SRMv2.2 in DPM

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SRMv2.2 Workshop
Edinburgh – 13th November 2007

My message

- **SRMv2.2**
  - No migration needed!
  - Just make sure the SRMv2.2 daemon is running
- **Space tokens vs. User space token descriptions**
- **SRMv2.2 useful tools**
  - dpm-reservespace
  - dpm-updatespace
  - dpm-releasespace

Outline

- **DPM architecture**
- **Authorization**
  - In the Namespace
  - On pools
- **SRMv2.2 in DPM**
- **Log files**
- **Admin corner**

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DPM architecture

/dpm/cern.ch/home/dteam/my_file

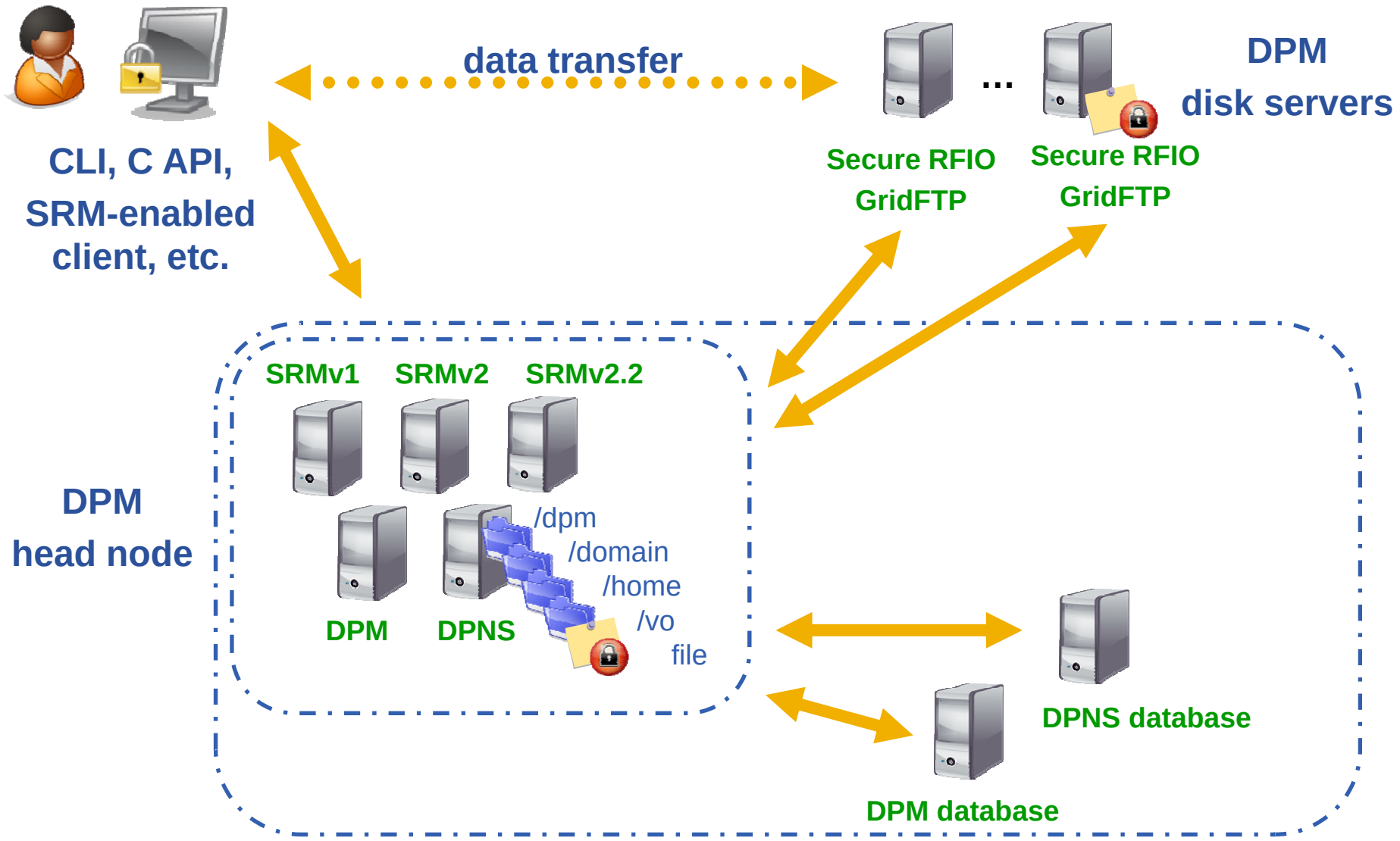
CLI, C API,

SRM-enabled client, etc.

DPM

disk01.cern.ch:/data01/dteam/2007-06-03/my_file.150.0

DPM architecture (details)



Ports

- **Ports**
  - DPNS: 5010
  - DPM: 5015
  - SRMv1: 8443
  - SRMv2: 8444
  - SRMv2.2: 8446

DPM Databases

- **Name Server database**
  - Namespace
    - Cns_file_metadata
  - Authorization
    - Cns_groupinfo, Cns_userinfo
  - Replicas
    - Cns_file_replica

- **DPM database**
  - DPM configuration
    - dpm_pool, dpm_fs
  - All requests (SRM, transfers, etc.)
    - dpm_pending_req, dpm_req, dpm_get_filereq, dpm_put_filereq
  - Space reservation
    - dpm_space_reserv

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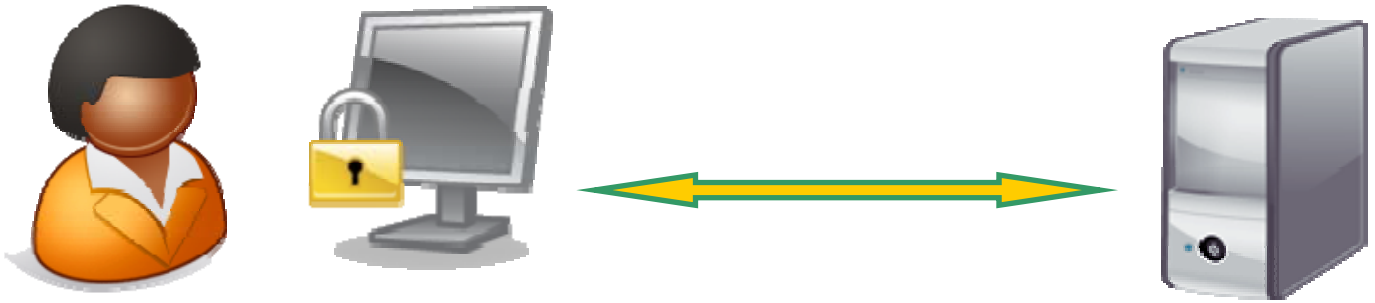
DPM virtual ids



- **Each user's DN**
  - Is mapped to a unique virtual uid
- **Each VOMS group, each VOMS role**
  - Is mapped to a unique virtual gid
- **Virtual uids / gids are created automatically**
  - the first time a given user / group contacts the DPM

DPM virtual ids

DPM
Name Server

(uid1, gid1)
Ex: (102, 101)

DB

Virtual uids mapping (example)

/C=CH/O=CERN/OU=GRID/CN=Sophie Lemaitre 2268	101
/C=CH/O=CERN/OU=GRID/CN=Simone Campana 7461	102

Virtual gids mapping (example)

atlas	101
atlas/Role=lcgadmin	102
atlas/Role=production	103

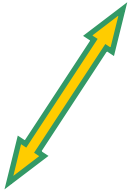
```
$ grid-proxy-init
$ voms-proxy-init --vo atlas
```

⇒Simone will be mapped to (uid, gid) = (102, 101)

DPM secondary groups

DPM
Name Server

(uid1, gid1)
Ex: (102, 103, 101)



DB

Virtual uids mapping (example)

/C=CH/O=CERN/OU=GRID/CN=Sophie Lemaitre 2268	101
/C=CH/O=CERN/OU=GRID/CN=Simone Campana 7461	102

Virtual gids mapping (example)

atlas	101
atlas/Role=lcgadmin	102
atlas/Role=production	103

$ voms-proxy-init –voms atlas:/atlas/Role=production

⇒Simone will be mapped to (uid, gid, …) = (102, 103, 101)

⇒Simone still belongs to “atlas”

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DPM pools

- **DPM terminology**
  - A DPM pool is a set of dedicated filesystems on DPM disk servers
- **By default, pools are generic**
- **Possibility to dedicate a pool to one or several groups**
  - dpm-addpool --poolname poolA --group alice
  - dpm-addpool --poolname poolB --group atlas,cms,lhcb
- **Easy to add or remove groups**
  - dpm-modifypool --poolname poolA --group +atlas,-alice
- **Primary group only for writing**
  - For disk space accounting
  - Who actually uses the space gets the bill…

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Migration to SRMv2.2?

- **No “migration to SRMv2.2” needed**
  - No need to update the DPM namespace
    - All files are accessible via SRMv1, v2 and v2.2
      - *Same logical file names*
      - *Same physical files*
    - The SRM daemons act as front end interfaces, they don’t affect the namespace
- **SRMv2.2 daemon needs to run**
  - Automatically done by YAIM
  - You are probably already running SRMv2.2!

File Storage Types

- **File Storage Types**
  - Volatile
  - Permanent
  - Any (default)

- **Some client tools use “volatile” type, others “permanent”**
  - Best to configure your pools as “-” (default)
    - dpm-addpool --poolname MyPool --def_filesize 200M --s_type “-”

Retention Policy

- **Retention policies**
  - Given quality of disks, admin defines quality of service
  - Replica (default), Output, Custodial

- **Example**
  - dpm-modifypool --poolname MyPool --ret_policy R

Space concepts

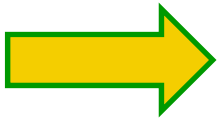
- **Space token**
  - A UUID created internally by the DPM
    - Ex: fe869590-b771-4002-b11a-8e7430d72911
- **User space token description**
  - A case sensitive description
  - Provided by a user or the DPM admin
    - Ex: myspace, atlas_prod, TutorialSpace
- **No relationship between**
  - spaces, and
  - the DPM namespace

Space Reservation

- **Static space reservation (admin)**
  - **No limitation on duration and size of space reservation**

```
$ dpm-reservespace --gspace 20G --lifetime Inf --group atlas --token_desc Atlas_ESD
$ dpm-reservespace --gspace 100M --lifetime 1h --group dteam/Role=lcgadmin --token_desc LcgAd
$ dpm-updatespace --token_desc myspace --gspace 5G
$ dpm-releasespace --token_desc myspace
```

- **Dynamic space reservation (user)**
  - **Defined by user on request**
    - dpm-reservespace, dpm-updatespace, dpm-releasespace
    - srmReserveSpace
  - **Limitation on duration and size of space reservation**



Features released since DPM 1.6.3

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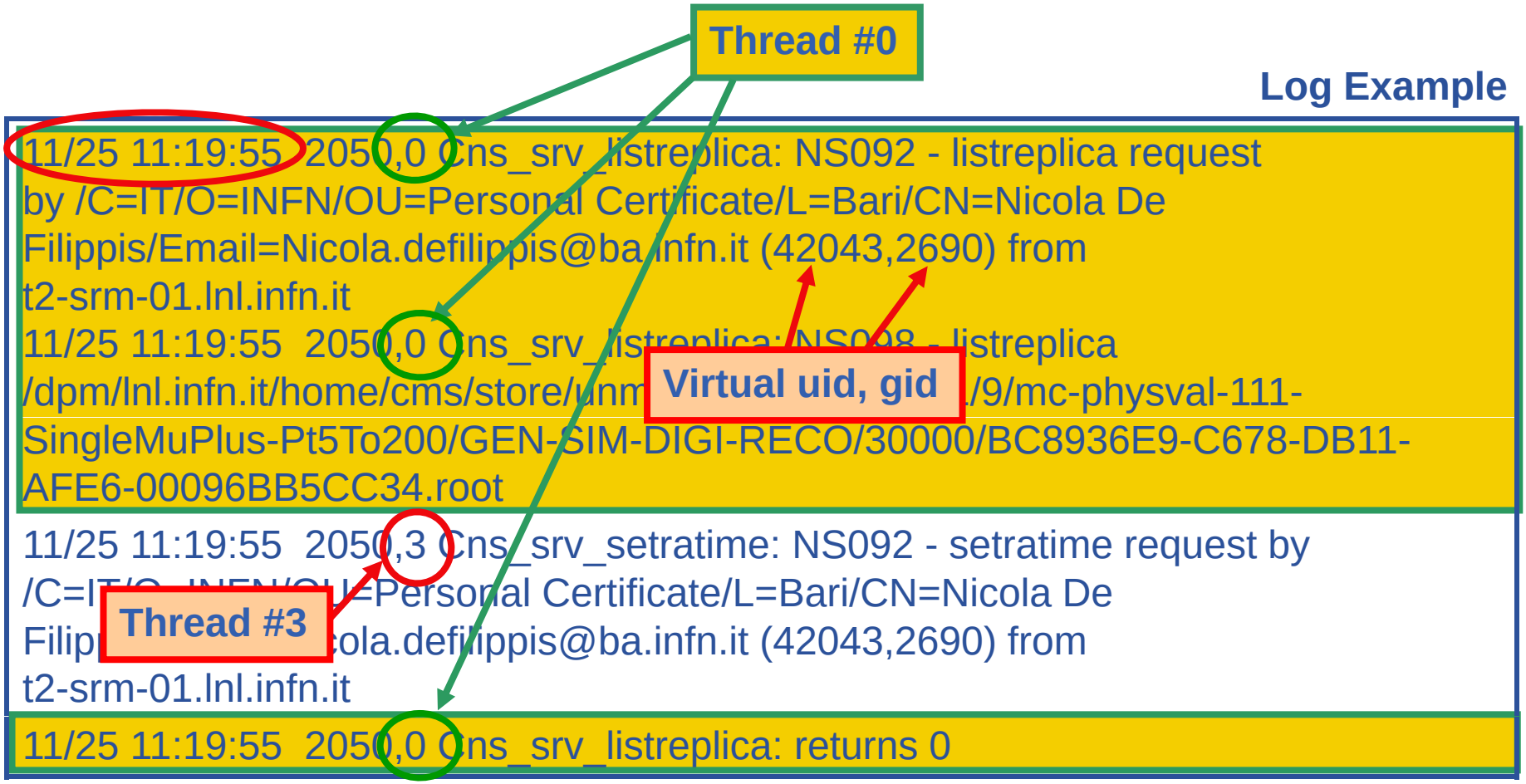
DPM log files

- **Example: DPNS log**
  - /var/log/dpns/log



SRMv2.2 log file

/var/log/srmv2.2/log example

11/05 05:06:16 25696,0 PrepareToPut: request by /C=IT/O=INFN/OU=Personal Certificate/L=Pisa/CN=Flavia Donno/Email=flavia.donno@pi.infn.it from lxdev25.cern.ch

11/05 05:06:16 25696,0 PrepareToPut: SRM98 - PrepareToPut b2c7ba01-ca72-4c9a-9714-312e70db7f22

11/05 05:06:16 25696,0 PrepareToPut: SRM98 - PrepareToPut 0 srm://lxdpm102.cern.ch:8446/srm/managerv2?SFN=/dpm/cern.ch/home/dteam/20071105-050615-1865/f0

11/05 05:06:16 25696,0 PrepareToPut: SRM98 - PrepareToPut 1 srm://lxdpm102.cern.ch:8446/srm/managerv2?SFN=/dpm/cern.ch/home/dteam/20071105-050615-1865/f1

11/05 05:06:16 25696,0 PrepareToPut: returns 0, statusCode=SRM_REQUEST_QUEUED

11/05 05:06:16 25696,0 StatusOfPutRequest: request by /C=IT/O=INFN/OU=Personal Certificate/L=Pisa/CN=Flavia Donno/Email=flavia.donno@pi.infn.it from lxdev25.cern.ch

11/05 05:06:16 25696,0 StatusOfPutRequest: SRM98 - StatusOfPutRequest b2c7ba01-ca72-4c9a-9714-312e70db7f22

11/05 05:06:16 25696,0 StatusOfPutRequest: SRM98 - StatusOfPutRequest srm://lxdpm102.cern.ch:8446/srm/managerv2?SFN=/dpm/cern.ch/home/dteam/20

11/05 05:06:16 25696,0 StatusOfPutRequest: SRM98 - StatusOfPutRequest srm://lxdpm102.cern.ch:8446/srm/managerv2?SFN=/dpm/cern.ch/home/dteam/20071105-050615-1865/f1

11/05 05:06:16 25696,0 StatusOfPutRequest: returns 0, statusCode=SRM_REQUEST_INPROGRESS

11/05 05:09:17 25696,0 StatusOfPutRequest: request by /C=IT/O=INFN/OU=Personal Certificate/L=Pisa/CN=Flavia Donno/Email=flavia.donno@pi.infn.it from lxdev25.cern.ch

11/05 05:09:17 25696,0 StatusOfPutRequest: SRM98 - StatusOfPutRequest b2c7ba01-ca72-4c9a-9714-312e70db7f22

11/05 05:09:17 25696,0 StatusOfPutRequest: SRM98 - StatusOfPutRequest srm://lxdpm102.cern.ch:8446/srm/managerv2?SFN=/dpm/cern.ch/home/dteam/20071105-050615-1865/f0

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11/05 05:09:17 25696,0 StatusOfPutRequest: returns 0, statusCode=SRM_SUCCESS

SRMv2.2 calls received

SRMv2.2 status codes

Admin corner

- **Useful tools**
  - DPM check consistency tool
  - DPM request database cleanup tool
- **No need to restart the daemons when the host certificate changes**
- **SLC3 to SLC4 migration**
  - OS reinstallation, not an update
  - Backup the MySQL “cns_db” and “dpm_db” databases
  - Need to backup:
    - Log files
    - Configuration files (NSCONFIG, DPMCONFIG)
    - etc.
  - Follow this procedure:
    - https://twiki.cern.ch/twiki/bin/view/LCG/DpmMigratingFromSL3TOSL4

TO DO list

- **On the TO DO list**
  - Blacklisting via LCAS
  - ChangeSpaceForFiles
    - To be able to move a file from one space to another
  - Quotas

Documentation

- **Main DPM entry point**
  - https://twiki.cern.ch/twiki/bin/view/LCG/DataManagementTop
- **DPM Admin Guide**
  - https://twiki.cern.ch/twiki/bin/view/LCG/DpmAdminGuide
- **Troubleshooting**
  - https://twiki.cern.ch/twiki/bin/view/LCG/LfcTroubleshooting

Help?

- **Global Grid User Support (GGUS)**
  - helpdesk@ggus.org
    - Your ROC will first help
    - If needed, DPM experts
- **Users and administrators forum**
  - dpm-users-forum@cern.ch
    - Place to ask questions
    - Place to share your experience with other users/admins
    - To subscribe, go to http://simba.cern.ch

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Questions?

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