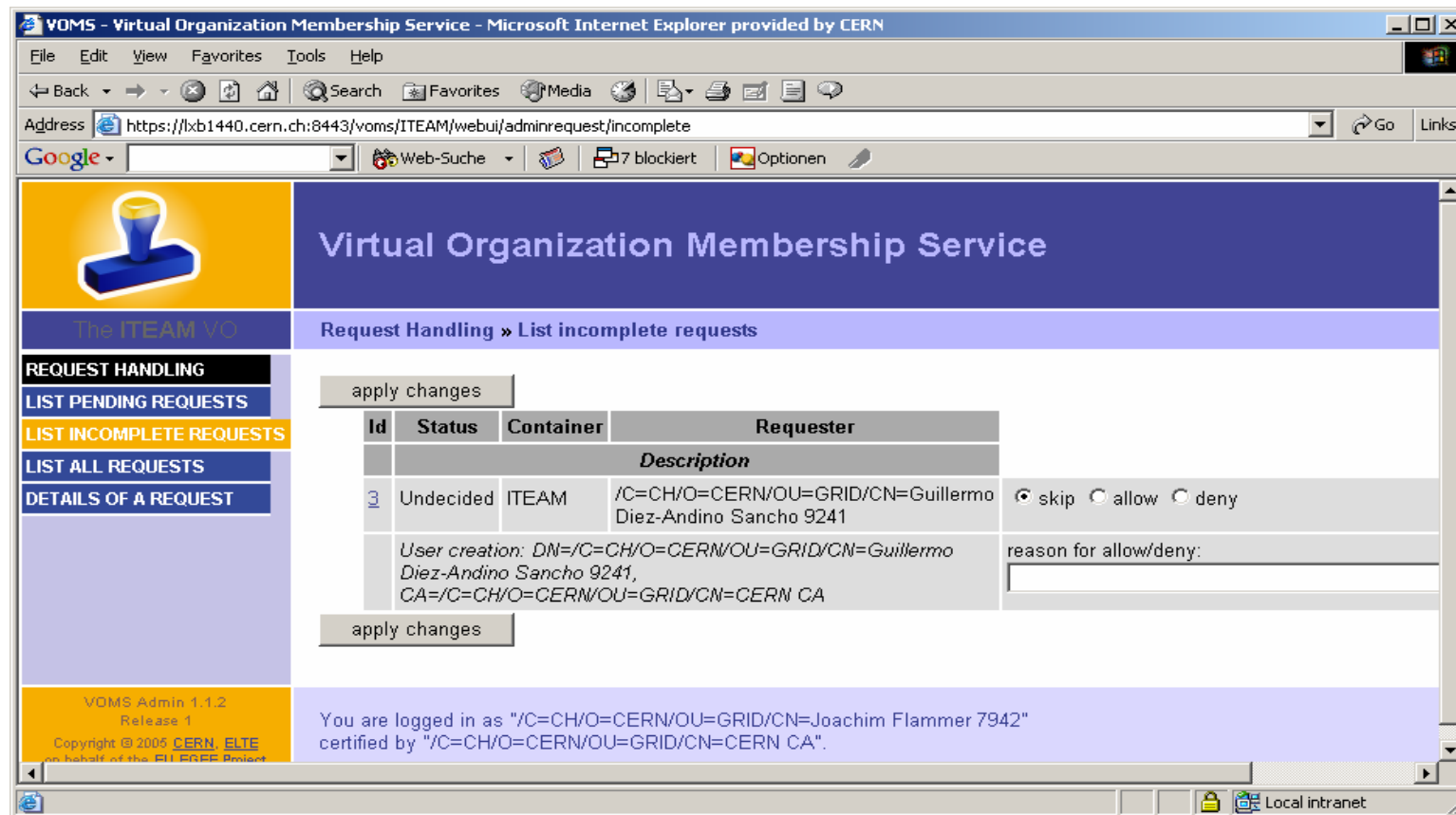
- **Using gLite configuration script**
  - `./glite-voms-server-config.py --status`

- **Connecting to the VOMS server via browser**
  - https://<hostname>:8443/voms/<your-vo-name>

- **Checking if VOMS server shows up in R-GMA**
  - **https://<rgma-server-machine>:8443/R-GMA**

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Enabling Grids for E-sciencE

- **VO user can**
  - **Query membership details**
  - **Register himself in the VO**
    - **You will need a valid certificate**
  - **Track his requests**

- **VO manager can**
  - **Handle request from users**
  - **Administer the VO**

VO Managers - Handling requests
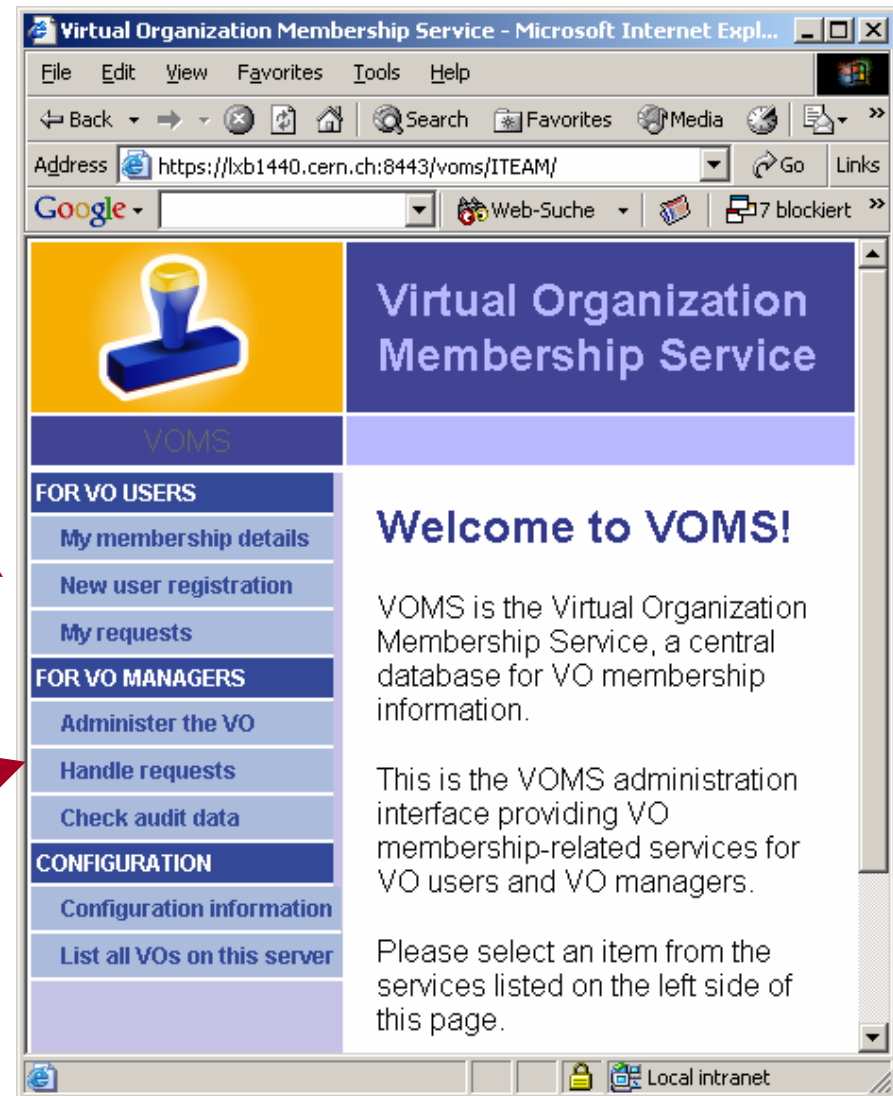
- **VO manager will be informed of new requests via mail**
  - **Query requests**
  - **Accept / Deny requests**

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Enabling Grids for E-sciencE

- **The administrator interface allows you to**
  - **Manage users**
    - **List users**
    - **Search for users**
    - **Create users**
  - **Manage groups**
    - **List groups**
    - **Search for groups**
    - **Create groups**
  - **Manage roles**
    - **List roles**
    - **Search for roles**
    - **Create roles**
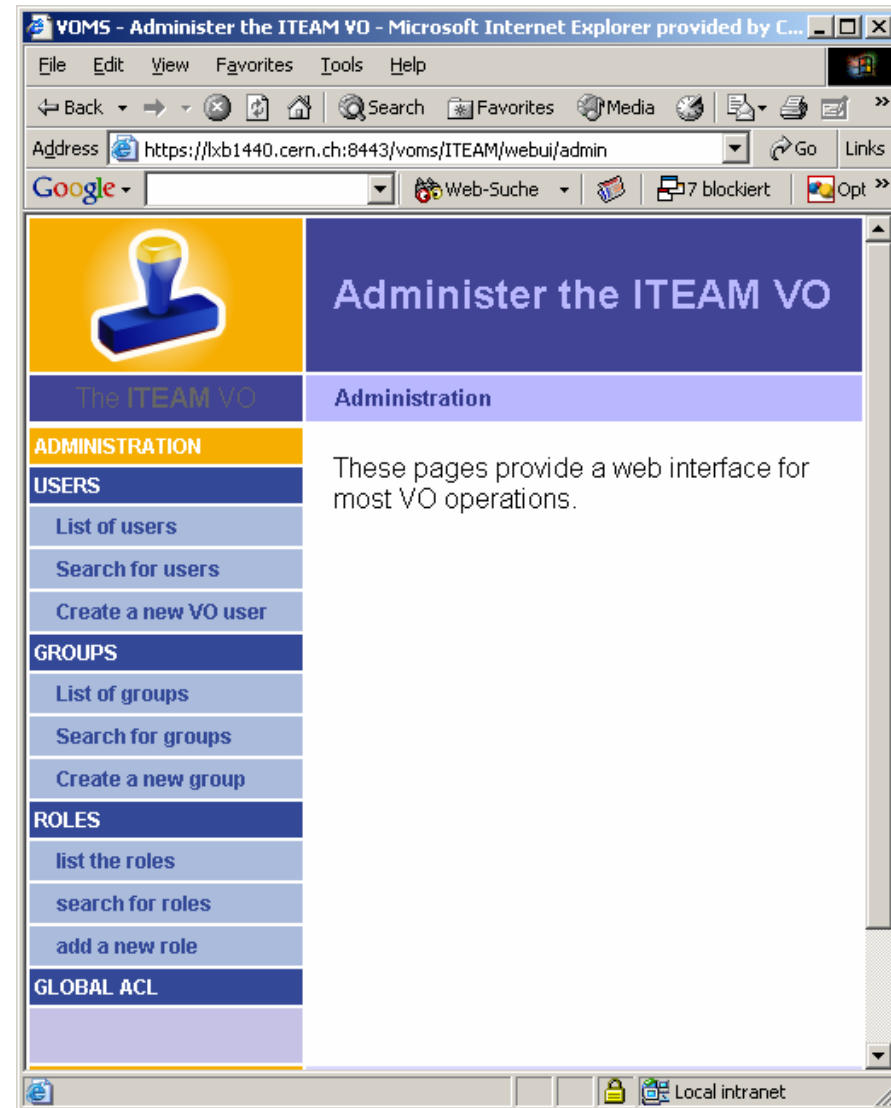
- **General commands**

  voms-admin [OPTIONS] --vo=NAME [-h HOST] [-p PORT] COMMAND PARAM

  voms-admin [OPTIONS] --url=URL COMMAND PARAM

  COMMAND:
  - **get-vo-name**
  - **list-users**   list all users of VO
  - **create-user <CERTIFICATE.PEM>**
  - **delete-user USER**
  - **list-cas**   list certificate auth. accepted by VO
  - **list-roles**
  - **....**

  See VOMS admin user guide for entire list and details