dCache Beginners Course

Access Control

What are the capabilities of dCache for accessing the stored data and admission control?

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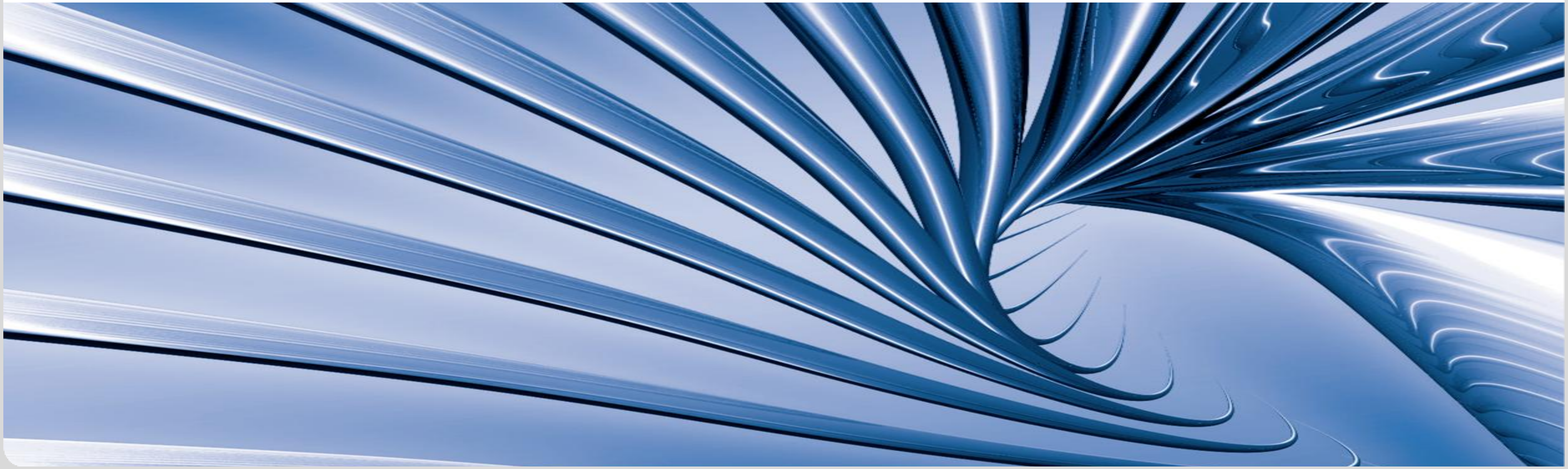
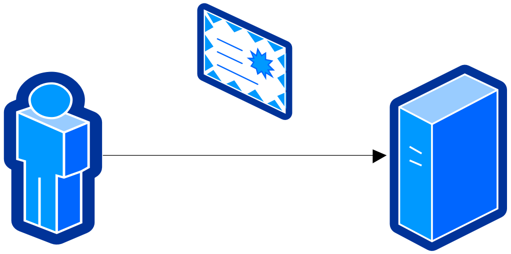


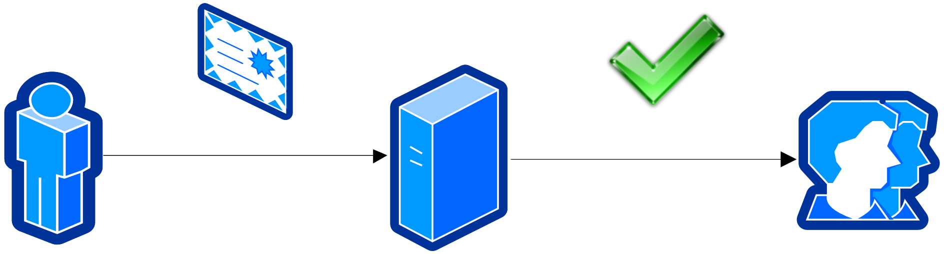
Access Control Systems In dCache

- Access Control in dCache is divided into following steps
  1. If a client is accessing dCache with a secured protocol (*not* DCAP or HTTP) a certificate with the user’s *Distinguished* Name (DN) and optionally one or more *Fully Qualified Attribute Names* (FQANs) must be provided.



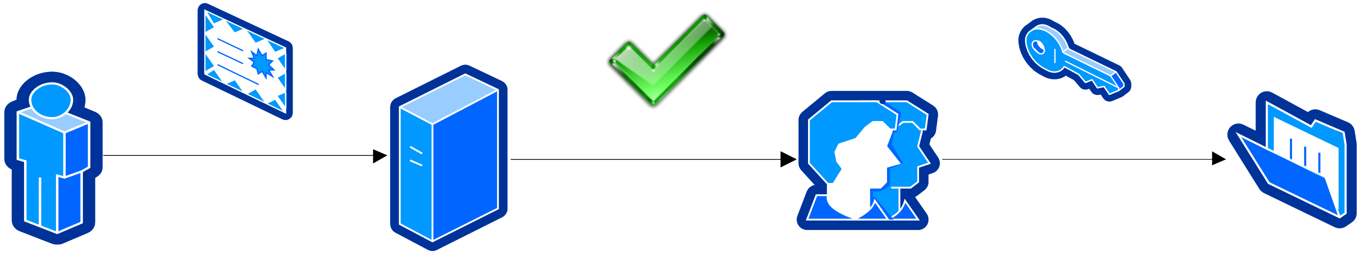
Access Control Systems In dCache

2. In case of successful *authentification* by dCache, the user will be mapped to a virtual, internal user account.



Access Control Systems In dCache

3. Afterwards, this virtual user will be mapped onto actual UNIX user-ID and group-ID(s) specific to the local environment.
4. Using this (final) information, dCache can enforce the configured *authorisation* policy.



Grid Security Infrastructure

- Most services within grids are secured using X.509 certificates, which are used for authentification (and thus indirectly for the authorisation-process), digital signatures and encryption.
- For grid environments, certificates are granted by *Certificate Authorities* (CAs) that are member of the *International Grid Trust Federation* (IGTF).
- A user belonging to a Virtual Organisation (VO) can generate short-living proxy certificates (“grid proxy”) by presenting the grid certificate to the *VO Membership Service* (VOMS).
- The grid proxy may have several attributes like VO role or capabilities attached along with the user’s DN.
- Whenever the user accesses dCache with a (gsi-)secured protocol, a grid proxy is required.

Grid-Aware Pluggable Authorization Management (gPlazma)

- *gPlazma* is the name of the service in dCache that is responsible for authentificating the users.
- As its name indicates, it utilises plugins behind the scenes.
- Tomorrow there will be a session about *gPlazma2*, the successor of gPlazma1.
  - You will learn how to install and configure gPlazma2 tomorrow.
  - For now, we will setup gPlazma1 with very basic configuration.
- The very legacy authentification plugin is *kpwd*, mapping is based solely on the user’s DN.
- The modern plugin is based on VOMS attributes and the plugin is called *gplazmalite-vorole-mapping*.

gplazmalite-vorole-mapping

- Combinations of DN and FQAN are mapped to unique virtual user names.
  - `“DN” [“FQAN”] virtual_user_name`
- The DN can also be set to “`*`”, which serves as a wildcard expression matching any character sequence.
  - This is especially useful when mapping whole VOs.
  - Matches with wildcards are overridden by matches with explicit DNs.
- If the same DN occurs in multiple lines with the same FQAN then only the mapping from the last one is used.
- The same DN can be used multiple times with different FQANs and will be mapped to different virtual user-names respectively.
- If `fqan` is empty or not specified at all, only client-certificates with an empty or no FQAN will match.
- “Disabling entries” (also called “revocation entries”) can be made by using “`-`” as virtual user-name.

Determining Actual User And Group IDs

- gPlazma will test with all enabled plugins to find a valid mapping for the user’s credentials.
  - Only if a plugin does not result in any mapping, the next plugin is applied.
  - Mappings through revocation entries are valid!
- Once the virtual user account is found, dCache will consult the so-called *storage-authzdb*-file.
  - Example:

```
version 2.1
authorize atlas001 read-only  1000 100 / / /
authorize prdatl01 read-write 1001 101 / / /
```

Policies

- dCache can use two different policies, that contain rules on how resources might be accessed.
  1. Traditional POSIX file permissions
  2. Access Control Lists (ACLs)
- ACLs are evaluated in addition to the POSIX file permissions, but supersede them mostly.
- The settings are stored on a per-file basis, managed by Chimera.

Third Chapter Completed!

- Are there any questions?
- If not, try configuring your dCache to allow read-write access for yourself.