



**NORDUGRID**

*Grid Solution For Wide Area  
Computing and Data Handling*

# **Status update from ARC**

*July, 2020 GDB*

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# Pre-GBD November 2019



**pre-GDB - ARC-CE**

Tuesday 19 Nov 2019, 09:30 → 18:00 Europe/Zurich

31/3-004 - IT Amphitheatre (CERN)

Oxana Smirnova (Lund University (SE))

**Description** Monthly meeting of the WLCG Grid Deployment Board  
See also Twiki [GDB area](#) for actions and summaries

**Videoconference Rooms** pre-GDB Join

**10:00** → 10:20 **Birds-eye overview of ARC-CE** 🕒 20m

A high-level view of the ARC-CE and ecosystem around

Speaker: Balazs Konyb (Lund University (SE))

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**10:25** → 10:45 **Release and development plan** 🕒 20m

Speaker: Malen Pedersen (University of Oslo (NO))

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**10:50** → 11:10 **ARC for WLCG pilots** 🕒 20m

Speaker: Francesco Giovanni Sciacca (Universitat Bern (CH))

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**11:15** → 11:45 **ARC datastaging and cache, integration with Rucio** 🕒 30m

Speakers: David Cameron (University of Oslo (NO)), Vincent Garonne (University of Oslo (NO))

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**11:55** → 12:15 **Deployment and operation experience at the Nordic Tier1** 🕒 20m

Speaker: Erik Mattias Wadenstein (University of Umeå (SE))

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**12:30** → 14:00 **Lunch** 🕒 1h 30m

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**14:00** → 14:20 **Experience with CREAM to ARC-CE migration** 🕒 20m

Speakers: Andreas Gellrich (DESY), Thomas Hartmann (Deutsches Elektronen-Synchrotron (DE))

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**14:25** → 14:45 **Accounting and sysadmin tools in ARC6** 🕒 20m

Speaker: Andrii Salnikov (Taras Shevchenko National University of Kyiv (UA))

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**14:50** → 15:10 **ARCHERY** 🕒 20m

Speaker: Balazs Konyb (Lund University (SE))

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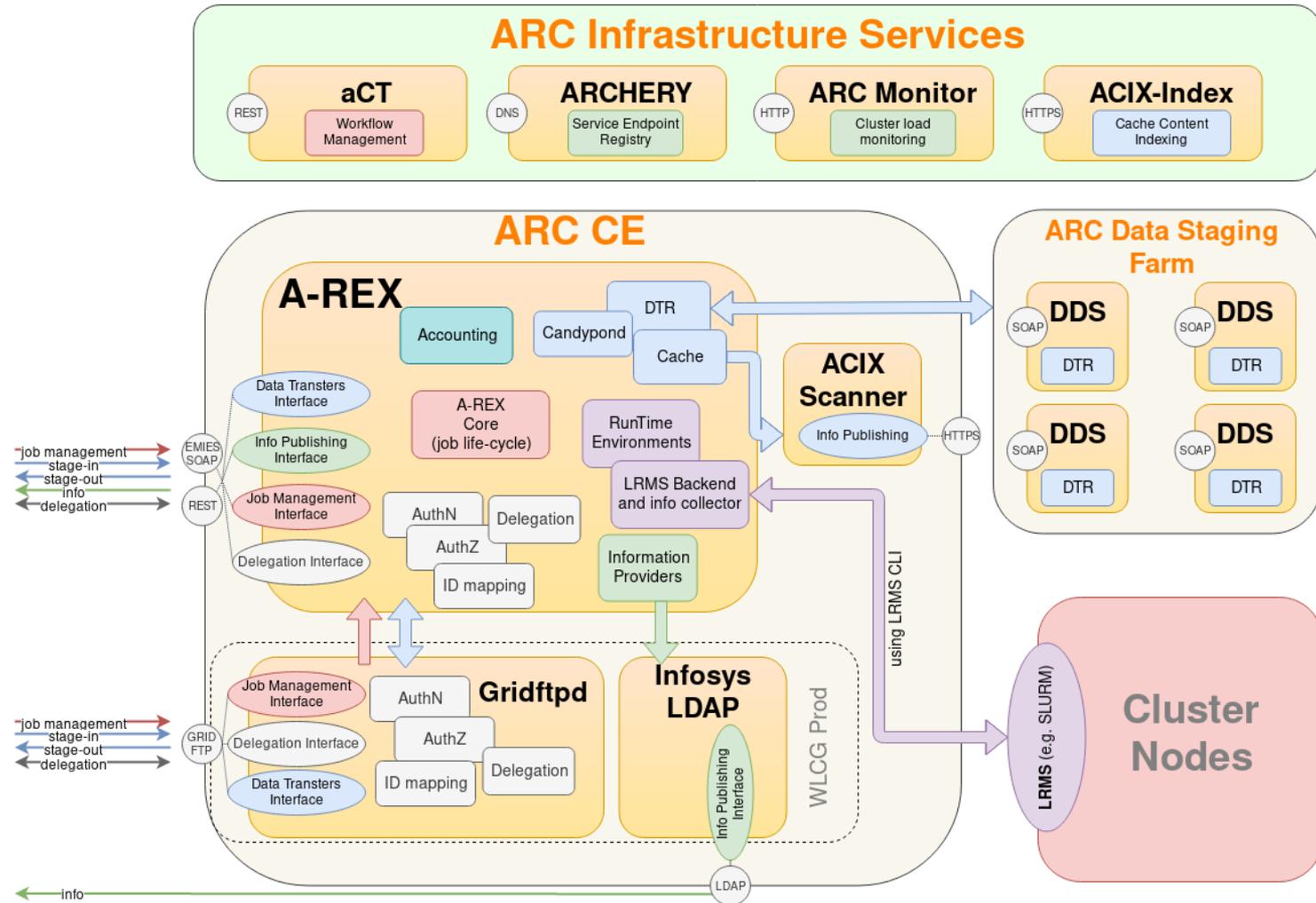
**15:15** → 15:35 **Token-based authorisation plans** 🕒 20m

Speaker: Andrea Ceccanti (Universita e INFN, Bologna (IT))

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**15:45** → 16:45 **Feedback from the experiments and sites and discussion** 🕒 1h

# ARC CE: internals, interfaces and the infrastructure ecosystem around



1. ARC5 End of Life
2. ARC6 upgrade and rollout support
3. Recent releases
4. Status of OIDC tokens
5. Globus legacy within ARC
6. REST interface progress
7. NO OpenLDAP in CentOS8

# ARC5 End of Life

## ARC5 has reached its End of Life!

- As of **June 2020** no more security updates are provided to ARC5!
- Since the release of ARC 6 in **June 2019**, no more development on the ARC 5 code base has been done
- Production sites already running ARC 5 will get some operational site support in form of deployment and configuration troubleshooting via GGUS until end **June 2021**
- Repository info:
  - ARC5 is available in EPEL7 and will stay there, to install ARC6 from EPEL7 the package-names are of type: nordugrid-arc6-xxx.
  - EPEL8 will only contain ARC6.

The ARC community is there to help sites with the ARC5 → ARC6 migration

- Dedicated skype support channel
  - <https://join.skype.com/dyf3A6Uutjy2>
- Community events:
  - EGI Webinar: [indico.egi.eu/event/5157/](https://indico.egi.eu/event/5157/)
  - GridPP Technical meeting: [indico.cern.ch/event/930786/](https://indico.cern.ch/event/930786/)
    - Q&A document: „*Are the developers aware of any safe performance tuning that can be done not covered in the docs?*”
- Traditional support channles
  - Email lists: [nordugrid-discuss@nordugrid.org](mailto:nordugrid-discuss@nordugrid.org), [wlcg-arc-ce-discuss@cern.ch](mailto:wlcg-arc-ce-discuss@cern.ch)
  - Bugzilla, GGUS

# Recent releases

- **ARC 6.4.0, November 15, 2019**
  - announced before the pre-GDB, contained a complete reimplementaion of the accounting subsystem based on local SQLite accounting database that stores all the A-Rex Accounting Record (AAR)
- **ARC 6.4.1 December 2, 2019**
  - an express release to fix two blocker bugs (xrootd-related and accounting subsystem vulnerability)
- **ARC 6.5 February 12, 2020**
  - large sets of enhancements (arcctl, client area, archery management, community RTEs)
- **ARC 6.6 April 27, 2020**
  - technology preview of the OIDC token support
- **ARC 6.7, July 2, 2020**
  - shipping out the pending smaller enhancements (arex stability, arcctl datastaging monitoring module, read-only cache)

# Status of OIDC tokens in ARC

## OIDC token support was released as a technology preview in ARC 6.6:

- Tokens conforming to WLCG profile are supported (validation is not strict)
- Tokens are accepted in job submission, job management and service information requests as part of HTTP header of the ARC CE WS interface (EMI-ES)
- Tokens are parsed and signature is checked: token verification is simplified and token parsing has limitations
- Used for client authentication and authorization for job submission through the WS interface (arscub command)
- Token attribute (subject, issuer, audience, scope and group) based server-side authorization is provided via a new config option „authtokens” introduced to the [authgroup] block
- Server-side generates an internal user identity derived from issuer and subject and uses it for mapping to local user accounts
- No user tools provided for obtaining token, no Oauth/OIDC authentication flows implemented. Recommended tool is oidc-agent

### *Future plans:*

- *Follow development of WLCG profile; better coverage for features of JWT tokens (especially emphasizing security related); integration of some token retrieval, management flows*
- *Support for multiple tokens per computational jobs or automatic token exchange*

# Statement regarding (legacy) Globus technologies used in ARC

- X509–based technology for authentication:
  - The X509 authentication does NOT use globus libraries, instead it is based on native openssl
- VOMS–based authorization:
  - Just like for the authentication, ARC has a VOMS authorization support that does NOT rely on any globus libraries and not even on any VOMS libraries. All is implemented via OpenSSL.
- **LCMAPS libraries: (integration with ARGUS):**
  - Both the "**gridftp–jobplugin**" and the EMIES WS–SOAP job submission interfaces integrated with ARGUS. Only the former one is relying on the LCMAPS libraries.
- Job description (XRSL):
  - The XRSL syntax originates from Globus (X refers to extended RSL). ARC comes with its own XRSL parser implementation.
- **Data staging to/from gridftp servers via DTR**
  - implementation of the gridftp data transfers are using the globus libraries
- **Job management via gridftp interface:**
  - uses GSI and compiled against Globus libraries in EPEL

**Conclusion: once the gridftp–jobplugin job submission is dropped and third party storage servers do not require GridFTP, ARC is Globus–free.**

# REST interface progress

- *First iteration of a REST interface:*
  - *Already back in 2019 May, as part of the ARC6.0 release we provided a technology preview REST interface.*
  - *Corresponding code is still distributed with ARC 6.x*
  - *Shouldn't be used!*
- ARC-CE REST interface specification (2nd iteration):
  - [www.nordugrid.org/arc/arc6/tech/rest/rest.html](http://www.nordugrid.org/arc/arc6/tech/rest/rest.html)
  - This is the second iteration of an ARC-CE REST interface
  - Work in progress: error handling, delegation details missing
  - Recently finished the state model
  - Spec finalization: early September
  - Coding (including testing): additional 2-3 months
- Condor team is „on board”
  - planning to switch from gridftp to REST, jumping over the EMI-ES

# NO OpenLDAP in CentOS8

- LDAP technology is essential for information system components in ARC
  - ARC-CE publishes critical info via GLUE1.3, Nordugrid schema in LDAP server (via BDII)
  - There is an existing alternative info interface in ARC: WS-EMIES and another one being defined (REST)
- CentOS 8 does not provide the openldap-server any longer
  - An ARC-CE installed on CentOS 8 platform will NOT publish any LDAP information
  - Will/can break many things in the experiment framework(s)
  - The „classic ARC CE” (gridftp + ldap) will not be available on CentOS 8
- We expect to provide some workaround for future releases.
  - and interested to see e.g. how BDII will be provided on CentOS 8

# ARC FACTSHEET

- Code:
  - <https://source.coderefinery.org/nordugrid/arc>
- Installable packages:
  - Global Linux repositories (CentOS, Debian, EPEL)
  - Upstream: <http://download.nordugrid.org/repos.html>
- Documentation:
  - ARC6: complete documentation online at <http://www.nordugrid.org/arc/arc6>
  - Including tech documentation of OIDC tokens and REST interface spec draft!
- Support:
  - Dedicated skype support channel: <https://join.skype.com/dyf3A6Uutjy2>
  - Email lists: [nordugrid-discuss@nordugrid.org](mailto:nordugrid-discuss@nordugrid.org) – generic, CERN e-group [wlcg-arc-ce-discuss@cern.ch](mailto:wlcg-arc-ce-discuss@cern.ch) – WLCG-specific
  - Own bugzilla and EGI GGUS: <https://bugzilla.nordugrid.org>; “ARC” unit in GGUS

Latest version: ARC 6.7